

Falck, Oliver (Ed.); Schönherr, Siegfried (Ed.)

Research Report

An Economic Reform Agenda for Croatia: a comprehensive economic reform package prepared for the Croatian Statehood Foundation (Zaklada Hrvatskog Državnog Zavjeta)

ifo Forschungsberichte, No. 70

Provided in Cooperation with:

Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

Suggested Citation: Falck, Oliver (Ed.); Schönherr, Siegfried (Ed.) (2016) : An Economic Reform Agenda for Croatia: a comprehensive economic reform package prepared for the Croatian Statehood Foundation (Zaklada Hrvatskog Državnog Zavjeta), ifo Forschungsberichte, No. 70, ISBN 978-3-95942-005-1, ifo Institut - Leibniz-Institut für Wirtschaftsforschung an der Universität München, München

This Version is available at:

<https://hdl.handle.net/10419/167430>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



70

ifo Forschungsberichte

An Economic Reform Agenda for Croatia

Editors:

Oliver Falck
Siegfried Schönherr

ifo Institute

Leibniz Institute for Economic Research
at the University of Munich

An Economic Reform Agenda for Croatia

A comprehensive economic reform package prepared
for the Croatian Statehood Foundation
(Zaklada Hrvatskog Državnog Zavjeta)

Editors:

Prof. Dr. Oliver Falck (Ifo Institute & LMU Munich)
Prof. Dr. Siegfried Schönherr (Ifo Institute)

January 2016

ifo Institute

Leibniz Institute for Economic Research
at the University of Munich

Bibliografische Information der Deutschen Nationalbibliothek

Die Deutsche Nationalbibliothek verzeichnet diese Publikation
in der Deutschen Nationalbibliografie; detaillierte bibliografische
Daten sind im Internet über
<http://dnb.d-nb.de>
abrufbar

ISBN 978-3-95942-005-1

Alle Rechte, insbesondere das der Übersetzung in fremde Sprachen, vorbehalten.
Ohne ausdrückliche Genehmigung des Verlags ist es auch nicht gestattet, dieses
Buch oder Teile daraus auf photomechanischem Wege (Photokopie, Mikrokopie)
oder auf andere Art zu vervielfältigen.

© ifo Institut, München 2016

Druck: ifo Institut, München
ifo Institut im Internet:
<http://www.cesifo-group.de>

Foreword

When the Ifo Institute received a request from the Croatian Statehood Foundation for developing a reform programme for Croatia, it made it clear from the outset that it would keep the study strictly neutral, based upon sound economic principles and in no way aligned to any existing political party programmes. The Ifo Institute is an independent research establishment devoid of any party or political affiliation whatsoever. The only principle we clearly adhere to, as a result of proven theoretical underpinnings and the empirical evidence available, is the conviction that the social market economy (with a strong emphasis on “social”) is the most successful system for achieving and combining economic growth and social welfare.

Once this was clear, the Ifo Institute entered into a contract with the Croatian Statehood Foundation specifying the terms for the study. Amongst its tenets, the execution of the study would be conducted in close cooperation with Croatian scholars and specialists. This was considered key to guarantee the inclusion of know-how on relevant local conditions.

Work on the study commenced in September 2014 and concluded in July 2015. Refinement for publication continued until the end of 2015. To make sure that the Institute would not become partisan in the parliamentary election campaign during autumn 2015, we refrained from publishing any results of the study until now.

Regular workshops were held alternatively in Zagreb and Munich to safeguard the close cooperation between the Ifo team of researchers and the Croatian researchers and specialists, but, as specified in the contract, the final responsibility for the scientific analysis and the conclusions as well as the recommendations remained with the Ifo Institute.

As regards the content of the proposed reform programme, we agreed that the most pressing problem in Croatia was the huge unemployment rate, especially among the youth, and the large brain drain depriving the country of many of its best human resources.

To reduce this core problem in a sustainable manner, we focused the study on one key issue, namely increasing Croatia’s economic competitiveness in order to attract both internal and foreign investment as well as improving the export capacities, which in the long term are the basis for sustainable employment generation. We believe that the recent EU membership of Croatia will open excellent opportunities for trade and investment, but Croatia’s very low competitiveness in comparison with most other European countries hinders the realisation of these opportunities.

The study has put forth a scientifically sound programme on how this very serious problem can be overcome. The 14 Papers, including a Summary Paper, published in this book deal with the key issues addressed by this programme.

The reform proposals put forth are neither radical nor do they call for an austerity programme. They outline a roadmap for the medium-term recovery of the chronically underperforming Croatian economy, starting with quickly-acting measures to reduce unemployment.

International experience suggests that the best way to do this is through increased domestic as well as foreign direct investment. Croatia is clearly an attractive investment destination, but has been hampered so far by the unpredictability of its commitment to economic reform.

Once the unemployment crisis has been brought under control, the necessary restructuring measures can be introduced, conceived to be at least employment-neutral and ideally employment-fostering. EU-financed projects would be highly advantageous for this stage, since they would contribute to a socially acceptable reshaping of the economy, furthering thus a sustainable economic development for the country.

Croatia is faced today with the option of lurching from crisis to crisis, putting up with a permanently high unemployment rate and the loss of part of its best (young) brains to emigration, in a course that will unavoidably lead to the erosion of its public finances and ultimately to following the Greek path. This would be the price exacted by caving in to the vested interests of a government-associated elite and other privileged groups who now defend the “business as usual” approach so vehemently.

The other option, that of sustainable, dynamic and employment-generating economic growth that offers good prospects in particular to younger Croatians, will of course not be free of initial pain. A commitment to a serious reform programme is imperative to see this option through. Clearly, Croatia has what it takes to achieve as much progress as other former socialist countries now in the EU have attained. It just needs the commitment.

The entire Ifo team, authors and coordinators alike, hope that Croatia will benefit from this joint German-Croatian research undertaking, regardless of the political composition of its Government.

Oliver Falck, Joachim Ragnitz and Siegfried Schönherr

Project Coordinators

Foreword

On February 5th last year I gave a speech on our German experiences with the Agenda 2010 in the "Economic Policy Debate" of the Zagreb-Bureau of the Konrad Adenauer-Stiftung. Hereafter, the responsible persons of the Croatian foundation ZAKLADA HRVATSKOG DRZAVNOG ZAVJETA, namely their CEO Srecko Prusina, asked me for support to develop an agenda for economic policy for the Adriatic republic. I felt indeed honoured by that approach, but was quite sure, that being Mitglied des Deutschen Bundestages, I would neither have the time nor the scientific staff to fulfil this duty.

So I asked the well-known director of the ifo Institut in Munich, Prof. Hans Werner Sinn, if he would be able and ready to do the consulting task. He was ready and convinced that the people of his institute would be well prepared to do so.

For me it was a great experience to do the work with the ifo-people under the lead of Siegfried Schönherr, a very experienced senior advisor, who has accompanied several countries in their transformation process with his advice. Oliver Falck as Scientific Project Coordinator gathered the right people for the different chapters among the ifo-staff. It was fascinating, somehow like returning to the times of my economic studies at the Johannes Gutenberg-Universität at Mainz 30 years ago, to discuss the working papers with both, German and Croatian economic experts.

The outcome of the work done is very respectable. It may serve anyone interested in a fundamental recovery of the really bad shaped Croatian economy as a quarry or as a blueprint. The solid database of the ifo research and the benchmarking by putting Croatia for each topic into an appropriate peer group gives operable hints for a better economic policy.

The main thing, however, will be that political leaders take full responsibility for their wonderful country and the following generations. A lot of time has been wasted, because there was the illusion that the entry to European Union would be a magic wand that makes things better without own additional efforts. Now being a full member, the country does not even call all the funds from the EU reserved for it. Looking at the energy supply sector for instance, there is a need of replacement for half of the production capacity. At the same time, the EU is vigorously pushing renewable energies with instruments like the Mediterranean Renewables plan. Sun hours and irradiance in combination with vast sparsely populated regions make Croatia predestined for photovoltaic which assumingly works there without any costly feed-in tariffs.

Seven years of sluggish performance with no growth, sharply rising public debt, unacceptable high number of jobless, especially among the young are enough warning. Mobilizing fallow assets in tourism for example, dealing with the negative trade balance in the agricultural sector by using the huge state-owned brownfields, reshaping the vocational education to reduce the mismatch, giving foreign investors stable conditions instead of continuously changing the framework in an erratic way - there is plenty of space for improvement. Politicians will have to take decisive measures and demonstrate the staying power to stick to them even if figures get

worse in the first step. It is quite a common experience that you have to go through a valley of tears, if you want to get up the hill on the other side.

A lot of underperformance is consequence of inefficiencies in the public sector. People have the impression that for recruiting of public administration staff special relationship is often more important than special qualification. Parties must stop making the state their prey. This seems quite crucial to me, because if you talk to people or look at representative surveys, confidence and belief in the so called political class has constantly diminished. The inflated public sector is a main reason for the lack of entrepreneurship and (foreign) investments. Double or multiple responsibilities on the different levels of public administration are a waste of public and private money. The widespread unwillingness on the municipality or regional level to take decisions one can rely on has to be changed. This needs politicians in Zagreb, who are willing to give more competences to the state levels below the centre in the capital, because they know about the beneficial impact of a state organisation along the principals of subsidiarity.

Croatia and its endearing people definitely need a fresh start. The next EU-Member southward down the Mediterranean Coastline is Greece, which is hopefully not a portent.

Klaus-Peter Willsch

Member of the German Parliament and Founding Member of the German-Croatian Parliamentary Group

Contributors

Teresa Buchen joined the Ifo Institute in 2009 as a doctoral student and junior economist, and obtained her PhD degree in Economics in 2014. Her research focuses on macroeconomic forecasting as well as the effects of news media reporting on firms' expectations. She has taken part in several political consulting projects. Currently, she works as a risk modeler at Credit Suisse.

Marcus Drometer is a postdoctoral researcher at the Ifo institute. He previously worked at the Ludwig-Maximilians-University (LMU) Munich, Germany, where he obtained a PhD in economics and the risk management department of Munich Re. His research interests are applied microeconomics and econometrics, in particular political economics and migration. His papers are published in the European Journal of Political Economy and Public Choice.

Nadine Fabritz obtained her doctorate degree at Ludwig-Maximilians-University (LMU) Munich and worked from 2010-2015 as a Junior Economist at the Ifo Institute in the Center for the Economics of Education and Innovation. During this time, her research focus was on the economic effects of Information- and Communication Technologies and the regulation of networks. Other fields of research included labor markets and innovative activity. Currently, she is working as an Economic Analyst in the Competition and Antitrust practice at NERA Economic Consulting in Berlin.

Oliver Falck is the Ifo Professor of Empirical Innovation Economics at Ludwig-Maximilians-University (LMU) Munich, Germany, and Director of the Center for Industrial Organization and New Technologies at the Ifo Institute, Germany. He is also the Program Director of CESifo, one of the world's largest research network in economics. He has extensive experience in applied innovation and entrepreneurship research and has published in leading journals such as the American Economic Review, the Economic Journal, and the Journal of Public Economics. He is co-editor of the best-selling Handbook of Research on Innovation and Entrepreneurship.

Rigmar Osterkamp obtained his doctoral degree in economics at Munich University where he also became an Assistant Professor. His interest in long-term developments of economies and societies led him to the Ifo Institute where he worked in the department for developing and transitional countries. Later he became head of department for international institutional comparisons. His current main interests are in institutional reforms, health economics and social policy. His recent publications comprise "The Global Organ Crisis" (co-author, Stanford University Press 2013) and "An Unconditional Basic Income for Germany?" (editor and contributor, Nomos 2015, in German language). Between 2007 and 2011 he was senior lecturer for economics at University of Namibia. Currently he is teaching economics at Bavarian School of Public Policy.

Joachim Ragnitz is Managing Director of the Ifo Institute's East German branch in Dresden. He is also an honorary professor at the Technical University of Dresden. He holds a Ph.D. from the University of Cologne, and has studied the transformation process in East Germany intensively,

with particular focus on regional development, structural change, cyclical developments, and economic and public policy.

Markus Reischmann studied economics at the Ludwig-Maximilians-University (LMU) Munich in Germany and the Università degli Studi di Padova in Italy. In 2015 he received his doctoral degree in economics from the LMU Munich. His research focuses on public debt, fiscal transfer schemes, and political economy. Since 2011 he works at the Ifo Institute at the Center for Public Finance and Political Economy. He worked on projects in the fields of public debt, local public finance, corporate taxation, and personnel management in the public administration.

Marina Riem studied Economics at the Ludwig-Maximilians-University in Munich, the University of Alberta in Edmonton and the University of California in San Diego. Since 2012 she works at the Ifo Institute at the Center for Public Finance and Political Economy and is a doctoral candidate at the Ludwig-Maximilians-University Munich. Her research focuses on fiscal policy and political economy. She has worked on projects which dealt with the assessment of tax effects, personnel management in the public administration, the effectiveness of economic stimulus packages and the framework conditions for private investment activity in Germany.

Julio Saavedra, an engineer and journalist specialised in Economics and International Affairs, joined CESifo in 2002, where he is now a member of the Executive Board and CESifo Director for International Relations. Editor of the CESifo Newsletter and other publications, and member of the Munich Economic Summit Advisory Council. Previously, he was the Germany and Eastern Europe correspondent for a large newspapers and later the CEO of a publishing house and two other companies in Chile. Member of a 2-person GIZ-led expert team advising Abu Dhabi's Department of Economic Development on formulation of economic policy.

Siegfried Schönherr obtained his degree in Economics and Social Sciences in Nuremberg in 1972, and his Habilitation, the post-doctoral degree to qualify as a Professor, in 1981. He was awarded by an Honorary Professorship at the University of Erlangen-Nuremberg in 1997. Mr. Schoenherr lectured in Nuremberg (1968-1981), with a Senior Research Fellowship at the University of Nairobi in between. He was a Government Advisor on Regional Economic Planning in Zimbabwe (1982-1984), before joining the Ifo Institute as Director of the Department for Development Studies. His focus is on Development and Transformation Economics and Politics. Currently, he is Advisor and Coordinator for International Projects at the Ifo Institute.

Johannes Steinbrecher is an economist at the Ifo Institute for Economic Research in Dresden. From 2009-2014 he was a doctoral student at the Ifo institute for Economic Research and obtained his doctoral degree from the TU Dresden in 2015. His research areas are public finance and the economic development of Eastern Germany.

Thomas Steinwachs obtained his masters degree in International Economics and European Studies from the Eberhard Karls University, Tübingen, in 2013 and studied at the universities of Munich (LMU), Tübingen, and Adelaide, South Australia. He joined the Ifo institute in 2014 as a Junior Economist and Doctoral Student. His research focus is on International Economics.

Michael Weber studied Economics in Erfurt, Berlin, and Oslo. Since 2010, he works as a Junior Economist and Doctoral Student at the Ifo Institute, Dresden Branch. His focus is on Labor Markets, particularly the search and matching process and its interdependence with labor market institutions.

Martin Werding is Professor of Social Policy and Public Finance at Ruhr Universität Bochum, Ifo Research Professor, and fellow of the CESifo Research Network. From 2000 to 2008, he has been chairing Ifo's Department of Social Policy and Labour Markets. He is a regular advisor of the German Federal Ministry of Finance and other federal and state-level ministries, mainly on issues of fiscal sustainability and the risks arising from demographic ageing and its impact on social expenditure. He has also worked for international organizations and other national governments and has extensively published in scholarly journals on his research in this and related fields.

Timo Wollmershäuser is interim director of the Ifo Center for Business Cycle Analysis and Surveys. He graduated as Diplom-Volkswirt at the University of Würzburg, where he also obtained his Ph.D. and his Habilitation from. The main focus of his research is on international monetary economics and time series analysis. His latest contributions are mainly devoted to the rescue measures taken by the European Central Bank and the euro member states to combat the euro crisis.

Erdal Yalcin is Deputy Director of the Ifo Center for International Economics, since 2010. He holds a doctoral degree in economics from Tübingen University for his thesis on the role of uncertainty in foreign direct investment decisions of firms. His current research deals with the role of uncertainty for trade policy, with international trade agreements, and with the interaction between outsourcing and firm dynamics.

1. Introduction	
Oliver Falck and Siegfried Schönherr.....	11
I. Macro-financial Reforms.....	27
2. Exchange Rate Policy	
Teresa Buchen and Timo Wollmershäuser	27
3. Managing Household Debt in Croatia	
Teresa Buchen, Marcus Drometer and Timo Wollmershäuser	53
4. Stimulating Foreign Direct Investment and International Trade to Generate Employment	
Thomas Steinwachs and Erdal Yalcin	71
II. Labor Market.....	105
5. Labor Market Challenges in Croatia	
Michael Weber.....	105
6. Activating the Unemployed: Policy Options for Croatia	
Martin Werding.....	123
7. International Experiences on Labor Market Reforms	
Rigmar Osterkamp.....	143
III. Pension Reform.....	167
8. Old-age provision: Policy Options for Croatia	
Martin Werding.....	167
IV. Education.....	199
9. Human Capital	
Nadine Fabritz and Oliver Falck.....	199
V. Public Budget/Public Administration.....	223
10. Fiscal Consolidation	
Marina Riem	223
11. Public Debt Policies	
Markus Reischmann.....	245
VI. Business Environment.....	269
12. Doing Business	
Nadine Fabritz, Oliver Falck and Julio Saavedra	269
VII. Long Term Structural Framework Reform.....	285
13. Infrastructure and Energy Supply	
Johannes Steinbrecher	285
14. Innovation Policy	
Nadine Fabritz and Oliver Falck.....	307

1. Introduction

Oliver Falck and Siegfried Schönherr

1.1. Overwhelming challenges

Croatia is well into its seventh year of recession. Not even accession to the European Union has brought really any relief. With a high rate of unemployment, a bloated and inefficient public sector, unaffordable welfare systems and some of its best brains leaving the country, it comes as no surprise that it ranks poorly in a wide array of indicators, from public indebtedness through competitiveness to ease of doing business. Needless to say, it cannot continue along this path.

Any economic reform agenda to bring Croatia out of the slump has to act on a very wide front and tackle a number of overwhelming challenges:

International price comparisons of key export goods reveal that manufacturing in Croatia is more expensive than in its peer countries. The price disadvantage is made worse by outmoded regulations and an inefficient public administration, which put a high burden on exports and entrepreneurial activity, i.e. on the motor of the economy. Good framework conditions for setting up and running businesses, essential to an economy's long-run growth, are largely absent in Croatia.

This has prompted many Croatians to try their entrepreneurial zeal in other countries. Whereas total emigration declined by 18 percent between 2000 and 2010, emigration of highly educated Croatians shot up by 33 percent, a development that may severely dampen the economy's future innovative capacity.

An increase in foreign direct investment inflows and more international trade, in particular exports of goods, could go a long way towards solving the above problem, and towards solving an additional problem: Croatia's low labor market participation rate, one of the lowest in the European Union. In 2014, only two-thirds of the population of working age (15-64 years) was officially active in the labor market, i.e. either employed, or unemployed and searching for a job. And despite this low participation rate, unemployment, at 17.3 percent in 2014, is inordinately high. Worse, more than half (58.4 percent) of the jobless are long-term unemployed, a rate far higher than in most peer countries. But that is not all: among the 15-24 year-olds, the unemployment rate amounted to 50 percent in 2013 and 45.5 percent in 2014, with a long-term unemployment share of 50 percent.

Croatia's shadow economy, at 28 percent of official GDP in 2014, is ten percentage points higher than the average of 31 European countries; only Bulgaria and Romania do worse. This is partly the result of the government's poor tax collection efficiency, which tempts people, and makes it easier for them, to evade and avoid taxes and engage in the shadow economy. This, naturally, erodes the tax base, a disadvantage compounded by the government's inability to distribute the tax burden fairly.

In general, public administration in Croatia is inefficient by international standards and characterized by poor coordination and a duplication of structures among different units. Reducing inefficiency would have noticeable positive effects, such as lower expenditures and higher revenues thanks to more effective tax collection.

Moreover, since the interest differentials between borrowing in kuna and in a foreign currency have been high over the past decades, borrowers have, quite rationally, decided to take loans denominated in a foreign currency. Indeed, more than 70 percent of all loans to households and to both non-financial and financial corporations are denominated in or indexed to a foreign currency, mainly the euro and the Swiss franc—the highest ratio in Europe. The misdirected incentives to borrow in foreign currencies have led to Croatia's high vulnerability to external shocks and a depreciation of the kuna.

Besides private debt, public debt denominated in foreign currencies is also very large (only about 23.3 percent of public debt is denominated in kuna) and also makes the Croatian public budget vulnerable to external shocks and exchange rate risks. General government debt declined moderately between 2002 and 2007, but after the outbreak of the financial crisis in 2008 and the subsequent years of recession it grew strongly. In 2014, Croatia's general government debt-to-GDP ratio (85.0 percent) was below the EU average (86.8 percent), but compared to central and eastern European peer countries Croatia has the second-highest public debt-to-GDP ratio, and it is expected to rise to 93.9 percent in 2016. Furthermore, the public guarantees given to state-owned companies pose a risk to the sustainability of public finances. The obvious step would be to restructure state-owned enterprises in order to reduce contingent liabilities and future government expenditures, but privatization in Croatia proceeded only slowly in 2014.

The protracted economic crisis has put the dominant pay-as-you-go pillar of the Croatian pension system under enormous financial strain, exerting a sizeable impact on government public finances. The subsidy to the pension system from the central government budget amounted to 5.0 percent of GDP in 2014. Since the budget deficit at the time was 5.7 percent of GDP, the subsidies could also be considered as largely debt-financed. To complicate matters, the pension system is too profligate, allowing relatively generous early retirement, a fairly low bar for disability pensions, and survivor or privileged pensions (for soldiers, policemen, politicians or academics). Nearly 20

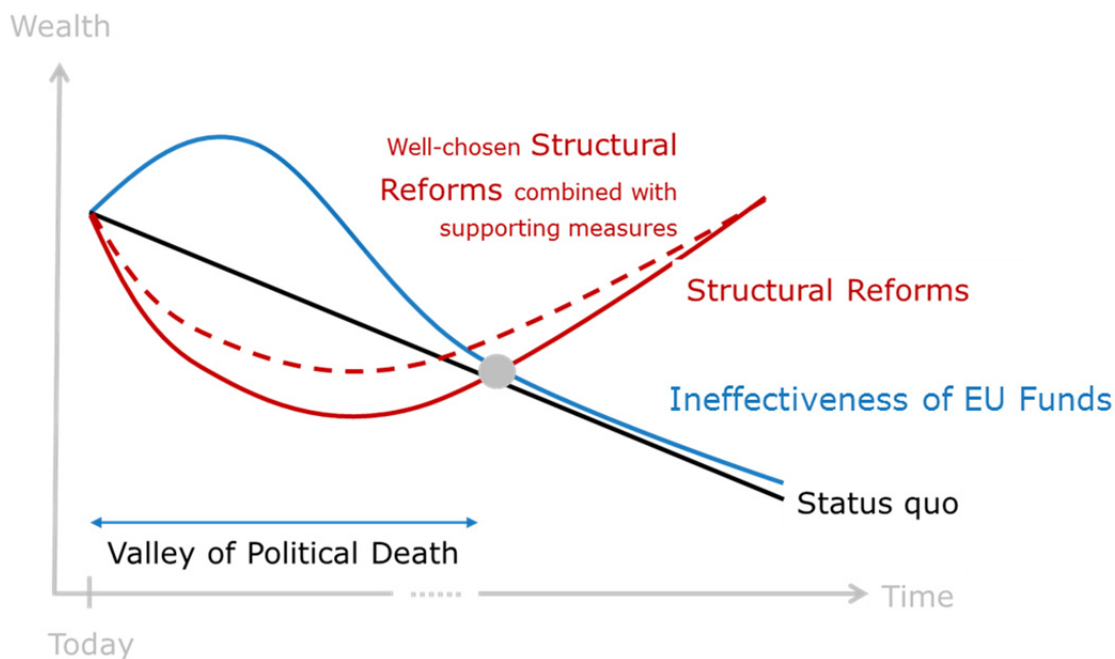
percent of the working-age population is receiving some kind of pension benefits, while the number of active contributors per beneficiary (the support ratio) has declined to 1.16, down from 3.0 in 1990. On the other hand, the benefit level (as a percentage of average taxable wages) of old-aged pensions is low compared to that of other EU and OECD countries.

1.2. Political Dilemma of Structural Reforms

The overwhelming challenges described above are not a new phenomenon, but have worsened since the outbreak of the financial crisis in 2008. As a result, the willingness among the Croatian population to accept changes seems to be large. Energy and momentum should thus not be wasted by trying to preserve things as they are. Preserving the status quo did not work out over the past several years and would decrease wealth even further. Resources should be used instead to implement new reforms.

There are some political forces counting on additional EU funds to solve the Croatian problems. However, experience shows that economic stimulation with EU funds has only an effect in the short run. For such transfers to exert long-lasting effects, absorptive capacities like human capital and good institutions are crucial. Structural reforms aimed at institutional change and the formation of human capital take longer than real investments such as infrastructure, but the returns in terms of growth are likely to be higher and sustainable. Structural reforms will hurt in the short run, eventually leading to a potential “valley of political death”, especially if structural reforms are announced shortly before an election. The key challenge is thus to educate voters regarding both the inevitability and the long-run benefits of the structural reforms.

Figure 1.1.: Valley of Political Death



To alleviate the above political dilemma, reforms should be chosen that keep the death valley as short and flat as possible. Some reforms will have an immediate effect, while others will take time to be implemented and to make an impact.

Empirical cross-country estimations for Croatia's peer countries show that a devaluation of the local currency is associated with rapidly evident positive effects on inward FDI and exports, leading to sustainable GDP growth which, eventually, will be capable of creating new jobs and helping the government to consolidate its budget. In the longer run, inward FDI might create home-grown innovations that could fuel additional growth and job creation.

Flattening the valley could be achieved by combining structural reforms with EU funds. One example for this is the Latvian Workplaces with Stipend Emergency Public Works Programme (WWS), which was co-financed by the European Social Fund. As a response to the crisis, between 2009 and 2011 the program created more than 11,000 temporary jobs. It was addressed to the unskilled and long-term unemployed who were not eligible for unemployment benefits. The aim of the project was the activation of the unemployed, maintaining and perhaps helping to acquire new work-related skills, thereby reducing the psychological consequences of long-term unemployment. An evaluation showed that approximately 22 percent of participants were able to find a job during or after the program. This clearly helped to ease the pain of reforms, reducing the inevitable hardship both in its depth and its duration. In other words, made the valley of death easier to bear and shorter to endure.

1.3. Elements of the Reform Agenda for Croatia

1.3.1. Overview

The thorough study of the available data, the results of interviews with stakeholders in Croatia, reviews of the relevant literature, the study of benchmark countries, fruitful workshops with our Croatian partners and a careful application of economic principles have led to a set of policy proposals that can be characterized as comprehensive, doable and tailored to tackle the above challenges. The reform proposals have been divided into seven groups:

- Macro-financial reforms
 - Managed devaluation of the kuna in order to eliminate incentives to borrow in foreign currencies and to increase internal competitiveness
 - Introduction of a consumer bankruptcy law
 - Revision of consumer protection and bank regulation to further reduce incentives to borrow/lend in foreign currencies
- Labor market
 - Increase flexibility of wage-setting and hiring/dismissal
 - Activation of the inactive
- Pension reform
 - Increase statutory retirement age in accordance with demographic ageing and reduce incentives for early retirement and for receiving disability pensions
 - In the future, the benefit level for old-age pensions should be stabilized at its current level or even raised
- Education
 - Facilitating the transition from school to work
 - Training the low-skilled
- Public budget/Public administration
 - Ensure continuity of the tax system to increase confidence in legislation and government

- Broadening of the tax base through zero tolerance of tax avoidance and the shadow economy as well as by increased employment participation
- Increase the efficiency of public administration
- A reduction of the public administration wage premium as a role model for wage-setting in the private sector
- Business environment
 - Privatization of non-strategic public companies
 - Improvement of the ease of doing business
- Long-term structural framework reforms
 - Market-oriented innovation strategy
 - Infrastructure strategy that carefully prioritizes transportation projects

1.3.2. Reforms in Detail

Macro-financial Reforms

Exchange rate

Price comparisons for key export goods reveal that prices, on average, are 7 percent higher in Croatia than in competitor countries such as Poland. A way to restore competitiveness is a devaluation of the kuna by 7 percent in real terms (or 13 percent in nominal terms). We propose a managed devaluation path so that the devaluation goal is reached after several years. The slope of the proposed devaluation path is determined by the interest rate differential between loans in kuna and loans in foreign currencies (euro). In the past, interest rate differentials have always been larger than the kuna/euro exchange rate changes so that it was rational for Croatian borrowers to take out loans in foreign currencies. A well-chosen managed devaluation path would thus not only contribute to restoring Croatia's price competitiveness but also eliminate harmful incentives to borrow in foreign currencies. In the absence of a devaluation, excess borrowing in foreign currencies can only be prevented by strict bans on further borrowing in foreign currencies. We expect the goal of a 13-percent nominal devaluation to be reached in 7 to 13 years, depending on the size of the future interest rate differential. Devaluation would lead to negative balance sheet effects, but if devaluation is performed gradually, such balance sheet effects are smoothed out and can therefore be better managed by debtors and banks alike.

Do we propose a new exchange rate regime for Croatia? No. During the past few years, the Croatian National Bank (CNB) has already accepted a 0.5-percent yearly devaluation

of the kuna before intervening. Our suggestion is merely to moderately increase the speed of devaluation by reducing the intensity of the CNB's intervention.

Introduction of a consumer bankruptcy law

Debt distress of households is a major problem in Croatia. Since many loans are denominated in foreign currencies, a devaluation of the kuna will further increase the likelihood of distress for those households that do not hold assets in foreign currencies. The proposed managed devaluation path will eliminate incentives to borrow in foreign currencies. To deal with existing private household debt, we propose the introduction of a consumer bankruptcy law giving individuals and micro-enterprises the possibility to restructure their debts, along the lines of the continental European approach for a consumer bankruptcy law which allows for a fresh start but only after a period of distress and sanction ("earned start"). Based on the experience with existing private bankruptcy laws in Europe, implementing a maximum repayment period of 3 to 5 years would be advisable. The implementation of a new consumer bankruptcy law needs to be embedded in the institutional infrastructure, including the availability and quality of judges and trustees, administrative capacity, and accounting and valuation systems. Furthermore, the consumer bankruptcy law should encourage out-of-court settlements in order to reduce the burden on the institutional infrastructure as well as the costs associated with the procedure. A good example for out-of-court settlement procedures are the principles and guidelines set by the by the Latvian Government together with the World Bank and the IMF in 2009 for out-of-court consumer mortgage workouts.

Consumer protection and bank regulation to further reduce incentives to borrow/lend in foreign currencies

The proposed managed devaluation path of the kuna will certainly eliminate incentives to borrow in foreign currencies. Nevertheless, information asymmetries between private borrowers and institutional lenders may still result in unintended borrowing in foreign currencies. Debt distress among Croatian households often results from an accumulation of many, often small, consumer loans. Various measures to protect and educate consumers are therefore proposed: (1) Guidelines provided by banks/national authorities in order to inform bank customers about possible risks associated with their loans. Especially in the case of loans in a foreign currency, customers have to be advised about the possible negative effects of exchange rate fluctuations; (2) Debt counseling and financial education for individuals, which should start in school; and (3) a credit registry for private consumers to enable banks and businesses to get information on the individual's credit history.

A further recommendation concerns the internal risk management of the financial institutions, calling for making it mandatory to incorporate foreign currency lending

risks in their internal risk management systems, as well as a tightening of the capital requirements to cover risks associated with foreign currency lending. The European Systemic Risk Board (ESRB) gives recommendations concerning the risk management of financial institutions, and directly addresses the national supervisory authorities, calling for them to impose certain lending and risk management policies on the financial institutions in their country. A good example of foreign currency loan management is that of the Austrian Financial Market Authority (FMA), which demands from the financial institutions to “compute the effects of exchange rate fluctuations on the foreign currency loan portfolio employing a meaningful stress test at least once a year”. The stress tests are to quantify the effects of currency fluctuations on the borrower’s solvency and on the credit institution’s risk-bearing capacity. The outcomes of stress testing must be adequately reflected in the business policy. Moreover, FMA emphasizes that foreign currency loans should only be given to customers with sufficient income in the respective currency.

Labor market

As discussed in section 2 above, a devaluation of the kuna is likely to have positive effects on inward FDI flows. Recent economic literature shows that direct investment often acts as a kind of catalyst and that a positive influence on economic growth becomes more likely when a country has appropriate institutions, a flexible labor market, a favorable environment for doing business, an adequate level of education of the workforce, and high-quality infrastructure. The decision in favor of a gradual devaluation for the kuna, thus, does not discharge the government from making progress in these other fields, especially in terms of labor market reforms. The latter must be targeted at both the insiders – those holding jobs – as well as the outsiders – those who are currently looking for jobs or inactive in the labor market.

Increasing labor market flexibility

Since in Croatia unemployment differs markedly between industries and among the population, industry-specific minimum wages should replace the current uniform minimum wage. Such industry-specific minimum wages should take into account the specific circumstances in an industry and could be set by social partners and the government. To integrate the vulnerable workers (e.g. long-term unemployed, low skilled and young workers) into employment, reduced minimum wage rates should be introduced in order to abolish or at least diminish the barrier to hire these workers. This could probably also help to fight undeclared work if wages in the shadow economy are set below the uniform minimum wage.

Aside from that, more flexible hiring and dismissal processes are necessary. Mandatory severance payments need to be limited solely to unjustified dismissals, since this reduces significantly the anticipated costs when hiring a worker. Additionally, the hiring ban for firms after dismissing workers for redundancy reasons should be abolished in order to allow firms to react in a timely manner to changes in business conditions. The higher flexibility and lower non-wage labor costs are likely to increase job creation and lead to fewer incentives to prefer fixed-term employment contracts over open-ended contracts.

An indirect way to reduce wage costs without having to cut wages is to increase working time while keeping wages constant, for instance by increasing daily, weekly or monthly working time, reduction of public holidays, or of days of annual vacation. In this regard, it is important to bear in mind that the statutory maximum working hours in Croatia are lower than in peer countries. Furthermore, few individuals in Croatia work on Saturdays, in the evening or at night. Such a measure stands a good chance of finding wide acceptance, since it applies to everyone.

Activating the inactive

Inactivity on the labor market is not only the result of a lack of demand, but also of modest incentives to join the labor force. In Croatia, many public benefits to individuals who are able to work, such as unemployment benefits, social assistance, early retirement pensions, and so on, are of a 'passive' nature, meaning that individuals are paid for *not* working. Unhelpfully, as soon as a benefit recipient starts to work, such benefits are withdrawn on a 1:1 basis. Furthermore, passive benefit recipients have the possibility of illegally generating additional income in the shadow economy, where gross wages equate net wages. Such a system creates little incentive for individuals who would earn a relatively low gross wage to seek work in the formal labor market. Incentives to start work on the formal labor market can be achieved by two types of measures: (1) changes in the design of benefit schemes; (2) stricter use of active labor-market policies.

This calls for a careful revision of the eligibility rules for long-term unemployment benefits, disability pensions, early retirement, and privileged pensions, since international experience has shown that long or unlimited duration of benefit reception is more harmful than the level of the benefits in terms of staying away from the labor market. Following the examples of the US Earned Income Tax Credit (EITC) and the British Working Tax Credit (WTC), benefit withdrawal should aim to create a marginal burden on earned income (including cumulative effects with wage taxes, social insurance contributions and withdrawal of other benefits such as housing allowances) that is as low as 50 percent but not larger than 70 percent. To limit fiscal costs, reduced withdrawal rates could be concentrated on certain ranges of earned income,

disregarding jobs with extremely low pay, incentivizing recipients to take up full-time jobs and to transcend the poverty line.

Among the measures of the second type, besides active counseling, job search requirements, and training of the unemployed, particular attention should be given to the imposition of an obligation to work on long-term benefit recipients, as well as to the organization of public work programs. Activating benefit recipients is especially difficult if they combine benefit receipt with work in the shadow economy. In fact, the actual use of their time must be monitored in some feasible way, in order to deter them from the abuse of benefit programs and of general rules regarding taxation and other public contributions. An instrument for doing so is the introduction of explicit work requirements under which individuals, in exchange for receiving welfare benefits, have to participate in public work programs at least for a certain amount of time per day or per week. Programs of this type also have a positive side effect, simply because they improve the employability and raise low levels of qualifications of many beneficiaries. Work programs should be organized in a decentralized manner, with municipalities taking on a leading role, combined with close co-operations between municipalities and regional branches of public employment services. Work opportunities should be organized in such a way that participants only work for the municipalities themselves or in co-operation with non-profit organizations (NGOs as well as other government institutions) so that the risk of displacing regular jobs remains low.

Saving the pension system

Croatia's current pension system not only poses a heavy financial burden on the public budget: it is simply unsustainable. The eligibility rules for disability pensions, early retirement, and privileged pensions must be critically reassessed not only for the sake of the labor market, but for the country's financial viability itself. Changes in the eligibility rules for new entries and also rehabilitation measures for recipients of disability pensions would lead to a significant decrease in the number of pension recipients who have not yet reached the statutory retirement age. Demographic ageing will further increase the financial pressure in the pay-as-you-go pillar of the pension system, making it crucial to link the statutory retirement age *automatically* to life-expectancy. According to the current benefit level up-rating formula, the already low benefit level (measured as a percentage of total taxable wages) granted by the pay-as-you-go pillar will erode further over time, an erosion that cannot be compensated by the pre-funded (second) pension pillar. Most crucially, the contribution rates to the second pillar should be increased gradually to the level foreseen in the original pension reform proposals that introduced such a system. In addition, in order to stabilize the benefit level, and even increase it in the long run, the up-rating formula in the pay-as-you go pillar should be

modified, giving more weight to wage growth than to inflation. Shifting to wage indexation will also be helpful if, during an early period of reform, wage growth will be moderate, while inflation may go up a bit (e.g., because prices for imported goods increase following a depreciation of the kuna). In this case, wage indexation temporarily limits the growth in pension expenditure and contributes to budget consolidation, in line with consolidation requirements mentioned above. When this period of transition is over, wage indexation will assume its role for stabilizing the level of pension benefits in the long run.

Education

Transition from school to work

Expanding the dual education system in Croatia would help to tackle the high levels of youth unemployment and the perceived mismatch of skills in the labor market. Currently only crafts schools offer a real dual educational curriculum, whereas industrial and trade schools have only few on-the-job-training offers. Public information campaigns on the advantages of the vocational education system could promote the attractiveness of this form of education, facilitating the transition from school to work. Also it may mobilize the private sector towards adopting the system.

Training of the low-skilled

Training programs as part of active labor market schemes are not very transparent in Croatia. An effective way to provide such training would be through a voucher system especially targeted at persons with low or no formal qualification. International evidence shows that this group is most likely to profit from such a measure. Integrating all training measures in one voucher system would make training opportunities more transparent. The consumer choice and provider competition made possible by a voucher system are likely to lead to a higher level of efficiency. Vouchers allow participants to express their preferences optimally and hence maximize their utility. A voucher system gives participants the option to change providers if services are not delivered satisfactorily, thus contributing to making providers more responsive to participants. Targeted at the unemployed, such a voucher system could increase employment; targeted at employees and firms, it would increase lifelong learning activities and reduce skills mismatches.

Public budget/Public administration

Public budget

Overall budget consolidation should aim towards long-term sustainability via structural reforms rather than short-term fiscal adjustments. The general tax level in Croatia is in line with the European averages. Rather than making election gifts by lowering taxes, it is thus advisable to ensure continuity of the tax system to increase confidence in legislation and government. However, this does not mean that the tax system should stay as it is in all details. As discussed in the sub-section on labor market reforms, both the tax and public benefit systems should provide incentives for joining the regular labor market. Distortions introduced by taxes should also be eliminated by reducing both the number of taxes as well as the number of tax exemptions. The number of tax procedures and their simplification by further promoting e-filing of tax returns and electronic communication with tax authorities must be undertaken in order to lower tax compliance costs. This would have the added benefit of removing opportunities for corruption.

Broadening the tax base can also be achieved through zero tolerance of tax avoidance and of the shadow economy. The likelihood of detecting tax evasion must be increased significantly. To ensure this, the number of tax administration personnel tasked with performing audits should be increased, and their training and case selection methodology improved. In addition, there should be more consistent imposition of statutory penalties for tax evasion, particularly by courts. When it comes to the shadow economy, better co-operation between the tax administration and other government bodies is essential. Furthermore, the education and public information system must be enlisted to increase public awareness of the adverse effects of the shadow economy and so improve tax morality. An improvement in the quality of public goods and services provided by the state would also contribute to achieving this goal.

There is also scope to broaden the tax base by eliminating any tax expenditures that are distorting, poorly targeted, and contribute to a lack of transparency. The most costly tax expenditures are typically those aimed at boosting retirement savings, promoting homeownership, health insurance and charitable donations. Publicly available tax expenditure reports that help identify potential areas for broadening the tax base and enhance transparency should be produced.

Transparency must also be enhanced with respect to the public debt. Debt policies and standards for accounting and reporting must address implicit as well as explicit, and contingent as well as non-contingent fiscal risks. A debt management strategy and a debt management agency are both needed to evaluate, regulate, control, and prevent financial risks; the former should be developed, and the latter established, forthwith.

Public administration

To facilitate an efficient and speedy handling of government services, Croatia must concentrate on developing digital procedures and bringing all levels of public agencies to an e-government operational status. Besides increasing efficiency, this would reduce red tape and remove opportunities for corruption. Efficiency of the public administration should be further increased through the elimination of duplicated structures as well as the number of public employees, which currently places a heavy burden on the public budget. Since 2010, the 'one-for-two' system has already led to a reduction in the number of public servants. This process could be speeded up if public employees were offered attractive exit options in the private sector. The necessity of reducing overall public employment should not lead us to lose sight of the fact that in some areas of public administration employment actually needs to increase. Any replacement rule should allow for this flexibility.

The budget could also be relieved by reducing the wage premium prevalent in the public sector and state-owned enterprises. In general, the public sector wage premium is comparable to that in other EU countries, and has even declined over the past several years. That notwithstanding, a significant wage premium still prevails in the lower half of the pay scale. A reduction of the public sector wage premium in this segment could lead to a reduction of wages in the same segment in the private sector, opening up new employment opportunities for a portion of the labor market that is characterized by extremely high unemployment. Wage-setting in the public administration may well serve as a role model for wage-setting in the private sector, boosting the competitiveness of the Croatian economy due to lower wage costs.

Business Environment

Privatization of public companies

High, and rising, public debt endangers Croatia's fiscal sustainability. Structural reforms must be implemented to stop public debt from growing further in future. State-owned enterprises must be privatized and the proceeds applied to reducing the stock of debt. At the same time, state guarantees and subsidies to publicly owned companies should be reduced and be made far more transparent. The privatization process should be executed in two steps. First, the state-owned enterprises must be categorized so as to start out with the sale of enterprises in the competitive and commercial sectors. Infrastructure assets, in turn, should be considered (if at all) in later stages, because privatizing them embodies public policy considerations such as consumer protection from abuse of monopoly pricing and guaranteeing access for all citizens, posing thus complex regulatory and competition issues. Similarly, enterprises responsible for such

assets as water or forest lands require special regulation and protection. Still, even the companies not slated for privatization in the first stage as well as those of strategic interest all need to be carefully reviewed and eventually restructured. Restructuring should include depoliticizing the management and increasing managerial autonomy and accountability, setting clear objectives, evaluating performance regularly, rethinking incentive structures and instituting transparent disclosure.

Improving the ease of doing business

To foster growth and promote the creation of new jobs, the ease of doing business in Croatia must be further improved. Ease of doing business refers to how easy or difficult it is for an entrepreneur to set up and run a business when complying with relevant regulations. It is also positively correlated with investment inflows and benefits from foreign direct investment. During the past decade, Croatia has introduced a number of regulations in an effort to improve this indicator, ranking now among the 30 economies which improved the most between 2013 and 2014. But firms in Croatia still bear relatively high administrative burdens in terms of time and costs. Starting a business, getting a construction permit, registering property and trading across borders are still the most critical aspects. In starting a business, things could be considerably facilitated by supporting the implementation of e-government and by establishing the e-signature as a fully valid element in the process. In the field of construction permits, careful consideration should be given to where regulation is not necessary, since the current set of regulations is clearly too cumbersome. The procedures for registering property should distinguish among industries with different risk profiles, allowing for facilitated procedures (such as online-registering) for low-risk industries. Trading across borders would most likely profit from a reduction in the number of required documents. Additionally, a sound business environment with transparent and easy processes is likely to reduce the opportunities for corruption.

Long-Term Structural Framework Reforms

Innovation Strategy

Foreign direct investment has proved time and again that it can be a substantial source of technological transfer for transition countries; attracting more of it could help Croatia to move closer to the world's technological frontier. Seen in this way, structural reforms that increase the inflow of FDI might thus be the best innovation policy for Croatia.

Another powerful way to foster innovation is to encourage research and development (R&D) in the public sector. However, due to the tight public budget, measures should be carefully chosen on the basis of international benchmarking. While R&D tax credits seem

to have a positive effect on private R&D, they are an expensive option, so that they are not recommended for Croatia. A system of direct, competitively awarded R&D subsidies (in particular those targeted at cooperative R&D projects) appears to be the more suitable option for Croatia to create additional R&D in the private sector. Still, care must be exercised that subsidies do not crowd out private R&D spending.

Another possibility to foster private R&D are innovation vouchers for cooperation between small and medium-sized enterprises (SMEs) and research institutions. Finally, public procurement of innovation has proven to be an effective strategy to increase private R&D. Following the idea behind research subsidies, public procurement should also be designed to induce competition among potential suppliers. Public procurement of innovation can then kill two birds with one stone: public procurement of innovative e-Government solutions, for instance, would not only increase the efficiency of the public administration, but also boost private R&D in a technological field with high potential for innovative spillovers onto other sectors.

The currently very low research funding in the academic sector should be increased in the longer run. At the same time, policymakers must increase the autonomy of universities and research institutions and foster competition among them. Autonomy and competition, in combination, have proved to be very effective in improving universities' research output.

Infrastructure Strategy

Infrastructure is essential for the economic development of a country. A well-developed transportation and communication infrastructure connects the local economy to international markets. Croatia's infrastructure is relatively competitive compared to its peer countries, but still falls short compared to more developed economies. Croatia should leverage its strategic location in Europe, with its great potential to make its ports in the Adriatic Sea a major, integral part of the Pan-European transport corridors. This calls for significant upgrades of international ports and the railway sector, in particular along the main corridors, focusing strongly on quality rather than on quantity. Given the importance of an efficient flanking infrastructure (such as, for instance, signaling and interlocking systems in the railway sector), investments in this area should be included from the outset. Finally, enhancing transport operators should not be disregarded.

Well-crafted transportation projects with a pan-European outlook are ideal candidates for EU structural funds, since they tend to benefit both the local economy and the European Union's as well. To improve the chances of funding success, they must consider all the aspects that play a role in ensuring their viability, including, in addition to the elements mentioned above, also the complementary infrastructure in the hinterlands.

Needless to say, successful EU funding for such projects, positive as they may be for the Croatian economy, must not detract from the need to undertake the other structural reforms outlined in this proposal.

1.4. Concluding remarks

Seven years of recession, high indebtedness and crushing unemployment are unmistakable signs that business as usual is no longer an option for Croatia. The only silver lining is that the situation is so dire that the willingness of the population to accept reforms that may be painful is somewhat higher than in the past.

The proposals contained herein, crafted with a view to the political feasibility of their implementation, tackle the major challenges Croatia faces at present and take into account the interactions and interdependencies among the various policies. They should be enacted as a package, since a piecemeal approach will not produce the desired results.

Implementing the reforms will exact a political price. What Croatia needs, thus, is a courageous leadership with sufficient statesmanship to face the inevitable valley of political death associated with any serious reforms. Only that way will the country finally, after seven grueling years, emerge from its slump.

2. Exchange Rate Policy in Croatia

Teresa Buchen and Timo Wollmershäuser

2.1 Introduction

For many years, Croatia's growth was built on domestic demand financed by cheap foreign credit. Export performance, on the other hand, was weak, so that Croatia ran large current account deficits from 2002 on and built up external debt rapidly.

When the global financial crisis hit Croatia in 2008, credit conditions tightened and capital inflows slowed down, pushing the economy into a severe and protracted recession. The crisis exposed a major problem: Croatia's poor competitiveness. The country is simply too expensive for an export-led recovery.¹

Improving price competitiveness involves difficult policy choices. One way of tackling this issue is to devalue internally, that is, by reducing wages. Such measures are extremely painful, in particular when the household sector of the economy is heavily indebted. What is more, rigid labor market institutions and a large shadow economy make it very difficult for Croatia to reduce wages to more competitive levels. The other way of addressing the problem is to devalue externally, that is, by allowing the kuna to depreciate. While the implementation of this policy option would be much easier from a technical point of view, external devaluation would also lead to adverse balance sheet effects in an economy in which debt is to large extent denominated in or indexed to a foreign currency (debt euroization).

Doing nothing or doing not enough about price competitiveness is not an option. Greece gives a very plastic example of where a country can steer itself into if it does not manage to reduce wages and prices enough to restore competitiveness while keeping the exchange rate stable. After a deep recession, Greek industrial production is devastated and there is still massive unemployment. Price competitiveness has improved only marginally, so that the current account balance is still negative—despite reductions in interest payments thanks to the ECB's monetary policy and international rescue credits. Public debt and foreign liabilities increase relentlessly, and it is unclear how and when Greece will be able to service its debt obligations on its own, let alone to reduce debt levels. With policy reforms having been largely inefficient, the Greek public has increasingly rejected the austerity measures imposed by the Troika, made up of the IMF, the ECB, and the EU (Sinn 2014). Public opposition culminated in the general elections of January 2015, which were won by the anti-austerity socialist party Syriza, and in the clear "No" delivered by the referendum on acceptance of the conditions demanded by

¹ See Bakker and Klingen (2012) for an overview of developments before and during the recent financial and economic crisis in Croatia.

the so-called “institutions”, the euphemistic label Greeks prefer in order to avoid using the loathed term “Troika”.

This paper estimates Croatia’s devaluation requirement and analyses the effects of external devaluation compared to internal devaluation. We propose a gradual, managed currency devaluation, which is an easier way to improve price competitiveness while smoothing out inevitable negative balance sheet effects. The policy proposal is designed such that incentives to borrow in foreign currency are eliminated. The proposed policy would thus not only help to promote exports, but also to reduce one of the key vulnerabilities of the Croatian economy.

2.2. Macroeconomic situation

In contrast to most other countries in the region, the Croatian economy has not yet recovered from the recent financial and economic crisis. After six years of recession, GDP has shrunk by 13% since the second quarter of 2008 — the time just before the onset of the financial crisis marked by the collapse of Lehman Brothers. Industrial production, a motor of economic activity, has plunged by 17%, while in Central and Eastern Europe it is already 8% higher compared to the pre-crisis level (see Figure 2.1.). During the crisis, the unemployment rate has more than doubled in Croatia. Recently, it has risen even further and currently stands at 18.2%. Youth unemployment is particularly alarming, with almost every second young person unemployed. Given the spare capacity in the economy, consumer price inflation is very low, at -0.2% in April 2015. To some extent, this is due to reduced energy prices. However, core inflation that excludes energy, food, alcohol and tobacco prices only recovered from deflation in summer 2014, and is still fairly low, at 0.7% (see Figure 2.2.).

Figure 2.1.: Economic activity compared to pre-crisis levels

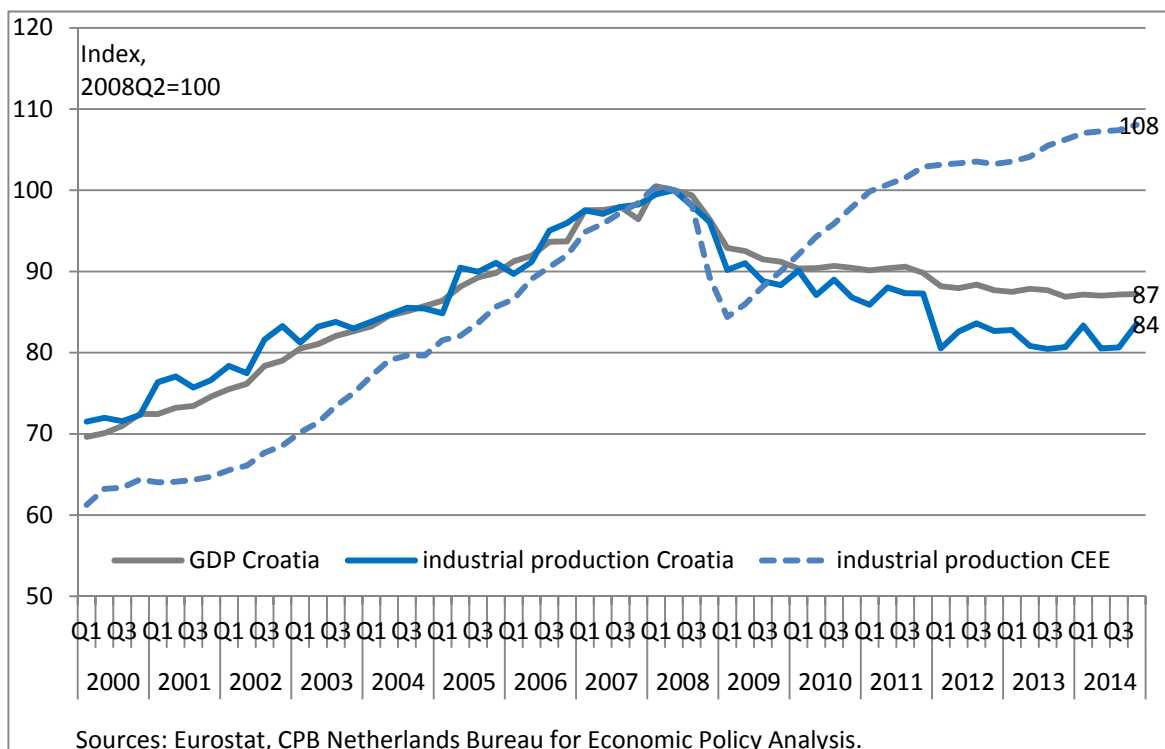
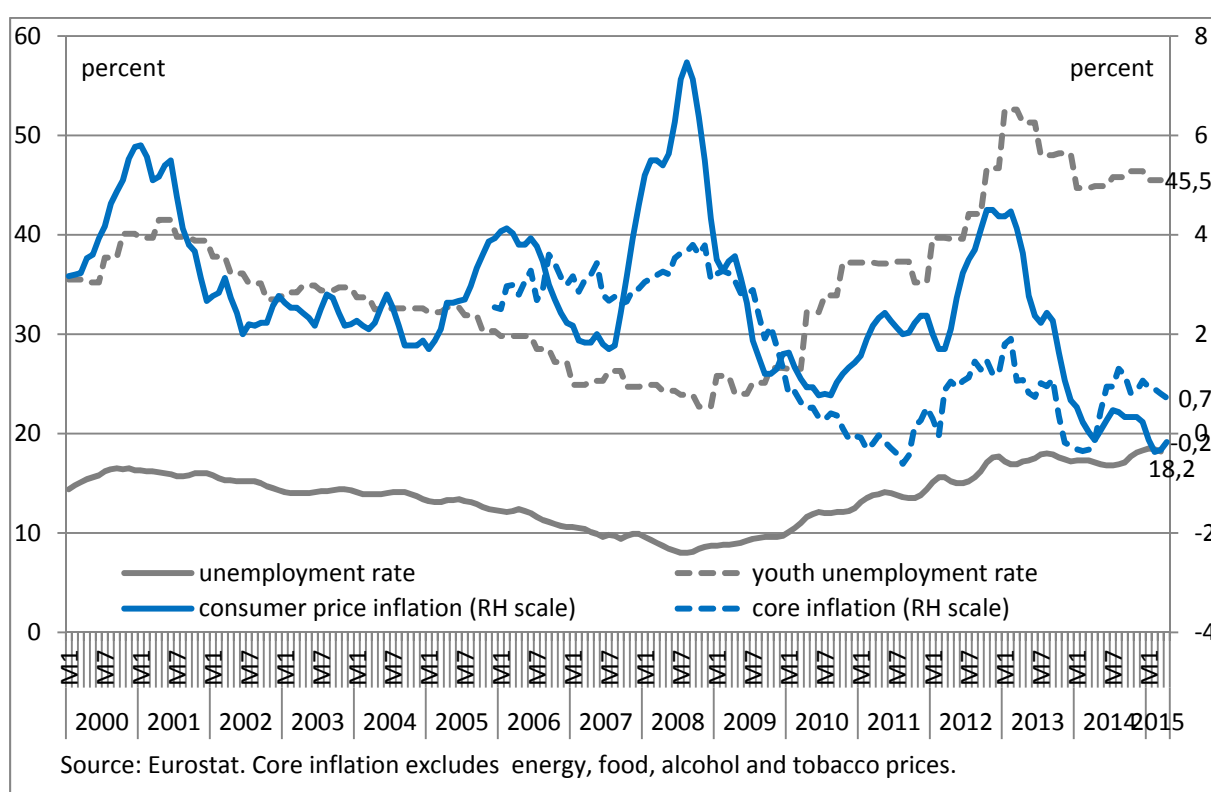


Figure 2.2.: Elevated unemployment and deflation



2.3 Competitiveness problem

One major reason for Croatia's subdued economic performance is the fact that it has not been able to restore its price competitiveness enough to stimulate robust export growth. Measured by the real effective exchange rate based on the GDP deflator (the price index for all domestically produced goods) relative to the 37 most important trading partners, Croatia has only improved its competitiveness by 7% since the onset of the crisis, while it had appreciated in real terms by 23% since 2000.

The real effective exchange rate can fall either because the nominal exchange rate depreciates or because wages and prices inflate less compared to the trading partners, channels we refer to as external and internal devaluation, respectively. In Croatia, the improvement in price competitiveness is primarily due to external devaluation; the nominal effective exchange rate has depreciated by 5% since 2008 (see Figure 2.3.). Internal devaluation has not been effective, although yearly growth of public wages has been negative between end of 2009 and mid-2010, and since summer 2012 (see Figure 2.4.).

Figure 2.3.: Real and nominal devaluation since the crisis

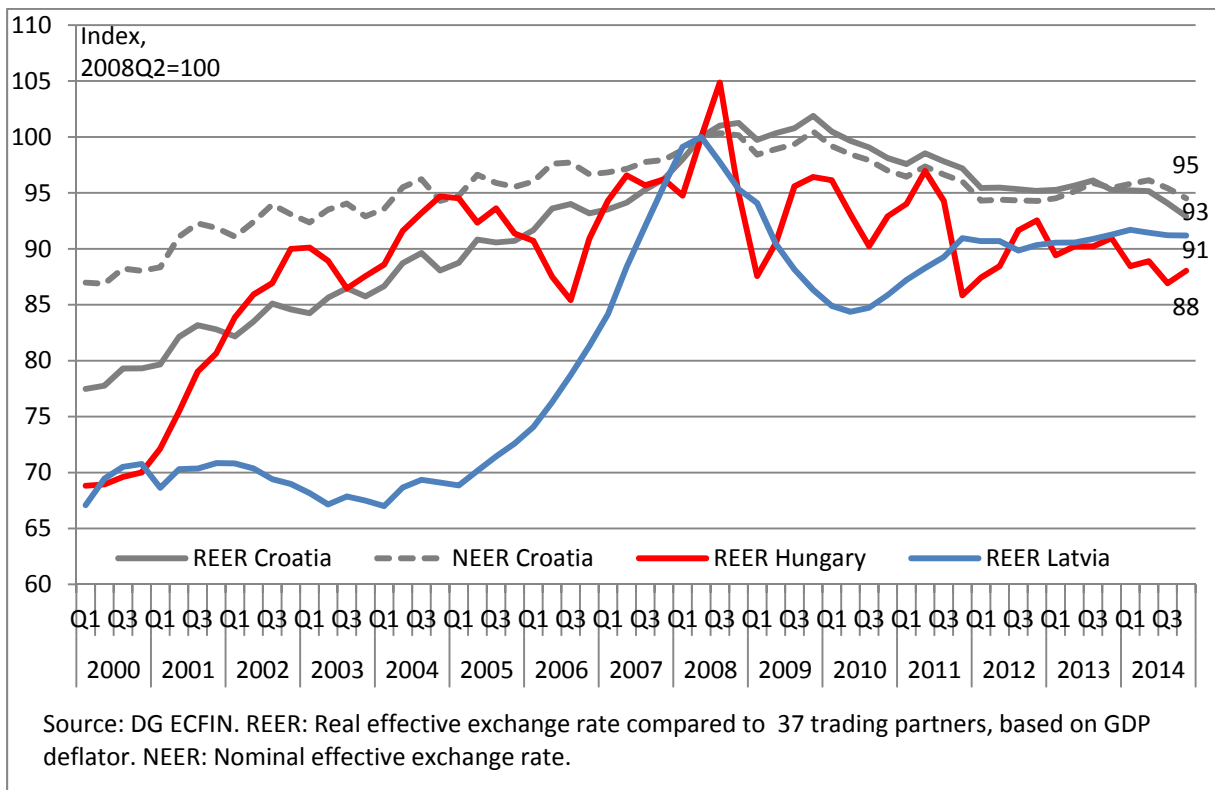
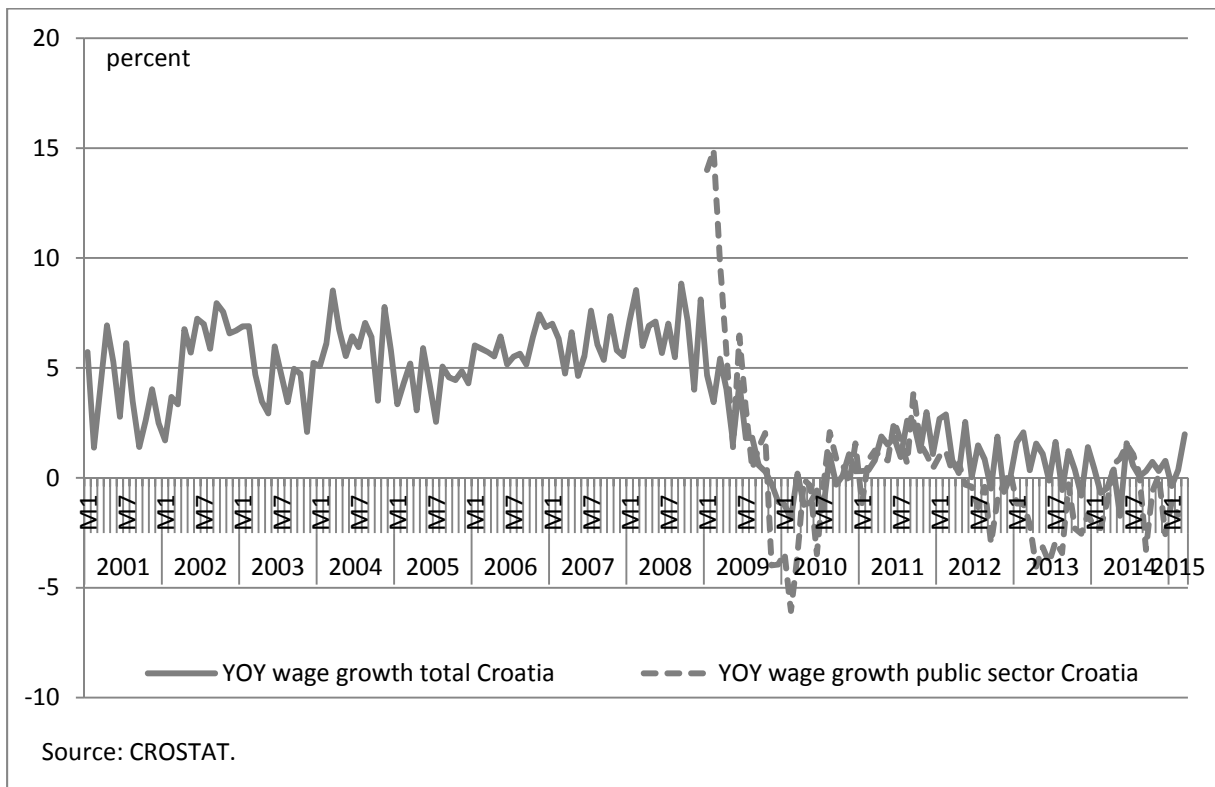


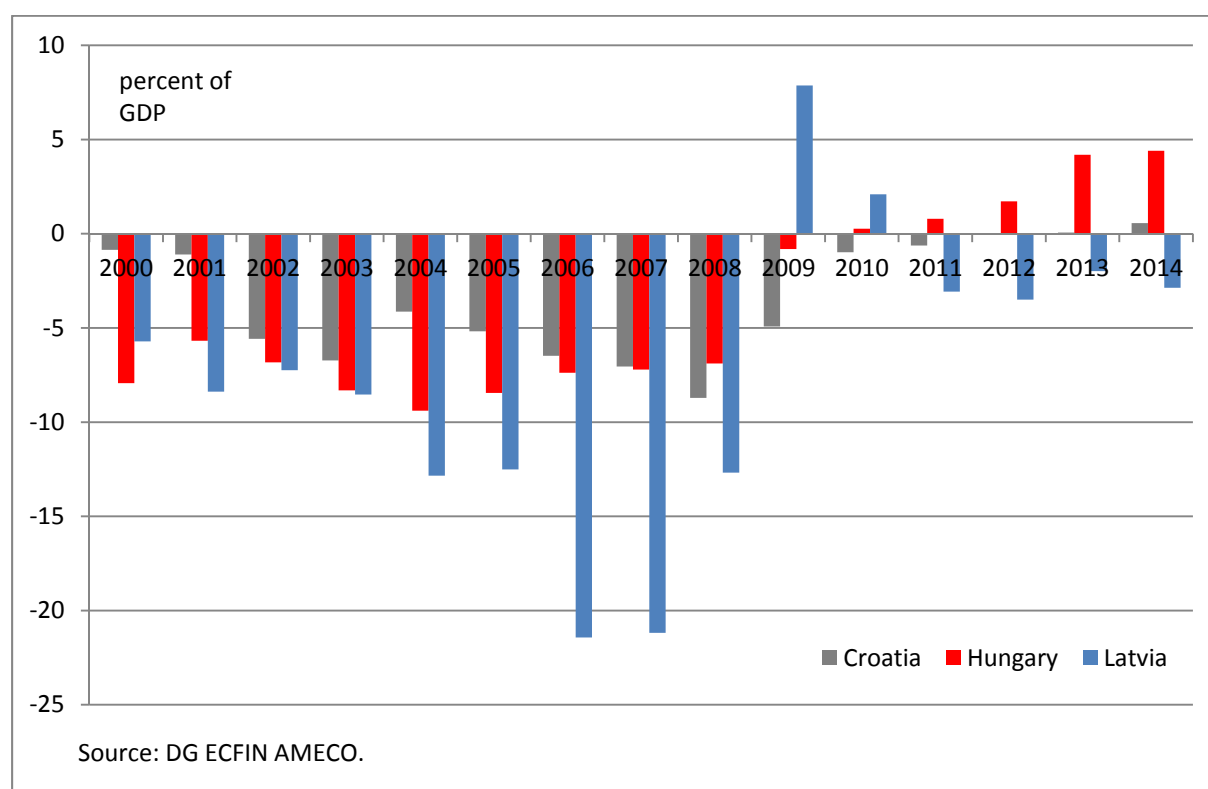
Figure 2.4.: Falling wages in the public sector



In contrast, Latvia is an example of successful internal devaluation. In order not to spoil its chances of euro adoption, it kept the euro-exchange rate stable, but carried out massive wage cuts. As a result, Latvia depreciated by 16% in real terms within two years after the outbreak of the financial crisis, although it has lost competitiveness to some extent since then. Hungary, in turn, is an example of a country that has considerably improved its price competitiveness through external devaluation. Experiencing a currency crisis in 2008, it gave up its exchange rate target band to the euro and has depreciated by 12% in real terms.²

An important indicator of a country's competitiveness is its current account balance. Croatia, Hungary and Latvia had driven substantial current account deficits relative to GDP between 2000 and 2008. During those years, all three countries imported more than they exported, and their trade deficits were financed by foreign capital. Latvia managed the turnaround already in 2009, while Hungary realized current account surpluses by 2010. Having run current account deficits of 5% relative to GDP on average between 2000 and 2008, Croatia had a broadly balanced current account in 2012 and achieved small surpluses of 0.1% and 0.6% during the past two years (see Figure 2.5.).

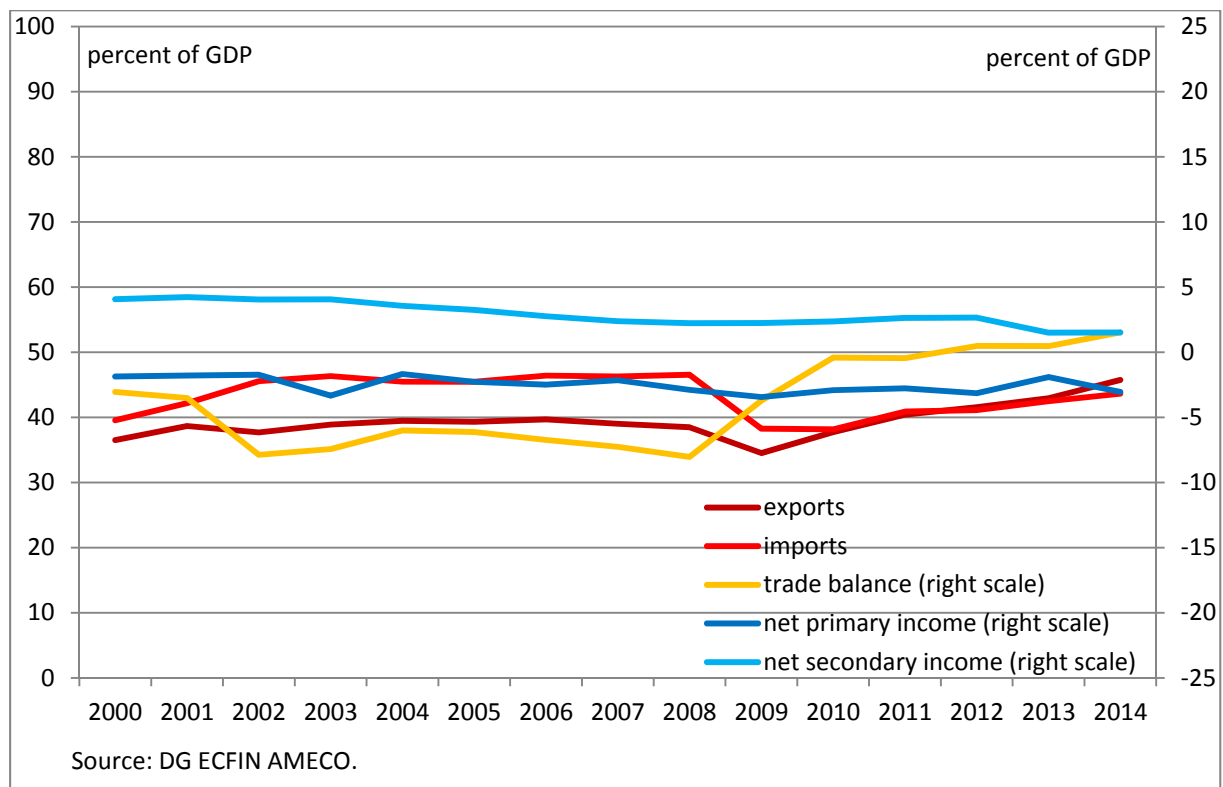
Figure 2.5.: Slightly positive current account balance in Croatia



² For more details on how Hungary and Latvia came through the crisis, see Bakker and Klingens (2012).

Yet, it would be wrong to conclude that Croatia has solved its competitiveness problem. Firstly, a look into the components of the current account³ reveals that the improvements in Croatia are primarily a result of the recession, which strongly reduced imports. A boost in competitiveness would have led to strong exports, but they have increased only little (see Figure 2.6.). In comparison, exports in Hungary, and especially in Latvia, rose much more strongly from 2010 onwards, although import reduction was also marked. But even though these countries did improve their competitiveness, they would not have been able to achieve the same current account surpluses without the reductions in investment income earned by foreign capital (see Figures 2.7. and 2.8.). The latter were a result of both the recession reducing profits of foreign-owned corporations and of international rescue credits with lower-than-market interest rates.

Figure 2.6.: Components of the Croatian current account



³ The current account consists of the trade balance (exports minus imports), net primary income and net secondary income. Net primary income refers to receipts and payments of employee compensation paid to non-resident workers and investment income received by and paid to non-residents, such as interest income, dividends and retained earnings of foreign subsidiaries. Net secondary income refers to trans-border transfers such as development aid or guest worker remittances.

Figure 2.7.: Components of the Hungarian current account

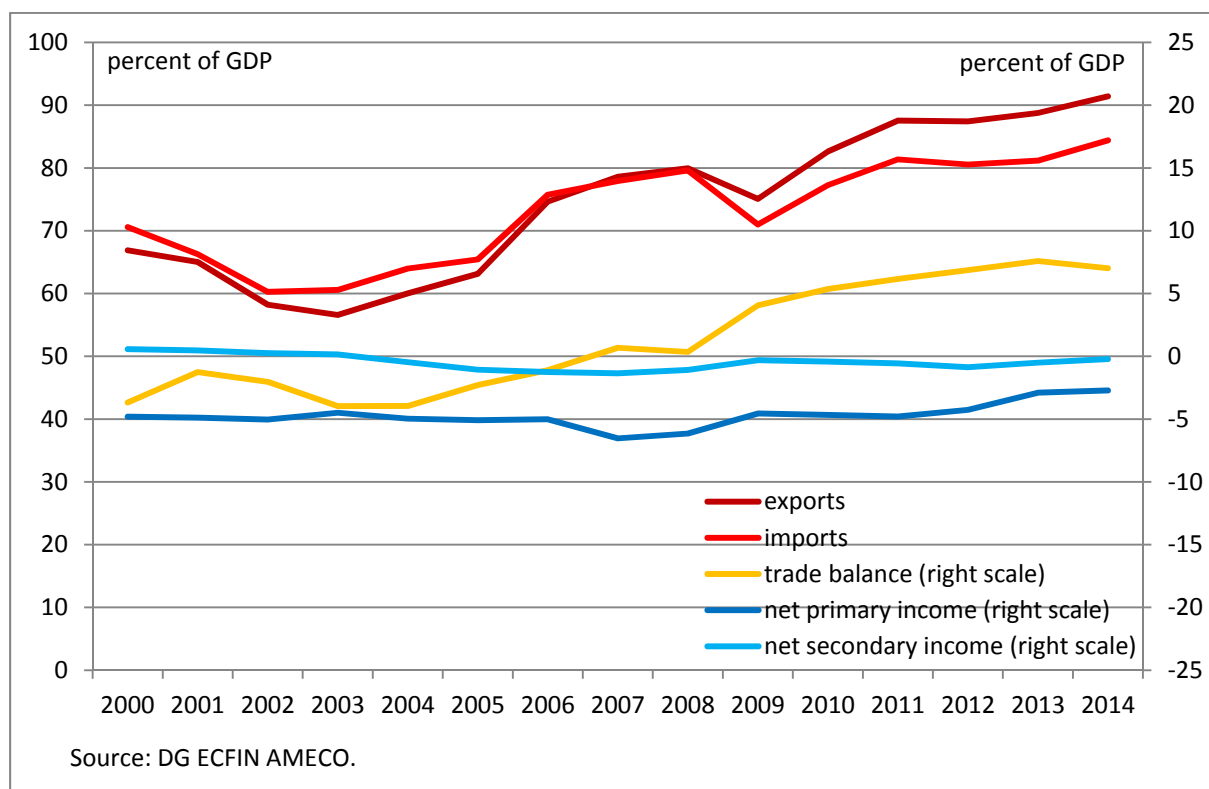
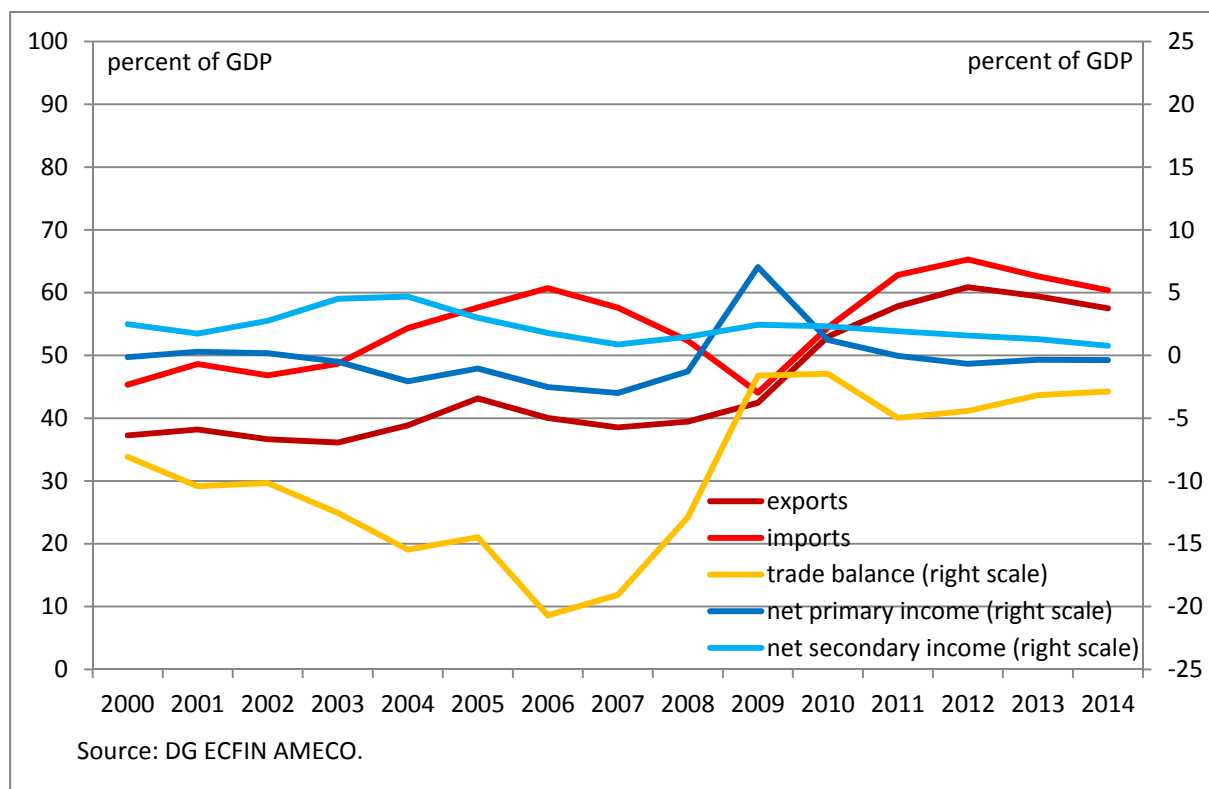
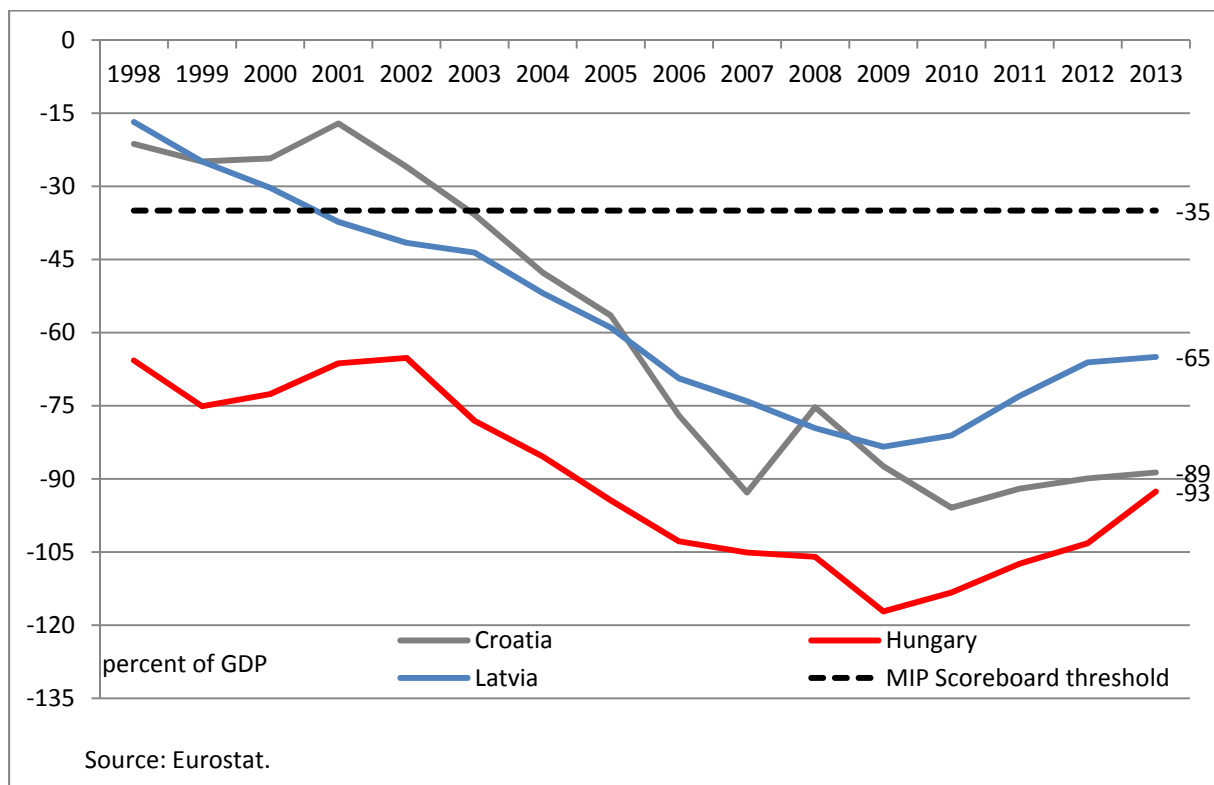


Figure 2.8.: Components of the Latvian current account



Secondly, although a balanced current account is often used as a metric for external sustainability, this concept does not take into account the accumulated stock of net external liabilities (net international investment position), that is, foreign capital inflows that financed former trade deficits as well as any additional borrowing that was needed to meet corresponding interest obligations. In fact, a balanced current account merely means that a country realizes a trade surplus large enough to cover investment payments to foreign investors (and employment compensation to non-residents). Only with substantial current account surpluses is a country able to reduce external liabilities.⁴ In fact, Croatia is still heavily indebted abroad; its net international investment position fell only slightly from -95% of GDP in 2010 to -89% in 2013. In comparison, Hungary and Latvia managed to improve their net international investment positions more substantially, although they are also still far below the European Commission's threshold of -35% (see Figure 2.9.). This threshold for external sustainability is somewhat arbitrary; other values range from -25% to -60% (Pill et al. 2012, European Commission 2015). However, if a country's net international investment position is much worse, investors could doubt its capacity to meet its current and future debt service obligations. In this case, they could ask for a risk premium on investments, which increases interest rates, which in turn raises the debt burden, so that a vicious circle and a severe debt crisis could be the result.

Figure 2.9.: Net international investment positions



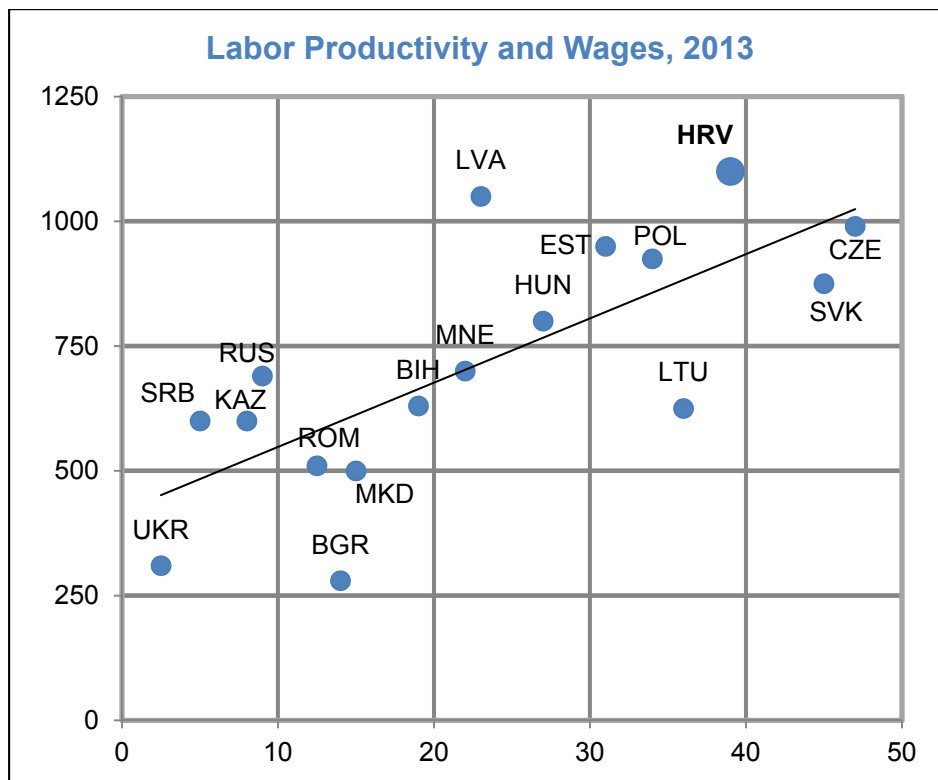
⁴ For a further discussion of different concepts of external sustainability, see Pill et al. 2012 and Sinn 2014.

2.4 Devaluation requirements

To achieve larger and sustained current account surpluses based on robust export growth, Croatia needs to devalue further in real terms. But how large are the devaluation requirements? Actually, there are various measures to assess the real exchange rate and they all lead to different conclusions. The IMF's estimates for Croatia vary between 10% overvaluation and 7% undervaluation. According to the IMF, Croatia could appreciate in real terms by almost 7% and its net international investment position would remain stable at its current level of -89%. To stabilize it at -40%, the real effective exchange rate is broadly balanced (IMF 2014). However, these estimates are based on a range of assumptions about real growth, inflation, interest rates, and the time frame. Under these assumptions, Croatia would reach sustainable external debt levels over a long time period and by further reducing imports rather than by increasing exports.

The IMF's preferred method analyses competitiveness by comparing unit labor costs relative to competitors. Unit labor costs measure the average cost of labor per unit of output. It can be decomposed into labor compensation per employee and output per employee, which is a measure of labor productivity. The IMF regresses average wages on labor productivity for a panel of peer countries. Real over- or undervaluation is then calculated as the percentage deviation of actual wages from the fitted value given the country's labor productivity. Figure 2.10. shows that countries like Poland or Hungary are only slightly overvalued, while Croatia is overvalued by 10%.

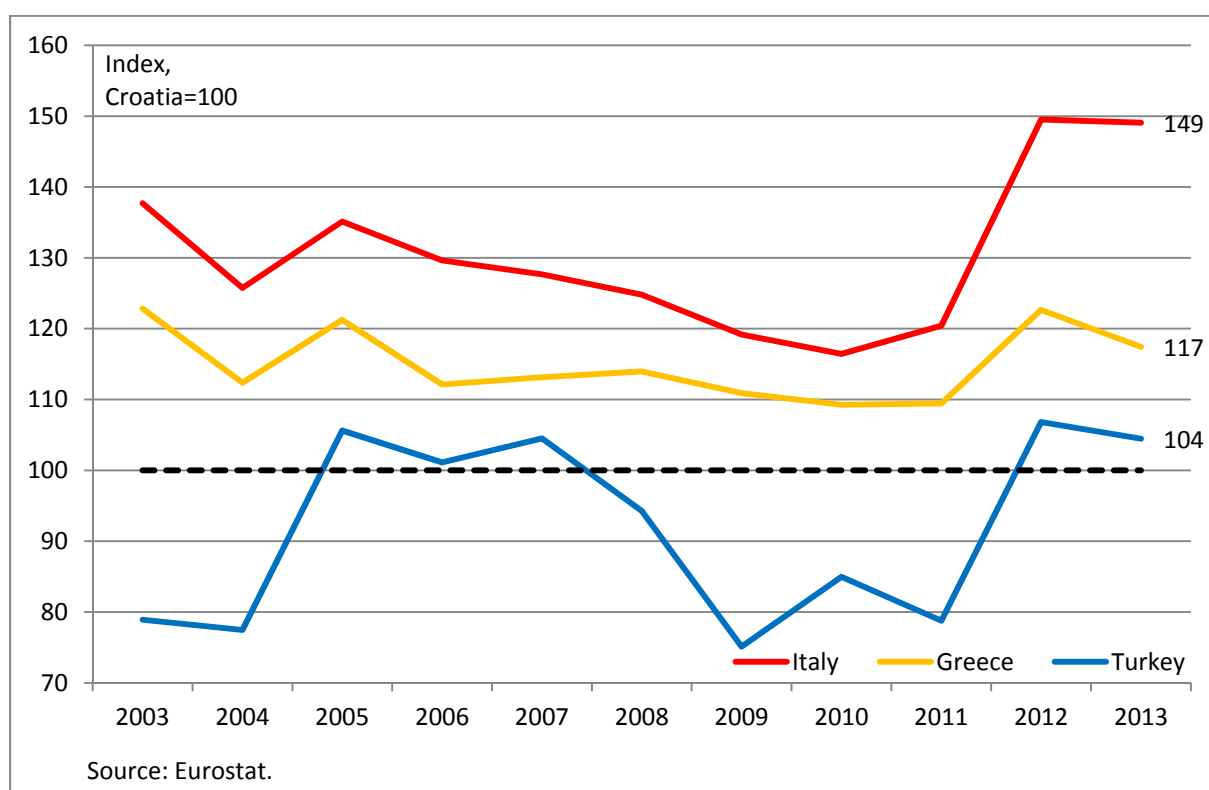
Figure 2.10.: Estimating devaluation requirement comparing unit labor costs



Source: IMF (2014).

We use an alternative though related method that assesses competitiveness more directly by comparing prices of key export goods and services relative to competitors rather than unit labor costs (which might not be fully reflected in prices). To evaluate whether a currency is over- or undervalued, comparative price levels contrast the nominal exchange rate with purchasing power parity, which is the level of an exchange rate at which prices of certain baskets of goods and services are equal between two countries. Key Croatian export sectors are tourism, transport equipment and electrical equipment.⁵ Comparing prices for restaurants and hotels in Greece, Italy and Turkey relative to Croatia, it becomes obvious that the Croatian tourism industry is quite competitive; in 2013, prices in Croatia were 4% lower than in Turkey, 17% lower than in Greece and no less than 49% lower than in Italy (see Figure 2.11.). However, for manufactured goods, the picture is somewhat different, especially in comparison to a country like Poland, where prices for transport equipment, including shipbuilding, were 7% lower and for electrical equipment, including electrical transformers, 5% lower than in Croatia (see Figures 2.12. and 2.13.). From these data, we conclude that Croatia has to devalue in real terms by up to 7%, which is broadly in line with the IMF estimate of 10%. As depreciation of the local currency leads to imported inflation, the required nominal devaluation is somewhat higher. The average ratio of the quarterly euro/kuna exchange rate percentage change and the quarterly real exchange rate percentage change between 2000 and 2014 was 1.8, indicating a corresponding nominal devaluation requirement of 13%.

Figure 2.11.: Comparative price levels for restaurants and hotels



⁵ Data on main Croatian exports and the most important competitors are taken from <https://atlas.media.mit.edu>.

Figure 2.12.: Comparative price levels for transport equipment

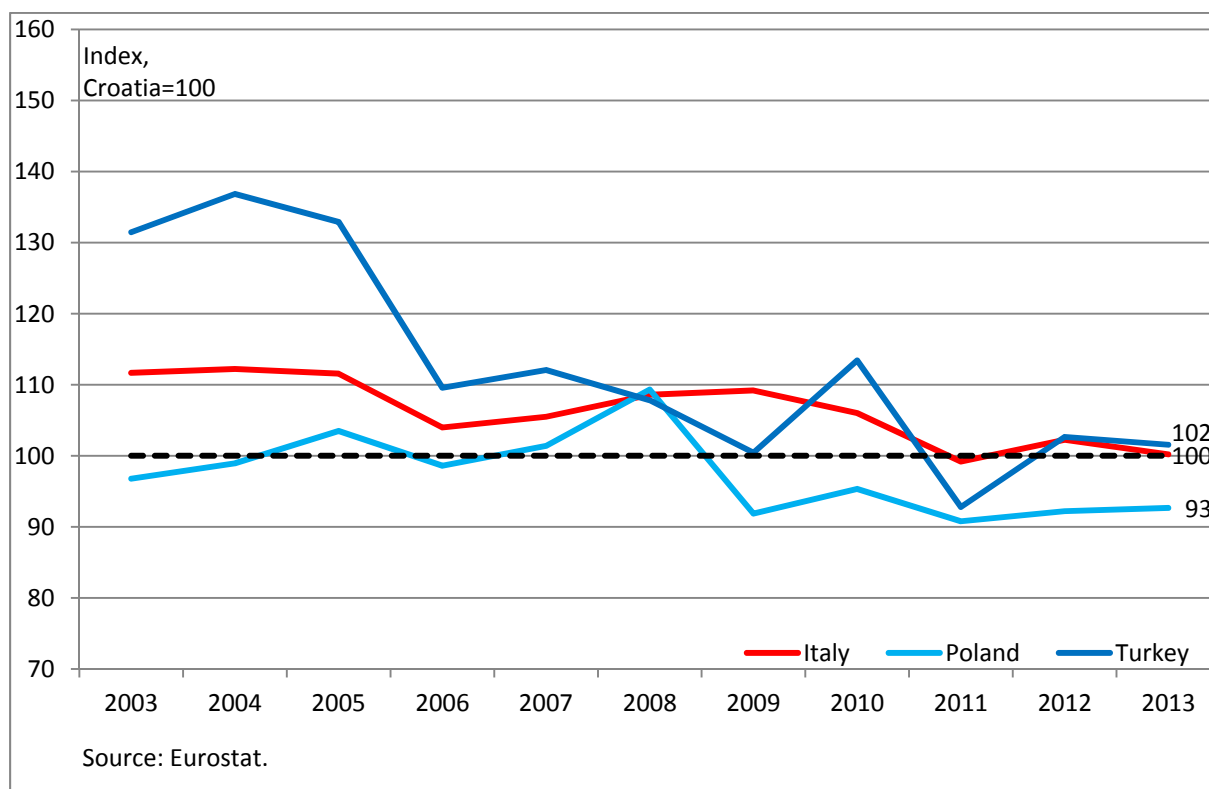
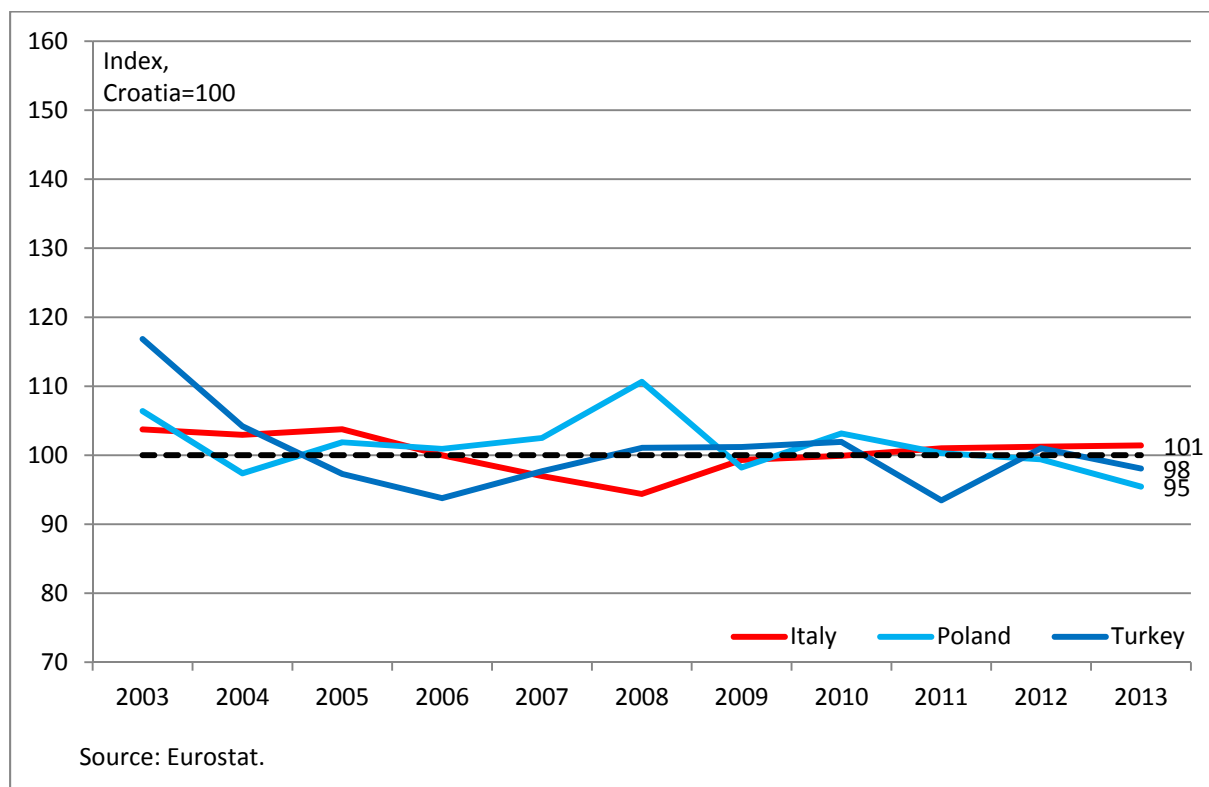


Figure 2.13.: Comparative price levels for electrical equipment



2.5 Balance sheet effects of external devaluation

On the one hand, external devaluation can foster exports and thus economic expansion. But on the other hand, it also leads to negative balance sheet effects for all those with liabilities in foreign-currency, which increase in value. In Croatia, these balance sheet effects would be relatively large because both public and private debt is mostly denominated in or indexed to foreign currency. In 2013 only 23% of general government debt was in kunas and 72% in euros. More timely data are available for the private sector. At the end of 2014, 24% of household loans were in kunas, 56% in euros and 18% in Swiss francs. Non-financial corporations had 31% of their domestic working capital and investment loans in kunas and 67% in euros. Of their external debt, 93% was in euros and 6% in US dollars.

In the following, we simulate the effects of a 7% real devaluation on public and private debt-to-GDP ratios. Data from 2000 to 2014 indicate that this corresponds to a nominal devaluation of 13% against the euro. In fact, it is difficult to determine the change in the nominal exchange rate that is necessary for a certain real devaluation because the relationship does not only depend on the pass-through of the nominal exchange rate on domestic inflation, but also on inflation rates abroad. The link between Croatian real exchange rate changes and nominal exchange rate changes tends to vary substantially over time, and this is especially true for the US-dollar/kuna exchange rate. The Swiss franc/kuna exchange rate, on the other hand, is only relevant for housing loans, for which it was fixed for twelve months in January 2015. Therefore, we restrict the analysis to the balance sheet effects of a kuna devaluation relative to the euro, which is the currency that accounts for the largest portion of the debt.

It should be kept in mind that we estimate devaluation effects on current debt without taking into consideration expansionary effects on GDP, which could counteract the immediate increase in debt-to-GDP ratios. The results of the simulation are the following: General government debt would rise by 8 percentage points to 93% of GDP; domestic working capital and investment loans of non-financial corporations would rise by 2 percentage points to 24% of GDP, and their external debt by an additional 3 percentage points to 29% of GDP;⁶ domestic household debt would increase by 3 percentage points to 42% of GDP.

Liability euroization is quite marked in Croatia, but a striking feature that distinguishes it from other countries in Central and Eastern Europe is that deposit euroization is also very pronounced (Rosenberg and Tirpák 2008). In Hungary, for instance, 51% of loans are in foreign currency, but only 20% of deposits (as of November 2014). In Croatia, 71% of household and non-financial corporations' loans and 82% of deposits are currently in a foreign currency (non-financial corporations hold 59% of time deposits in foreign currency and households even 85%).

⁶ For other domestic loans than working capital and investment loans as well as debt securities we do not have data on the currency composition.

On the aggregate, households' total foreign-currency deposits are larger than their total foreign-currency loans. So overall, the household sector would actually profit from external devaluation. Real devaluation by 7% and corresponding nominal devaluation by 13% relative to the euro would increase the value of household loans by 8.9 billion kunas, but the value of deposits would rise by 14.4 billion kunas, which is 1.6 times as much. Yet, for non-financial corporations the costs (16.4 billion kunas) would be much larger than the gains (1.1 billion kunas), so the overall costs from devaluation would dominate. Furthermore, although the household sector would gain from a devaluation on the aggregate, this would most certainly entail distributional issues among social classes. Consequently, any sudden depreciation is to be avoided. Instead, we suggest a managed and gradual devaluation path that gives firms and households time to adjust and to hedge against exchange rate risk.

2.6 Policy recommendations

2.6.1 Managed devaluation path

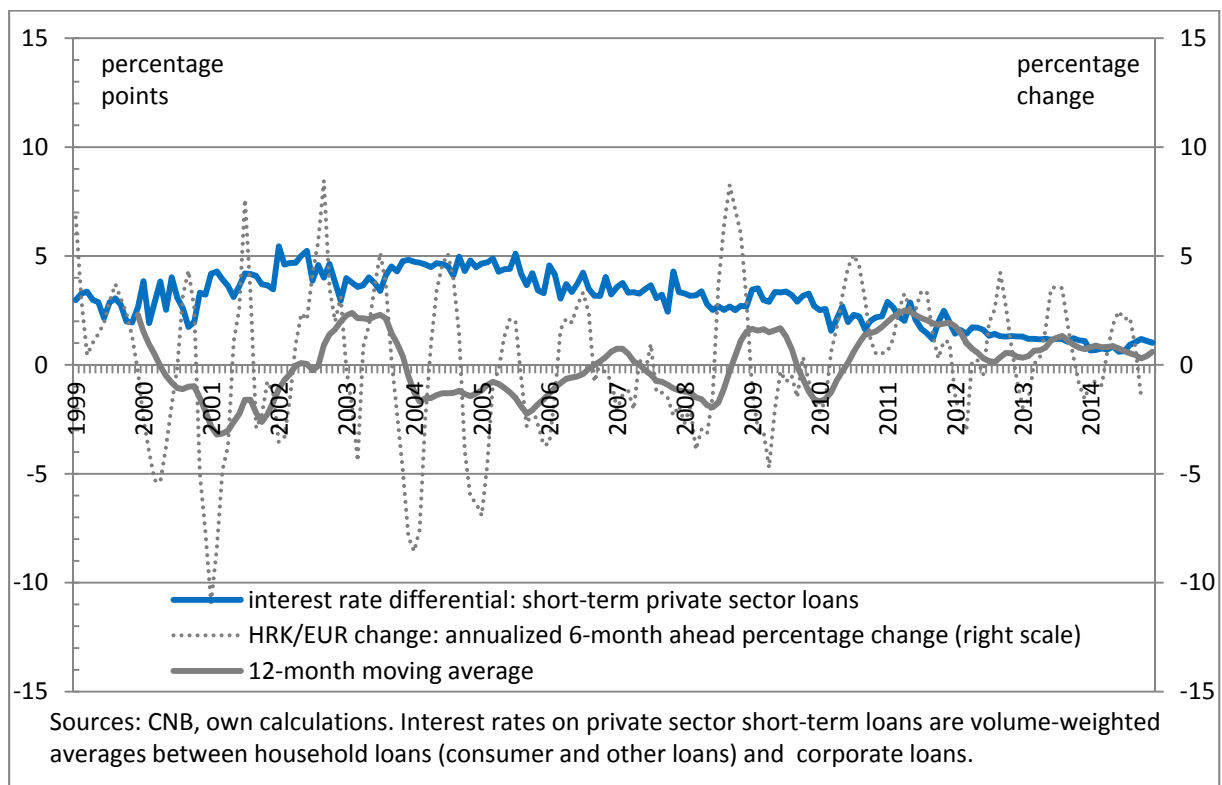
Our proposal of a gradual and managed devaluation path of the kuna offers three advantages. Firstly, depreciation would improve Croatia's price competitiveness. Secondly, allowing for more exchange rate flexibility could reduce debt euroization, a hypothesis that is supported by the empirical literature (Arteta 2005, Barajas and Morales 2003, Brown and De Haas 2010, Luca and Petrova 2008). In fact, a relatively stable exchange rate aggravates the exchange rate illusion for which many debtors seem to fall. They realize that foreign interest rates are lower than local interest rates, so they presume that foreign-currency loans are cheaper. But they do not take into account potential negative effects due to depreciation of the local currency. A more flexible exchange rate regime could reduce incentives to borrow in foreign currency by making people aware of exchange rate risks. Thirdly, by following our policy proposal the central bank would possess two independent instruments, the exchange rate and short-term interest rates. A centerpiece of international macroeconomics is the "impossible trinity", which says that a country with open capital markets must choose between monetary independence and a stable exchange rate (Fleming 1962, Mundell 1963). In a fixed exchange rate regime, local interest rates are determined externally. If, for instance, foreign interest rates decline, investments in foreign currency become less attractive so that the foreign currency depreciates and the local currency appreciates. Consequently, the central bank will buy foreign (anchor) currency, thereby expanding the monetary base and lowering local interest rates as well. However, with intermediate policies such as the proposed managed floating, a country receives greater monetary independence (Bofinger and Wollmershäuser 2001 and 2003, Radošević 2014). The central bank is then able to fully sterilize its foreign exchange interventions, thereby keeping local interest rates at the desired level.

How does the managed floating policy work? The central bank first determines the appropriate degree of restriction given its inflation target and the state of the economy, that is, the degree to which it stimulates or dampens domestic production and inflation. Subsequently, it chooses an optimal policy mix between short-term interest rates and

the exchange rate such that investors and borrowers are indifferent between local and foreign investments and loans, respectively. To reach an optimal policy mix, exchange rate changes should offset differentials between local and foreign interest rates on average. In the case of Croatia, where local interest rates lie above foreign interest rates, the local currency should depreciate. Thus, the advantage of cheaper foreign credit is fully compensated by the fact that the value of the loan increases due to depreciation.

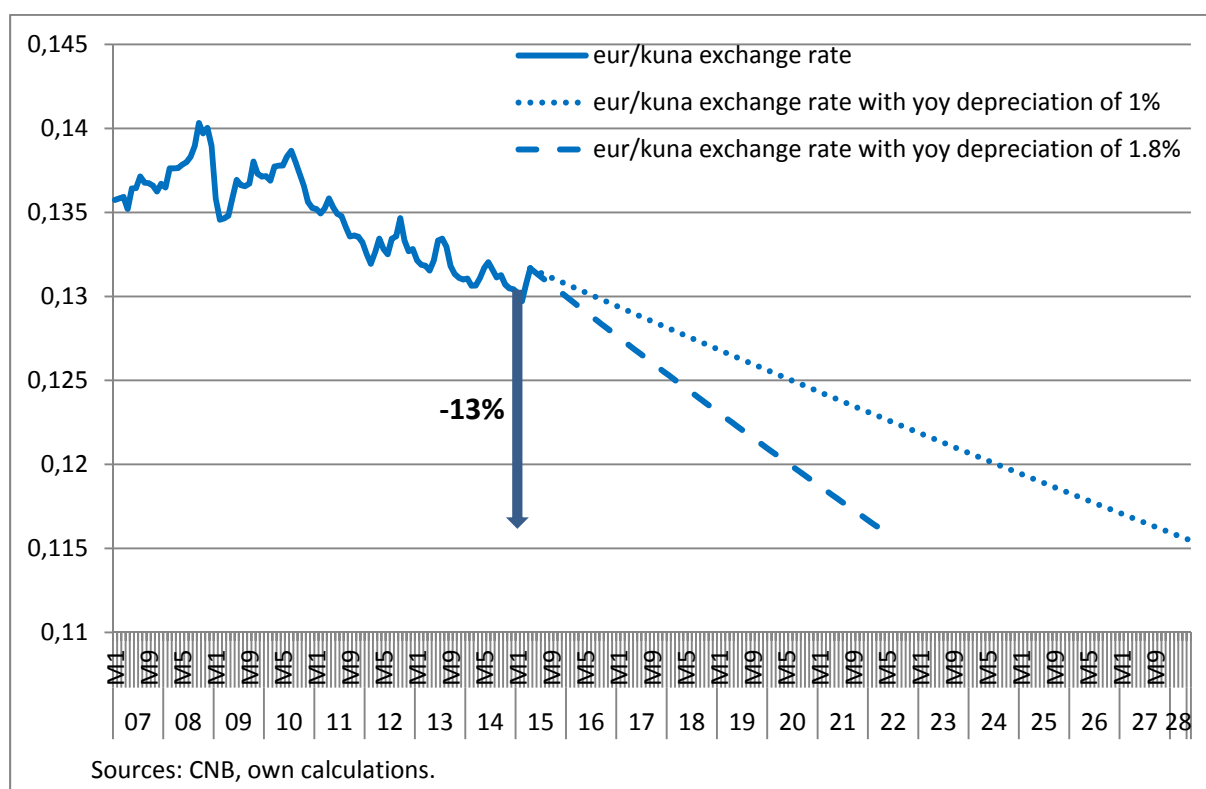
Although the kuna depreciated somewhat during the years 2009 to 2014, on average, this was not sufficient to counteract the interest rate differential between local and foreign interest rates (see Figure 2.14.). Ex post, it was actually cheaper to take out loans in foreign currency than in kunas. On average, the interest rate differential between short-term kuna and foreign-currency loans for household (consumer and other loans) and corporate loans amounted to 1.8 percentage points, while the annualized 6-month-ahead percentage change of the kuna/euro exchange rate was only 0.6%. Since the beginning of 2014, the policy mix was almost optimal in Croatia, with an interest rate differential of 0.8 percentage points and an average annualized depreciation of 0.6%.

Figure 2.14.: Interest rate differentials exceed rates of kuna depreciation



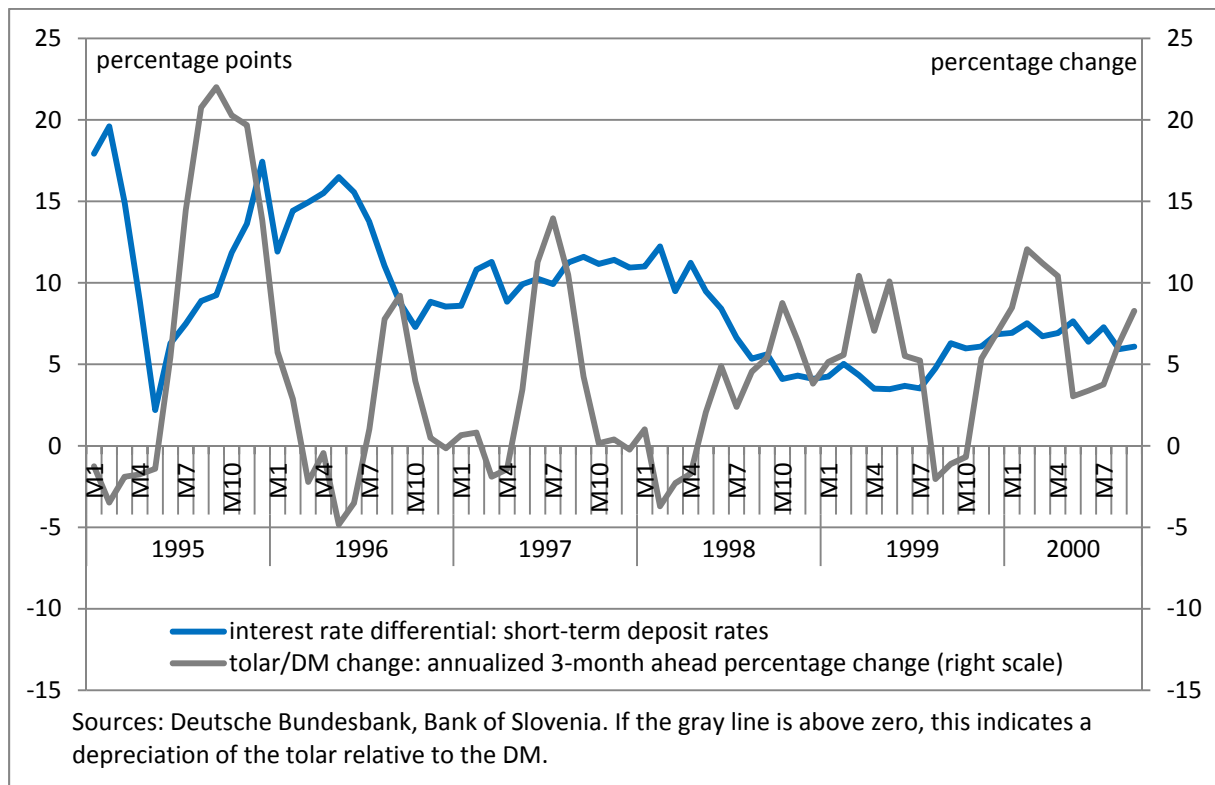
The slope of the optimal depreciation path in the future depends on how the interest rate differential evolves. Should it remain at its current level of 1 percentage point, the devaluation requirement of 13% would be met within 13 years. Should it pick up to higher levels seen in the past and equal the average of 1.8 percentage points since 2009, for instance, the devaluation requirement would be reached within a bit more than seven years (see Figure 2.15.).

Figure 2.15.: Gradual devaluation paths



Managed floating comes close to the practice of many central banks, for instance during the 1990s in Poland, Hungary, Slovenia, Indonesia and several Latin American countries (Bofinger 2001). Bofinger and Wollmershäuser (2003) show that the Slovenian policy mix between local interest rates and the exchange rate was indeed nearly optimal between 1993 and 2001. This was true especially from mid-1998 onwards, as Figure 2.16. shows. In terms of competitiveness, the Slovenian policy can be seen as a success. Nominal depreciation of 23% relative to the most important trading partners resulted only in a real depreciation of 5% between 1995 and 2000 due to pronounced inflation. But as a result, Slovenia managed to keep its competitiveness position broadly stable, while most other countries in the region lost considerable ground. In today's low-inflation environment, it should presumably be easier for Croatia to improve its price competitiveness than for Slovenia in the 1990s.

Figure 2.16.: Managed floating in Slovenia



2.6.2 Main features of monetary and exchange rate policy

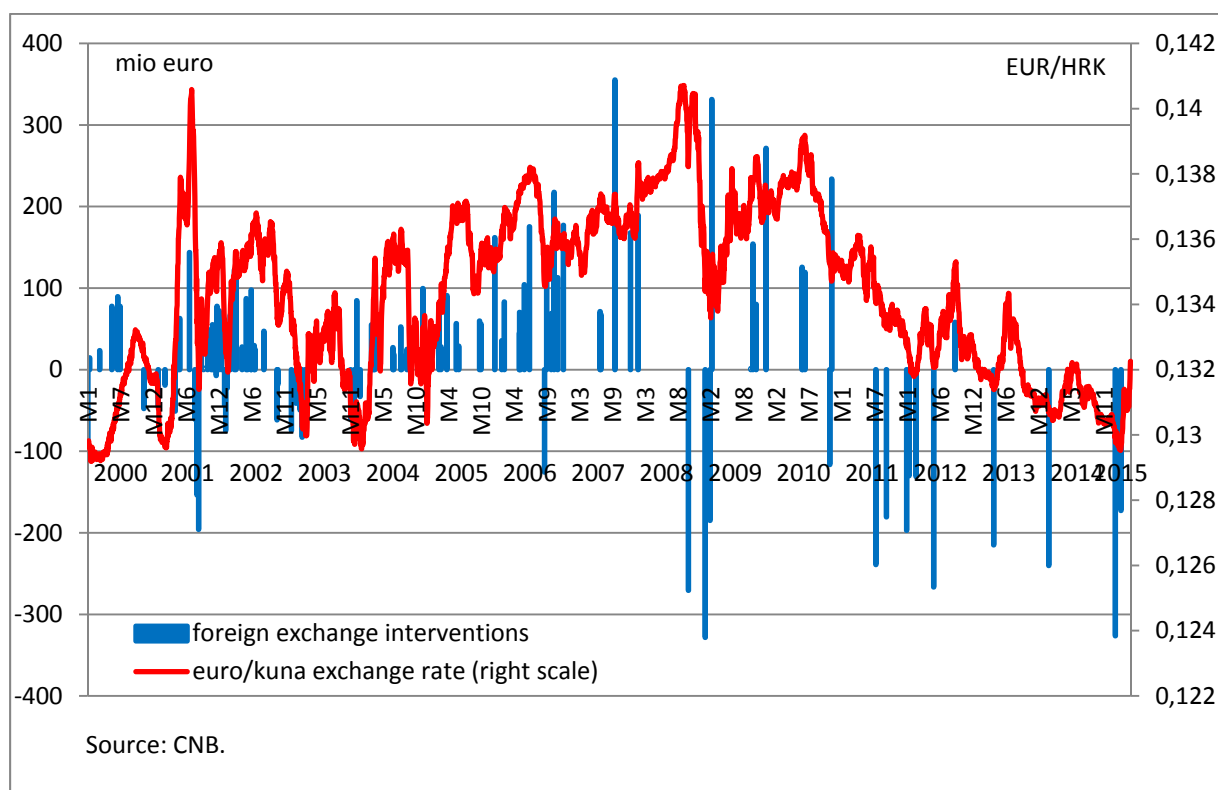
Officially, Croatia implements the exchange rate regime of managed floating, where the exchange rate is rather freely determined by the foreign exchange market, with the Croatian National Bank (CNB) intervening only occasionally to prevent excessive fluctuations.⁷ De facto, however, monetary policy is strongly based on the euro as an exchange rate anchor and can be characterized best as a quasi-currency board regime (Dragojević Mijatović 2011, Radošević and Vidaković 2014, Vujčić 2003). The CNB's main policy instrument is foreign exchange auctions, where it regularly sells or buys domestic currency to and from commercial banks in exchange for foreign currency. To reverse or smooth exchange rate movements, the CNB sells foreign exchange when the kuna depreciates and buys foreign exchange when it appreciates, a strategy that is called "leaning against the wind" (Balázs and Lang 2006).

Looking at daily data for foreign exchange interventions and the euro/kuna exchange rate in Figure 2.17., two phases can be distinguished. From 2000 to 2008, the euro/kuna exchange rate appreciated by around 7%, from 0.130 to 0.140, while appreciation was dampened by continuous purchases of foreign exchange. Since 2009, the kuna has depreciated to 0.130 in February 2015. During this second phase, foreign exchange interventions have occurred only occasionally and mostly aimed at avoiding stronger

⁷ See <http://www.hnb.hr/tecajn/etecajn.htm>.

depreciation by selling foreign currency. Intervention amounts were larger, however, than during the first phase, so when the CNB intervened, it did so very decisively.

Figure 2.17.: Foreign exchange interventions



To get some more insights on how the CNB's interventions respond to changes in the exchange rate, we estimate an ordered probit model following the methodology used by Ito and Yabu (2004). Using daily data from 2000 to April 2015, we regress an intervention variable with the values -1, 0 and 1 indicating whether a negative intervention (sales of FX), no intervention or a positive intervention (purchases of FX) occurs on four explanatory variables. The first three variables capture short run, medium run and long run changes of the exchange rate on the previous day.⁸ The fourth variable, which is intervention on the previous day, is included to capture the fact that once the central bank has decided to intervene, consecutive interventions might be more likely. The regression results in Table 2.1. confirm that the CNB conducts a "leaning against the wind" strategy; the coefficients of short-run, medium-run and long-run exchange rate changes are positive for the whole period from 2000 to 2015, and also for the two subperiods, the pre-crisis sample and the recession sample. This means that the probability that the central bank buys (sells) foreign exchange rises when the exchange rate appreciates (depreciates). From these coefficients we can compute the relative importance of short-run, medium-run and long-run fluctuations in the CNB's

⁸ Short-run changes are measured by the daily percentage change, medium-run changes by the monthly percentage change (21 business days), and long-run changes by the percentage deviation from mean of the exchange rate over the whole period.

intervention reaction function.⁹ We find that until 2008, the CNB mainly paid attention to short-run exchange rate changes (weight of 0.8), when deciding whether to intervene or not. During the recession phase, short run fluctuations did not play a role, but medium run changes (weight of 0.7) and deviations of the exchange rate from the long run mean (weight of 0.3) were the relevant criteria for the intervention decision. These findings correspond with the fact that from 2000 to 2008 the CNB intervened frequently, while from 2009 on, it only intervened occasionally. We also report estimated threshold values that define a “neutral band” of no intervention. The values themselves are difficult to interpret, but they indicate whether the central bank reacts asymmetrically to appreciation and depreciation. In fact, the results suggest that the CNB is more tolerant to depreciation of the kuna, and even more so since the outbreak of the recent crisis, when it allowed the exchange rate to depreciate to some extent.

Table 2.1.: Ordered probit estimation of intervention response function

	Full sample	02/2000-12/2008	01/2009-04/2015
Dependent variable: Intervention			
Short run change(-1D)	137.8*** (29.0)	153.4*** (31.9)	6.1 (74.4)
Medium run change(-1D)	27.0*** (4.3)	22.8*** (4.6)	57.0*** (15.1)
Long run change(-1D)	8.8*** (2.2)	5.2** (2.5)	21.1*** (5.6)
Intervention(-1D)	-0.3 (0.2)	-0.3 (0.2)	-0.7 (0.8)
Lower threshold	-3.1*** (0.5)	-3.0*** (0.5)	-4.2*** (1.6)
Upper threshold	1.7*** (0.5)	1.6** (0.5)	1.4 (1.6)
Pseudo R2	0.09	0.08	0.13
Observations	3957	2318	1639

Notes: Coefficients with *** significant at the 99%-level, ** significant at the 95% level. Standard errors are given in parentheses. Short-run changes are measured by the daily percentage change of the euro/kuna exchange rate, medium-run changes by the monthly percentage change (21 business days), and long-run changes by the percentage deviation from the mean of the exchange rate over the whole period.

To maintain exchange rate stability, the CNB has given up some monetary independence. It only sterilizes its foreign exchange interventions partially and with varying instruments. During the 1990s, the CNB started issuing kuna-denominated central bank

⁹ They are computed by the formula $\text{weight } i = \text{coefficient } i / (\text{coefficient } 1 + \text{coefficient } 2 + \text{coefficient } 3)$ with $i=1,2,3$.

bills to sterilize excess liquidity, but the last auction was in April 2004. In 2005 the CNB introduced open market operations. However, since August 2009, no further operations have taken place and currently, loans to credit institutions (including Lombard loans or short-term-liquidity loans) are negligible. Up to 2008, restricted and blocked deposits were also used to sterilize liquidity. Taking all these instruments together, we find that the CNB sterilized around 60% of its foreign exchange interventions in the pre-crisis period from 1995 to 2008.¹⁰ During the period from 2009 to March 2015, foreign exchange interventions were sterilized by 84% through changes in deposits of the central government and social security funds at the CNB (see Table 2.2.).

Table 2.2.: Ordinary least squares estimation of sterilization policy

	01/1995-12/2008	01/2009-03/2015
Dependent variable: Change in sterilization instruments		
Constant	-157.59* (93.45)	-278.23 (202.12)
Change in foreign reserves	0.58*** (0.08)	0.84*** (0.06)
R2	0.26	0.74
Observations	168	75

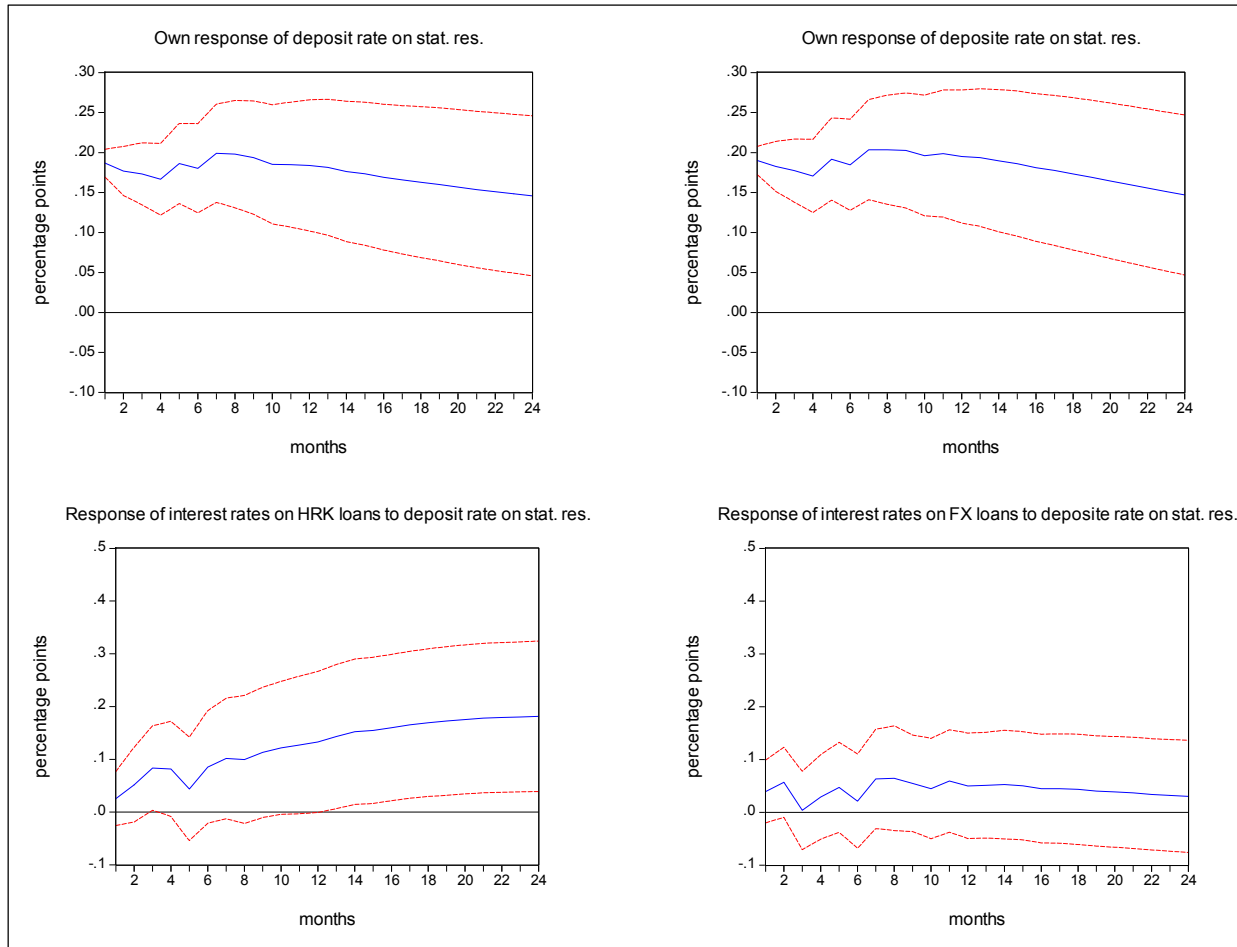
Notes: Coefficients with *** significant at the 99%-level, ** significant at the 95% level. Standard errors are given in parentheses. From 1995 to 2008 sterilization instruments include CNB bills, claims on credit institutions, and restricted and blocked deposits. From 2009 to 2015 the relevant sterilization instrument was deposits of the government and social security funds at the CNB. Foreign reserves are measured in kunas.

The CNB's current main interest rate instrument is the deposit rate on statutory reserves that commercial banks have to hold at the central bank, corresponding to minimum reserve requirements on their deposit liabilities. Using data from January 1995 to March 2015, we estimate two bivariate vector autoregressive (VAR) models to investigate whether the CNB is able to influence banks' short-term loan rates with this instrument and thus to pursue the proposed policy of managed devaluation through both instruments, the exchange rate and interest rates. The lower left panel of Figure 2.19. plots the response of the average interest rate on kuna short-term loans to households and non-financial corporations to a one standard deviation shock in the deposit rate on statutory reserves up to 24 months ahead. It can be seen that the initial shock of 0.19 percentage points has a delayed impact on the interest rate on kuna loans that only becomes significant after one year. But over time, the shock is passed-through almost completely, with the response amounting to 0.18 percentage points after two

¹⁰ We regress the change in the sterilization instruments on the change in foreign reserves. The coefficient of 0.58 says that if foreign reserves increase by 100 units, the sterilization instruments increase by 58 units.

years. Yet, the CNB is not able to influence interest rates on short-term foreign currency loans (lower right panel).

Figure 2.19.: Impulse response analysis

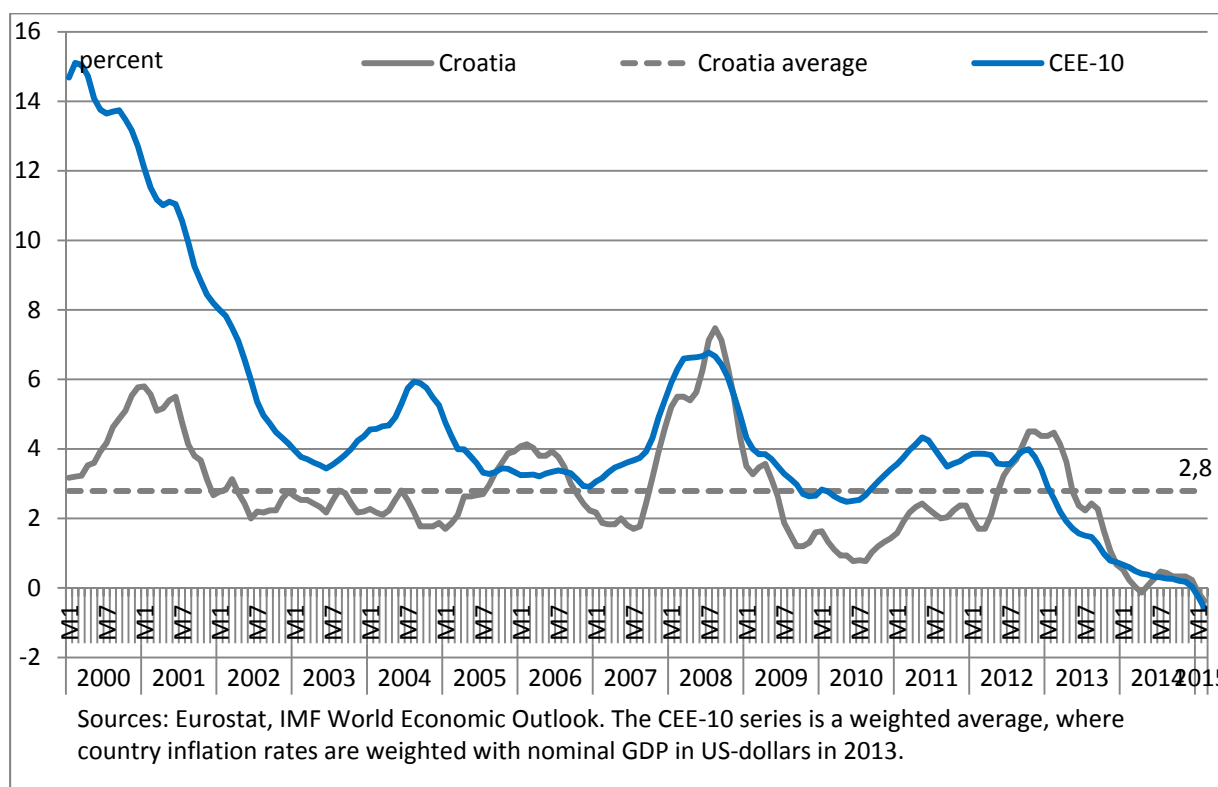


Notes: This figure plots the impulse responses of interest rates on kuna and foreign exchange loans to a one standard deviation shock of the deposit rate on statutory reserves with the CNB. The dotted red lines are the two-standard-deviation confidence bands. The impulse responses are estimated using bivariate vector autoregressive models in levels with eight lags. Identification is done via Cholesky factorization, where the deposit rate on statutory reserves is ordered first. Loan rates refer to the average rates offered on short-term loans to non-financial corporations and households (consumer and other loans) by commercial banks as reported by the CNB, weighted by the volume of outstanding loans. The sample covers data from January 1995 to March 2015.

To improve the control over domestic interest rates, thereby increasing monetary independence, the CNB should introduce or revive more direct monetary instruments that are better suited to fine-tuning short-term interest rates than reserve requirements and the corresponding deposit rate on statutory reserves. A natural candidate would be open market operations, but in the current recessionary environment the banking sector's demand for central bank money is very small. Thus the CNB does not hold enough securities it could sell to sterilize the extension of its balance sheet when it buys foreign exchange to depreciate the kuna.

Overall, the CNB has successfully stabilized prices with its exchange rate policy and monetary policy instruments. During the phase from 2000 to 2008, it pursued a contractionary policy to counteract relatively high inflation rates and switched to an expansionary stance during the recession. On average, the inflation rate has been 2.8% since 2000 and lay most of the time below inflation rates in the CEE-10 countries (see Figures 2.2 and 2.18.).

Figure 2.18.: Price stability



However, the current policy is at odds with the economic situation and the competitiveness requirements. It would have helped to stabilize the economy, stuck in a recession since six years, if the CNB had not intervened during the last years and had allowed the kuna to depreciate more strongly. Especially in a situation where all relevant policy rates are zero, a more expansionary stance through depreciation should be welcome. The CNB tolerated the kuna depreciation to some extent, but does not seem to be ready to accept a depreciation of the exchange rate below 0.130 euros per kuna, as the latest two interventions in January and February 2015 suggest. Therefore, although first steps have been taken that point in the right direction, it would be advisable to increase exchange rate flexibility.

How should the CNB manage depreciation? If the exchange rate is not depreciating sufficiently, the CNB should buy foreign exchange against kunas. In this case, the CNB would keep on increasing foreign-currency reserves. Currently, the corresponding increase in kuna liquidity should be welcome, so it should not be sterilized. Should sterilization become necessary to avoid an overheating of the economy, the CNB should issue interest-bearing CNB bills, raise the interest rate on overnight deposits or offer an

interest-bearing deposit facility on excess reserves¹¹. Rising CNB rates would increase domestic banks' loan rates and thereby exert a contractionary effect on the economy.

If, however, depreciation has to be decelerated, the policy of managed floating has its limitations. The CNB would have to sell foreign exchange against kunas, running down its foreign exchange reserves. To avoid large losses, the CNB should seek an agreement with the European Central Bank (ECB) to provide short-term credit lines to the CNB in such a scenario. Joining the Exchange Rate Mechanism (ERM II), a system designed to stabilize the exchange rate prior to euro adoption, could be a possible framework for such central bank cooperation. However, the ECB made clear that apart from fiscal consolidation it is necessary for Croatia to address euroization and enhance the attractiveness of financial intermediation in local currency before the ECB would be willing to accept Croatia's membership in ERM II (ECB 2004). Thus, an easy exit strategy does not seem to exist, but our proposed policy is one way of reducing euroization for which Croatia can hope to get the ECB's support.

2.6.3 The pros and cons of internal and external devaluation

Instead of devaluating the currency, Croatia could also try to improve its price competitiveness by internal devaluation through wage moderation or even wage cuts. When comparing internal experiences — looking at examples like Hungary or Latvia — it becomes evident that both ways can be successful in promoting export growth and in reducing foreign liabilities.

But there are several reasons why external devaluation is to be preferred — especially if it occurs in a gradual manner. Firstly, devaluating the currency is much easier than restricting or, worse, lowering wages. Actually, Latvia is, together with the other Baltic countries and Ireland, one of the few examples where internal devaluation has been successful in restoring competitiveness. Cutting unit labor costs up to 24% relative to trading partners was only possible due to flexible labor market institutions and a national consensus. In Croatia, on the contrary, internal devaluation has barely occurred; of the 7% improvement in the real effective exchange rate since 2008, 5% was due to nominal devaluation of the kuna. Influencing wages seems to be difficult because of the large shadow economy and a relatively inflexible labor market characterized by rigid wage setting and a high degree of employment protection (Bakker and Klingen 2012, Kunovac 2014). If Croatia relies on internal devaluation, but does not succeed in lowering prices sufficiently, this strategy will further reduce demand without increasing exports.

Secondly, an important argument in favor of external devaluation is that allowing for more exchange rate flexibility would reduce the extent of euroization of the Croatian economy. Borrowers would become more conscious of exchange rate risk, so the incentive to take out foreign-currency loans would be weakened. In contrast, keeping the exchange rate relatively stable would perpetuate incentives for the euroization of

¹¹ These are reserves that commercial banks hold in excess of statutory reserves at the central bank.

liabilities, so the economy would remain extremely vulnerable to exchange rate fluctuations.

Thirdly, it is true that external devaluation would lead to negative balance sheet effects, especially for the Croatian government and non-financial firms. The household sector as a whole would be better off, but gains and losses would be unevenly distributed between richer and poorer households. But when devaluation is gradual, these balance sheet effects are smoothed and can therefore be better digested by debtors and banks. Furthermore, it should be kept in mind that internal devaluation *also* leads to adverse balance sheet effects. The difference is that with external devaluation balance sheet effects pertain to all those holding foreign-currency debt, while with internal devaluation, adverse effects are shared among all debtors because debt has to be serviced with lower nominal income.

Finally, external devaluation could lead to imported inflation, especially in a country like Croatia, which is highly euroized and where many prices are linked to the euro. However, empirical evidence of exchange rate pass-through on inflation is rather moderate for Croatia (Billmeier and Bonato 2002, Kraft 2003). Moreover, with inflation standing at -0.2%, the danger of sustained deflation as a result of internal devaluation is much more serious, possibly leading to a downward spiral of prices and economic activity.

References

- Arteta, C. (2005), "Exchange Rate Regimes and Financial Dollarisation: Does Flexibility Reduce Bank Currency Mismatches?" *Berkeley Electronic Journals in Macroeconomics*, Topics in Macroeconomics 5, No. 1: Article 10.
- Bakker, B. B. and Klingen, C. (2012): *How Emerging Europe Came Through the 2008/09 Crisis: An Account by the Staff of the IMF's European Department*. Washington, D.C.: International Monetary Fund.
- Balázs, É. and Lang, M. (2006): "Foreign exchange interventions in a Small Emerging Market: The Case of Croatia." *Economic Change and Restructuring*, 39, 35-62.
- Barajas, A. and Morales, R. A. (2003): "Dollarization of Liabilities: Beyond the Usual Suspects." IMF Working Paper No. 11.
- Billmeier, A. and Bonato, L. (2002): "Exchange Rate Pass-Through and Monetary Policy in Croatia." IMF Working Paper No. 02/109.
- Bofinger, P. (2001): *Monetary Policy: Goals, Institutions, Strategies, and Instruments*. New York: Oxford University Press.
- Bofinger, P. and Wollmershäuser, T. (2001): "Is there a third way to EMU for the EU accession countries?" *Economic Systems*, 25, 253-274.
- Bofinger, P. and Wollmershäuser, T. (2003): "Managed Floating as a Monetary Policy Strategy." *Economics of Planning*, 36, 81-109.
- Brown, M. and De Haas, R. (2010): "Foreign Currency Lending in Emerging Europe: Bank-level Evidence." *European Bank for Reconstruction and Development Working Paper No. 122*.
- Dragojević Mijatović, A. (2011): "Monetary Policy in Croatia: Challenges in the Medium Term". *Proceedings of 8th International Conference Economic Integration, Competition and Cooperation*, 6-9 April, Opatija, University of Rijeka, Faculty of Economics.
- European Central Bank (2004): "Monetary Policy and ERM II Participation on the Path to the Euro." Speech by Lucas Papademos, Vice President of the ECB at the tenth Dubrovnik economic conference, Dubrovnik, 25 June 2004. Accessed on 22 May 2015 from <http://www.ecb.europa.eu/press/key/date/2004/html/sp040625.en.html>
- European Commission (2015): "Country Report Croatia 2015 Including an In-Depth Review on the Prevention and Correction of Macroeconomic Imbalances". Commission Staff Working Document.
- Fleming, M. (1962): "Domestic Financial Policies under Fixed and Floating Exchange Rates." IMF Staff Papers No. 9.

- International Monetary Fund (2014): "Republic of Croatia: 2014 Article IV Consultation—Staff Report, Press Release, and Statement by the Executive Director for the Republic of Croatia". IMF Country Report No. 14/124, May 2014.
- Ito, T. and Yabu, T. (2004): "What promotes Japan to Intervene in the Forex Market? A New Approach to a Reaction Function." NBER Working Paper 10456.
- Kraft, E. (2003): "Monetary Policy under Dollarisation: The Case of Croatia." *Comparative Economic Studies*, 45, 256-277.
- Kunovac, M. (2014): "Employment Protection Legislation in Croatia." *Financial Theory and Practice*, 38, 139-172.
- Luca, A. and Petrova, I. (2008): "What Drives Credit Dollarization in Transition Economies?" *Journal of Banking & Finance*, 32, 858-69.
- Mundell, R. (1963): "Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates." *Canadian Journal of Economics and Political Science*, 29, 475-485.
- Pill, H. et al., Goldman Sachs Global Economics (2012): "Achieving Fiscal and External Balance (Part 1): The Price Adjustment Required for External Sustainability". *European Economics Analyst*, Issue No. 12/01, 15 March 2012.
- Radošević, D. (2014): "Capital Account Mismanagement, Deleveraging and Unstable Economy in the European Union Periphery Countries: The Case of Croatia and Slovenia". The Institute of Economics Zagreb.
- Radošević, D. and Vidaković, N. (2014): "Monetary Policy versus Structural Reforms: The Case of Croatia." *Razprave*, 12, 40-44.
- Rosenberg, C. B. and Tirpák, M. (2008): "Determinants of Foreign Currency Borrowing in the New Member States of the EU." IMF Working Paper 08/173.
- Sinn, H.-W. (2014): *The Euro Trap: On Bursting Bubbles, Budgets, and Beliefs*. New York: Oxford University Press.
- Vujčić, B. (2003): "Monetary Policy and Management of Capital Flows in a Situation of High Euroisation: The Case of Croatia." BIS Papers No. 17.

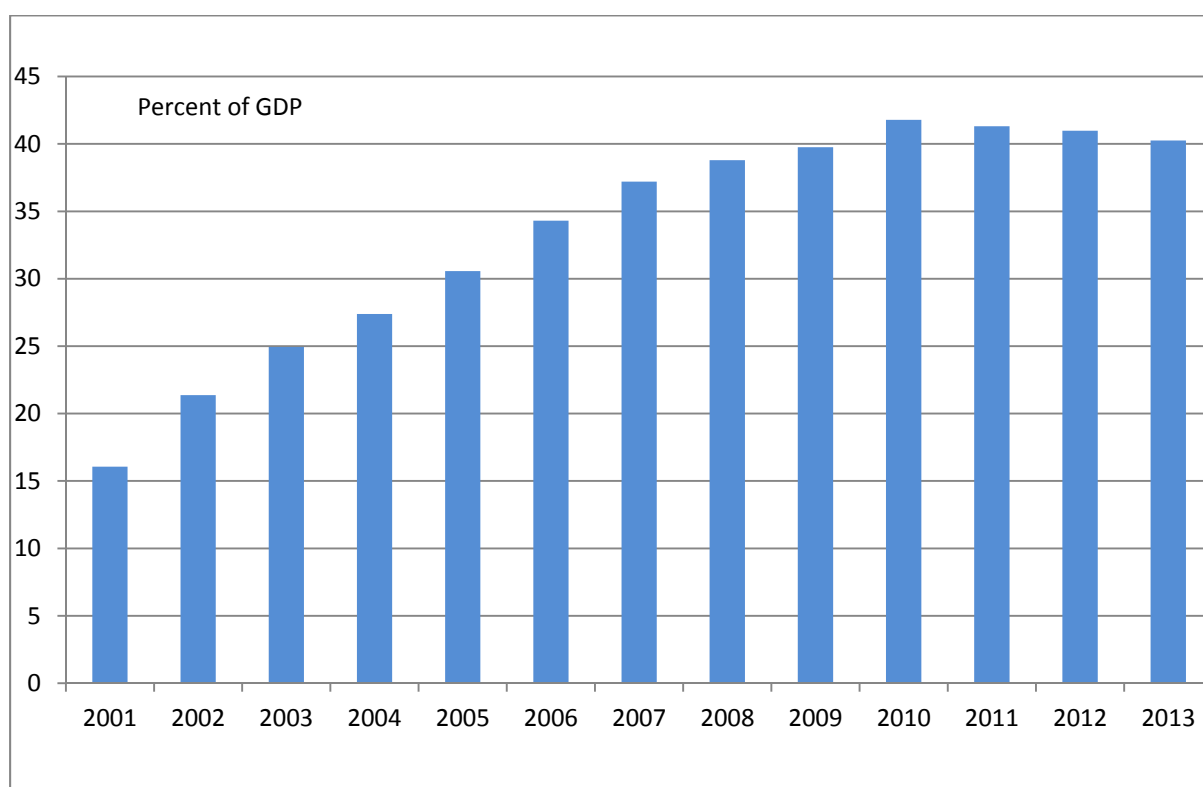
3. Managing Household Debt in Croatia

Teresa Buchen, Marcus Drometer and Timo Wollmershäuser¹

3.1. Household debt in Croatia

Household debt in Croatia has risen considerably, from 16% relative to GDP in 2001 to 40% in 2013. Although there has been slight deleveraging since 2010, the Croatian household debt-to-GDP ratio is still higher than in most CEE-10 countries² (see Figures 3.1. and 3.2.).

Figure 3.1.: Household debt-to-GDP ratio in Croatia

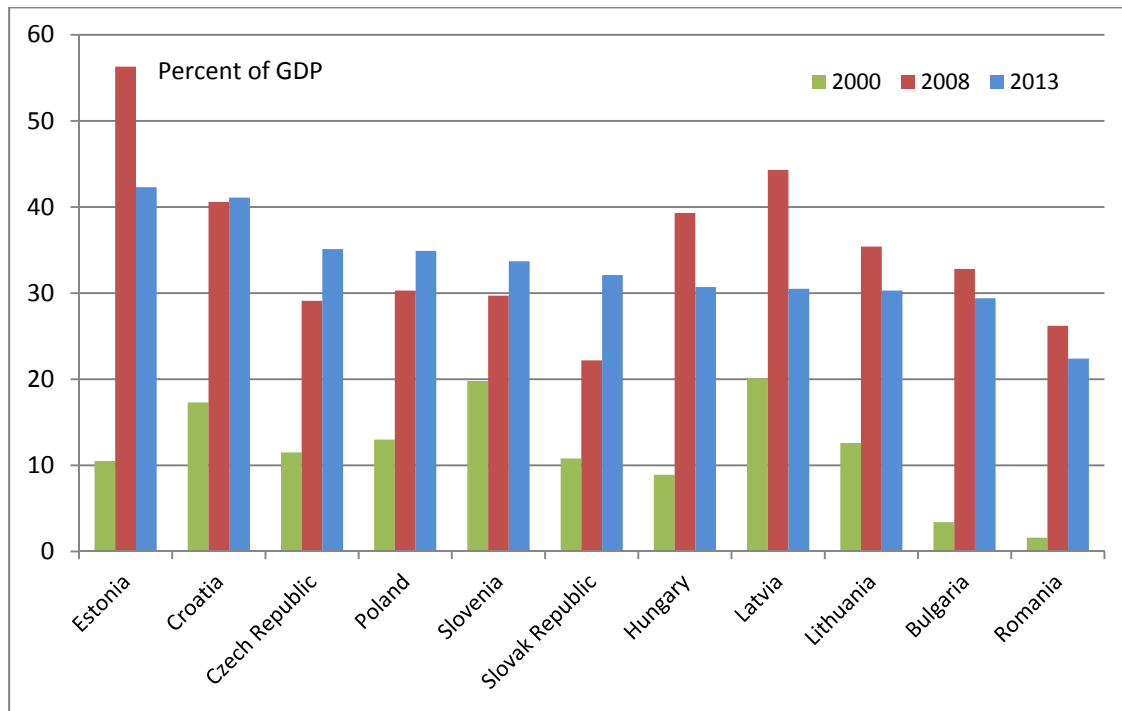


Sources: Croatian Bureau of Statistics, Croatian National Bank (CNB).

¹ Katrin Oesingmann provided excellent research assistance.

² CEE10 = Ten countries of Central and Eastern Europe (CEE): Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia, Slovak Republic.

Figure 3.2.: Household debt-to-GDP ratio in comparison to CEE-10 countries

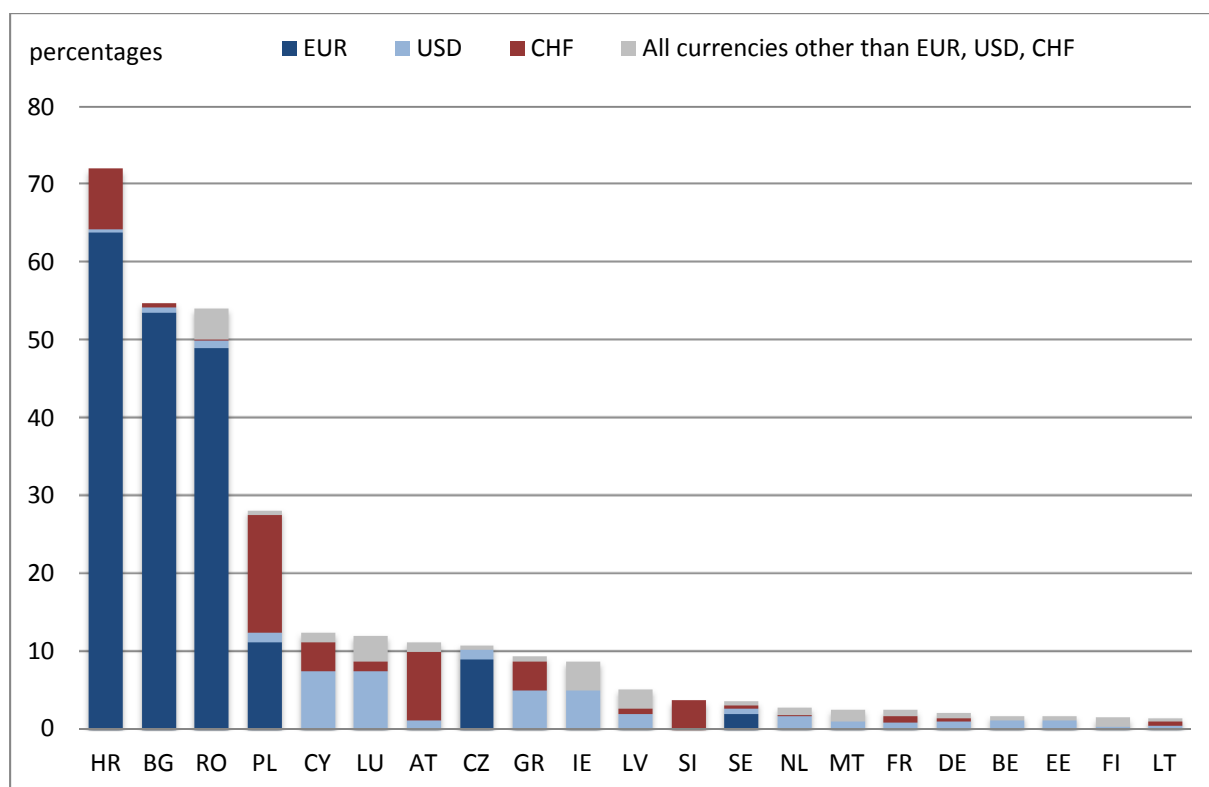


Note: For Slovenia and Croatia the data in 2000 is from 2001; for Poland from 2003; for Latvia and Lithuania from 2004. Data includes the liabilities of households.

Source: Eurostat.

The major part of private sector debt is in foreign currency. More than 70% of all loans to households, non-financial corporations and financial corporations are denominated in or indexed to a foreign currency, mainly the euro and the Swiss franc. This is the highest ratio in the European Union (see Figure 3.3.). As regards Croatian households, 28% of all domestic loans are in kuna, while 53% are indexed to the euro and 18% to the Swiss franc (March 2015). Foreign-currency loans are especially relevant for housing loans, which constitute 48% of all loans to households. Only 7% of housing loans are not indexed to a foreign currency, while 56% are indexed to the euro and 36% to the Swiss franc. Apparently, households fall for an exchange rate illusion: by considering only the fact that interest rates on foreign-currency loans are lower than those on kuna loans, they ignore the risk of currency depreciation. This might be reinforced by the exchange rate policy of the Croatian National Bank, which aims to guarantee stability through the quasi-peg to the euro. But between 2009 and April 2015, the kuna has depreciated by 7% against the euro and even by 36% against the Swiss franc. The Swiss franc/kuna exchange rate stabilized when the Swiss National Bank introduced the exchange rate floor to the euro, but depreciated by an additional 14% when the floor was removed in January 2015.

Figure 3.3.: Foreign-currency loans of the private sector in the EU, Q4 2014

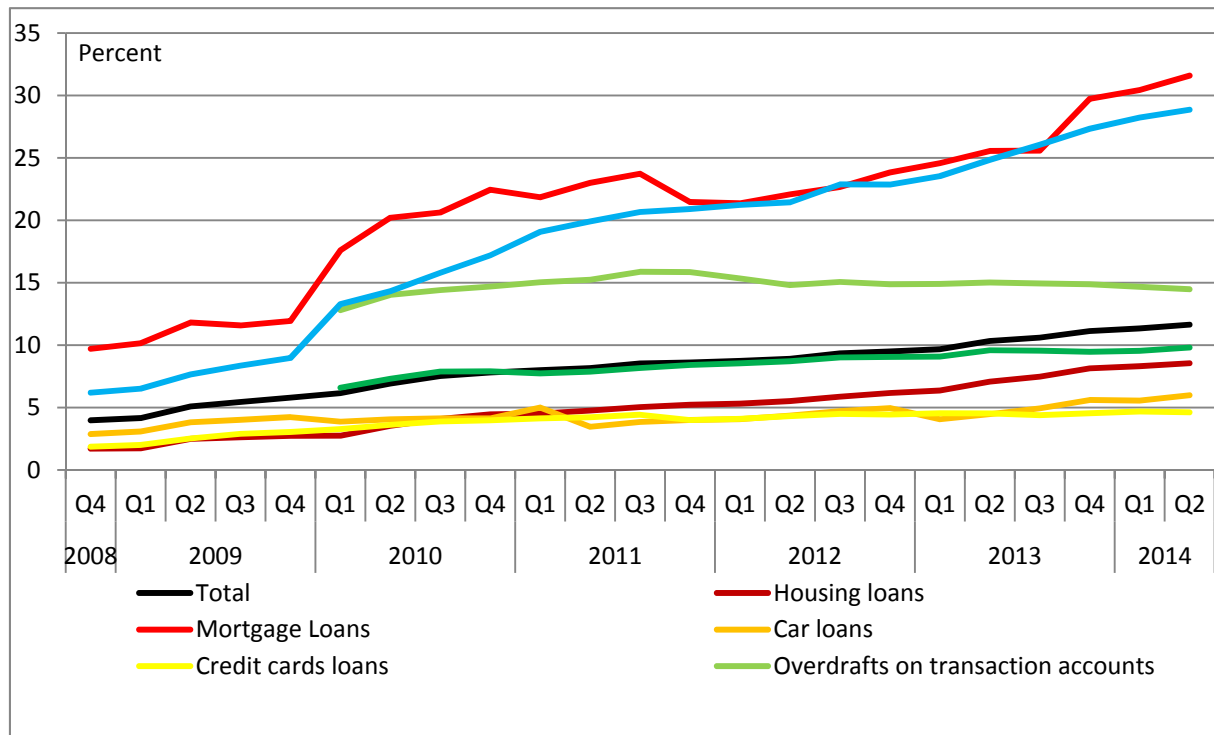


Note: The chart shows the foreign currency loans of households, NFCs and financial institutions as a percentage of the total loans. No data available for Denmark, Hungary and the United Kingdom.

Source: ESRB Risk Dashboard March 2015.

Depreciation and the protracted recession in Croatia have made it difficult for many households to service their debt. The share of non-performing loans among households—that is, loans that are in or close to default—has risen dramatically in the course of the recession, from 4% at the end of 2008 to 12% in June 2014 (see Figure 3.4.). A substantial share of the population is not even able to pay their utility bills. Due to this, 313,830 bank accounts were blocked as of August 2014 (FINA 2014), which corresponds to about 7% of the population (assuming that every citizen has only one bank account).

Figure 3.4.: Share of partially and non-performing household loans in Croatia



Source: Calculations based on the Croatian National Bank's (CNB) data.

3.2. Ad-hoc measures by the Croatian government

The Croatian government has taken several ad-hoc measures to cushion some of the negative effects of household indebtedness. In particular, the issue of blocked bank accounts has been addressed by the “Fresh Start Program”, which consists of a debt relief for the poorest households. The “Consumer Credit Act” was introduced to offset the effect of the appreciation of the Swiss franc on January 15th 2015, and the corresponding increase in value of Swiss franc-loans, by temporarily imposing a fixed kuna-Swiss franc exchange rate on existing loans. Furthermore, other ad-hoc measures are being discussed in Croatia and elsewhere in the region, in particular a permanent conversion of all foreign-currency mortgage loans to local currency following the Hungarian example. In the following, we critically assess both the implemented and the planned ad-hoc measures.

3.2.1. Policy assessment of ad-hoc measures in general

Generally speaking, temporary measures by the government can be criticized as they interfere with private contracts and undermine credit discipline. They damage the rule of law, may endanger the independence of judiciary, and raise the problem of moral hazard (Liu and Rosenberg 2013). They therefore may give negative incentives for private households to continue incurring excessive debt, and for banks to promote loans in foreign currencies.

Some European governments have intervened in the past years – mainly due to non-existing or non-sufficient consumer bankruptcy laws and the fear of broader side effects on the financial sector and the whole economy. Transitory measures usually include the imposition of a temporary moratorium on foreclosures and the conversion of debt denominated in foreign currency into local currency.

Experience shows that direct government support may be needed in cases where the debt overhang is so severe and widespread that market mechanisms no longer work and/or financial stability is at risk. Leaving high private sector debt unresolved helps neither debtors nor creditors, but may endanger stability and economic growth. Iceland is one example cited for justified direct interventions: In the years after the global financial crisis of 2008, private non-financial debt-to-GDP levels shot up and Iceland experienced a strong boom-bust credit cycle. The government introduced voluntary guidelines that provided guidance on mortgage restructuring for borrowers in financial distress. Direct government interventions included conversion of foreign currency-denominated debt into local currency, a write-down of mortgages, an interest rebate and subsidy, and the installation of a debtor's ombudsman to arbitrate individual debt mitigation applications. The extreme deterioration of debt indicators in Iceland seemed to have justified the government intervention, especially since the government preserved a market-based approach (Liu and Rosenberg 2013).

3.2.2. “Fresh Start Program” – Haircut for loans

Under Croatia's “fresh start” program, people owing up to 35,000 Croatian kuna (€4,541 at the euro-kuna exchange rate of 21.01.2015) will have their debts retired if they are on welfare or have a monthly income of less than 1,250 kuna (€162). The agreement will enable those eligible to gain access to their bank accounts. According to the Croatian government, about 60,000 citizens would benefit, up to a sum of 2.1 billion kuna (€272 million). The agreement on debt write-offs for the poorest citizens includes the liabilities to banks, telecommunications companies, public utilities and local self-government units and was signed with representatives of these companies (Zagrebacka Banka, OTP bank, Hypo Alpe Adria Bank, Raiffeisenbank Austria, Privredna Banka Zagreb, Erste&Steiermaerkische Bank, Sberbank, Societe Generale-Splitska Banka, Vipnet, Tele2 and Croatian Telecom). Furthermore, the Croatian government made a decision to include the tax administration in its scheme (Government of Croatia 2015a).

Given the amount of people benefited and the sums involved, it can be said that this measure will have quite a large effect. It clearly has a social objective, as only households with low/no income or assets are to benefit. Losers are the banks and non-financial corporations such as telecommunication companies that will have to bear the haircut and take a loss of up to 2.1 billion kunas.

This step is different from measures in other countries, where no comparable government intervention has been tried. Although there is clearly a need for urgent measures to reduce household debt and to help citizens to get access again to their bank accounts, the intervention endangers the rule of law and damages trust and credibility.

After the haircut there still exists the risk of households taking on new loans, in part because of the lack of a discharge period and of frameworks or guidelines. Furthermore, the haircut on loans may result in higher interest rates to low-income borrowers in the future as banks charge an extra risk supplement.

3.3. “Consumer Credit Act” – Fixed kuna-Swiss franc exchange rate on existing loans

In late January 2015, the Croatian parliament passed the “Consumer Credit Act” as a reaction to the removal of the peg on the Swiss franc-euro exchange rate (Government of Croatia 2015b). Within a week, the Swiss franc had appreciated by 20% against the kuna and, consequently, so had the value of loans indexed to the Swiss franc. This affected primarily housing loans that, in December 2014, had amounted to 20.2 billion kunas (2.7 billion euros). The Consumer Credit Act fixed the kuna-Swiss franc exchange rate applicable to household loans at 6.39, the rate prevalent before the Swiss National Bank’s decision on January 15, 2015 to abandon the fixed exchange rate. The Croatian banking association (HUB) had already made an agreement with the Croatian finance minister to fix the exchange rate for three months and only for customers with severe payment difficulties (Financial Times 2015). However, this milder measure was overruled.

Only 4% of Croatian families who are spared from a further increase in the interest payments on their (unhedged) Swiss-franc liabilities benefit from the above measure as most housing loans are issued in euro (Croatian National Bank 2015). However, citizens holding housing loans do not necessarily constitute the most vulnerable group of the Croatian society.

Losers from the policy measure are banks who have to bear all the costs. Assuming the average appreciation since the removal of the Swiss franc-euro peg (13%), the costs of applying to the Swiss franc housing loans that were outstanding in December 2014 an exchange rate different from the market rate add up to 2.6 billion kunas (around 350 million euros).

These costs arise due to the fact that conversion of bank assets requires conversion of bank liabilities. Banks have to cover the exchange rate differential between the market exchange rate and the fixed rate.

The measure should be rescinded. As there is no burden-sharing between creditors and debtors it sets negative incentives for households to continue incurring debt while ignoring exchange rate risk.

3.3.1. Conversion of all FX-mortgage loans to kuna – The Hungarian example

In November 2014, the Hungarian parliament passed legislation under which banks had to convert foreign-currency mortgage loans to forint at the market rate. To avoid downward pressure on the local currency stemming from banks’ purchases of foreign currency in the open market to cover their liabilities to foreign (parent) banks, the

Hungarian central bank made sales to banks from its foreign-currency reserves at the market exchange rate (Central Bank of Hungary 2014a).

The Hungarian example should not be followed in Croatia. Firstly, on the aggregate the Croatian household sector would win from a devaluation of the kuna, although gains and losses would presumably be distributed unequally among households. In fact, 93% (57.8 billion kunas) of housing loans are indexed to foreign currency in Croatia, but 85% (123.4 billion kuna) of households' time deposits are also in or indexed to foreign currency, mainly in euros. A depreciation of the kuna against the euro by 10%, for instance, would increase the value of housing loans by 3.5 billion kunas (around 460 million euros) and raise the value of time deposits by 11.1 billion kunas (around 1.5 billion euros). Overall, gains for households would thus be more than three times as large as their costs. In comparison, the 2,900 billion forints (around 9 billion euros) in foreign-currency housing loans that were affected by the forint conversion in Hungary (Central Bank of Hungary 2014b) contrasted with foreign-currency deposits worth only 920 billion forints (around 2.9 billion euros). The Hungarian household sector would have been a clear loser from the devaluation.

Secondly, the central bank intervention in Croatia that would be necessary to avoid exchange rate effects of converting all foreign-currency housing loans to households would cost 58 billion kunas, or 53% of total foreign-currency reserves. Currently, the international reserves cover foreign short-term liabilities (maturing in 2015) by a factor of 1.4, but according to the IMF's broader measure of reserve adequacy³ Croatia only reaches 80, instead of the 100-150 comfort zone (Croatian National Bank 2015). With conversion, Croatia would end up far below both metrics, covering only 60% of its foreign short-term liabilities and reaching only a value of 28 according to the IMF measure. In comparison, the Hungarian policy instrument required 26% of foreign-currency reserves, leading to a reduction of the IMF's adequacy metric from 135 to 101. Given the importance of foreign-currency reserves in Croatia for maintaining the euro exchange rate anchor, a reduction of the adequacy metric should be avoided. In particular, there is a risk of speculative attacks against the kuna if markets no longer believe the central bank can defend its exchange rate target.

3.4. Policy proposals

3.4.1. Implementation of a private bankruptcy law in Croatia

3.4.1.1. Theoretical background on consumer bankruptcy

A personal bankruptcy law serves a number of purposes but, in general, it aims to establish an even, predictable burden-sharing between borrower and lender.

On the one hand, it should make it possible for the private person to get a "fresh start" after completing a certain period of repayments, rehabilitating her afterwards by

³ Gross international reserves as a percentage of risk-weighted liabilities which cover short-term liabilities, other portfolio liabilities, broad money, and exports.

clearing the unpayable remaining debts. Only that way can a person get back to an economic life as any other member of society (Christopherson and Abjornsson 2011). On the other hand, it should maintain credit discipline and prevent moral hazard. A legal framework on consumer bankruptcy should remove uncertainty about indebtedness and provide a framework for dealing with indebtedness for both creditors and lenders.

Failure to provide debt relief can have negative externalities for the economy as a whole and will help neither debtors nor creditors. Individuals will be unable to take part in the economic life and will have to reduce their consumer spending, and in all likelihood will need social assistance and welfare. High and long-lasting household debt-to-GDP ratios endanger the development and growth of a country's economy.

As a result, many countries have changed their stance, from one in which only lenders are responsible for their debts and where contracts have to be complied with, to a view where the creditors are also responsible for the over-indebtedness of the households mainly because of loose lending policies. The rehabilitation of the debtor slid into the main focus when new consumer insolvency laws were being devised in recent years.

A number of basic design features for an economically efficient personal insolvency law have emerged from the early cross-country experience (Liu and Rosenberg 2013):

- Allocate risks among parties in a fair and equitable manner;
- Provide a fresh start through discharge of financially responsible individuals from their liabilities at the end of insolvency proceedings (typically after 3-5 years);
- Establish appropriate filing criteria to make insolvency procedures accessible to individual debtors while minimizing abuse;
- Impose an automatic and temporary stay on enforcement actions with adequate safeguards for creditor interests;
- Set repayment terms that accurately reflect the debtor's capacity to repay to ensure an effective fresh start; and
- Recognize foreign proceedings and enable cross-border cooperation to avoid bankruptcy tourism (refers to debtors filing for bankruptcy in countries with favorable personal insolvency laws).

No worldwide best practice exists when it comes to a consumer bankruptcy law, but the experiences with longer-existing laws in countries like France, Germany, Japan, the Netherlands, the United Kingdom, and the United States can be taken into account when designing a new such law.

In general there are two opposing models of consumer bankruptcy, the Anglo-Saxon and the continental European models. The first stands for a liberal "fresh start" policy and is common in the United States, Canada, England and Commonwealth countries. It's referred to as a "Fresh Start" system since debtors can discharge their debt via bankruptcy and continue their lives free of their previously existing debt without the need to fulfill a "payment plan" over a certain time period (Ramsay 2012).

The continental approach, on the other hand, consists of a long-lasting procedure, which allows for a fresh start but only after a period of distress and sanction (“earned start”). Consumer bankruptcy regulations structure consumer’s debt repayments and limit the amount of earnings that can be used for the individual’s living. Laws within the Continental approach mainly differ regarding the duration of the repayment and recuperation process. In Germany, for example, the time is 6 years, but can be shortened up to 3 years when the debtor is able to repay 35% of his debts. The German law is therefore considered to be more creditor-friendly. In Latvia the maximum time is 3.5 years and can be shortened up to 1 year, which is more debtor-friendly.

3.4.1.2. Status quo in Croatia

Croatia’s current insolvency regime only covers the bankruptcy of corporations and not that of individuals – the institutions of personal bankruptcy and debt rescheduling for the over-indebted do not exist. The missing legal framework has become a problem in the past years since the total indebtedness of the private households has risen and the number of insolvent households with blocked bank accounts increased.

In response, the government passed several temporary measures (Chapter 2), while a draft for a consumer bankruptcy law (Draft of the Consumer Bankruptcy Law Proposal, Ministry of Justice, Zagreb, June 2014) modeled on the German approach is currently under examination (see also Bodul and Žiković 2014). On March 13th 2015 the Croatian government endorsed the consumer bankruptcy bill. According to the government, the bill includes the following measures: A debtor will first have to try to settle with the creditor out of court, under the aegis of a Financial Agency advisory body. If no agreement is attained, the proceedings will continue in court. If no court settlement is reached, the court will then appoint a trustee to divide the consumer’s estate. Debts would be written off only for debtors without assets or job prospects, while employed debtors would retain income only for the bare necessities, the rest going towards paying off their debts. Consumers who file for bankruptcy will have to report to the trustee any changes to their assets for a period ranging from one to five years. Filing for bankruptcy will be possible to all insolvent consumers with debts exceeding 30,000 kunas if for three straight months they been unable to serve their debts (Government of Croatia 2015c).

3.4.1.3. The example of a new consumer bankruptcy law in Latvia

During the boom years (2000-2007), Latvia’s non-financial private sector debts, held predominantly in foreign currencies, increased rapidly. From 2005-2007 the average real GDP growth was at 10.3 percent annually, while the external debt grew by 172 percent, reaching 128 percent of GDP. When the financial crisis hit in 2008/2009, the need for debt restructuring became apparent. On the one hand this was done by the foreign banks in Latvia, which can provide financial resources, technical expertise through Asset Management Companies (AMCs) and sufficient capital buffers to facilitate debt restructuring. On the other hand, the Latvian government chose a market-based

approach to restructure the debts. The provision of a sufficient legal framework was preferred over direct public intervention.

Firstly, amendments to tax legislation were introduced to give incentives for debt forgiveness. For instance, the transfer of a distressed loan to a third party was declared a tax neutral event.

Secondly, incentives for voluntary out-of-court debt restructuring were set in order to relieve the courts and make the process of restructuring speedy, cost-effective and flexible. The guidelines for those processes were defined in August 2009 in cooperation with the World Bank and the IMF.

Thirdly, in 2009 amendments to the insolvency law were made to allow the rehabilitation of viable firms and the exit of non-viable firms. For instance, stakeholders were to participate in Legal Protection Proceedings (LPPs) before submitting a bankruptcy petition, and the rehabilitation period for distressed firms was prolonged up to two years.

Furthermore, a new personal insolvency law was adopted on November 1, 2010, to provide indebted individuals with the possibility of an exit and of avoiding over-indebtedness. Financially responsible individual debtors are provided with a fresh start at the end of their insolvency proceedings. This is done by the debtor having to meet specified repayment requirements and discharging her remaining liabilities. The repayment plan lasts between 1 year and 3.5 years, depending on how much the debtor is able to cover of the remaining obligations.

In Latvia the number of personal insolvency proceedings was five times as high during the crisis years (2009-2010) than before the crisis, peaking at 246 cases in 2010.

The policy strategies chosen by the Latvian government are producing their first positive results. The amendments to the corporate and household insolvency regime led to a sharp increase in legal protection proceedings and personal insolvency proceedings. After the release of the new personal insolvency law in 2010, the number of bankruptcy cases rose to 810 cases in 2011. Voluntary out-of-court debt restructuring proceedings are rising as well.

Further recommendations to the legislation in order to improve debt restructuring are the strengthening of the court system and amendments to the Civil Procedure Law. For instance, in an auction, the winning bidder should receive a bank guarantee letter, and the tax legislation should be more in favor of effective debt restructuring (Erbenova, Liu, Saxegaard 2011).

3.4.1.4. A consumer bankruptcy law for Croatia

The best way to deal with private household debt is via a consumer bankruptcy law that gives individuals (natural persons) and micro-enterprises the possibility to restructure their debts.

With a view to forestalling bankruptcy tourism (Hoffmann 2012) and considering the general alignment of rules and laws within the European Union, we propose for Croatia to follow the continental European approach for a consumer bankruptcy law. Since most laws within this approach differ in the duration of the recuperation and discharge period, the challenge will be to find a balance between avoiding moral hazard, preserving bank solvency and credit discipline on the one hand, and on the other hand enabling the consumer a fresh start that makes it possible to take part in the economic life again.

Based on the experience with existing private bankruptcy laws in Europe, a maximum repayment period of 3 to 5 years is advisable, with 5 years being considered more debtor-friendly and shorter periods more creditor-friendly. We advise against regulations stipulating that filing for bankruptcy is permitted only above a given amount of debt (see Government of Croatia 2015c: New bill on personal bankruptcy in Croatia stipulates that filing for bankruptcy will only be possible if debts exceed 30,000 kunas).

The implementation of a new law needs to be embedded in the institutional infrastructure, including the availability and quality of judges and trustees, administrative capacity, accounting, and valuation systems. In order not to put undue stress upon the (existing) legal institutions with a large number of private insolvencies to process, out-of-court settlements must be encouraged as well. Out-of-court settlements can take the form of voluntary arrangements between the lender and the borrower consisting of a binding and formal arrangement under which creditors may agree to accept less than the full amount they are owed, usually paid over a period of three to five years, or introducing third-party payments. In addition to reducing the burden on state institutions as well as the costs from the procedure, out-of-court settlements can be completed more quickly, saving time and money for both parties involved. As mentioned in the previous section, in 2009 the Latvian government set forth, together with the World Bank and the IMF, principles and guidelines for out-of-court consumer mortgage settlements (for details see: Financial and Capital Market Commission Latvia 2009). This guideline consists of 12 principles aimed at providing a framework for out-of-court settlements, including: The borrower has to contact as early as possible the lender to discuss payment problems; the lender has to provide the borrower with a detailed report of the contract payments; an informal workout should only be commenced if the circumstance of a financially troubled borrower occurs; the borrower must be offered a possibility of loan repayment by establishing a repayment schedule that is affordable; the borrower will provide the lender with all necessary information, including information relating to income, in order to enable a proper assessment of her financial position.

3.5. Measures to prevent consumer insolvency

3.5.1. Consumer protection

There can be many reasons for consumer over-indebtedness, ranging from economic to psychological or familial ones. Among the main economic reasons are unemployment, business failure, excessive consumption, a lack of financial overview, and inexperience with banks. Laws and regulations can play a role in preventing over-indebtedness resulting from asymmetric information between lenders and borrowers. In April 2011 the European Commission published a proposal for legislation on ‘responsible lending and borrowing’ on mortgages, which includes a range of preventive measures such as requiring a standardized pre-contractual information sheet, having a mandated period where the borrower has the right to withdraw, regulating advertisement, and verifying creditworthiness (European Commission, 2011 and 2013). The European Systemic Risk Board (ESRB) also published recommendations in 2011 covering the granting of foreign-currency loans, recommending that the national supervisory authorities and EU member states require their financial institutions to provide borrowers with adequate information regarding the risks involved in foreign-currency lending and also, if necessary, directly limit the amount of lending in foreign currencies (ESRB 2011).

The new law on consumer bankruptcy should therefore be accompanied by measures aimed at preventing consumer insolvency:

- Bank customers must consult guidelines provided by banks/national authorities to inform themselves about possible risks of their loans, in particular the exchange-rate risks associated with loans denominated in a foreign currency⁴;
- When offering loans in foreign currencies, banks can be recommended to offer financial instruments to hedge against the associated exchange-rate risks;
- Debt counselling and financial education for individuals must be provided, since one reason for over-indebtedness is a lack of financial overview. A Debt Counselling Service is essential for an effective personal bankruptcy regime;
- A credit registry for private consumers enables banks and businesses to get information about the creditworthiness of borrowers. It should, however, not lead to discrimination of consumer creditors due to past credit history, and it should not overly restrict debtors’ full rehabilitation once all requirements have been fulfilled.

3.5.2. Risk management for the banking sector

The above-mentioned European Systemic Risk Board (ESRB) has also made recommendations concerning the risk management of financial institutions, asking the national supervisory authorities to (ESRB 2011):

⁴ As an example for a customer consulting guideline on foreign currency loans please see: The Austrian National Bank (ÖNB): <http://oenb.at/dms/oenb/Finanzmarktstabilitaet/Downloads/Systemrisikoanalyse/Fremdw-hrungs--und-Tilgungstr-gerkredite/Folder-Fremdwaehrungskredite/Folder%20Fremdw%C3%A4hrungskredite.pdf>.

- 1) Monitor levels of foreign-currency lending and of private non-financial sector currency mismatches, and adopt the necessary measures to limit foreign-currency lending;
- 2) Allow foreign-currency loans to be granted only to borrowers with sufficient creditworthiness;
- 3) Consider setting more stringent underwriting standards, such as debt-service-to-income and loan-to-value ratios.

Further recommendations concern the internal risk management of the financial institutions with a view for them to better incorporate foreign currency lending risks in their internal risk management systems, as well as meeting the capital requirements to cover risks associated with foreign-currency lending.

Austria is one example where excessive foreign-currency lending led to stricter rules and guidelines in line with the ESRB recommendations. According to the Austrian National Bank, private households and companies are indebted in Swiss franc-denominated loans amounting to 29.5 billion euros (Himmelbauer 2015). The Austrian Financial Market Authority (FMA) considers the volume of foreign-currency loans in Austria as a potential systemic risk (FMA 2013), stipulating therefore that the financial institutions “shall compute the effects of exchange rate fluctuations on the foreign currency loan portfolio employing a meaningful stress test at least once a year”. The stress tests are to quantify the effects on the borrower’s solvency and on the credit institution’s risk-bearing capacity. The outcomes of stress testing must be adequately reflected in the business policy in particular (FMA 2013). Further recommendations of the FMA concerning the issue of foreign-currency loans include: preparing guidelines on granting of foreign-currency loans; setting limits to the volumes of individual foreign currency loans; conducting checks of the borrower’s ability to meet an increased loan repayment requirement, and recording market developments that bear upon a customer’s exchange rate risks. Furthermore, the FMA states that “foreign currency loans to private consumers are not suitable as a mass product”, and that “in general, credit institutions may not grant any foreign-currency loans to consumers”. As a conclusion, the FMA states that foreign currency loans should be given only to customers with sufficient income in the respective currency (FMA 2013).

The Croatian National Bank has been using a variety of measures since 2003 to slow credit growth, especially in foreign currencies, including higher reserve requirements and higher risk weights for unhedged foreign currency loans, as well as measures like ceilings on credit growth, marginal reserve requirements on foreign borrowing, and foreign currency liquidity requirements (Murgasova and Rahman 2012). But success has been modest, especially as regards loans to Croatian corporations, since foreign parent banks extended credit directly to the customers; the scant success may also be due to the fact that banks didn’t take account of the regulations. The insufficient implementation of risk management rules may be due to Croatia’s weak institutional framework: according to the “Rule of Law Index” of the World Justice Project, Croatia

ranks 53 out of 99 countries worldwide (with 99 being the lowest rank), below almost all its peers (Estonia 13, Check Republic 24, Poland 26, Slovenia 28, Hungary 30; Romania 45, and Bulgaria 57). The Rule of Law index uses 8 categories, including one on “Regulatory enforcement”, to assess the extent to which countries adhere to the rule of law in practice (The World Justice Project 2014).

As a conclusion, risk management regulations for the banking sector are needed to prevent extensive lending and bank illiquidity, both of which can lead to instability in the financial sector. A national supervisory authority should stipulate the measures to be adopted by the different financial institutions, which include:

- Furthering the implementation of the Basel III and EU Capital Requirements Directive IV/Capital Requirements Regulation (CRD IV/CRR), requiring Croatian financial institutions to hold adequate capital to cover risks associated with foreign-currency lending;
- Banks must incorporate foreign-currency lending risks in their internal risk management systems and must report the contribution of their foreign-currency loan portfolio to the bank’s total revenue;
- Stricter lending policies for loans in foreign currencies, especially for unhedged households. Banks should recommend customers to hedge against the exchange rate risk. More strictly, there should be no lending in foreign currencies to customers without income in the respective currency;
- Stress tests for banks in order to check stability and to quantify the effects of economic changes on the borrower’s solvency and on the credit institution’s risk-bearing capacity.

3.6. Conclusion

Long-lasting household debt can exert negative externalities on the entire economy of a country, as it dampens consumption and therefore economic growth; non-performing loans can pose a threat to financial stability.

The introduction of a consumer bankruptcy law, as well as measures to prevent unsustainable household indebtedness (consumer protection, risk management) and risk management tools on the banking side (EU capital requirements, risk management systems, stress tests) are strongly recommended. Loose credit regulations should be tightened. Loans denominated in foreign currencies should be hedged.

No further state interventions or ad-hoc measures are recommended, since they severely interfere with legal certainty and the rule of law.

The high number of non-performing loans and the level of foreign-currency loans of households are still a cause for concern.

Ultimately, the best way for households to deleverage is via better macroeconomic conditions: economic growth, increasing employment rates and stabilizing real estate prices.

References

- Bodul, D. and I. T. Žiković (2014), Advantages and disadvantages of German consumer bankruptcy model: Guidelines for Croatian lawmaker, *Ekonomski Vjesnik / Econviews: Review of contemporary business, entrepreneurship and economic issues*, God. XXVII, BR. 2/2014, 393-407.
- Central Bank of Hungary (2014a), “Magyar Nemzeti Bank provides the necessary amount of foreign currency to Hungarian banks to phase out households’ FX loans”, *Press release*, 24 September, http://english.mnb.hu/mnben_pressroom/press_releases/mnben_pressreleases_2014/mnben_pressrelease_20140924.
- Central Bank of Hungary (2014b), “The MNB’s foreign currency tender has brought success; Banks have almost entirely covered the forint conversion”, *Press release*, 10 November, http://english.mnb.hu/mnben_pressroom/press_releases/mnben_pressreleases_2014/mnben_pressrelease_141111.
- Christopherson, K. and R. Abjornsson (2011), Republic of Lithuania: Technical Assistance Report on Proposals for Reforming the Insolvency Regime, *IMF Country Report* No. 11/320.
- Croatian National Bank (2015), “Some facts about loans in Swiss francs and some options for government intervention”, *Press release*, 21 January.
- Erbenova, M., Y. Liu and M. Saxegaard (2011), Corporate and Household Debt Distress in Latvia: Strengthening the Incentives for a Market-Based Approach to Debt Resolution, *IMF Working Paper* 11/85.
- European Commission (2015), Country Report Croatia 2015 - Including an In-Depth Review on the prevention and correction of macroeconomic imbalances, *Commission staff working document*.
- European Commission (2014), Macroeconomic Imbalances Croatia 2014, *Occasional Papers* 179, March 2014.
- European Commission (2013), Creating a fair single market for mortgage credit – FAQ, *Press release*, http://europa.eu/rapid/press-release_MEMO-13-1127_en.htm (accessed 10 March 2015).
- European Commission (2011), Proposal for a directive of the European parliament and of the council credit agreements relating to residential property, 2011/0062 (COD).
- European Systemic Risk Board (ESRB) (2015), ESRB Risk Dashboard, March 2015.

- European Systemic Risk Board (ESRB) (2011), Recommendation of the ESRB of 21 September 2011 on lending in foreign currencies, *Official Journal of the European Union*, C 342/1.
- Eurostat (2015), Financial balance sheets [nasa_10_f_bs], (accessed 6 May 2015).
- FINA (2014), Pregled Blokiranih Građana Po Vjerovnicima I Ročnosti 31 August 2014, <http://www.fina.hr/Default.aspx?art=11269> (accessed 29 October 2014).
- Financial and Capital Market Commission Latvia (2009), Principles and guidelines for out of court consumer mortgage workouts, <http://www.fktk.lv/en/law/general/fcmc-guidelines-and-recommenda/4665-2009-08-21-principles-and-guideline.html>.
- Financial Times (2015), “Croatian banks spurn Swiss franc rate fix”, 21 January, <http://www.ft.com/cms/s/0/658f6e2e-a13c-11e4-8d19-00144feab7de.html#axzz3fNz152jE>.
- FMA (2013), FMA-Minimum Standards for the Risk Management and Granting of Foreign Currency Loans and Loans with Repayment Vehicles.
- Government of Croatia (2015a), Banks, telecom operators sign agreement on debt-write off for destitute citizens, *Press release*, 20 January, <https://vlada.gov.hr/news/banks-telecom-operators-sign-agreement-on-debt-write-off-for-destitute-citizens/16223>.
- Government of Croatia (2015b), Gov't moves amendments to protect debtors from sky-high franc, *Press release*, 21 January, <https://vlada.gov.hr/news/gov-t-moves-amendments-to-protect-debtors-from-sky-high-franc/16252>.
- Government of Croatia (2015c), Government endorses personal bankruptcy bill, *Press release*, 13 March, <https://vlada.gov.hr/news/government-endorses-personal-bankruptcy-bill/16540>.
- Himmelbauer, L. (2015), “Franken-Kredite für 220.000 Österreicher massiv teurer - Disput über Wiens Schulden - Raiffeisen hat hohes Exposure“, *Wirtschaftsblatt*, 15 January, <http://wirtschaftsblatt.at/home/boerse/wien/4638878/FrankenKredite-fur-220000-Oesterreicher-massiv-teurer-Disput-uber> (accessed 5 May 2015).
- Hoffmann, T. (2012), The Phenomenon of ‘Consumer Insolvency Tourism’ and its Challenges to European Legislation, *Journal of Consumer Policy* 35 (4), 417–419.
- International Monetary Fund (2014), Republic of Croatia, *IMF Country Report* No. 14/124.
- Liu, Y. and C. B. Rosenberg (2013), Dealing with Private Debt Distress in the Wake of the European Financial Crisis - A Review of the Economics and Legal Toolbox, *IMF Working Paper* 13/44.

Murgasova, Z. and J. Rahman (2012), "Croatia: Averting Financial Crisis but Struggling to Become Competitive", in B. Bakker and C. Kligen, eds., *How emerging Europe came through the 2008/09 crisis: an account by the staff of the IMF's European Department*, 245-250.

Ramsay, I. (2012), Between Neo-Liberalism and the Social Market: Approaches to Debt Adjustment and Consumer Insolvency in the EU, *Journal of Consumer Policy* 35 (4), 421-441.

The World Justice Project (2014), *Rule of Law Index 2014*, The World Justice Project, Washington.

4. Stimulating Foreign Direct Investment and International Trade to Generate Employment

Thomas Steinwachs and Erdal Yalcin

Economic conditions in Croatia have been worsening for the last decade, with macroeconomic imbalances becoming increasingly problematic, in particular after the global financial crisis of 2007/8. In light of the economic challenges Croatia now faces, it has two major vehicles to achieve sustainable growth in employment and the creation of new firms: An increase in Foreign Direct Investment (FDI) inflows, and a stimulation of international trade, in particular exports of final and intermediate goods, can have a substantial direct employment effect for the country.

The purpose of the following analysis is to identify how Croatia's FDI inflows and international trade patterns have evolved during the past decade. In a second step, relevant statistics for Croatia are compared with appropriate new EU member countries and candidates in order to elaborate and compare FDI and international trade patterns. Moreover, important microeconomic indicators are examined and compared across Croatian industries and across potentially competing European countries.

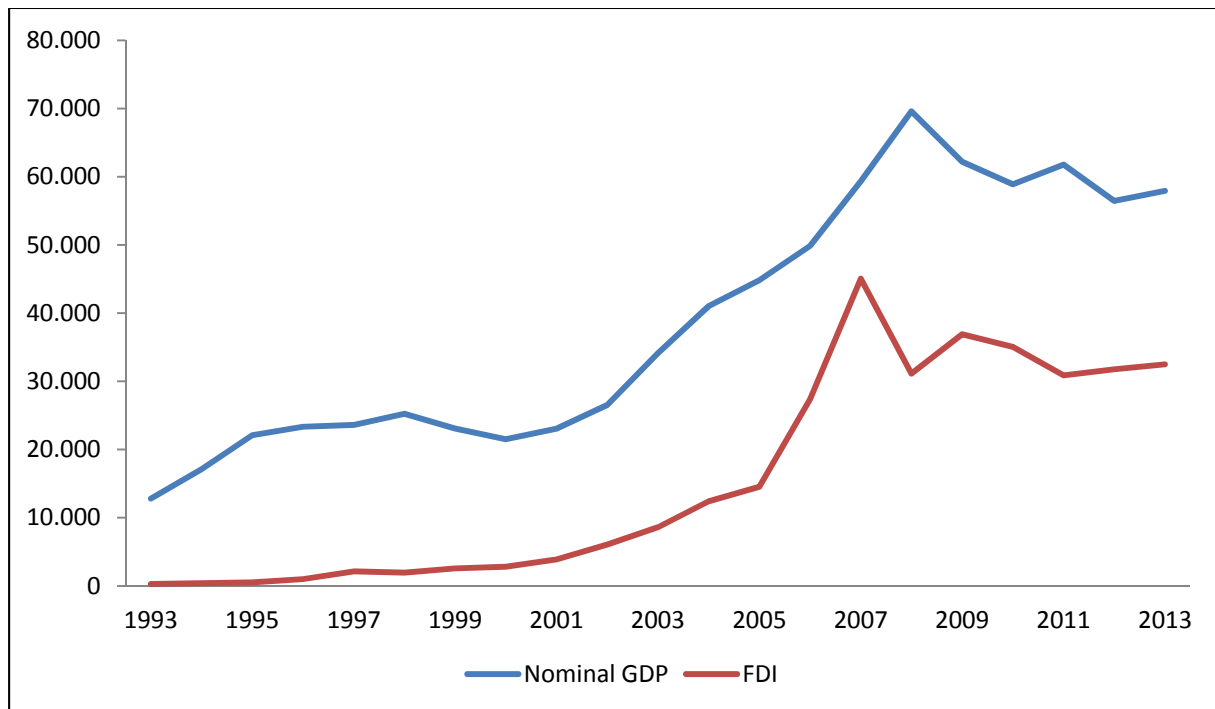
Finally, based on the empirical facts, a scenario analysis is presented, allowing the derivation of tailored policy recommendations. The analysis is closed with a discussion of the suggested reforms.

4.1. Empirical facts of Croatia's international trade and FDI flows

4.1.1. Croatia's FDI development

After EU candidate status was granted to Croatia in mid-2004, Croatian FDI inflows and GDP increased steadily until 2008. The outbreak of the global financial crisis in the same year triggered a lasting stagnation in both FDI inflows and GDP growth. Figure 4.1. illustrates the strong positive correlation between FDI inflows and Croatia's GDP development over time.

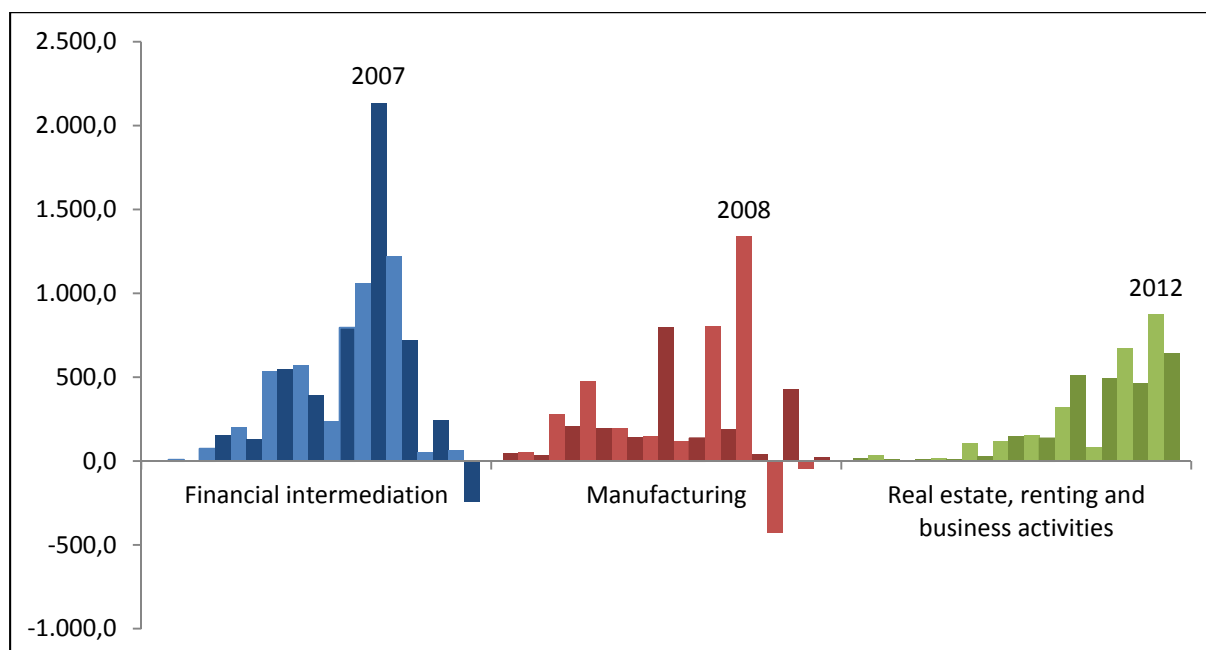
Figure 4.1.: Nominal GDP and FDI Positions in Croatia (in million USD)



(Data: UnctadStat, Figure: ifo)

Figure 4.2. depicts foreign investment positions in Croatia (in million euros) between 1993 and 2013 in the three most important recipient sectors. FDI inflows have been particularly large in a) financial intermediation, b) manufacturing, and c) real estate, renting and business activities. These three sectors jointly account for approximately 70 percent of total FDI positions in Croatia. Figure 4.2 additionally shows that FDI inflows into these major sectors have been increasing, in particular after Croatia was granted EU candidate status. Since the outbreak of the financial crisis in 2008 however, investments in financial intermediation – which peaked at 2,132 million euros in 2007 – have been declining and finally turned negative in 2013. Moreover, manufacturing FDI has followed a rather volatile pattern, peaking at close to 1,337 million euros in 2008, negative flows in 2010 and 2012, and close to zero in 2013. Finally, the real estate, renting and business activities sector has seen a steady increase in FDI since the early 2000s, but at more modest rates compared to the former two sectors, peaking at 873 million euros in 2012.

Figure 4.2.: Three most important FDI recipient (aggregated) sectors, accounting for approximately 70% of total FDI



(Data: Croatian National Bank, Figure: ifo)

Box 4.1.

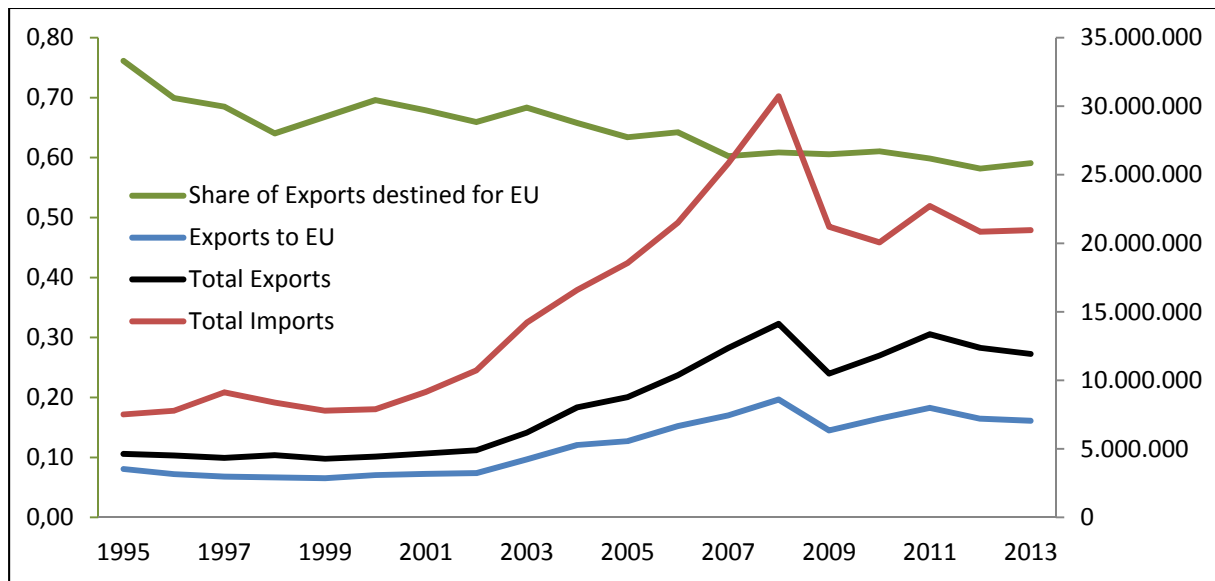
Croatian GDP and FDI inflows increased steadily since Croatia was granted EU candidate status in 2004 until the outbreak of the financial crisis in 2008.

Both GDP and inward FDI in Croatia have been stagnating ever since, with macroeconomic imbalances becoming increasingly problematic and overall economic conditions worsening.

4.1.2. Croatia's international trade development

This section examines how Croatia's imports and exports have developed over the last decade. Figure 4.3. depicts the evolution of Croatian aggregate imports and exports in millions of US dollars. Increasing integration into the European market since the early 2000s has led to a considerable rise in Croatia's trade deficit, as export growth has been accompanied by an even stronger increase in imports. After the financial crisis hit in 2008, Croatian international trade has largely stagnated. Moreover, even though Croatian exports to the EU have increased over time, the share of exports destined for the EU versus the rest of the world has declined over the past two decades. This implies that Croatian integration into the EU has involved increasing exports from Croatia not only to the EU, but even more so to the rest of the world. Actually, due to favorable export conditions in the common European market, one would expect Croatia's EU export share to increase. These simple statistics suggest that Croatia's exports are not sufficiently competitive to gain further market shares in the EU, even though European market access obstacles have been removed to a large extent.

Figure 4.3.: Total Imports and Exports in 1000 USD/Share

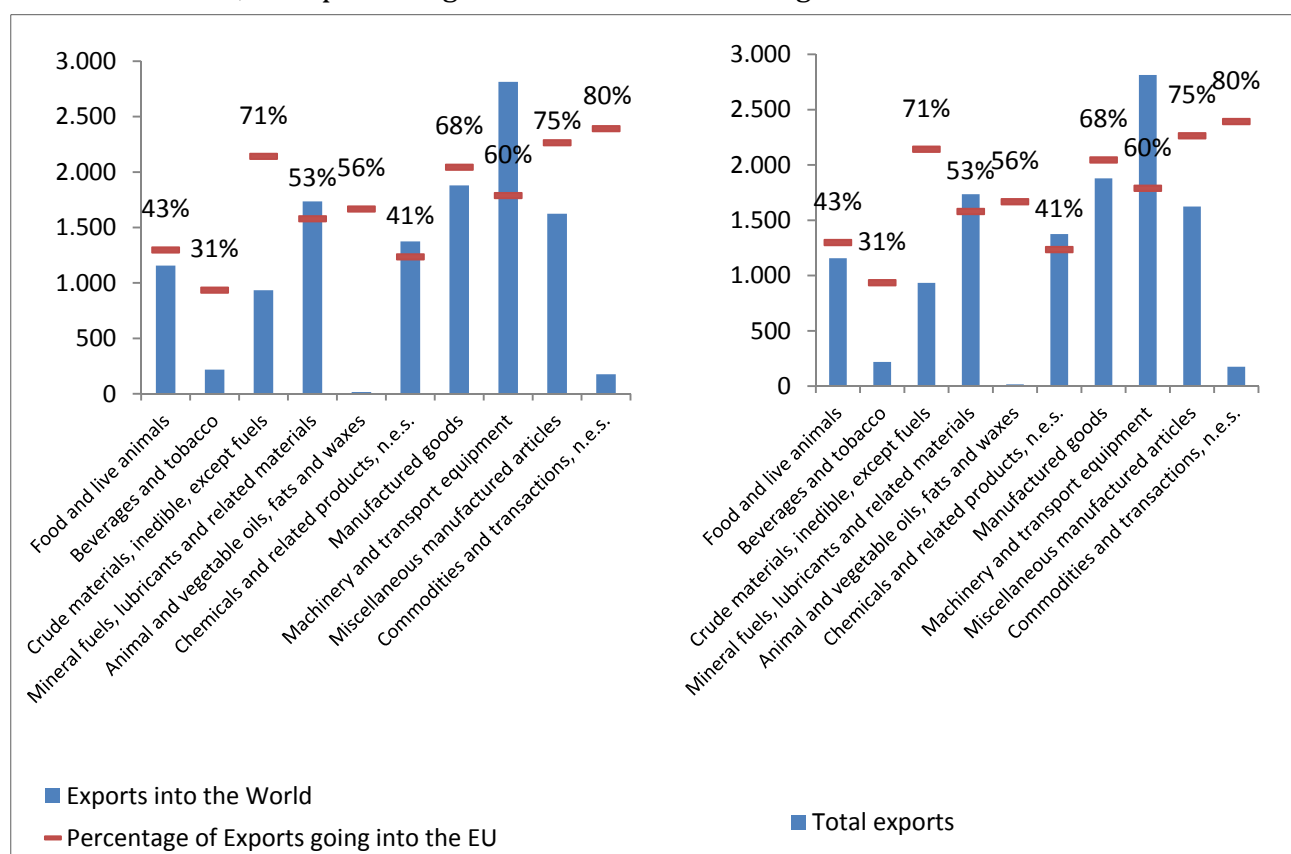


(Data: UnctadStat, Figure: ifo).

A more detailed analysis can be provided using international trade data on a fairly disaggregated product level (HS6).

Figure 4.4. lists Croatian exports and imports to and from the world by sectors, and illustrates the importance of intra-EU trade within each sector. In 2013, Croatia's most important exporting industry was *machinery and transport equipment* (USD 2,813 million), followed by *manufactured goods* (USD 1,879 million) and *mineral fuels, lubricants and related material* (USD 1,735 million) as well as *miscellaneous manufactured articles* (USD 1,624 million). In all these industries, between 40 and 75 percent of exports were destined for the EU. The least successful exporting industries were *animal and vegetable oils, fats and waxes* (USD 17 million), *commodities and transactions* (USD 176 million) and *beverages and tobacco* (USD 219 million). Comparing these export patterns with imports in the same sectors reveals three facts: *First*, setting aside the overall higher import levels, within-industry trade (imports and exports in the same industry) is observed across the major sectors. *Second*, exports are larger than imports in only two industries, suggesting a comparative advantage in *crude materials, inedible, except fuels* (exports: USD 993 million, imports: USD 316 million) and in *commodities and transactions* (exports: USD 176.13 million, imports: USD 4.08 million). *Third*, imports are sourced from the EU at rates of around 80% for most industries, suggesting that EU membership has played a stronger role for Croatia's importing rather than its exporting activities.

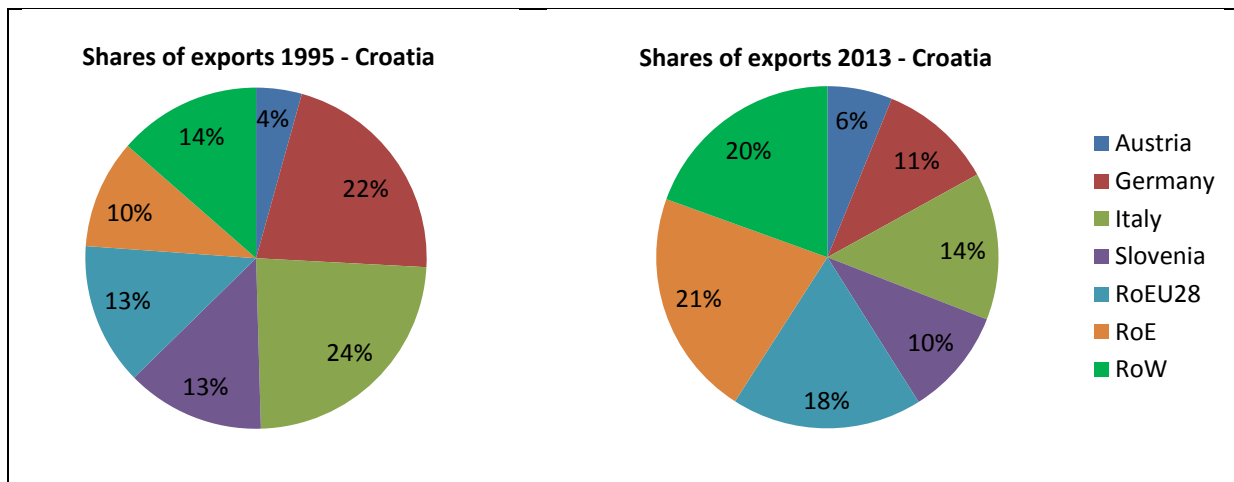
Figure 4.4.: Sectoral exports and imports in million USD to and from the world in 2013, with percentage destined for and coming from the EU



(Data: UnctadStat, Figure: ifo)

Figure 4.5. ranks different destination countries for Croatian exports in 1995 and 2013. As in the aggregate data, one would expect relatively more trade with EU members as a consequence of Croatia's increasing integration with the EU since 2004. However, the opposite turns out to be true. While exports to the rest of Europe and the rest of the world only accounted for 10% and 14% in 1995, they have increased to 21% and 20% respectively in 2013. Croatia's core export destinations from 1995, Germany, Italy and Slovenia, who jointly received 59% of Croatian exports, have dropped to 35%. Importantly, this relative decline is not compensated by the slight increases in exports to Austria and the remaining EU countries (RoEU28).

Figure 4.5.: Croatia's export destination countries in 1995 and 2013



Box 4.2.

Croatia's weak trade patterns over the past decade suggest that Croatia's exports are not sufficiently competitive to gain market shares in the EU, even though European market access has improved for Croatian exporters.

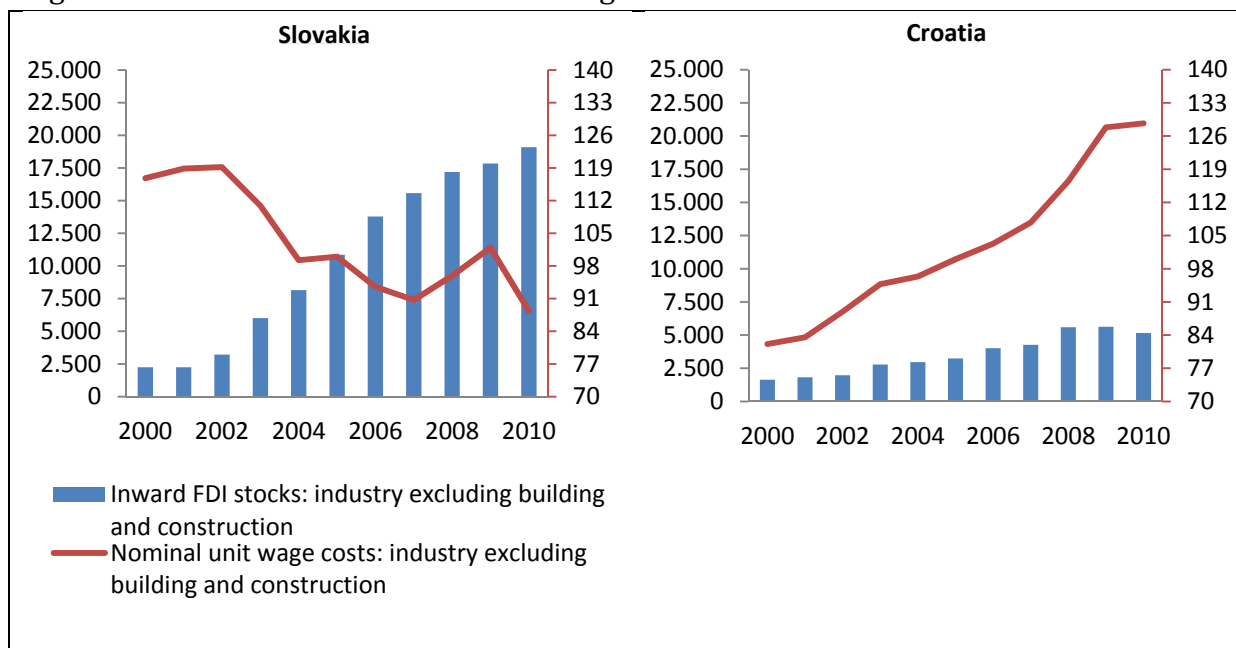
Croatia currently runs a trade deficit in nearly all major sectors. While EU membership has mattered for Croatia's imports, the exporting sector has not yet benefited from increasing integration into the EU.

4.1.3. Microeconomic competitiveness measures and Croatia's FDI and international trade pattern

Competitiveness in cross-border business is highly correlated with a country's cost-driving economic conditions. This subsection examines the development and impact of relevant microeconomic measures on FDI and international trade, focusing in particular on the evolution of labor costs and their correlation with FDI and trade flows across industries and time.

Figure 4.6. illustrates, by example of Slovakia, that there is a strong negative relationship between wage costs and FDI inflows. Comparing Slovakia to Croatia, one can easily see that Croatia is underperforming in FDI attraction: While Slovakian FDI inflows in the industrial sector increased from 2,245 million euros in 2000 to 19,086 million euros in 2010, Croatia only experienced an increase from 1,636 million to 5,158 million euros over the same period. Apparently this correlates with Croatia's relatively higher wage costs, which are uncompetitive compared to other recent EU members and thus impede FDI attraction: 190 euros on average in 2010, compared to 88 euros in the same year in Slovakia.

Figure 4.6.: FDI-In Stocks and National Wage Cost

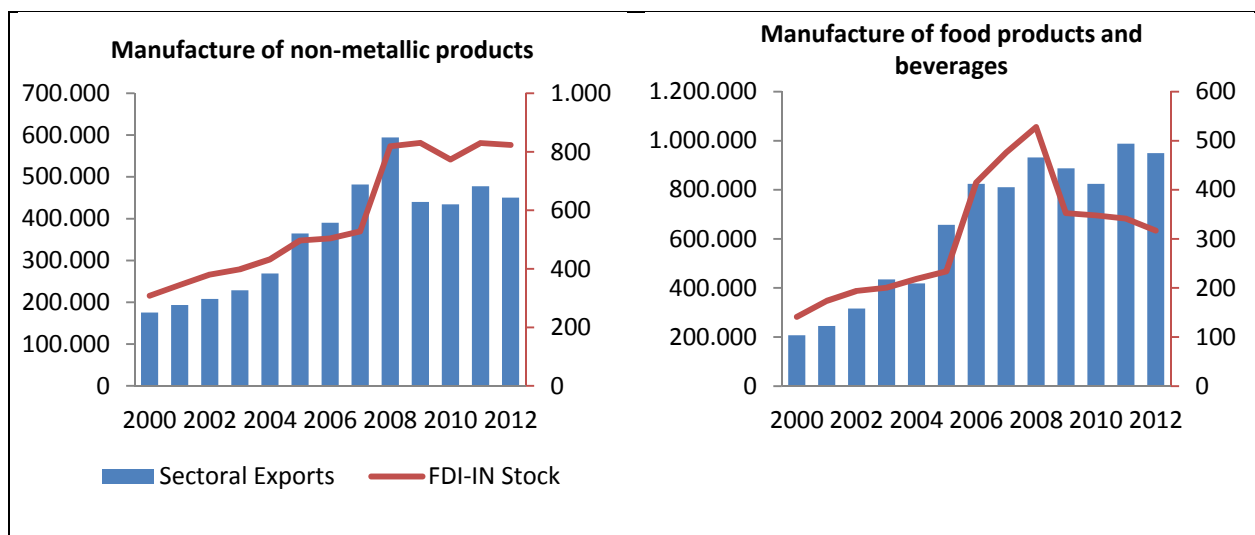


(Data: Croatian National Bank & AMECO, Figures: ifo)

By juxtaposing the respective inward FDI stocks with exports for two Croatian showcase industries (manufacturing of non-metallic products and manufacturing of food products and beverages), Figure 4.7. illustrates how exports are correlated with FDI inflows. As long as FDI inflows are positive, such that the stock of inward FDI increases, exports in the FDI-receiving industry grow on average, too. Since the financial crisis hit in 2008, the stock of inward FDI has stagnated or fallen for the two industries, implying zero or even negative FDI inflows. The charts additionally show that the pre-2008 surges in FDI had been accompanied by steady increases in exports. After 2008 however, stagnating and falling FDI have been associated with stagnating and falling exports.

Overall, these simple statistics help to visualize the direct economic link between FDI inflows and exports: Increasing an industry’s ability to attract FDI can considerably enhance its success in exporting.

Figure 4.7.: Sectoral Exports and inward FDI stock (in million USD)



(Data: Ifo Database & Croatian National Bank. Charts: Ifo.)

Box 4.3.

In cross-border business, a strong negative correlation between a country's cost-driving conditions, like labor costs, and inward foreign direct investment can be observed.

Rising labor costs in Croatia have hampered inward FDI growth, leading to unfavorable economic conditions relative to other EU countries, where declining labor costs have been accompanied by a very sharp increase in FDI inflows.

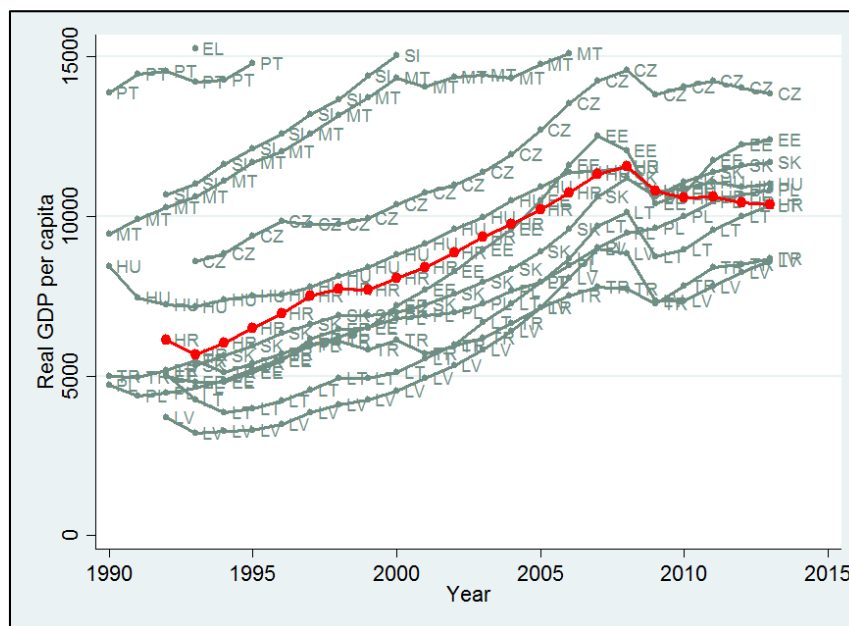
Stagnating and falling FDI inflows in Croatia's manufacturing sectors have been associated with stagnating and weakening exports.

4.2. Comparing Croatia with recent EU members and EU membership candidates

Several of the countries that became new EU members during the past decade have successfully initiated deep economic reforms. To analyze the potential quantitative effects of economic reforms in Croatia, it is important to first identify and compare countries which are similar to Croatia in their economic development. The following analysis subdivides the sample of European countries into three quantiles by real GDP per capita. Within the lowest quantile, Macedonia, Bulgaria and Romania constitute outliers at the lower end. Therefore, these countries are dropped from the sample, resulting in a subsample of 12 European countries which are appropriately distributed around Croatia in terms of real GDP per capita (see Figure 4.8.). These countries are referred to as Croatia's *peer group*.¹ This peer group of countries essentially includes the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Turkey over the entire time horizon (Greece, Portugal, Slovenia and Malta left the peer group over the course of time). Henceforth, this peer group will be utilized to quantitatively assess the correlations between labor costs, inward FDI and exports. The empirical analysis focuses on two major aspects: First, Section 4.4.2.1 explains the general economic relationship between labor costs, FDI and exports. Second, Section 4.4.2.2 sheds light on the differences in Croatia's competitiveness with respect to its peer countries which, as established above, consist predominantly of other EU members and membership candidates.

¹ For a comprehensive list of countries in the full sample and in the peer group, see Table 4.9. in the Appendix.

Figure 4.8.: Defining the peer group: Real GDP distribution of Croatia and similar EU members



4.2.1. Economic relationship between labor costs, FDI and exports

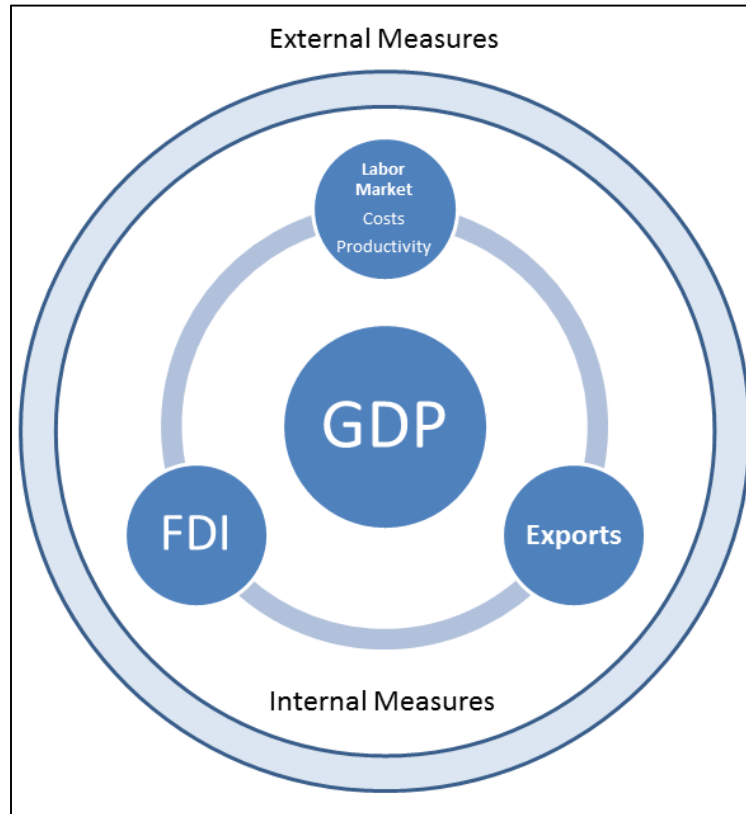
As discussed in Section 4.1.3. labor costs have a strong impact on the evolution of FDI inflows and exports: Low labor costs in comparison to alternative destinations can be considered as a core reason for foreign direct investors to enter countries. By taking advantage of low production costs, foreign investors not only set up new companies to serve domestic markets, but often integrate those newly built or acquired plants into their European production network, additionally stimulating exports.

However, it is important to emphasize that the economic relationship between labor costs, FDI inflows, and exports is not a one-way street, but an *endogenous circle* of economic interdependencies. Figure 4.9. illustrates the endogenous link between the domestic labor market, FDI inflows and exports, which has been observed in most of the EU member countries during the past decade. Initially, a reduction in labor costs is associated with increasing FDI inflows. Subsequently, most of the European member countries experienced a substantial increase in labor productivity driven by capital investments originating from FDI inflows. Hence, a rise in FDI inflows is able to improve labor productivity and thereby supports a lasting low labor cost environment with increasing output. Both increasing FDI and stable labor costs with rising productivity lead to competitive exports. Finally, rising exports again have positive repercussions on FDI inflows, labor productivity, and labor costs. It has been well substantiated in the economic literature that there is not only a selection process of relatively more productive firms into exports,² but that exporters also become more productive over

² Prominent theoretical work by Melitz (2003) and empirical studies by Bernard and Jensen (1999) and Van Biesebroeck (2005).

time compared to their non-exporting competitors.³ This increase in productivity then allows the exporting firms to pay higher wages, leading to a demand-driven boost to the domestic economy, which in turn results in additional incentives for foreign investors to increase FDI. Once this circle of economic interaction is in motion, GDP growth and a rise in employment follow implicitly.

Figure 4.9.: Economic relationship between labor costs, FDI and exports



On the analytic side, the endogenous circle introduced above implies some methodological challenges for the quantitative analysis conducted in Section 4.4.3. Endogeneity in the explanatory variables may lead to biased estimates of the effect of wages on FDI and exports as well as of the effect of FDI and exports on output. To partially alleviate reverse causality, lagged explanatory variables are used in the subsequent analyses.⁴ Nevertheless, endogeneity bias in the coefficients is very likely to persist, such that the estimators should be interpreted as correlations in sign and overall magnitude, but not as exact causal predictors.

Besides the internal economic chain of events triggered by lowering labor costs (internal devaluation), there exists a similar chain which can be triggered by exchange rate

³ (2011) on the firm-level innovation-promoting effects of international trade (learning by exporting) or Lileeva and Trefler (2010) on the market-expanding effects of trade causally encouraging firms to innovate.

⁴ To facilitate an exact causal identification of the respective effects, an instrumental variable approach would be needed. However, an adequate instrument – one which, conditional on other covariates, is correlated with the respective endogenous explanatory variables but at the same times satisfies the exclusion restriction, i.e. is not correlated with the error term in the regression equation – could not be provided for the scope of this analysis.

adjustments (external devaluation). This second policy option will be briefly addressed in Section 4.3.2. of this paper, and is additionally discussed in detail in the paper on Exchange Rate Policy. Overall however, this paper focuses on internal policy measures, in particular on labor cost-driven effects. Based on historical data from current EU member countries and potential future entrants, the above endogenous relationship is empirically measured. Such measurement permits a quantification of the endogenous relationships and finally the derivation of policy implications.

Box 4.4.

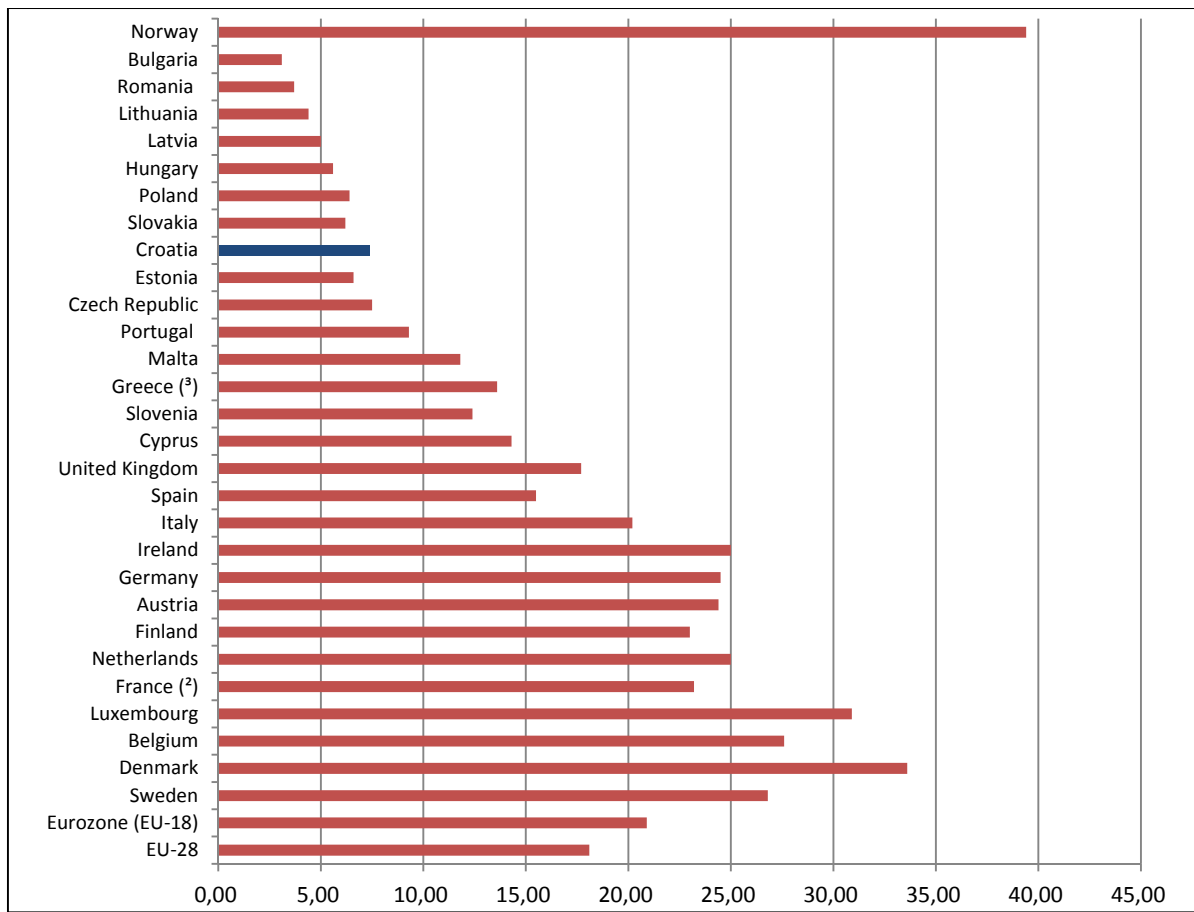
The relationship between labor costs, inward FDI and exports can be described by an endogenous circle of economic interdependencies.

Once this circle is set in motion by external measures (like the exchange rate policy) or internal measures (like labor cost adjustments), increasing FDI inflows and exports lead to sustainable GDP growth.

4.2.2. How does Croatia's competitiveness differ with respect to that of its peer countries?

In order to compare Croatia's competitiveness with the competitiveness of other new EU members and potential EU candidates, it is advisable to compare wages or labor costs between Croatia and its peer group (as defined in Section 4.2.) since labor productivity, which drives competitiveness, is essentially an inverse measure of labor cost. Figure 4.10. depicts the labor costs of all EU28 countries (and Norway) in 2013. It can be seen that Croatian hourly labor costs, with an average of 7.40 euros, are comparatively high relative to its peer countries, with the only notable exceptions being the Czech Republic (7.50 euros) and Slovenia (12.40 euros). Average wages are lower in Bulgaria (3.10 euros), Romania (3.70 euros), Lithuania (4.40 euros), Latvia (5.00 euros), Hungary (5.60 euros), Slovakia (6.20 euros), Poland (6.40 euros) and Estonia (6.60 euros).

Figure 4.10.: 2013 Labor Costs (hourly gross wages, in euros)



(Data: Eurostat. Chart: Ifo)

Figure 4.11., which compares wages at the sectoral level, indicates that in many manufacturing industries Croatian wages are among the highest within its peer group (excluding Slovenia). The most pronounced wage difference can be seen in the *Electrical Machinery and Apparatus* sector (ISIC 31), where in 2007 an employee earned on average USD 20,421 per year in Croatia but only USD 7,949 in Slovakia. In the same year, Croatian inward FDI amounted to USD 2.80 million and exports reached USD 729.73 million, while Slovakian exported goods worth USD 3,091.73 million.⁵ Similarly, in 2007 Croatian per capita wages in *Fabricated Metal Products* (ISIC 28) reached on average USD 12,495 per year, versus a Slovakian average of USD 9,294. This wage difference was accompanied by USD 29.97 million in inward FDI in Croatia, but USD 3,972.75 million inward FDI in Slovakia, whereas exports reached USD 504.88 million in Croatia and USD 1,945.94 million in Slovakia.

The large wage differences go hand in hand with substantial differences in sectoral inward FDI and exports between Croatia and its peer countries, and represent a pattern that emerges also across the other sectors depicted in Figure 4.11. In short, for the remaining sectors depicted, the *absolute* yearly wage difference between Croatia and the respective lowest average yearly wage paid by a peer country in 2008 was USD

⁵ Slovakian inward FDI data for comparison is not available for ISIC sector 31.

2,479 in *Textiles* (ISIC 17), USD 2,636 in *Wearing Apparel* (ISIC 18), USD 4,278 in *Leather, Luggage, Handbags, Saddlery, Harness, Footwear* (ISIC 19), USD 1,854 in *Wood and Cork Products (Except Furniture)* (ISIC 20), USD 3,037 in *Paper and Paper Products* (ISIC 21), and USD 5,643 in *Other Non-Metallic Mineral Products* (ISIC 26). In all these sectors, Croatia represents the upper end of the wage distribution among its peer group, even though this peer group has been defined such that Croatia, in terms of real GDP per capita, occupies a rather average position.

These descriptive results suggest that the Croatian economy is relatively uncompetitive in terms of labor costs. Hence, its peer group countries pose a more attractive environment for foreign direct investors because production in Croatia – and thus also the production of goods targeted for exporting – is too expensive in relative terms. To become more attractive for foreign direct investors and for the export market, Croatia must enhance its competitiveness by lowering its labor costs relative to the peer group.

It must be noted that the policy outlined does not imply that Croatian wages should not converge to the EU average over the long run. However, a sustainable movement along a convergence path towards the EU average must be driven by a steady increase in the Croatian economy's competitiveness. This can best be achieved by triggering the mechanisms behind the endogenous economic circle introduced in Section 4.2.1., starting with low labor costs to stimulate successful economic activity. In the context of an increasingly globalized economy, the definition of *low* has to be set within the scope of Croatia's peer group of countries. Within this group, however, as the stylized facts in this section reveal, Croatian wages are comparatively too high. Currently, these relatively high labor costs hamper the endogenous economic circle from gaining momentum. In order to catch up with those countries that are already on a path to establishing a sound economic position in the international market, Croatia needs to take measures to increase FDI inflows and exports. Two possible strategies to achieve GDP growth via increasing FDI and exports will be addressed in the subsequent sections.

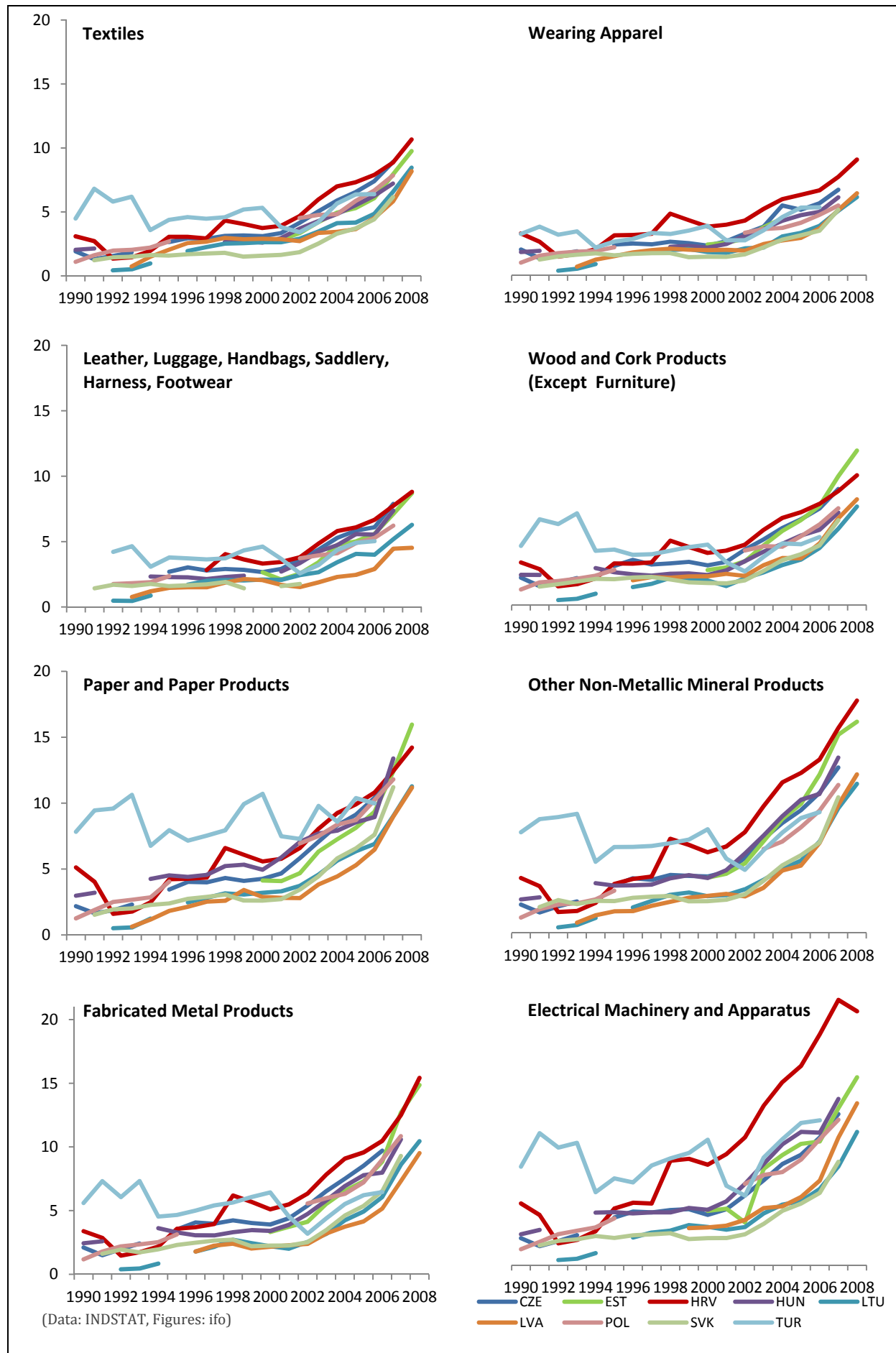
Box 4.5.

Within its peer group of countries, Croatian wages define the upper end of the average labor costs. A similar pattern appears at the sectoral level for major industries.

The Croatian economy is relatively uncompetitive in terms of labor costs. This explains why Croatia lags behind its peer countries in terms of attracting inward FDI and expanding its export market penetration.

To attract additional FDI, increase exports and get back onto a sustainable growth path, Croatia has to improve its competitiveness by reducing average labor costs.

Figure 4.11.: Sectoral wages per employee (in thousand USD)



4.3. Necessary structural reforms and potential improvements in FDI and international trade competitiveness

This section identifies the structural reforms needed to improve competitiveness in order to generate FDI and export-driven economic growth in Croatia. Subsection 4.3.1. addresses the expected quantitative effects of microeconomic reforms, namely an *internal devaluation*, on FDI and international trade as well as the impact of an increase in FDI inflows and exports on GDP. Section 4.3.2. analyzes the expected quantitative effects of an *external devaluation* on FDI inflows. Section 4.3.3. concludes by offering a deeper sector-level analysis of the relationship between labor cost, inward FDI and exports.

4.3.1. Expected quantitative effects of an internal devaluation on FDI and international trade

Over the past decade, several countries have joined the EU and successfully implemented economic policies to boost domestic growth and employment by taking advantage of easier access to the EU markets. Major sources to stimulate domestic growth have been an increase in FDI inflows and a rise in exports. Countries successful in attracting FDI and simultaneously enhancing their exports share several features: Firstly, labor costs have been reduced on average to relatively low levels compared to competing countries. Secondly, these reduced costs have been kept on a relatively low level over a longer period. Thirdly, appropriate labor market reforms allowed a fast reallocation of workers during the economic adjustment period. The combination of lasting low labor costs and flexible labor markets lead to a steady increase in productivity. As a result, FDI inflows and exports showed unprecedented growth in countries such as Slovakia, leading to a substantial rise in employment and economic growth.

This section analyzes empirically the correlation between labor costs or labor productivity and inward FDI and exports, especially for Croatia's peer countries, in order to build a numerical foundation upon which the potential benefits of policies designed to increase Croatia's economic competitiveness can be estimated. A cross-country regression approach is employed, controlling for GDP, population size and the real effective exchange rate. Country fixed effects are used to account for unobserved country characteristics.

Table 4.1. shows the results of a regression of inward FDI on lagged real unit labor costs or lagged real labor productivity per hour and covariates across Croatia's peer group of countries. The negative coefficient in column (1) indicates that a decline in the real unit labor cost index by 1% implies an increase in inward FDI by 1.021 percent on average for Croatia and its peer group of countries. These first results illustrate a strong negative correlation between labor costs and inward FDI. Moreover, columns (2) and (3) show positive coefficients for real unit labor productivity per hour, indicating that a higher productivity comes along with higher inward FDI. This effect nicely highlights the inverse

relationship between labor costs and productivity, and is perfectly in line with economic intuition.

Table 4.1.: Foreign Direct Investment (FDI)

	(1)	(2)	(3)
	Peer Group	Peer Group	Peer Group
log(GDP)	1.623*** (0.104)	1.498*** (0.115)	1.426*** (0.0744)
log(population)	0.516 (0.817)	-0.591*** (0.114)	0.580 (0.682)
L. real unit labor cost index	-1.021** (0.478)		
L2.log(real lab. prod./hour)		0.507*** (0.136)	0.431** (0.186)
log(real eff. exch. rate)	-0.866** (0.370)	-1.319*** (0.336)	-0.935*** (0.270)
Constant	-10.02 (12.33)	8.008*** (2.185)	-10.94 (10.43)
Observations	104	99	99
R ²	0.927	0.964	0.954
Country fixed effects	yes	no	yes
Real GDP per capita thirtile	1	1	1
Number of countries (FE)	9		8

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Dependent variable: FDI. The time horizon used in all estimations is 2000-2013. The peer group includes countries with similar economic characteristics. A detailed list of countries and peer group countries can be found in Table 4.9. (columns 1 and 2) in the Appendix.

Table 4.2. shows the results of a regression of exports on lagged nominal or real unit labor cost or on lagged real labor productivity per hour and further covariates. Columns (1) to (3) contain the regression results for estimations across all countries in the sample, while columns (4) through (9) contain the peer group estimates. By comparing the coefficients of interest, it can be seen that the effects of increased competitiveness on exports in the full sample turn out to be smaller than in the peer group. This result indicates that the potential for Croatia and its peers to boost exports via increased competitiveness is stronger than for the average European country. This observation is straightforward regarding the fact that the peer group consists of emerging economies that are still catching up in terms of productivity and export market shares, whereas other countries in the full sample, like Germany, France and the UK, have already achieved a high level of productivity and export participation, such that the effect of an additional increase in competitiveness on exports is expected to be relatively weaker. Among the peer group estimations, columns (7) and (9) contain the results of the most robust specifications for real unit labor costs and real labor productivity per hour respectively, including country fixed effects to control for unobserved country characteristics. According to column (7), a 1% decline in labor costs implies an average increase in exports by 1.3 % for Croatia and its peers.

Moreover, to account for the interdependencies arising in the endogenous economic circle characterized in Section 4.2.1., lagged inward FDI has also been controlled for in the export regressions. In fact, across all specifications in Table 4.2., lagged inward FDI shows a significantly positive effect on exports. For the two most robust specifications in columns (7) and (9), the results suggest a 0.7% increase in exports associated with a 1% increase in inward FDI.

Table 4.2.: Exports

	(1) All	(2) All	(3) All	(4) Peer Group	(5) Peer Group	(6) Peer Group	(7) Peer Group	(8) Peer Group	(9) Peer Group
L.log(investment)	0.432*** (0.0244)	0.448*** (0.0238)	0.452*** (0.0227)	0.269*** (0.0696)	-0.0329 (0.0829)	0.396*** (0.0656)	0.0485 (0.0800)	0.281*** (0.0653)	-0.120* (0.0711)
L.log(inward FDI stock)	0.467*** (0.0235)	0.455*** (0.0232)	0.420*** (0.0244)	0.693*** (0.0586)	0.795*** (0.0820)	0.595*** (0.0546)	0.736*** (0.0719)	0.605*** (0.0675)	0.766*** (0.0548)
L.nom. unit labor cost index	-0.306*** (0.106)			-0.388*** (0.101)	-0.0191 (0.100)				
L.real unit labor cost index		-0.584 (0.411)				-2.037*** (0.462)	-1.271*** (0.364)		
L.log(real lab. prod./hour)			0.105*** (0.0306)					0.339*** (0.126)	0.561*** (0.151)
log(real eff. exch. rate)	0.425* (0.250)	0.0282 (0.207)	0.166 (0.201)	0.0163 (0.216)	-0.00699 (0.294)	-0.315* (0.178)	0.0845 (0.272)	-0.444** (0.178)	-0.178 (0.204)
Constant	-1.917* (1.106)	0.0441 (1.067)	-1.198 (0.971)	0.190 (1.004)	2.973** (1.125)	2.488** (0.956)	3.243*** (1.035)	1.776* (0.967)	4.040*** (0.848)
Observations	330	330	353	84	84	84	84	97	97
R ²	0.960	0.959	0.960	0.967	0.944	0.968	0.952	0.970	0.957
Country fixed effects	no	no	no	no	yes	no	yes	no	yes
Real GDP per capita thirtile	all	all	all	1	1	1	1	1	1
Number of countries (FE)					8		8		8

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Dependent variable: exports. The time horizon used in all estimations is 2000-2013. The peer group includes countries with similar economic characteristics. A detailed list of countries and peer group countries can be found in Table 4.9. (columns 1 and 2) in the Appendix.

Since the correlations between labor cost, inward FDI and exports have been already characterized above, what remains to be examined in order to close the endogenous economic circle of interdependencies is the correlation of inward FDI and exports with GDP. This relationship is especially important to derive the average economic adjustments in terms of GDP associated with the increase in inward FDI and exports that can be achieved via competitiveness-enhancing economic reforms. From an economic point of view there exists a strong positive correlation between GDP, FDI and exports. This relationship will be analyzed empirically in the remainder of this subsection.

Table 4.3. shows how exports and FDI *on average* correlate with nominal GDP per capita for all European countries and for Croatia's peer group. Most importantly, in all regressions exports and inward FDI are positively and significantly correlated with GDP per capita. Moreover, this effect is on average substantially stronger across the peer group (columns 4 through 6) than across the full sample of European countries (columns 1 through 3). This result is not surprising, given that marginal effects of economic adjustments at lower development levels often turn out to be stronger compared to marginal effects at higher levels.

Table 4.3.: Nominal GDP Per Capita

	(1) All	(2) All	(3) All	(4) Peer Group	(5) Peer Group	(6) Peer Group
L.log(investment)	0.303*** (0.0317)	0.309*** (0.0271)	0.237*** (0.0280)	0.341*** (0.0664)	0.265*** (0.0530)	0.191*** (0.0530)
L.log(exports)	0.420*** (0.0273)		0.320*** (0.0492)	0.444*** (0.0591)		0.403*** (0.103)
L.log(inward FDI stock)		0.301*** (0.0162)	0.350*** (0.0426)		0.469*** (0.0411)	0.690*** (0.0867)
L.log(Export) x log(FDI)			-0.0117*** (0.00324)			-0.0283*** (0.00683)
log(real eff. exch. rate)	0.745*** (0.102)	0.823*** (0.0917)	0.643*** (0.0911)	0.449** (0.185)	0.187 (0.156)	0.239 (0.144)
Constant	-2.743*** (0.385)	-1.791*** (0.372)	-2.524*** (0.439)	-2.227*** (0.683)	-0.0556 (0.644)	-2.675*** (0.871)
Observations	359	359	359	100	100	100
Number of countries (FE)	27	27	27	9	9	9
R ²	0.921	0.934	0.942	0.947	0.965	0.971
Country fixed effects	yes	yes	yes	yes	yes	yes
Real GDP per capita thirtile	all	all	all	1	1	1

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Dependent variable: GDP per capita. The time horizon used in all estimations is 2000-2013. The peer group includes countries with similar economic characteristics. A detailed list of countries and peer group countries can be found in Table 4.9. (columns 1 and 2) in the Appendix.

Within the peer group of countries, an increase in exports by 1% is associated with an average increase in GDP per capita by 0.44% (column 4), while a similar increase in FDI inflows boosts GDP per capita by the same order of magnitude, by around 0.47%

(column 5). Column 6 illustrates that the combined effect of a 1% increase in both exports and FDI within a country is even larger than the sum of their individual effects.

By combining these results with the estimated effect of a decline in unit labor costs on exports and FDI, a possible associated adjustment in Croatia's GDP per capita can be predicted. The results in Table 4.2. (column 7) suggest that an internal devaluation corresponding to a 10% decline in real unit labor costs can lead to an increase in exports by 12.71%. Simultaneously, Table 4.1. (column 1) indicates that the same amount of internal devaluation can increase inward foreign direct investment by 10.21%. Recalling the estimated joint effects of FDI and exports on GDP per capita from Table 4.3. (column 6), the predicted gain in GDP driven by new inward FDI and exports can add up to 11.8% over the period considered. Hence, if labor costs are reduced by 10% in a short-term adjustment and if this lower level of labor cost is kept constant relative to Croatia's peer countries over the coming years, Croatia can expect to experience an additional 1.18 percentage points in annual growth in GDP due to increasing FDI inflows and rising exports, *ceteris paribus*. This figure does not include GDP effects arising from further domestic economic adjustments.

It must be noted that a 10% decline in real unit labor costs does not necessarily imply that all wages need to decline by 10%, only that wages must fall *on average* by that amount (or held constant over a longer period). The strength of the effects delineated depends on the sectors in which labor costs are adjusted. In fact, in order to unleash the full potential that can be achieved via internal devaluation, competitiveness must be increased through adjusted labor costs in particular in those sectors in which the strongest impact on exports and inward FDI can be expected. Identifying these sectors requires a deeper analysis at the sectoral level, which is addressed in section 4.3.3.

Furthermore, it is important to note that the above measure of 11.8% increase in GDP induced by a 10% wage decline is a conservative estimate, considering the fact that the relationship between FDI, exports and GDP is a circle of economic interdependencies, as explained in Section 4.2.1. Within this circle, the success of an internal devaluation policy can be promoted substantially if additional microeconomic measures are accomplished.

Effective internal devaluation policies have usually been flanked by liberalization measures paving the way for successful FDI attraction, which such measures to facilitate FDI attraction via increased competitiveness.⁶ One such measure can be privatizations in the industrial sector, which would give foreign investors the opportunity to engage in existing economic activities and to utilize established infrastructure, as well as to get better access to greenfield investment and to engage especially in the field of export-oriented activities. Another measure recommended is the removal of labor market distortions that affect the cost of job search and of hiring workers. Obstacles to the

⁶ As the European Commission (2014) states in its review of progress on policy measures relevant for the correction of macroeconomic imbalances in Croatia, pronounced nominal and real rigidities and obstacles to the reallocation of resources are still a big issue in Croatia.

expansion of employment need to be alleviated or even removed, so that investment, especially in the tradable sectors, becomes more attractive.⁷ Also, reforms in the banking system aimed at reducing barriers to FDI represent a viable option to enhance FDI attraction.⁸

Box 4.6.

Empirical measures suggest a significant negative correlation between labor costs and inward foreign direct investment across Croatia's peer group of countries. A one-percent decline in wages has the potential to translate into an average increase in inward FDI by one percent.

Regarding exports, the country-level correlation with labor cost turns out to be stronger. A one-percent decline in wages comes along with an increase in exports by 1.27 percent.

Moreover, within the peer group of countries, the combined effects of the additional inward FDI and exports that can be induced by a 10% decline in average wages correlate with an annual growth in GDP by an additional 1.18 percentage points over a period of 10 years.

To support successful FDI attraction via increased competitiveness in Croatia, additional flanking measures like privatizations, reforms of the labor market and in the banking sector are highly recommended.

4.3.2. Expected quantitative effects of an external devaluation on FDI and international trade

Besides the internal economic relationship discussed in Section 4.3.1. there exists a similar economic option which can be triggered by an appropriate exchange rate policy: A devaluation of the Kuna, which would make Croatian goods prices and wages cheaper relative to other countries. Such a monetary policy would also imply that the Croatian economy would become relatively more competitive, and would be able to attract additional inward FDI and expand exports. An external devaluation is able to spark a similar endogenous circle of economic interdependencies leading to a sustainable increase in wages and GDP over the long run, as described for the case of an internal devaluation in Section 4.2.1. Drawing on the same regression specifications used to quantify the expected effects of an internal devaluation in Section 4.3.1., this section will quantify the magnitude of an external currency devaluation needed to achieve an equivalent long-run outcome in terms of GDP per capita growth.

The regressions presented in Table 4.1.

⁷ The importance of these measures is in line with the IMF (2015) Report on the Western Balkans, which finds the presence of legacy practices that prevent the expansion of employment and distort labor market outcomes.

⁸ According to IMF (2015), rules on FDI and foreign ownership seem to be stricter in Croatia than in other countries on the Western Balkans.

Table 4.1. and Table 4.2. of Section 4.3.1. include the real effective exchange rate (REER) as a control variable. The REER quantifies changes in the value of a currency against a trade-weighted basket of other currencies, measuring the change in competitiveness of a country by also taking into account the change in costs or prices relative to other countries.⁹ Importantly, as a result of its definition, a rise in the REER implies a strengthening of the currency and entails a loss of competitiveness. In other words, an external devaluation policy necessitates a decrease in the REER indicator.

According to column (1) of Table 4.1., a currency devaluation of 1% significantly correlates with an increase in inward FDI by about 0.87%. Concerning the impact of currency devaluations on exports, however, it is a well-established fact in the academic literature that clear correlations are difficult to identify. In fact, Obstfeld and Rogoff (2000) identify the so called “exchange rate disconnect puzzle” as one of the six major puzzles in international economics, observing that a country’s real exchange rate is very volatile in the short run and does not clearly reflect movements in real values. Nevertheless, the estimations presented in Table 4.2. allow a quantification of the correlation between the exchange rate and exports within a certain bandwidth. More precisely, the expected effect lies between the coefficients obtained from the cross country regression specification in column (6) and the one obtained from the within estimation in column (7). A weighted average of both coefficients approximating the actual correlation should put more weight on the cross-country than on the within-country estimate, since sluggish adjustment of country-specific real values may disguise the actual economic potential of exchange rate adjustments, whereas the cross-country perspective offers a wider scope to identify real differences correlating with differences in the real exchange rate. Applying an 80:20 ratio suggests that a currency devaluation of 1% correlates with an increase in exports by about 0.24%. Combining the effects of an external devaluation on inward FDI and on exports, it follows from Table 4.3. that an external devaluation of 17.19% correlates with an accumulated increase in GDP per capita of 11.8% over 10 years. Based on the derived econometric measures, it can be followed that in terms of the GDP per capita outcome which can potentially be achieved via increased exports and inward FDI, an internal devaluation of 10% is equivalent to an external devaluation of around 17.19%.

⁹ The real effective exchange rate indicator used in this chapter is provided by Eurostat. Its trade-weighted currency basket includes 28 trade partners. The Consumer Price Index (CPI) is used as a deflator and the base year is 2005.

Further implications of an external devaluation are discussed in more detail in the exchange rate paper. In order to comply with the smaller exchange rate adjustment of between 7 and 10% proposed in that paper, a mixed strategy to increase inward FDI and exports by combining both external and internal devaluation is advisable.

Box 4.7.

Exchange rate policy is an alternative to internal devaluation. In order to generate the same effect on GDP per capita via increased inward FDI and exports that could be achieved with a 10% decline in labor costs, the Kuna would have to be devalued by approximately 17.19%.

An advisable policy measure is to pursue a mixed strategy combining both external and internal devaluation by choosing appropriate adjustment magnitudes along each of the two margins.

4.3.3. A sectoral analysis

Sensitivity of exports and inward FDI to labor costs may differ significantly across different sectors due to underlying and systematic differences in sector characteristics. This section uses sectoral data to address this issue and to identify those sectors in which an internal devaluation strategy appears most reasonable to boost exports and inward FDI. The panel used consists of sectoral export data collected by the United Nations, which has been harmonized by the French Research Center in International Economics (CEPII). Sectoral data on FDI positions was obtained from the OECD and from the Croatian National Bank. In addition, sectoral data on wages, output and the number of employees has been provided by the United Nations Industrial Development Organization's INDSTAT database up to the year 2008. All data is encoded at two-digit ISIC Rev. 3 sector level for 29 European countries (excluding Germany, France and Great Britain, which are positive outliers).¹⁰

This dataset makes it possible to calculate sectoral wages per capita, i.e. wage payments per employee working in a given sector, and to examine the relationship between wages per capita, inward FDI, exports and output on a sectoral level. Importantly, due to the panel structure, fixed effects can be used effectively to control for unobserved variables. It must be noted that due to limited data availability the sectoral analysis is restricted to 23 manufacturing industries (see Table 4.10.) observed over one decade.

As a first step, plausibility of the data and compatibility with the country-level analysis conducted in the previous sections will be briefly verified.

¹⁰ See Appendix for a comprehensive list of countries (Table 4.9.) and of sectors (Table 4.10.) included in the sectoral sample.

Table 4.4. shows that for the most robust regression specification in column (4) the effect of sectoral labor cost (measured by wages per capita) on inward FDI is -1.109, meaning that across all observations a reduction in per capita wages by 1% is on average accompanied by 1.1% additional inward FDI once unobserved sectoral characteristics have been controlled for with industry fixed effects. Importantly, this effect is very similar in sign and magnitude to the effect estimated from the previously used country level dataset, given in column (1) of Table 4.4.

Table 4.4.: Dependent variable: Sectoral Inward FDI

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) FE
L.log(wages p. capita)	-1.135*** (0.0784)	-0.800*** (0.0789)	-1.106*** (0.0771)	-1.109*** (0.0792)	2.676*** (0.343)
L.log(output)	1.002*** (0.0432)	0.917*** (0.0519)	0.888*** (0.0486)	0.889*** (0.0502)	0.349* (0.209)
Constant	-1.844*** (0.393)	1.427** (0.638)	1.297** (0.642)	0.492 (1.162)	-6.636*** (1.201)
Observations	1,910	1,910	1,910	1,910	1,910
R^2	0.278	0.232	0.321	0.334	0.198
Time fixed effects	yes		yes	yes	
Industry fixed effects		yes	yes	yes	
Country-industry groups					248
Country-industry fixed effects					yes
Industry-time fixed effects				yes	

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The time horizon used in all estimations is 2000-2012. A detailed list of countries is provided in Table 4.9. (column 3) and a comprehensive list of sectors included in the analysis can be found in Table 4.10. in the Appendix.

Moreover, while the previous cross sector analyses presented in columns (1) through (4) have exploited the data variation *across* countries and industries, column (5) of Table 4.4. now exploits the variation *within* country-industry pairs. This means that each country-industry combination is observed over time as a separate entity that may have its own characteristics which may be systematically different from others, e.g., car manufacturing in Croatia versus car manufacturing in Slovakia. While the previously conducted *cross* estimations have found a negative correlation between wages and inward FDI, the results of the *within* approach now show a significantly positive impact of sectoral wages per capita on sectoral inward FDI. This observation may seem surprising at first glance, but is in fact perfectly in line with the economic literature (see, e.g. Arnold and Javorcik, 2009), suggesting that firms which attract more inward FDI will

eventually also pay higher wages. This finding essentially confirms the economic mechanisms behind the endogenous circle of interdependencies introduced in Section 4.2.1. In this sense, the new sectoral data bolster our previous findings and conform to what is expected from economic reasoning and in the light of existing scientific literature.

Table 4.5. shows the corresponding regression results for individual sectors across countries. It lists all sectors for which a significantly negative correlation exists between per capita wages and inward FDI. For the remaining sectors where such a relationship could not be established, this is predominantly due to insufficient availability of information on inward FDI in these sectors. For the given sectors, the increase in inward FDI induced by a 1% decline in wages is considerable, ranging from roughly 0.7% in sector 35 up to 2.2% in sector 34. In detail, an over-proportionately strong response of inward FDI to wage reductions can be expected in the manufacturing sectors for *motor vehicles* (ISIC 34), *radio, television and communication equipment* (ISIC 32), *rubber and plastics products* (ISIC 25), *coke, refined petroleum products and nuclear fuel* (ISIC 23), *office, accounting and computing machinery* (ISIC 30) and *fabricated metal products* (ISIC 28), while in the remaining sectors inward FDI correlates less than proportionately, albeit still significantly and strongly. Notably, as shown in Section 4.2.2., Croatian per capita wages rank highest among its peer-group countries in each one of these sectors. Thus, there seems to be considerable scope for improvements in competitiveness to trigger the economic circle introduced in Section 4.2.1. , where initially lower wages lead to higher inward FDI and eventually increase GDP and employment, resulting in sustainable wage increases in the long run.

Table 4.5. OLS by sectors; Dependent variable: Sectoral Inward FDI

	(1) Sector 18	(2) Sector 22	(3) Sector 23	(4) Sector 24	(5) Sector 25	(6) Sector 28	(7) Sector 29	(8) Sector 30	(9) Sector 32	(10) Sector 34	(11) Sector 35
L.log(wages p. capita)	-0.841***	-0.886**	-1.303**	-0.844**	-1.399***	-1.107***	-0.902***	-1.228***	-1.607***	-2.228***	-0.669** (0.338)
L.log(output)	0.576***	0.275	1.166***	0.943***	0.626***	0.984***	1.270***	0.883***	0.658***	1.287***	0.726***
Constant	0.515	3.711**	-2.991	-1.303	1.486	-1.376	-4.974***	-0.649	1.641	-0.530	-1.978
Observations	161	165	105	162	165	161	165	149	151	160	158
R ²	0.245	0.165	0.301	0.182	0.240	0.211	0.299	0.386	0.390	0.463	0.154
Time fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The time horizon used in all estimations is 2000-2012. A detailed list of countries is provided in Table 4.9.(column 3) and a comprehensive list of sectors included in the analysis can be found in Table 4.10. in the Appendix.

Table 4.6. shows the results of the same exercise for the sectoral relationship between per capita wages and exports across all countries. Again, only those sectors are listed for which a significantly negative relationship between per capita wages and exports could be found, namely sectors *Textiles* (ISIC 17), *Wearing apparel* (ISIC 18), *leather, luggage, handbags, saddlery, harness and footwear* (ISIC 19), *wood and cork products (except furniture)* (ISIC 20), *paper and paper products* (ISIC 21), *other non-metallic mineral products* (ISIC 26), *fabricated metal products* (ISIC 28) and *electrical machinery and apparatus* (ISIC 31). The results suggest that the increase in exports induced by a 1% decline in wages for a given sector ranges from 0.02% (*paper and paper products*) to 0.4% (*wood and cork products*). Looking instead at the overall effect of a decline in sectoral wages on sectoral exports for individual countries across all sectors adds a different perspective: As can be seen in Table 4.7., the strength of the effect that a 1% decline in per capita wages has on exports is very heterogeneous across Croatia's peer countries, ranging from 0.06% in Latvia to 1.8% in Lithuania. Across all peer countries and exploiting cross sector variation in the data, a 1% decline in per capita wages gives rise to an increase in exports of 1.03 percent on average (column 13), which is close to the measure obtained from the country-level sample given in column (7) of Table 4.2. For Croatia in particular, the average effect of a 1% decline in per capita wages on exports amounts to 1.5 percent overall, which is above the peer-group average. However, this estimate needs to be taken with caution, since sectoral output could not be controlled for in the case of Croatia due to the lack of data, such that the coefficient is very likely to be overestimated in comparison to the other peer countries.¹¹

¹¹ The identification of the pure causal effect of per capita wages on exports and inward FDI is challenging, as there are endogeneity concerns due to the mechanics within the endogenous circle introduced in Section 4.2.1.: Recall that ex ante lower wages lead to higher exports and attraction of inward FDI, whereas ex post those countries that export more and attract higher inward FDI will also be able to pay higher wages. Thus, reverse causality partially dilutes the effects presented in the analysis at hand.

Table 4.6.: OLS by sectors; Dependent variable: Sectoral Exports 4.6

	(1) Sector 17	(2) Sector 18	(3) Sector 19	(4) Sector 20	(5) Sector 21	(6) Sector 26	(7) Sector 28	(8) Sector 31
L.log(wages p. capita)	-0.166*** (0.0245)	-0.233*** (0.0392)	-0.130** (0.0597)	-0.405*** (0.0442)	-0.0230 (0.0481)	-0.219*** (0.0459)	-0.217*** (0.0447)	-0.0803** (0.0354)
L.log(output)	0.890*** (0.0136)	0.806*** (0.0216)	0.845*** (0.0227)	1.082*** (0.0343)	1.056*** (0.0298)	1.042*** (0.0299)	0.954*** (0.0311)	0.882*** (0.0412)
Constant	0.846*** (0.115)	1.551*** (0.180)	1.062*** (0.200)	-0.875*** (0.290)	-1.215*** (0.226)	-1.082*** (0.182)	-0.370* (0.215)	0.778*** (0.273)
Observations	233	226	204	232	233	232	226	226
R ²	0.949	0.833	0.817	0.858	0.916	0.892	0.908	0.915
Time fixed effects	yes	yes	yes	yes	yes	yes	yes	yes

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 The time horizon used in all estimations is 2000-2012. A detailed list of countries is provided in 4.9. (column 3) and a list with sector descriptions can be found in Table 4.10. in the Appendix to this Chapter.

Table 4.7.: OLS by countries; Dependent variable: Sectoral Exports 4.7

	(1) HRV	(2) BGR	(3) CZE	(4) EST	(5) HUN	(6) LIT	(7) LVA	(8) MKD	(9) PO	(10) ROU	(11) SVK	(12) TUR	(13) All of these
L.log(wages p. capita)	-1.460*** (0.392)	-1.866*** (0.426)	-0.608* (0.344)	-0.894*** (0.323)	-1.188*** (0.213)	-1.843*** (0.247)	-0.0666 (0.161)	-1.323*** (0.292)	-1.009*** (0.207)	-2.309*** (0.319)	-0.171 (0.220)	-0.879*** (0.221)	-1.026*** (0.100)
L.log(output)	0.841*** (0.0746)	0.850*** (0.0691)	0.850*** (0.0691)	0.386*** (0.0698)	1.013*** (0.0642)	0.537*** (0.0523)	0.657*** (0.0357)	0.746*** (0.0981)	0.930*** (0.0625)	0.821*** (0.150)	0.749*** (0.0729)	0.981*** (0.0735)	0.731*** (0.0266)
Constant	7.328*** (0.716)	0.738* (0.408)	1.476*** (0.334)	4.029*** (0.604)	1.160*** (0.401)	3.846*** (0.368)	1.233*** (0.209)	2.038*** (0.660)	0.0111 (0.509)	0.00403 (1.057)	1.920*** (0.326)	0.407 (0.712)	0.947*** (0.184)
Observations	216	206	183	173	190	220	196	152	129	192	174	176	1,628
R ²	0.147	0.480	0.699	0.303	0.558	0.538	0.672	0.257	0.666	0.483	0.719	0.531	0.647
Time fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country fixed effects													yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Note: Sectoral output data not sufficiently available for Croatia. The time horizon used in all estimations is 2000-2012. A comprehensive list of sectors included in the analysis can be found in Table 4.10. in the Appendix.

To conclude this section, Table 4.8. again compares the core estimators obtained from the country level analysis in section 4.3.1. and from this section's sectoral analysis. Since the results at the sectoral level confirm the average aggregate outcomes, implications for GDP growth follow equivalently.

Table 4.8.: Coefficient Comparison

	Country Level Data (Section 4.3.1)	Sector Level Data (Section 4.3.3)
Average effect of labor cost on FDI	-1.021** (0.478)	-1.109*** (0.0792)
Average effect of labor cost on Exports	-1.271*** (0.364)	-1.026*** (0.100)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Box 4.8.

The average aggregate effects of labor cost on FDI and exports are confirmed by sector level analysis.

Examining individual sectors, it turns out that the point estimates for the effect of labor cost on inward FDI and exports indeed vary significantly between sectors. In particular, the strongest effect on inward FDI appears in the *motor vehicles* sector (ISIC 34), whereas exports react strongest in *wood and cork products* (ISIC 20). Overall, within its peer group, the strength of the correlation between labor costs and exports is above average in Croatia.

To achieve the most efficient outcome of an internal devaluation strategy, competitiveness should be increased especially in those sectors where the expected impact on FDI and exports is particularly large.

4.4 Summary of major results and policy recommendation

Croatia has experienced a dramatic slowdown in FDI inflows and exports during the past several years, in particular after the financial crisis hit in 2008. A major reason for Croatia's economic weakness can be found in its relatively high labor costs, which have made the country uncompetitive after its integration in the EU.

From a political point of view, Croatia's economy can be stimulated either by an external or an internal devaluation. In this chapter, we emphasize potential effects of an internal devaluation and also provide an estimate for the *equivalent* external devaluation that would be required to obtain economic effects of the same order of magnitude. Average effects in FDI inflows and exports originating from labor cost reductions can be derived from similar policies observed in comparable new EU member countries and membership candidates, indicating that Croatia can expect an additional annual growth in GDP by around 1.18 percentage points if labor costs are reduced in the short run by 10%, and if this adjustment is kept in place over a longer period.

The main reason for this additional annual GDP growth is an increase in FDI inflows and growing exports due to improved competitiveness. To maximize the impact of an internal devaluation strategy, competitiveness should be increased particularly in those sectors where inward FDI and exports react especially strongly, which are identified in a sector-level analysis. While an internal devaluation will increase Croatia's attractiveness for foreign investors, it is of utmost importance to simultaneously reform investment policies for foreigners (see paper on Doing Business in Croatia). The observed rise in FDI inflows after an internal devaluation in similar countries, such as Slovakia or the Czech Republic, was accompanied by privatization programs enabling foreign investors to acquire domestic facilities and to modernize those acquisitions.

It is important to emphasize that a rise in FDI inflows will increase capital investment in Croatia, leading to a steady rise in labor productivity. Hence, maintaining labor costs on a relatively competitive level compared to Croatia's peer group of countries offers the chance to achieve a long-lasting period of GDP growth with a steady decline in unemployment. Clearly, once the current stagnation is overcome, rising productivity would in principle offer the possibility to increase wages. The challenge for politicians will be to resist this temptation in the initial years, as it could foil a sustainable economic recovery.

Finally, the effects outlined are partial effect considerations. Certainly, from a political point of view, a reasonable combination of an internal and external devaluation permits a balanced distribution of economic costs between different social groups. Possible distributional effects are discussed in the corresponding papers.

Appendix

Table 4.9.: List of Countries

Country data – All Countries Used in Sections 4.3.1. & 4.3.2.	Country data – Peer Countries Used in Sections 4.3.1. & 4.3.2.	Sector data – All countries Used in Section 4.3.3.
Austria	Croatia	Austria
Belgium	Czech Republic	Belgium-Luxembourg
Bulgaria	Estonia	Bulgaria
Croatia	Greece (only 1993)*	Croatia
Cyprus	Hungary	Cyprus
Czech Republic	Latvia	Czech Republic
Denmark	Lithuania	Denmark
Estonia	Malta (until 2006)	Estonia
Finland	Poland	Finland
France	Portugal (until 1995)*	Greece
Germany	Slovakia	Hungary
Greece	Slovenia (until 2000)	Iceland
Hungary	Turkey	Ireland
Iceland		Italy
Ireland		Latvia
Italy		Lithuania
Latvia		Macedonia
Lithuania		Malta
Luxembourg		Netherlands
Macedonia		Norway
Malta		Poland
Netherlands		Portugal
Norway		Romania
Poland		Slovakia
Portugal		Slovenia
Romania		Spain
Slovakia		Sweden
Slovenia		Switzerland
Spain		Turkey
Sweden		
Switzerland		
Turkey		
United Kingdom		

* Note: In the peer group estimations where the time horizon starts in 2000, Greece and Portugal are not part of the peer group and thus do not enter the estimations.

Table 4.10.: Sector Descriptions

ISIC	Sector Description
15	Manufacture of food products and beverages
16	Manufacture of tobacco products
17	Manufacture of textiles
18	Manufacture of wearing apparel; dressing and dyeing of fur
19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
20	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
21	Manufacture of paper and paper products
22	Publishing, printing and reproduction of recorded media
23	Manufacture of coke, refined petroleum products and nuclear fuel
24	Manufacture of chemicals and chemical products
25	Manufacture of rubber and plastics products
26	Manufacture of other non-metallic mineral products
27	Manufacture of basic metals
28	Manufacture of fabricated metal products, except machinery and equipment
29	Manufacture of machinery and equipment n.e.c.
30	Manufacture of office, accounting and computing machinery
31	Manufacture of electrical machinery and apparatus n.e.c.
32	Manufacture of radio, television and communication equipment and apparatus
33	Manufacture of medical, precision and optical instruments, watches and clocks
34	Manufacture of motor vehicles, trailers and semi-trailers
35	Manufacture of other transport equipment
36	Manufacture of furniture; manufacturing n.e.c.
37	Recycling

References

- Arnold, J. M., and Javorcik, B. S. (2009). *Gifted kids or pushy parents? Foreign direct investment and plant productivity in Indonesia*. *Journal of International Economics*, 79(1), 42-53.
- Bernard, A. B., and Jensen, J. B. (1999). *Exceptional exporter performance: cause, effect, or both?*. *Journal of International Economics*, 47(1), 1-25.
- Bustos, P. (2011). *Trade liberalization, exports, and technology upgrading: Evidence on the impact of MERCOSUR on Argentinian firms*. *The American Economic Review*, 101(1), 304-340.
- European Commission (2014). *Croatia - Review of progress on policy measures relevant for the correction of Macroeconomic Imbalances*. European Commission Directorate General Economic and Financial Affairs.
- IMF (2015). *The Western Balkans: 15 Years of Economic Transition*. International Monetary Fund Regional Economic Issues Special Report, by Murgasova, Z., Ilahi, N., Miniane, J., Scott, A., Vladkova-Hollar, I. and an IMF Staff Team.
- Lileeva, A., and Trefler, D. (2010). *Improved Access to Foreign Markets Raises Plant-level Productivity... For Some Plants*. *The Quarterly Journal of Economics*, 125(3), 1051-1099.
- Melitz, M. (2003). *The Impact of Trade on Intra-industry Reallocations and Aggregate Industry Productivity*. *Econometrica*, 71(6), 1695-1725.
- Obstfeld, M., and Rogoff, K. (2001). *The six major puzzles in international macroeconomics: is there a common cause?*. In: *NBER Macroeconomics Annual 2000*, Volume 15, 339-412. MIT press.
- Van Biesebroeck, J. (2005). *Exporting raises productivity in Sub-Saharan African manufacturing firms*. *Journal of International Economics*, 67(2), 373-391.

5. Labor Market Challenges in Croatia

Michael Weber¹

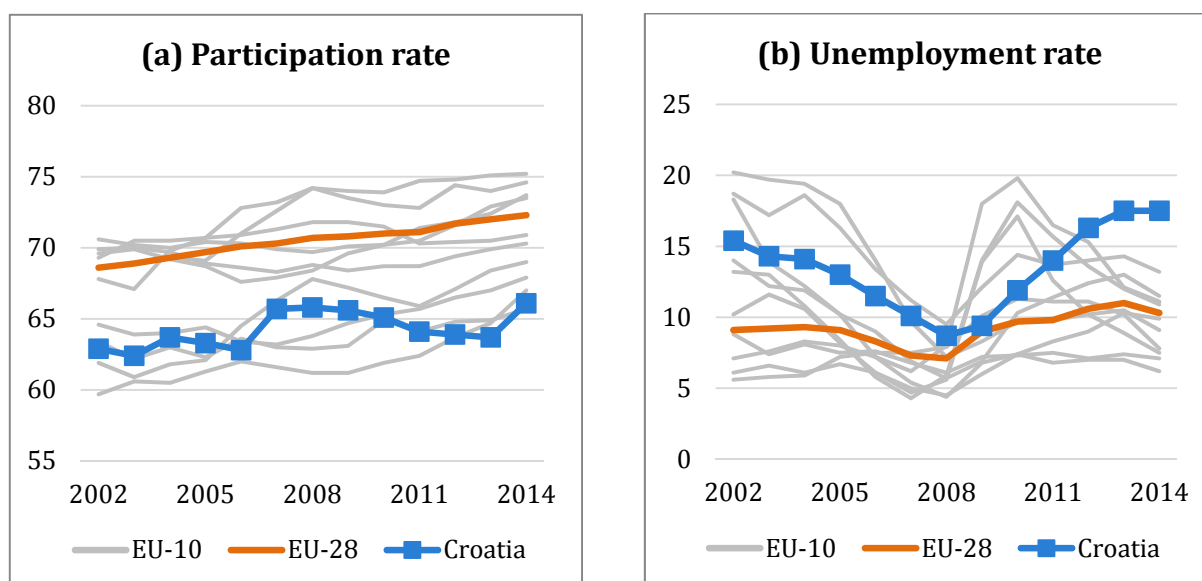
5.1. Croatia's Labor Market Performance

5.1.1. Labor force participation and unemployment

Croatia suffers from comparably low labor force participation rates and high unemployment: In 2014, only two-thirds of the population of working age (15-64 years) was officially active in the labor market, i.e. either employed, or unemployed and searching for a job (see Figure 5.1.(a)). Croatia thus experiences one of the lowest participation rates in the whole European Union (EU-28 average: 72.3%). Labor force participation rates are particularly low among the young (15 to 24 years of age), the elderly (50 to 64) and women.

Even compared to its peer countries, the EU-10, Croatia performs particularly poorly. While the participation rate for the young increased in 2014 towards the peer average of about one-third, the participation rate for the elderly is low vis-à-vis the comparison group, and has even declined recently. The low participation rates very likely reflect discouragement after long unemployment and insufficient activation measures by the Croatian Employment Service (CES). Until recently, investments into active labor market policies (ALMPs) were insufficient.

Figure 5.1.: Labor force participation rates and unemployment rates (15 to 64 years of age), based on the European labor force survey



Source: Eurostat (2015).

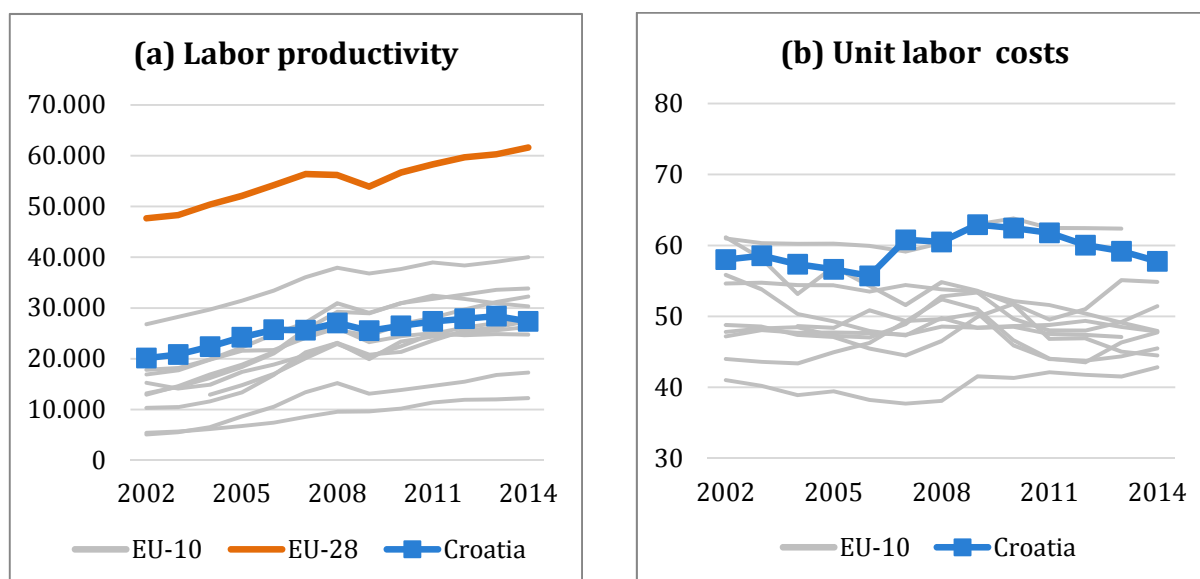
¹ Ifo Institute, Dresden Branch.

Despite the very low participation rates, the unemployment rate (measured by labor force survey data) was stuck at an inordinately high level of 17.5% in 2013 and 2014 (see Figure 5.1. (b)). Among Croatia's peer countries, especially the Czech Republic and Romania, unemployment rates are significantly lower. In fact, EU wide, unemployment rates are higher only in Spain and Greece. It is not only the mere extent of unemployment that gives rise to concerns, but also its structure: more than every second (58.4%) of the jobless are long-term unemployed, a rate far higher than in most peer countries. Even worse is the situation for younger people: among the 15-24 year-olds, the unemployment rate amounted to 50.0% in 2013 and 45.0% in 2014, with a long-term unemployment share of 50.0%. As a consequence, Croatia's employment rate (employed persons aged 15 to 64 years relative to the population in this age group) stood at only 52.5% in 2013 and 54.6% in 2014. This is remarkably low compared to the EU-10 and the EU-28.

5.1.2. Labor productivity and labor costs

Croatia's poor labor market performance is partly caused by labor costs being not in line with labor productivity. While Croatia does keep up with its peer countries in terms of labor productivity (calculated as GDP per employee, see Figure 5.2. (a)), its unit labor costs per capita (see Figure 5.2. (b)) as well as its total labor costs per hour in industry and services are far above the peer group average. In 2014, Croatia's labor productivity was about equal to the one in Latvia and Lithuania (almost 27,500 euros), but its total hourly labor costs were more than 40% higher than in these two countries. Conversely, while in 2014 Croatia's total hourly labor costs equaled those in the Czech Republic (9.40 euros), its labor productivity was 10% lower. In fact, Croatia's labor productivity is much lower than in the countries of its peer group that receive strong foreign investments in some industrial sectors (Slovenia and Slovakia), and it is by far lower than the EU-28 average.

Figure 5.2: Labor productivity and unit labor costs per capita



Source: Eurostat (2015), own calculations

Moreover, from 2002 to the onset of the crisis, total factor productivity increased much more slowly in Croatia than in the EU-10 average (EC, 2015, p. 4). Between 2002 and 2014, gross real wages rose by only 8% in Croatia, compared to 30% in the EU-10, but unit labor costs decreased by only 5% in Croatia compared to 10% in the EU-10 (EC, 2015, p. 17).

5.1.3. The weak performance roots in structural deficiencies

The persistently low rate of labor force participation, high unemployment and labor costs not in line with labor productivity – before, during and after the recent crisis – suggest that the observed imbalances are not just a consequence of the economic recession. Rather, deficiencies in the institutional setting are what hampers the functioning of the labor market.

On the supply side, low participation rates and high unemployment can be attributed to high reservation wages. Workers will engage in declared work only if the associated income exceeds their reservation wages. However, in Croatia reservation wages are inordinately high, because the large shadow economy, in combination with the social benefit system and generous paths into early retirement provide lavish alternative income schemes to declared work. The welfare system, for example, enables beneficiaries to accumulate multiple benefits, which are withdrawn at high rates as soon as a worker exceeds a fairly low (legal) income threshold. That deters people from taking on declared work.

On the demand side, an unfavorable combination of average labor productivity and above-average labor costs, on an international comparison, and institutional settings that are biased towards insiders likely hinder the creation of new jobs. For instance, the

system of mandatory severance payments contributes significantly to non-wage labor costs and thus reduces incentives for firms to create new jobs. As a result, chances of the unemployed to find a new job are fairly low, and unemployment duration as well as the unemployment rate are high.

Finally, high unemployment may also be a consequence of a structural mismatch of labor demand and labor supply. For instance, if workers' skills do not match the skills requirements of Croatian employers, even formally qualified workers may have a low effective productivity and thus few employment opportunities. Moreover, many job-seekers, especially young ones, have only a low qualification level, which limits their job opportunities to heavily volatile sectors such as tourism or agriculture. Workers' skills and productivity could be raised by an improved education and vocational training system as well as appropriately targeted active labor market programs.

In the following, I will discuss the factors that contribute to high reservation wages, high labor costs and low productivity in the Croatian labor market in more detail. I will also discuss reforms recently implemented to increase labor market efficiency, and will provide suggestions for further reform measures.

5.2. Labor Supply: Reducing reservation wages

5.2.1. Social Benefits

In 2014, total social benefits accounted for 18.2% of GDP and 37% of total government expenditures (Republic of Croatia, 2014a, p. 27). Currently, there are more than 70 different social benefits, 90% of which are not means-tested, and which are administered by different national and local authorities. Locally provided benefits often vary across communities according to the resources available. This multi-layered system is highly opaque and ineffective, as it enables beneficiaries to illegally accumulate different benefits while simultaneously leaving 37% of the unemployed and poor uncovered (EC, 2015, p. 16). Beneficiaries lose their entitlements immediately when exceeding low earnings thresholds, which gives rise to inactivity traps and undeclared work.

Croatia started to consolidate its social benefit system with the Social Welfare Act of 2013, which pursued three interrelated strategies. First, in cooperation with the United Nations Development Program, all the different social benefits will be mapped until 2017 such that they can be unified and combined into a smaller number of benefits. In 2014, the extended unemployment benefit, social assistance benefit and two war veteran benefits were integrated into a guaranteed minimum benefit (GMB). Provision of the GMB is contingent upon a tightened means test and is capped at the gross minimum wage. In contrast to previous benefits, it is not withdrawn immediately upon taking up employment, but declines gradually instead over the first three months if the person was unemployed for at least one year. In 2015 and 2016, further benefits will be integrated into the GMB.

Second, Single Payment Centers have been established to administer the GMB. In the future, they will provide all social benefits so as to substitute the multi-layered benefit administration with one-stop shops.

Third, by the end of 2015 the Single Payment Centers will be provided with an extended software application, the Management Information System One-Stop Shop (MISOSS), to administer the different kinds of benefits. The MISOSS database may be linked to other databases, for example from the Tax Administration, to prevent abuse of social benefits.

These strategies point to the right direction to increase incentives to work, and to work officially. If the mapping and integration of social benefits results in a manageable number of benefits with common, nationwide standards for entitlement at a level that is perceived as fair, unemployed and nonemployed job-seekers may strive to qualify for these benefits, increasing their labor supply and reducing their reservation wages (see also Cahuc and Zylberberg, 2004, chapter 3). This effect is enhanced if benefits are reasonably and transparently targeted, and if illegal accumulation of benefits is prosecuted.

Work incentives could be increased further by several other measures. First, interactions between different benefits have to be ruled out so that the accumulation of benefits is possible only on the basis of multiple reasons for entitlement (e.g. children and unemployment provide entitlements for child allowance and unemployment benefits, respectively). Second, unemployment benefits must be strictly linked to compulsory participation into ALMPs and acceptance of reasonable job offers provided by the Croatian Employment Service (CES). Noncompliance with assignments into jobs or ALMP measures or nonattendance at regular interviews with the case worker should result in temporary reductions of unemployment benefits (sanctions). Empirical evidence strongly suggests that sanctions and even the mere but credible threat of being sanctioned increase the job finding rate (see, for instance, van den Berg et al., 2004; Abbring et al., 2005; Lalive et al., 2005; Svarer, 2011; van der Klaauw and van Ours, 2013).² To this end, the MISOSS database needs to be linked to registered employment and unemployment data by the CES. Rules for the sanctions must be transparent and communicated in the first interview between the case worker and the unemployed. Third, the qualifying period for the short-term unemployment benefit (currently nine months of employment over a period of 24 months, according to MISSOC, 2014) should be tightened, e.g. to six months out of the last twelve months or twelve months out of the last 24 months. Fourth, the interactions among earnings, benefits and taxation have to be reconsidered. While taxation by itself has probably little effect on labor supply due to the rather small tax wedge of 34.9% (as measured in 2013 for a worker earning 67% of

² Monitoring and sanctions may hamper the quality of subsequent job matches (see e.g. Arni et al., 2013; Hofmann et al., 2013; van den Berg and Vikström, 2014) and even may reduce the job-finding rate (van den Berg and van der Klaauw, 2006, 2015). However, given the comparably low job-finding rate in Croatia, the potential gains of a rigorous sanction scheme likely outweigh these potential negative side effects.

the average salary; see EC, 2015, p. 44), the high withdrawal rates of benefits when exceeding certain income thresholds probably leads to inactivity traps. Such barriers to entry into employment can be circumvented if unemployment benefits are phased out gradually for those with lower earnings (like the EITC in the US, the WTC in the UK or the “Unemployment Benefit II” in Germany; see also chapter 6). In contrast, the level of the short-term unemployment benefit, at 70% of a worker’s former net base salary, and a fixed level at about half of the statutory minimum wage for the long-term unemployed appear reasonable and do not need to be altered (figures taken from MISSOC, 2014).

5.2.2. Early Retirement

Croatia offers a generous early retirement scheme. While recent reforms have made it more difficult to misuse disability and special pensions as an alternative path into early retirement, standard early retirement schemes continue to provide huge incentives to withdraw from the labor market. Currently, the statutory retirement age is 65 years for men and 61 years for women, while early retirement is possible five years earlier. The average gap between early and statutory retirement ages in the EU is below three years. Mean actual retirement ages in Croatia in 2014 stood at 64 years for men and 61 years for women (EC, 2015, p. 73). In 2013, Croatian workers retired after an average working life of 31 years (EC, 2015, p. 71), which is lower than the EU average of 35 years and almost ten years below the envisaged full working life of 40 years (the latter is fulfilled by only 12.8% of retirees; see Republic of Croatia, 2014b, p. 20).

Only in 2014 were penalties for early retirement introduced in order to provide incentives for more years of service. However, the penalty is comparably low, amounting to between 1.2% and 4.1% per year, while the EU average is above 5% (EC, 2015, p. 71). The Croatian government argues that higher reduction rates were counterproductive, as the loss in pensions would have to be compensated by higher social benefits (Republic of Croatia, 2014b, p. 20). Moreover, there exist many and large exemptions from the penalties. For example, workers with at least two years of unemployment after enterprise bankruptcy may retire early without any penalty. The early retirement scheme is particularly generous for more than 100 professions that are defined as arduous and hazardous, accounting for 2.7% of employees insured in the pension system (EC, 2015, p. 72). A reform of these special early pension entitlements has been postponed to the second half of 2015.

Several reforms are needed to sustain the Croatian pension system and increase participation of the elderly in the labor force. First, that large gap between early retirement ages and statutory retirement ages needs to be reduced. Second, statutory retirement ages for women should be raised faster so that harmonization with men is achieved much earlier than in 2030, as is now envisaged (see Council of the European Union, 2014; Directorate-General for Economic and Financial Affairs, 2014). Third, reduction rates for early retirement should be unified across professions, and the numerous exemptions from the penalties must be re-considered. These measures

should be coupled with extensive re-training of elderly unemployed in ALMP measures (see below) so that the elderly retire while in employment, not after years of unemployment. Employment may be further incentivized by increasing the linkage between the monthly pension level to the years in service. See also chapters 6 and 8.

5.2.3. Wages

Compared to other EU countries with a similar productivity level, labor costs in Croatia are relatively high. In 2013, average monthly gross earnings in Croatia amounted to 7,939 kunas, while average monthly net wages were 5,515 kunas (CBS, 2014). There are three major determinants for individual wages in Croatia: the statutory minimum wage, the collective bargaining system, and the wage level in the large public sector and state-owned firms. Non-wage payroll costs are comparably much less important: employers' social contributions and other labor costs amount to only 16% of total labor costs, the lowest of all countries under consideration.

The statutory minimum wage in Croatia has been set to 3,029.55 kunas since 1 January 2015, which is above the poverty threshold and equals about 38% of average monthly gross earnings. According to the 2010 Structure of Earnings Survey (more recent data is not yet available), 9.2% of all employees earned less than 105% of the statutory minimum wage. This is one of the highest shares among all EU countries and implies that many employers struggle to pay their employees such high wages. The statutory minimum wage was reformed in 2013, when its automatic indexation to GDP and inflation was substituted by a discretionary determination by the government after consultation with the social partners. The reform also stipulated that the minimum wage may not be reduced, which leads to nominal downward rigidity of wages.

Above the minimum wage, wage setting in Croatia shows a medium degree of centralization with a low degree of coordination.³ The relatively high degree of unionization enables unions to pursue an apparently strongly insider-biased wage policy. Additionally, expired collective agreements remained valid until, in 2014, the Act on Criteria for the Participation in Tripartite Bodies and the Representativeness for Collective Bargaining abolished this rule. Reviewing the current system, Orsini and Ostojic (forthcoming) propose to either further centralize the wage bargaining system while imposing stronger coordination mechanisms, or to further decentralize the system while imposing stronger enforcement mechanisms. A review conducted by a commission of Croatian authorities and external experts in 2014 came to a similar conclusion, calling for a more coordinated wage-setting system (see EC, 2015, p. 18).

Finally, upward wage pressure is exerted by the public sector and state-owned enterprises, which accounted for 19.7% and 37.2% of total employment in 2013, respectively (CBS, 2014). After adjusting for worker characteristics, Nikolic et al. (2014) identify a wage premium of about 5% in the public sector. In state-owned enterprises,

³ See <http://www.eurofound.europa.eu/observatories/eurwork/collective-wage-bargaining/context>.

the wage premium amounts to 7% (see EC, 2015, 18). Due to their large share in total employment, public sector and state-owned firms drive reservation wages upwards in all sectors, thus putting wage pressure on private firms. Additionally, public sector and state-owned enterprises offer a range of benefits and often even early retirement bonuses, encouraging workers to leave the labor force early. In 2014, salaries for government officials were finally reduced, which helps to both reduce the upward pressure exerted upon private-sector salaries as well as reduce public expenditure.

To summarize, the relatively high labor costs (compared to productivity) hamper international competitiveness. With currently low external demand for goods, domestic labor demand remains depressed as well. Labor supply in turn is characterized by high reservation wages, which are driven by the high overall wage level and the social benefit system. In order to stimulate employment, wages and productivity need to become better aligned with each other. If productivity cannot be raised towards wages, wages have to be reduced, at least for those workers with limited productivity.

A first approach would be to abolish the minimum wage or to reduce it at least in sectors (and regions) with below-average productivity. This would probably also help to fight undeclared work if wages in the shadow economy are lower than the statutory minimum wage. Therefore, instead of the current uniform statutory minimum wage set by the Croatian government, the social partners should agree on sector- (and region-) specific minimum wages. These wages are then declared statutory for all employees in the given sector (and region) by the Croatian government. In sectors not sufficiently addressed by the social partners, no minimum wages are to be set. However, wage schedules will follow other sectors with minimum wages, and implicit minimum wages will result from workers' reservation wages (see above). If there are several collective agreements by competing unions within the same sector, priority rules may be applied. For instance, the lowest wage of all collective agreements might be declared statutory; or the lowest wage of the collective agreement that covers the majority of employees. A very similar system of implicit sector specific minimum wages prevailed in Germany until 2015, when it was partly substituted by the introduction of the statutory uniform minimum wage. In Germany, if a collective agreement covers at least 50% of all employees in an industry, the agreement can be extended to all workers in that industry by declaration of the government (Frings, 2013). Implicit minimum wages set by collective agreements are also effective in Denmark. Compared to a statutory national minimum wage, the system of implicit minimum wages is perceived in Denmark to be more efficient and to ultimately enhance productivity (Lucifora et al. 2005, McLaughlin, 2009).

Next to sector-specific minimum wages, reduced minimum wage rates for vulnerable workers should be introduced, i.e. for the long-term unemployed, low skilled and young workers. This helps to integrate the more vulnerable workers into employment, whereas the current uniform wage rate creates a high barrier to employing them (Neumark and Wascher, 2004).

Finally, the minimum wage should be made more flexible in order to allow for a nominal reduction in the following years.

Wage-setting above the minimum wage should also take outsiders more into account. Labor unions need to consider their social and economic responsibility for all Croatian workers and job-seekers, not just those currently in employment. If necessary, the minimum representation rate as a prerequisite for collective wage bargaining negotiations could be increased further.

5.2.4. Non-wage labor costs: hiring and firing flexibility

Up until recently, Croatia had very strict hiring and firing regulations, leading it to rank 110 out of 132 countries in 2012 in terms of flexibility for firms in this area, according to the Economic Freedom of the World indicator (Gwartney et al., 2014), and 124 out of 144 countries according to the Global Competitiveness Report (Schwab, 2012). Its overall employment protection index, calculated according to the OECD methodology, was 2.9, on a scale of 0 to 6 (0 denoting a completely flexible labor market), while its subindex for employment protection against collective dismissals was as high as 3.75 (Kunovac, 2014). The high level of employment protection may reduce dismissals, but also makes firms reluctant to hire new workers (Davoine and Keuschnigg, 2015). It thus favors employed insiders over unemployed outsiders. This has severe effects, which became particularly obvious during the recent crisis. Because of the strict regulations, most firms did not downsize, taking instead a “wait-and-see approach” (EC, 2015, p. 14), which prevented them from regaining productivity.

Hiring and firing is further hindered by mandatory severance payments (the following discussion is based on Drezgic et al., 2013). Any termination for personal or business reasons⁴ of an employment contract that has lasted for at least two years has to be accompanied by a severance payment of at least one-third of the average monthly salary for each complete year of work with that employer, and up to six average monthly salaries of that employee. Even higher severance payments may occur, based for instance upon collective agreements. The public sector offers particularly generous severance payments. In contrast, employers in the private sector seek to circumvent severance payments by terminating the contract before fulfilling the two-year waiting period, by using fixed-term contracts or simply by ignoring their legal responsibilities.

In 2013 and 2014, Croatia lifted several restrictions on the organization of work (see also Kunovac, 2014, for details). The 2013 reforms shortened the procedure of collective dismissals. Additionally, restrictions on the use of fixed-term concluded for the first time were reduced while the maximum duration was abolished altogether. However, the use of subsequent fixed-term contracts has to be based on objective reasons and the maximum duration of subsequent fixed-term contracts was reduced to three years. Furthermore, in 2013 the monthly limit for overtime work was abolished and the use of

⁴ Terminations due to misconduct of the worker are explicitly excluded.

split-shift working time effectively simplified. The 2014 reforms continued the flexibilization process: They simplified collective and individual dismissal procedures, limited the notification period for dismissals to six months, and limited the maximum compensation for unfair dismissals to eight statutory or contractual salaries. Furthermore, the 2014 reforms increased the maximum working time to 50 hours per week (60 hours per week if negotiated by collective agreements), allowed full-time employees to work part-time with another employer for up to 8 hours per week, and lifted numerous restrictions on temporary work agencies (for example, the maximum assignment period was increased to three years). All these measures together reduced Croatia's employment protection index to 2.1, which is now in the range of most other OECD countries (EC, 2015, p. 18). Additionally, in order to stimulate job creation, since 2015 firms hiring young workers do not have to pay social security contributions for these workers for five years.

The new flexibility for atypical work resulted in an immediate increase of these types of contracts. In 2013, 14.5% of all employment and an astounding 93% of all new employment in 2014 was fixed-term (EC, 2015, p. 19). These figures potentially mark the begin of labor market segmentation between highly protected permanent staff, mostly hired prior to 2013, and weakly protected fixed-term employees, often hired since 2013. Such labor market segmentation may result in unintended social side-effects like low training incentives, higher perceived uncertainty and delayed family formation (see e.g. Barbanchon and Malherbet 2013; García-Serrano and Malo, 2013; Auer and Danzer, 2014).

Further flexibility of hiring and firing processes is necessary to prevent labor market segmentation while further promoting the creation of jobs. Most importantly, the severance payment regime needs to be abolished or at least restricted to unfair dismissals, as this reduces significantly the anticipated costs when hiring a worker. The current system of mandatory severance payments severely discourages firms from creating new jobs or using open-ended contracts, because it adds significantly to the anticipated non-wage labor costs of a new worker. In combination with the other Croatian labor market institutions, the current scheme is thus both inefficient and superfluous. Severance payments would be efficient only if wages were completely flexible and employees risk-neutral (Blanchard and Tirole, 2008; Boeri et al., 2013). However, in Croatia the existing minimum wage legislation causes wages to be downward rigid,⁵ and thus induces an unambiguously negative effect of mandatory severance payments on overall employment (see Garibaldi and Violante, 2005). Additionally, severance payments add to a job-seeker's income during unemployment, raising her reservation wage even further and thus reducing re-employment probabilities (see, for example, Card et al., 2007). Moreover, severance payments are superfluous as the key rationale behind them does not apply in Croatia: Severance payments shall provide income protection for dismissed workers and employment

⁵ The same holds true for sector-specific minimum wages.

protection for employees, reassuring them that investments in firm-specific human capital are worthwhile, as they will not be fired at will (Holzmann et al., 2012). In Croatia, income protection is provided by the social welfare system, and employment protection is provided by labor law. As already mentioned above, dismissals have to be based on either a worker's misconduct, personal reasons or business reasons. If workers questioning their dismissal can appeal to labor courts, and if these courts rule neutrally and in a timely manner, there is no need for further employment protection by mandatory severance payments. Courts may nevertheless settle for severance payments if they rule a dismissal to be unjust but deem continued employment unacceptable for the worker. If mandatory severance payments are abolished or restricted to unfair dismissals, firms anticipate lower non-wage labor costs, which would likely increase job creation. Moreover, there would be fewer incentives to prefer fixed-term employment contracts over open-ended contracts.

Hiring may also be stimulated by reducing labor costs, i.e. the minimum wage, at least for workers entering employment out of unemployment or non-employment (see also Pena, 2013). Furthermore, the hiring ban for firms after dismissing workers for business reasons should be abolished in order to allow firms to react in a timely manner to changes in business conditions and to regain productivity during economic downturns.

5.3. Productivity: The role of ALMPs

The Croatian labor market suffers from a severe skills mismatch between labor supply and labor demand. This is mainly due to the fields of study (Arandarenko and Bartlett, 2012; Bejaković and Mrnjavac, 2014) and structural weaknesses in the design of vocational training (see also chapter 9). Moreover, participation in lifelong learning is extremely low. Active labor market policy (ALMP) measures offer a means to provide unemployed job-seekers with skills that match the requirements of Croatian employers.

However, until recently ALMPs played only a minor role in Croatia. While the number of participants increased in 2013 to 53,656 persons (Republic of Croatia, 2014b, p. 52), ALMP expenditures still were only 0.3% of GDP in 2014. In 2012 (i.e. before ESF-funds became available), "active" measures such as training or direct job creation were of minor importance (24% of total labor market policy [LMP] expenditures; see Table 5.1.), and only a small share of all unemployed persons (4.6%) took part in them. Only 7.5% of all funds were allocated to training of unemployed persons. In contrast, two-thirds of all expenditures were spent on income support for the unemployed. This ratio is all the more remarkable as only every fourth unemployed job-seeker actually received some form of unemployment benefit in 2012.

Table 5.1.: Expenditures and participants by type of labor market policy in 2012

	expenditures (m euros)	% of all expenditures	participants	% of all unemployed
Labour market services	24.8	8.8	-	-
ALMP measures	68.4	24.2	13,638	4.6
Training	21.2	7.5	5,092	1.7
Employment incentives	15.8	5.6	2,735	0.9
Direct job creation	23.3	8.3	3,859	1.3
Other	8.1	2.9	1,952	0.7
LMP supports	189	67.0	74,285	25.0
Total	282.2	100.0	-	-

Source: Eurostat (2015).

Moreover, most ALMP measures are insufficiently targeted. By 2014, 23 of all ALMP measures were exclusively targeted for the youth, partly due to the Youth Guarantee Implementation Plan (see also the chapter on Activation of the Youth), but none was exclusively targeted for the elderly (a fact that likely contributes to the very low participation rate among the elderly). On the other hand, the various kinds of ALMP measures, often overlapping in their means, targets and methods, make it difficult for unemployed job-seekers to identify the ALMP measures appropriate for their needs.

Recently, Croatia has taken some first steps to improve the quality and reach of ALMPs. An interdepartmental working group has set guidelines for implementation, monitoring and reporting standards for all institutions involved in providing ALMPs. Moreover, the Croatian Employment Service (CES; see following section) will commission an external evaluation of ALMPs of the period 2010 to 2013 in order to improve ALMP quality and effectiveness. While these evaluations are highly welcome, they cannot examine long-run effects due to the short time span available. ALMPs usually suffer from lock-in effects in the short run, but may provide their participants with gains in terms of earnings and employment probabilities in the long run (see e. g. Lechner et al., 2011; van Ours, 2004). In the end, the CES should start continuous monitoring and advancement of all ALMPs. ALMP evaluation should be accompanied by a consolidation of measures into a manageable set, in which each measure is identifiable by its own group of targeted job-seekers and education targets.

Furthermore, it may be helpful to distinguish among two groups of ALMPs. The first group provides basic skills in order to increase the job-seekers' general employability. These ALMPs target the unemployed who have no or little employment experience or who are only loosely attached to the labor market. These ALMPs should be accompanied by intensified consultation and encouragement, even beyond the end of the actual ALMP measure, where possible. Such an intensified counseling helps job-seekers to successfully complete the ALMP measures and engage more actively and confidently in job search (e. g. Buchwald et al., 2014). The second group of ALMPs align job-seekers' skills to the requirements of Croatian employers. This assumes determination of the

medium- and long-run skill requirements in the first place. The long-run strategic decisions of the Croatian government, like the “Industrial Strategy” and the “Tourism Development Strategy”, should be taken into account for the above, and further developed.

After all, training and other activating ALMP measures might be more expensive in the short run, but are likely to generate higher payoffs in the long run than the provision of purely passive (income support) measures. The European funds to be received in the 2014-2020 support period for aspects of employability (0.5 billion euros) and human capital building (0.7 billion euros) should thus be used to establish a comprehensive yet tractable set of targeted training and other ALMP measures that will enable unemployed job-seekers to update their skills to employers’ requirements. In the long run, ALMP measures may also be used to prevent inflows into unemployment.

5.4. The Croatian Employment Service

The Croatian Employment Service (CES) is central for solving the problem of prolonged unemployment. It provides the key link between unemployed job-seekers and firms offering vacancies, and also between skill endowments and skill requirements. However, it lacks efficient administrative capacities that would allow for a continuous improvement of services (see also EC, 2015, p. 68). Currently, the CES is being restructured, a process that will last at least until 2017. The network will be expanded to include youth centers and career counseling, and business processes will be implemented and monitored. Moreover, specialized counselors will be recruited and trained while a new categorization of clients is established.

In the future, the CES’s primary focus should be on the activation of the unemployed instead of their pure administration. This includes mandating interviews between the job-seeker and the case worker on a regular basis; the offering of and, if necessary, forced assignment into training measures; and, of course, the supply of appropriate job offers. As mentioned above, the CES should possess the means to temporarily reduce a job-seeker’s unemployment benefits if she does not comply with her obligation of attending the interviews, participating in assigned training measures or accepting reasonable job offers. Moreover, the CES should maintain a comprehensive database of open vacancies, gathering new job postings via a specialized employer service. All these measures will increase the efficiency of the counseling, but require a further reduction of the job-seeker/caseworker ratio, and further improvement of the counselors’ skills. EU funds may provide the means to finance these indispensable contributions to the transformation of the CES from an unemployment administration into an activating service.

Recent research has shown that an appropriate restructuring of a public employment service may be much more effective in decreasing unemployment than reducing unemployment benefits (Launov and Wälde, 2015). In particular, reducing the job-seeker/caseworker ratio usually increases the job-finding rate as a lower caseload

enables caseworkers to assign job offers that correspond to a job-seeker's actual abilities (Grubb and Martin, 2001; Koning, 2009; Boockmann et al., 2014; Hainmueller et al., 2015).⁶ Furthermore, research has investigated features that may enhance the efficiency of a public employment service, for example the assignment of specialized case workers to the unemployed with multiple obstacles to employment, or the integrated provision of activation procedures (interviewing, counseling and assignment to training measures) and placement services (assignment of job offers) by a single case worker (see e. g. Boockmann et al., 2014, 2015; Holzner and Munz, 2013). Unfortunately, the results remain inconclusive. The CES could establish different organizational structures in its local offices in order to identify efficiency-enhancing features. These features should then be implemented throughout all local offices.

5.5. Conclusion

The Croatian labor market is performing poorly due to, among other factors, a misalignment of reservation wages to market wages and of labor costs to labor productivity. Reservation wages may be reduced by restructuring the social benefit system and by temporary sanctions for unemployed who do not comply with their job-seeker obligations. Labor costs may be reduced by allowing for sector-specific minimum wages and the abolition of mandatory severance payments. Productivity may be raised by improving the vocational training system and by introducing targeted ALMP measures. Finally, the Croatian Employment Service (CES) needs to further increase its efficiency, placing more emphasis on activation schemes and training measures than on pure administration. Some of these measures will involve costs in the short run, but will pay-off in terms of lower unemployment and higher employment in the medium and long runs.

⁶ Next to the caseload, also the social similarity between caseworker and job seeker may affect the job-finding rate (Behncke et al., 2010).

References

- Abbring, J. H., van den Berg, G. J. and van Ours, J. C. (2005). The effect of unemployment insurance sanction on the transition rate from unemployment to employment. *The Economic Journal*, 115 (505), 602–630.
- Arandarenko M. and W. Bartlett (2012): *Labour Market and Skills in the Western Balkans*, Foundation for the Advancement of Economics, pp. 1–224.
- Arni, P., Lalive, R. and van Ours, J. C. (2013). How effective are unemployment benefit sanctions? Looking beyond unemployment exit. *Journal of Applied Econometrics*, 28 (7), 1153–1178.
- Barbanchon, T. L. and F. Malherbet (2013): *An anatomy of the French labour market: country case study on labour market segmentation*, ILO Employment working paper 142.
- Behncke, S., Frölich, M. and Lechner, M. (2010). A Caseworker Like Me – Does The Similarity Between The Unemployed and Their Caseworkers Increase Job Placements? *The Economic Journal*, 120 (549), 1430–1459.
- Bejaković, P. and Ž. Mrnjavac (2014): Skill Mismatches and Anticipation of the Future Labour Market Need: Case of Croatia, *Zagreb International Review of Economics & Business*, Vol. 17, No. 1, pp. 47–68.
- Blanchard, O. J. and J. Tirole (2008): The joint design of unemployment insurance and employment protection: A first pass, *Journal of the European Economic Association* 6(1), pp. 45-77.
- Boeri, T., Garibaldi, P. and E. Moen (2013): *The Economics of Severance Pay*, IZA Discussion Paper No. 7455.
- Boockmann, B., Osiander, C. and Stops, M. (2014). Vermittlerstrategien und Arbeitsmarkterfolg – Evidenz aus kombinierten Prozess- und Befragungsdaten. *Journal for Labour Market Research*, 47 (4), 341–360.
- Boockmann, B., Thomsen, S. L., Walter, T., Göbel, C. and M. Huber (2015): Should Welfare Administration be Centralized or Decentralized? Evidence from a Policy Experiment, *German Economic Review* 16(1), pp. 13–42.
- Buchwald, C., Grünert, H. and B. Wiener (2014): *ZIEL. Zielgerichtete Integration junger Langzeitarbeitsloser: Erfahrungen und Ergebnisse eines Projektes*, Berlin.
- Cahuc, P. and A. Zylberberg (2004): *Labor Economics*, MIT Press, Cambridge.
- Card, D., Chetty, R. and A. Weber (2007): Cash-on-Hand and Competing Models of Intertemporal Behavior: New Evidence from the Labor Market, *Quarterly Journal of Economics* 122 (4), pp. 1511–1560.

- Council of the European Union (2014): Council Recommendation of 8 July 2014 on the National Reform Programme 2014 of Croatia and delivering a Council opinion on the Convergence Programme of Croatia, 2014, Official Journal of the European Union C 247, pp. 50-56.
- Croatian Bureau of Statistics [CBS] (2014): Statistical Yearbook of the Republic of Croatia 2014, Zagreb.
- Davoine, T. and C. Keuschnigg (2015): Flexicurity, Taxes and Job Reallocation, CESifo Working Paper No. 5302.
- Directorate-General for Economic and Financial Affairs (2014): Identifying fiscal sustainability challenges in the areas of pension, health care and long-term care policies, European Economy Occasional Papers 201.
- Drezgic, S., Gotovac, V. and U. Schuh (2013): Analysis of the Severance Pay Scheme in the Republic of Croatia: current arrangements and changes to be considered, World Bank report 81626, prepared at the request of the Ministry of Labor and Pension System of the Republic of Croatia.
- European Commission Staff [EC] (2015): Country Report Croatia 2015, including an In-Depth Review on the prevention and correction of macroeconomic imbalances, Brussels.
- Eurostat (2015): Eurostat Dissemination Database, <http://ec.europa.eu/eurostat/data/database>.
- Frings, H. (2013): The Effect of Industry-Specific, Collectively Bargained Minimum Wages, German Economic Review 14(3), pp.258-281.
- García-Serrano, C. and M. A. Malo (2013): Beyond the contract type segmentation in Spain: country case study on labour market segmentation, ILO Employment working paper 143.
- Garibaldi, P. and G. L. Violante (2005), The Employment Effects of Severance Payments with Wage Rigidities, The Economic Journal, 115 (506): 799-832.
- Grubb, D. and Martin, J. P. (2001). What works and for whom: A review of OECD countries' experiences with active labour market policies. Swedish Economic Policy Review, 8, 9–56.
- Gwartney, J., Lawson, R. and J. Hall (2014): Economic Freedom of the World: 2014 Annual Report, Fraser Institute.
- Hainmueller, J., Hofmann, B., Krug, G. and Wolf, K. (2015). Do Lower Caseloads Improve the Performance of Public Employment Services? New Evidence from German Employment Offices. Scandinavian Journal of Economics (forthcoming).

- Holzmann, R., Pouget, Y., Vodopivec, M., and M. Weber (2012): Severance Pay Programs around the World: History, Rationale, Status, and Reforms, in: Holzmann, R. and M. Vodopivec (eds.): *Reforming Severance Pay. An international perspective*, The World Bank, Washington, D.C.
- Holzner, C. and S. Munz (2013): Should local public employment services be merged with local social benefit administrations? *Journal of Labour Market Research* 46 (2), pp. 83–102.
- Koning, P. (2009). The effectiveness of Public Employment Service workers in the Netherlands. *Empirical Economics*, 37 (2), 393–409.
- Kunovac, M. (2014): Employment protection legislation in Croatia, *Financial Theory and Practice* 38(2), 139-172.
- Lalive, R., van Ours, J. C. and Zweimüller, J. (2005). The Effect of Benefit Sanctions on the Duration of Unemployment. *Journal of the European Economic Association*, 3 (6), 1386–1417.
- Launov, A. and Wälde, K. (2015). The Employment Effect of Reforming a Public Employment Agency. CESifo Working Paper 5477, Münchener Gesellschaft zur Förderung der Wirtschaftswissenschaft – CESifo GmbH, Munich, http://www.cesifo-group.de/DocDL/cesifo1_wp5477.pdf.
- Lechner, M., Miquel, R., and C. Wunsch (2011): Long-Run Effects Of Public Sector Sponsored Training In West Germany, *Journal of the European Economic Association*, 9(4), pp. 742–784.
- Lucifora, C., McKnight, A. and W. Salverda (2005): Low-wage employment in Europe: a review of the evidence, *Socio-Economic Review* 3 (2), pp. 259–292.
- McLaughlin, C. (2009): The Productivity-Enhancing Impacts of the Minimum Wage: Lessons from Denmark and New Zealand, *British Journal of Industrial Relations* 47 (2), pp. 327-348.
- Mutual Information System on Social Protection [MISSOC] (2014): Comparative Tables on Social Protection, accessed March 2, 2015.
- Neumark, D. and W. Wascher (2004): Minimum Wages, Labor Market Institutions, and Youth Employment: A Cross-National Analysis, *Industrial & Labor Relations Review* 57 (2), pp. 223-248.
- Nikolic, J., Rubil, I. and I. Tomić (2014): Changes in Public and Private Sector Pay Structures in Two Emerging Market Economies during the Crisis, EIZ-WP-1403.

- Orsini, K. and Ostojić, V. (forthcoming): Wage dynamics in Croatia, leaders and followers, European Commission, Directorate General for Economic and Financial Affairs, Country Focus, forthcoming.
- Pena, X. (2013): The formal and informal sectors in Colombia: Country case study on labour market segmentation, ILO Employment working paper 146.
- Republic of Croatia (2014a): Convergence Programme of the Republic of Croatia for the period 2014-2017.
- Republic of Croatia (2014b): National Reform Programme.
- Schwab, K. (ed.) (2012): The Global Competitiveness Report 2012–2013: Full data Edition, World Economic Forum.
- Svarer, M. (2011). The Effect of Sanctions on Exit from Unemployment: Evidence from Denmark. *Economica*, 78 (312), 751–778.
- van den Berg, G. J. and van der Klaauw, B. (2006). Counseling and Monitoring of Unemployed Workers: Theory and Evidence From A Controlled Social Experiment. *International Economic Review*, 47 (3), 895–936.
- van den Berg, G. J. and van der Klaauw, B. (2015). Structural empirical evaluation of job search monitoring. IFAU Working Paper 2015:16, IFAU – Institute for Evaluation of Labour Market and Education Policy, Uppsala, <http://www.ifau.se/Upload/pdf/se/2015/wp-2015-16-Structural-empirical-evaluation-of-job-search-monitoring.pdf>.
- van den Berg, G. J., and Vikström, J. (2014). Monitoring job offer decisions, punishments, exit to work, and job quality. *Scandinavian Journal of Economics*, 116 (2), 284–334.
- van den Berg, G. J., van der Klaauw, B. and van Ours, J. C. (2004). Punitive sanctions and the transition rate from welfare to work. *Journal of Labor Economics*, 22 (1), 211–241.
- van der Klaauw, B. and van Ours, J. C. (2013). Carrot and stick: How reemployment bonuses and benefit sanctions affect exit rates from welfare. *Journal of Applied Econometrics*, 28 (2), 275–296.
- Van Ours, J (2004): The Locking-in Effect of Subsidized Jobs. *Journal of Comparative Economics* 32, pp. 37–52.

6. Activating the unemployed: Policy Options for Croatia

Martin Werding¹

Summary

Labour-market performance in Croatia is extremely sluggish today, with levels of labour-force participation and employment that are among the lowest across the EU-28 and levels of (long-term) unemployment and unofficial activity that are among the highest. In this paper, we concentrate on measures which are particularly suited to activate the unemployed and re-integrate those outside the labour force into regular employment. Relying on the international experience, we effectively concentrate on two types of measures, viz. changes in the design of benefit schemes (unemployment insurance, social assistance and also disability and early-retirement pensions) and stricter use of active labour-market policies. Among instruments of the latter type, work requirements for benefit recipients and the organization of public work programmes are given particular attention.

6.1. Introduction

To revitalize the Croatian economy, a multi-pillar strategy for higher employment and stronger growth is definitely called for, encompassing measures which take care of international competitiveness and the balance of trade, public finances and the budgetary situation of a number of specific programmes, but also public responsibilities in the areas of education, innovation and infrastructure. Aspects that are particularly relevant relate to the performance of labour markets which is currently extremely sluggish for reasons which appear to be of a rather fundamental, or “structural”, nature (see also Weber 2016). In this context, increasing the general level of economic activity and activating those who are currently in long-term unemployment or entirely outside the labour force is a major sub-task.

In this paper, we first demonstrate that, compared to most other countries in the EU-28, the levels of labour-force participation and (formal) employment are rather low in Croatia, while unemployment and the level of informal activities in the shadow economy appear to be relatively high (Section 6.2). We then describe the most important programmes providing (“passive”) benefits for the unemployed and other individuals who are inactive (Section 6.3). In Section 6.4, we briefly review the international experience with reforms

¹ Ruhr Universität Bochum, Ifo Institute for Economic Research & CESifo

which are meant to activate recipients of these benefits, highlighting the potentially promising role of work obligations and public work programmes within an activation strategy. We discuss the policy implication for Croatia, specifically drawing on experience gathered in other transition countries with public work programmes and commenting on concomitant changes in the design of benefits which might be helpful (Section 6.5). Section 6.6 concludes, summarizing once again the main lessons that arise.

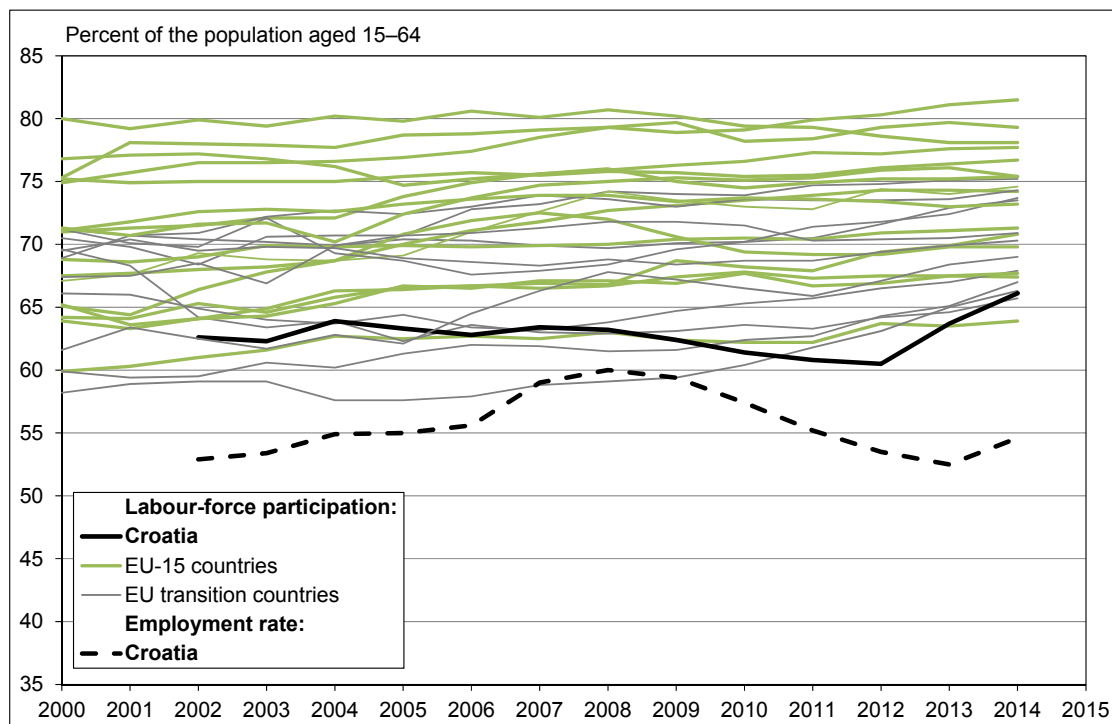
6.2. Economic Activity

6.2.1. Labour-market performance

Economic activity in terms of (formal) labour-force participation is generally low in Croatia when compared in a European context. Currently, this situation is further aggravated through a very high level of unemployment. Furthermore, among the unemployed, the share of those in long-term unemployment is also extremely high. All this is immediate from figures collected by Eurostat (2015), based on the European Labour Force Survey.

Figure 6.1. shows the development of labour-force participation among the population aged 15 to 64 in the EU-28 countries. For convenience, we clearly highlight the graph representing Croatia (solid blue line), while all other countries are only differentiated by whether they belong to the old member countries of the EU-15 (thick solid green lines) or the transition countries which have joined the EU since 2004 (thin green lines). It can be seen that labour-force participation in Croatia is not only low vis-à-vis the more advanced economies among the EU-15, but also vis-à-vis the other new member states which could be considered more relevant for direct comparison. In recent years, Croatia has been consistently located at the bottom end of labour-force participation rates in the European Union. Lower rates are currently only observed in Italy and Romania; Hungary and Malta had lower rates in preceding years.

Figure 6.1.: Labour-force participation and employment (2000–2014)

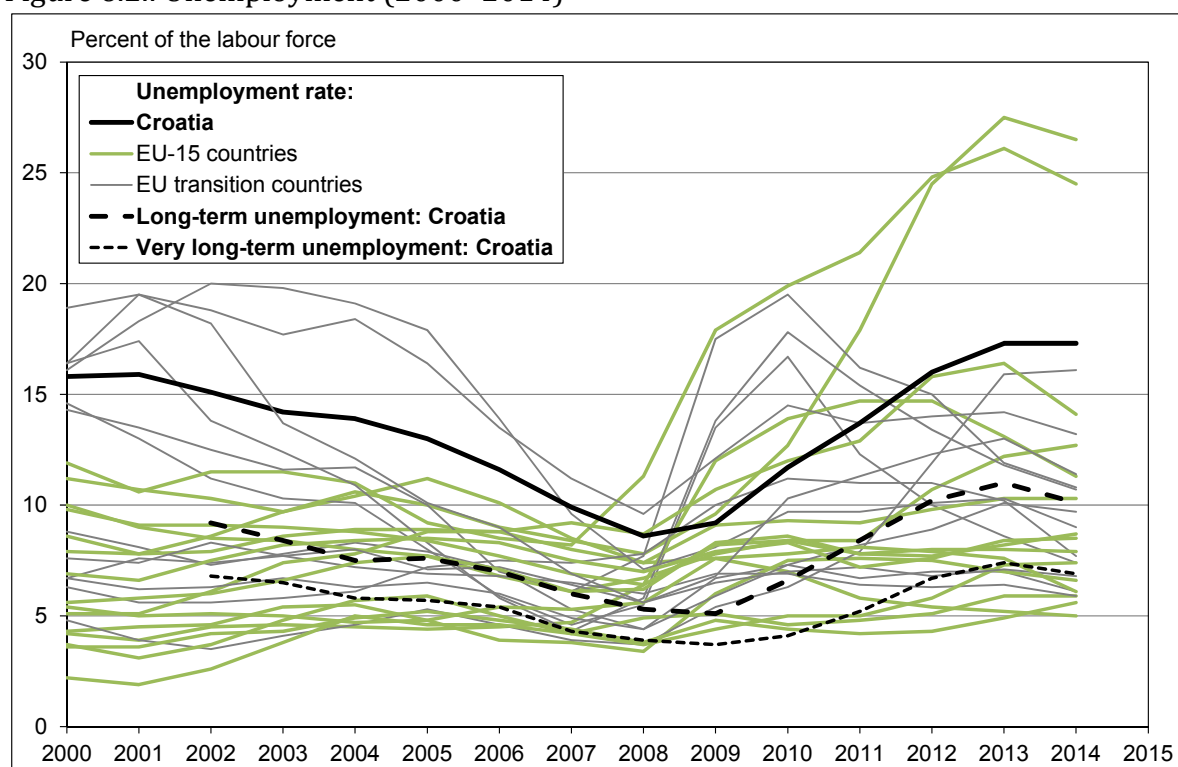


Source: Eurostat.

In addition, Figure 6.1. also shows the employment rate for Croatia (blue dashed line), again related to the population aged 15 to 64. Since employment is defined as labour force minus the unemployed and since unemployment is rather high in Croatia since the Great Recession has spread around after 2009, showing no signs of a recovery so far, the employment rate in this country is currently lowest among all countries of the EU-28, with the exception of Greece (Eurostat 2015). In fact, many European countries have employment rates which clearly exceed the Croatian labour-force participation rate.

Figure 6.2. illustrates recent trends in unemployment rates across the EU-28. Again, the graph representing Croatia (blue solid line) is highlighted in particular, while results for EU-15 countries (thick green lines) as well as for EU transition countries (thin green lines) are not further distinguished. Following a sharp increase which started in 2009, the unemployment rate in Croatia is currently the third-largest across the EU, with even higher rates only being observed in Spain and Greece. Furthermore, unemployment in many other transition countries exceeded that in Croatia at the early stage of the recent crisis, but has since declined substantially, while the Croatian rate has now stabilized at a very high level.

Figure 6.2.: Unemployment (2000–2014)



Source: Eurostat.

Besides total unemployment, Figure 6.2. also displays unemployment rates for Croatia for two sub-groups which are of particular importance for the theme of this paper, viz. the rates of those in “long-term unemployment” (exceeding a duration of one year at an individual level; blue dashed line) and in “very long-term unemployment” (exceeding a duration of two years; blue dotted line). It can be seen that a huge fraction of Croatian unemployment has effectively turned into long-term unemployment during the last few years. The share of the long-term unemployed among total unemployment is once more among the highest across the entire EU, with higher shares only being observed in Slovakia and Greece. In any case, as a percentage of the labour force, long-term unemployment in Croatia even exceeds total unemployment in many other EU countries, including a number of transition countries.

Taken together, all these figures clearly indicate that economic inactivity is currently widespread in Croatia, where many of those who are (formally) inactive are in non-employment, so outside the (official) labour force, while a considerable fraction is also in unemployment, with a particularly high share being in persistent long-term unemployment. Furthermore, some of those accounted for as being inactive may actually be working nevertheless, namely in the so-called shadow economy.

6.2.2. Shadow economy

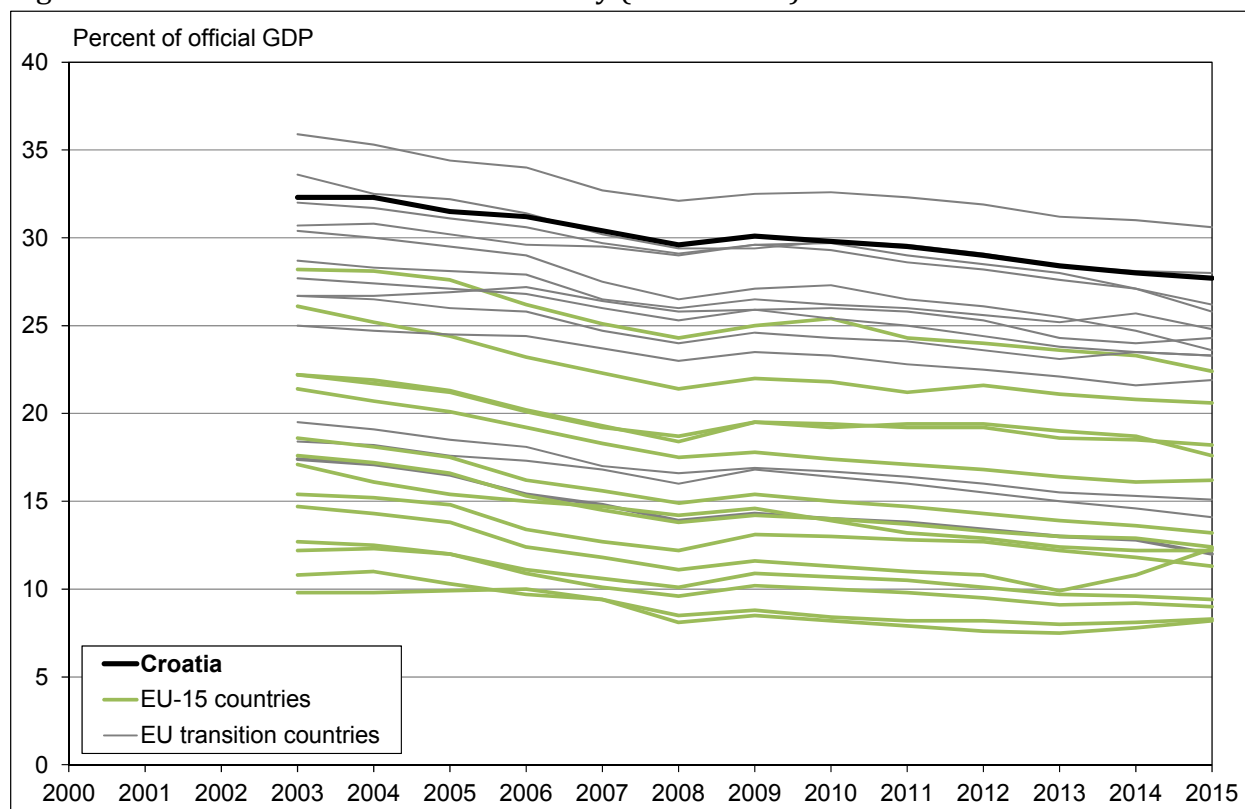
For any policy which is aimed at activating individuals who are currently not working, at least not in terms of official employment, a key question relates to the way in which these individuals are currently receiving resources to live on. In many cases, these will be

(different types of) public benefits (see Section 6.3). In these cases, re-designing the relevant benefit programmes could help a lot for reintegrating benefit recipients in official economic activity. Things are far more difficult, however, if inactive individuals earn their living in unregistered forms of economic activity. This problem becomes more pressing, of course, if the shadow economy has a substantial size.

By its nature, accounting for the shadow economy is very difficult. There are several approaches for doing so, based on indirect evidence, which typically lead to different results in terms of levels of informal activity. The econometric “MIMIC” (multiple indicators multiple causes) approach which is conventionally utilized by Friedrich Schneider (Schneider and Enste 2000), one of the leading researchers in this field, typically leads to relatively high shares in official GDP compared to alternative approaches. It may thus produce upper boundaries for the actual size of the shadow economy, but it can be expected that the results are consistent across countries and over time. Figure 6.3. shows the most recent up-date of these estimates (Schneider 2015) for all countries of the EU-28.

The results indicate that, besides a relatively poor labour-market performance, Croatia (blue line) hosts one of the largest informal sectors across the EU, when measured as a percentage of official GDP. It appears that the shadow economy is generally more important in “EU transition countries” (thin green lines) than in countries of the old “EU-15” (thick green lines). But even among the new member states, Croatia almost takes the lead in this respect, GDP-shares of unofficial economic activity in this country being at the same level as in Romania, while shares are estimated to be higher only in Bulgaria.

Figure 6.3.: The size of the shadow economy (2003–2015)



Of course, the shadow economy can assume various forms, with differing implications for how to reduce and transform it into official types of economic activity. There is no simple rule for assessing the number of possible jobs (in full-time equivalents) which are currently hidden in this sector. With shares that may vary considerably across countries, work that is entirely unregistered certainly plays an important role for the size of the shadow economy, especially where it is considered to be really large; unregistered overtime worked by individuals employed in regular jobs is also relevant, probably more in countries where the shadow economy is generally smaller. In addition, a specific type of hidden economic activity which may also play a role in Croatia is based on unregistered “over-pay”, implying that individuals are officially paid the minimum wage, while they actually receive substantially higher pay, free of taxes and social insurance contributions, outside their official wage bill. In this particular case, changes in existing benefit programmes could also contribute to increasing the official level of economic activity. Otherwise, competition of employment under official conditions against activity in the shadow economy is highly distorted and really difficult to win.

6.3. Welfare programmes with “passive” benefits

Benefit programmes that are definitely relevant for solving the problems of persistent long-term unemployment and a low level of economic activity are those providing unemployment insurance benefits and, in addition, general social assistance. Together, benefits of these programmes are often classified as “passive” benefits as they are purely meant to replace earlier wages, in contrast to measures of “active” labour-market policies (training programmes, job placements or apprenticeships, wage subsidies) that directly aim at re-integration into formal employment or to “activating” elements of benefit schemes that are meant to create incentives for the unemployed to search and take up jobs more actively.

Two features of “passive” benefit programmes that are most relevant for the incentive effects they create are (i) the level of benefit entitlements (compared to current and earlier wages) and (ii) the duration for which these entitlements are valid. Basically, higher benefit entitlements and longer durations both work in the direction of reducing job-search efforts of the unemployed and thereby lead to lock-in effects which tend to lengthen individual unemployment spells and increase unemployment at the aggregate level. However, convincing empirical evidence has established that, among these two features, potentially harmful effects for employment are much more related to the duration of benefit entitlements than to the sheer amounts of benefits which are granted over some limited period of time (Werding and Konrad 2012, pp. 81).

In Croatia, unemployment benefits that individuals are entitled to receive during a first period after a lay-off derive from a typical social insurance scheme (see MISSOC 2015 for many details). This means, they are paid without any means-testing if at least a certain minimum period of employment (nine months) has been accomplished during which contributions to this scheme have been paid. During the first three months in unemployment, benefits aim at a replacement rate of 70% of earlier net wages; afterwards,

the benefit level becomes substantially smaller, reaching only 35%. Throughout, there are caps on maximum benefits (70% and 35% of average net wages, respectively) and minimum amounts of benefits (50% of the minimum wage, net of mandatory levies). Total duration of benefit receipt is governed by a differentiated scheme that depends on the duration of earlier employment spells (and, implicitly, age), extending entitlement periods to up to 15 months. As a result, a substantial share of the labour force has benefit entitlements exceeding six months (after more than five years of employment), and a share which is still considerable has benefit entitlements exceeding one year (after more than fifteen years of employment). Aggregate expenditure of the system fluctuates substantially, following business-cycle movements and structural components of (short-term) unemployment. Most recently (in 2012), expenditure of the unemployment insurance scheme amount to about 2.5% of total public expenditure or to 0.6% of GDP (Croatian Employment Service 2013).

Unemployed individuals whose benefit entitlements vis-à-vis unemployment insurance have expired can be entitled to receive social assistance benefits during a further, and ultimately unlimited, period of unemployment (again, see MISSOC 2015). Social assistance benefits are non-contributory and means-tested (with respect to income and wealth), with a basic level of benefits that is substantially below the official poverty line. Typically, social assistance benefits are topped up by housing allowances and, where applicable, by disability benefits. Beneficiaries also have access to health insurance benefits. The scheme has a far broader coverage (including handicapped persons, single parents and their children and persons who are not of working age), but it effectively supports quite a number of individuals who are or, by their age and health status, could be job-seekers. This situation has definitely deteriorated in recent years, when unemployment increased and turned into long-term unemployment in many cases. Consequently, aggregate expenditure on the social assistance scheme is substantially higher than that on unemployment insurance. It currently (2013) amounts to about 10.3% of total public expenditure or to 4.3% of GDP (Ministry of Finance 2015).

Further benefits which are “passive” by definition and may also be relevant for the low level of economic activity in Croatia are derived from the pension system. In recent years, the Croatian public pension scheme has seen a massive inflow into disability and early retirement benefits (Werding 2016, 8.5.1, first paragraph), so that expenditure on these categories of pensions currently amounts to 26.5% of total pension expenditure or to 2.9% of GDP (HZMO 2015). This suggests that many individuals have been discouraged from continuing to seek for regular jobs and entered retirement. Here, the risk is that, following a short period of time during which a review of their new status might still be an option, these individuals are definitely lost for any re-activation. Alternatively, individuals who could seek jobs, but are currently out of the labour force, may also have indirect cover from the pension scheme, effectively living on pension benefits paid to family members (or on “family benefits” granted to several types economically dependent survivors). Since pension benefits are not very high on average, this is actually more likely to be the case if a member of the family receives a “privileged” pension (accruing, among other things, to war veterans or to soldiers and policemen) which can be substantially higher.

6.4. Activating benefit recipients: international experience

A long history of ups and downs in “structural” levels of unemployment in Europe and even in the US has triggered a huge literature, both theoretical and empirical, on how to deal with persistent high levels of unemployment and how to activate those in unemployment or even non-employment (Werding 2006). Two aspects of the policy packages designed for this purpose have turned out to be of highest significance (Werding and Konrad 2012, pp. 82–84). On the one hand, financial incentives for the unemployed to re-enter regular jobs which are integrated into the design of benefit schemes apparently play a role in this context. On the other hand, an activating orientation of the benefit administration appears to matter as well, in fact even more than the level of “passive” benefits or other elements of the legal framework of labour markets (Andersen and Svarer 2007). Compared to just paying for “passive” benefit entitlements, many of these measures can appear to be really costly. It is therefore important to concentrate on those which have been demonstrated to be cost-effective (Card et al. 2010).

Activating elements involved in the administration of benefits include a strict case management with active counselling, training programmes and active job placement, formal agreements stating search requirements for the unemployed, and the possibility of imposing benefit sanctions on those who do not co-operate in any of these areas (Osterkamp 2016). Besides requirements to actively search for a new job, some countries even considered the option of introducing work requirements for benefit recipients, and a smaller number of countries have actually done so successfully.

6.4.1. Design of benefit schemes

Attempts at incentivating inactive individuals to re-enter regular employment through changes in benefit design have been discussed and actually applied under various labels, such as “welfare to work” or “make work pay”. Key elements are welfare benefits which are paid out to individuals with low (but positive) wage earnings and are therefore called “in-work benefits” (for a review of existing instruments see Sinn et al. 2006, ch. 3.2).

The international model for the introduction of benefits of this particular type is the US Earned Income Tax Credit (EITC). It was first introduced as early as in 1975, but has been substantially expanded to become a core instrument of labour-market policy in the early 1990s. Subsequently, many countries in the OECD world have followed this model, though with adaptations to their national welfare systems and with various modifications. An interesting example is provided by the UK Working Families’ Tax Credit (WFTC; introduced in 1999 and separated into a Work Tax Credit, WTC, and a Child Tax Credit in 2003), while modifications of the German benefit system for the long-term unemployed (*Grundsicherung für Arbeitsuchende*) enacted in 2005 reflect just a small step in the direction of granting “in-work benefits”.

The basic idea of any of these schemes is to create a notable difference in the financial situation of those who remain inactive for an extended period of unemployment and those who return to, or take up, a regular form of employment. Whatever the precise mechanism,

unemployment benefits or basic income support are effectively no longer withdrawn on a one-for-one basis if individuals (re-)enter employment. Instead, withdrawal rates are reduced so that, over a certain range of low earnings, individuals effectively receive some amount of public benefits on top of their wages, which can also be seen as a targeted wage subsidy for those whose total income could otherwise call for means-tested benefits.

The US EITC and the UK WTC are really separate instruments, directly designed to top up low wage earnings. The EITC is in fact a genuine “negative income tax”, with benefits that are paid out by the tax administration. Also, over an initial range of low earnings, benefits are phased in at a constant rate of actual earnings which amounts to a negative marginal tax rate, i.e., a direct subsidization of working in low-paid jobs. If individual earnings become higher, the EITC first remains constant over a small range of income and is then gradually withdrawn at a constant rate over a broader range of income. Through this structure, the tax credit provides an orientation for individuals to work full-time if this is possible, and it seeks to limit distortions through effective marginal tax rates (including the effects of regular income taxes and social security contributions) when the credit is phased out.

The design of the UK WTC is different in that the tax credit is granted only if individuals work at least about half-time, with a certain minimum amount of earnings. The maximum benefit that is payable at these lower thresholds is held constant over a small range of low income and is then gradually withdrawn. Therefore, the WTC does not encourage work with very limited working hours, while it also seeks to limit total marginal tax rates on earnings which are still rather low, but are located in the phase-out range of the tax credit.

In Germany, in-work benefits are embedded in a new system of benefits for the long-term unemployed that was introduced in 2005. They are due to the fact that withdrawal rates for these benefits were reduced against those implied in earlier rules. Until 2004, effective marginal tax rates on low wage earnings were virtually 100% (or even higher, through cumulative effects of withdrawal of other benefits). Thus, there had been no financial incentives at all to take up low-paid jobs for those receiving benefits. The new law slightly reduced benefit withdrawal rates, hence effective marginal tax rates, over an initial range of earnings. The incentives created are not very strong, and they actually encourage work only with very low amounts of working hours and wages. But this could be altered by further changing benefit withdrawal rates and/or by focusing on other ranges of earnings where reduced marginal benefit withdrawals apply.

These brief descriptions are meant to show how changes in the design of welfare benefits could contribute to activating beneficiaries. They highlight which features appear to be of particular interest in this context, and what options have been used in other, prominent cases to alter incentives of pre-existing programmes and to shape the incentives involved in new programmes. However, altering financial incentives alone may not be sufficient to help individuals in re-entering regular employment if they have been inactive over longer periods of time.

6.4.2. Public work programmes

While redesigning benefit programmes can create, or increase, work incentives for those who actually live on these benefits (see Section 6.4.1), a strict case management with active counselling can contribute to addressing various obstacles for the long-term unemployed to seek and find regular jobs: de-motivation, lack of (fresh) experience and training, child-care obligations and, within certain limits, even dealing with behavioural problems and health conditions of job seekers. In any of these areas, case management has effectively two sides. On the one hand, it can do something to encourage, advise and support individuals in their job search; on the other hand, it will monitor whether they are really available for employment and are actively searching jobs. Compliance with the legal rules and with requirements set up by case managers is then requested in return for receiving some kind of unemployment benefits, while non-compliance can lead to benefit sanctions, i.e., to temporary and gradual reductions in benefit entitlements.

Things become more difficult if individuals combine benefit receipt with work in the shadow economy (or if individuals secure their living entirely through unofficial work). In most countries operating a welfare state, taxes and contributions needed to finance public activities are so high that, on purely financial terms, working under regular conditions can never compete with jobs in which earnings are entirely untaxed. This cannot be fully made up for through any kind of in-work benefits nor through sanctions which would reduce welfare benefits to zero. In this case, even strict case management and active search requirements may not be sufficient to bring individuals closer to entering regular employment. In fact, the actual use of their time must be monitored in some feasible way, in order to deter them from the abuse of benefit programmes and of general rules regarding taxation and other public charges. An instrument for doing so is the introduction of explicit work requirements by which individuals, in exchange for receiving welfare benefits, have to participate in public work programmes at least for a certain amount of time per day or per week.

Another important reason for imposing work obligations on benefit recipients who are long-term unemployed and for creating corresponding work opportunities is due to the fact that, following long periods of inactivity, they often have lost motivation, earlier qualifications, and a number of basic work-related habits, such as the regular time schedule involved in active labour-force participation. Therefore, programmes of this type also have a positive side, simply because they improve on the employability and low levels of qualifications of many beneficiaries. Nevertheless, the aspect of monitoring how individuals spend their time when relying on public benefits is an important part of the story. This is certainly true in a country where a high level of economic activity is effectively hidden in the shadow economy.

The introduction of formal work obligations for individuals in long-term unemployment has been considered in a number of European countries – even in Germany, at the peak level of structural unemployment (Sinn et al. 2006, ch. 3.4). Actual policies were often reluctant to integrate such obligations in broader reform packages. But there are also examples of countries which are, or have been, in a similar situation as Croatia now is and

which have utilized this instrument rather actively, either in the form of an “emergency measure” which was applied only temporarily, in order to overcome a period of extremely high levels of unemployment following a severe external shock, or as a general measure which can be applied also under less exceptional circumstances. Two countries deserving particular attention in this respect are Latvia and Hungary.

In Latvia, the “Workplace with Stipend” (WWS) public work programme applied in the period from 2009 to 2011 served as an emergency measure (Hazans 2012; Azam et al. 2012). It was inaugurated, with considerable financial support by the European Social Fund (ESF) and technical assistance by the Worldbank, when unemployment peaked in the course of the Great Recession. Since then, unemployment in Latvia has been reduced substantially, but it still remains well above its pre-crisis level. Hungary also used public work programmes as a measure to fight high and persistent unemployment in the aftermath of the most recent crisis. However, the “Way to Work” programme initiated in 2008 and the comprehensive National Public Work Program created in 2011 build on experience with similar programmes which effectively goes back to the early transition period starting from 1991 (Koltai 2012). We will carefully discuss the experience collected in these two countries when addressing policy options for Croatia in more detail which result from our analysis (see Section 6.5.1).

6.5. Activating benefit recipients: lessons for Croatia

Given the current labour-market situation and general economic performance, activating those who are in long-term unemployment or outside the official labour force is clearly a major sub-task within an overall agenda for increasing employment and stimulating growth in Croatia. Policy recommendations that address a number of structural problems involved in the interaction of, and the current legal framework for, labour supply and labour demand in Croatia are provided in a parallel paper (Weber 2016). Exploiting the international experience with policies that are specifically meant to activate the (long-term) unemployed, two types of additional measures appear to be important for reaching this task. First, we recommend to seriously consider the introduction of public work programmes in Croatia (see Section 6.5.1). In addition, a number of changes in existing benefit programmes – for the unemployed as well as for those who are about to leave the labour force and enter retirement – appear to be required (see Section 6.5.2).

6.5.1. A public work programme for Croatia

Under current conditions of high-level, long-lasting unemployment, a strong recommendation for increasing economic activity in Croatia relates to the introduction of work requirements for those receiving public benefits over extended spells of unemployment (exceeding, say, 6 or 12 months). To make this strategy effective, organization of public work schemes is also required where beneficiaries have to show up and actively participate for at least a certain amount of time per day or per week. For those who do not comply with these rules, a (gradual scheme of) benefit sanctions needs to be introduced by which benefits can be temporarily reduced or even withdrawn. These work schemes should be operated decentrally, i.e., at a municipal or county level. They should at

least be used as a temporary (“emergency”) measure, until labour-market performance has significantly improved. They could form a new standard instrument of active labour-market policies later on, but this is a decision which does not have to be taken up-front.

In the design and implementation of the programme, experience with similar schemes gathered in other transition economies should be carefully considered. A particularly interesting and well-documented case is provided by Latvia where a public work programme was applied as an emergency measure in a very difficult period between 2009 and 2011 (Hazans 2012; Azam et al. 2012). Another case of interest is given by Hungary where public work programmes have been used again and again since 1991, but also formed an important part of the efforts to overcome the most recent crisis through changes in existing programmes in 2008 and 2011 (Koltai 2012). The Latvian “Workplace with Stipend” (WWS) programme and the current Hungarian National Public Work Programme differ with regard to many details. Here, we will concentrate on common lessons from both examples – with regard to their success as well as the difficulties that arose – and point to existing differences only where this is really needed.

First of all, however, we should look at the impact of the programmes as, besides the considerations made in Sections 6.2 to 6.4, this is what motivates our recommendation. In both countries, there has been a positive development of aggregate-level unemployment after the introduction or expansion of the programmes (Eurostat 2015). Up to a point, this is clearly part of a general recovery to which the programmes may have contributed, not a causal effect. But both countries have much lower shares of long-term unemployment in total unemployment than Croatia, and these shares have been reduced over the last few years. At an individual level, the programmes have definitely contributed to a reduction of poverty, among other things through an appropriate targeting of participants. Against the background of public concerns and criticisms, it is interesting to note that many participants perceived the programmes as a safety net or as a basis for doing work that is beneficial for the community – not just as a monitoring device where they have to spend (or even waste) their time. Last but not least, the Latvian programme has been positively assessed with respect to these individual-level effects and the utilization of public funds in a serious evaluation exercise conducted by the World Bank (Azam et al. 2012).

A number of factors that have been particularly important for making the programmes successful are highlighted in the literature (see Hazans 2012 and Koltai 2012). First, comprehensive coverage of individuals and geographic regions appears to be very important. In Latvia, for instance, all registered unemployed who did not receive unemployment insurance benefits for any reason (or who received subsistence-level benefits on top of very low unemployment insurance benefits) were eligible for participation. Individual participation was limited to six months (just one month per year in Hungary). In terms of geography, all municipalities could participate in the programme on a voluntary basis, while actual coverage towards the end of the programme period was almost complete – in all but one municipality.

A second, very important aspect has been the decentral organization, with a leading role of municipalities, combined with close co-operations between municipalities and regional branches of public employment services and an interactive exchange of experience between all participating bodies, especially during the initial stage of the programme. In addition, planning and managing the programmes was overseen by national ministries of labour or welfare, and there was strong political backing from the central government against all kinds of resistance and public concerns. In all relevant branches of the public administration, there was thus unanimous support for the programme, with different responsibilities within a useful division of labour between political and administrative actors.

A third feature that should be taken to be important, also with an eye on various criticisms that were raised, is that work opportunities were organized in such a way that participants only worked for municipalities themselves or in co-operation with non-profit organizations (NGOs as well as other government institutions). For some critics, this still involved the risk of displacing regular jobs. Especially when the programmes were increasingly considered successful, other critics demanded that for-profit enterprises should be allowed to participate as well. We will comment on potential displacement effects below, but staying within the non-profit sector is certainly useful in this respect.

A fourth and final aspect that we would like to stress here as a factor contributing to the success is that a number of (self)targeting mechanisms were built into the programmes making sure that they really addressed individuals in need and at risk of losing contacts to regular forms of economic activity. Participants could receive only a relatively low amount of pay, substantially less than the minimum wage for regular employment, and they had to carry out physically demanding or unpleasant work on a full-time basis, i.e., during eight hours a day. Programme participation therefore gave evidence of work motivation and, for able-bodied individuals, was a pre-condition for continuing to receive any kind of benefits. Nevertheless, at least in the Latvian short-term programme, there was substantial over-subscription by individuals who wanted to participate. Hungary, with its longer experience (and some phenomena of erosion of success over time) has added elements of training and education to some sub-programmes in recent years to make participation more attractive for those interested in re-entering regular employment.

Besides these success factors, experience from both countries also points to difficulties and risks that need to be dealt with in the implementation and operation of public work programmes. One point one should be aware of is that a stricter regime for those outside the official labour force and a successful public work programme could lead to an increased motivation to register as unemployed, with a statistical side-effect on unemployment which looks unfavourable, but is actually neutral with respect to the labour-market situation. Another observation from both Latvia and Hungary is that influential groups – employers, local politicians and also public servants in other areas – exerted some pressure against the implementation in these countries. They argued that it might imply a waste of public funds and existing qualifications of participants, both of which could allegedly be better utilized in creating regular jobs. As was already mentioned, once the programmes were under way,

others argued to the contrary in favour of allowing for-profit enterprises to participate as well. These were occasions where unanimous support of all levels of administration and public policy that were somehow involved in the programme were called for to get the scheme going and keep it on track as originally intended.

A concern which was often expressed from various sides was that work programmes could have displacement effects for regular jobs, even though the rules prescribed that participants should be assigned to “additional” jobs that would not compete with existing ones. An important point to note is that displacement effects of this kind can only arise on a sectoral level – that is, as a displacement of particular activities which cannot be fully prevented through administrative definitions of “additional” jobs. These effects cannot exist at an aggregate level because saving public expenditure on some issues which can be taken care of by the work programmes necessarily frees up resources which can then be used elsewhere. Even the sectoral effect can be held under control if public work schemes concentrate on non-profit activities with a social value for which municipalities simply haven’t got the funds under current economic conditions. Typical activities carried out in public work programmes in the countries considered here were gardening, collecting garbage, cleaning road sides and old graveyards, building small infrastructure in national parks, preparing firewood, helping elderly people and people with disabilities, etc. Limiting distortions which could nevertheless arise over time also provides another reason why public work programmes should probably operate only on a temporary basis.

Finally, while the programmes were in operation, public opinion reacted to the fact that unemployment became publicly visible, with programme participants not working with due care but “just walking around and smoking” during short breaks (Hazans 2012, p. 18). This type of criticism is essentially based on a misperception, as the main alternative would be that the unemployed remain invisible at their homes, watching TV and not working at all – or that they pocket their benefits without much fuss and go on to work in the shadow economy.

6.5.2. Re-designing existing benefit schemes

Besides the implementation of a comprehensive public work programme within the context of other elements of active labour-market policies, our considerations in this paper also point to the need for a number of changes in the design of existing schemes with “passive” benefits. To some extent, they are needed to make sure that individuals in unemployment or inactivity are actually exposed to activating measures we have been discussing. To some extent, they are meant to create financial incentives for the (long-term) unemployed to re-enter regular jobs. In any case, the changes in benefit design ought to relate to those schemes that we have identified as being relevant for solving the problems of persistent long-term unemployment (in Section 6.3).

Unemployment insurance in Croatia has a relatively generous replacement rate only for limited spells of unemployment (of up to three months). However, the duration of (lower) benefits can become rather long for older workers with a long work record, especially if

they are approaching retirement. Reducing the maximum duration of unemployment insurance benefits for these groups might therefore be helpful in fighting long-term unemployment, as it might prevent individuals from giving up job search, especially if the labour-market situation is far from encouraging for a continued search. However, similar effects could be brought about by establishing a stricter case management for those in extended spells of unemployment or by including all individuals with more than 6 or 12 months of unemployment in the target group for the public work programme, regardless of which benefit scheme they are currently in.

Recipients of social assistance should definitely be subjected to a tighter framework in terms of active counselling, job search requirements and possible benefit sanctions. In addition, elements of “in-work benefits” should be introduced into the social assistance scheme. Germany provides an example for a kind of minimum approach, with a reduction of benefit withdrawal rates vis-à-vis own earned income from 100% to 80% to 90%, establishing only weak incentives to take up low-paid jobs. Approaches which are stronger and more elaborate, such that entering regular employment is encouraged mainly if it goes along with a considerable number of working hours, or a substantial contribution to securing one’s living, can be conceived of, following the examples of the Anglo-Saxon countries considered before (see Section 6.4.1). In fact, following the examples of the US EITC and the British WTC, benefit withdrawal should create a marginal burden on earned income (including cumulative effects with wage taxes, social insurance contributions and withdrawal of other benefits, e.g. housing allowances) that can be as low as 50% and does not exceed 70%. To limit fiscal costs, reduced withdrawal rates can be concentrated on certain ranges of earned income, disregarding jobs with extremely low pay, but mainly incentivating recipients to take up full-time jobs and to transcend the poverty line.

With respect to labour-market performance, the pension scheme may appear to be a side issue. Nevertheless, changes in benefit categories for working-age individuals should also be considered within an agenda addressing inactive individuals and attempting to re-integrate them into the official labour force. At least, current outflows into disability and early-retirement pensions should be substantially reduced by tightening the relevant eligibility rules and increasing the earliest age for retirement (see, again, Werding 2016). For similar reasons, reducing the amounts of benefits deriving from “privileged” pensions (and curbing special early-retirement options applying in these cases) might be an issue, to the extent that this appears to be feasible. Further changes in pension law which could have an impact on formal activity could relate to redistributive elements involved in benefit assessment: increasing pension benefits for those who were on minimum wages for substantial periods of their working life may lead to under-reporting of actual wages as a specific form of work in the shadow economy.

6.6. Conclusion

Following the Great Recession, labour-market performance in Croatia has continuously deteriorated. Currently, there is a considerable risk that unemployment and economic inactivity become lasting problems, instead of turning to a recovery. In this situation, many efforts are called for in order to revitalize the Croatian economy, to increase international competitiveness and to balance public budgets. However, labour-market policy will most likely be a key area in any promising reform strategy. Besides other measures for reforming labour markets (Weber 2016) particular attention should be paid to elements which are suited to activate the unemployed and to re-integrate those outside the labour force into regular employment.

Relying on the international experience with attempts at reducing high-level, structural unemployment, two types of measures have been specifically addressed in this paper. On the one hand, changes in the design of existing benefit schemes have been considered, with the task of increasing incentives for beneficiaries to search and enter new jobs. On the other hand, activation strategies applied by the benefit administration have been reviewed, with a special emphasis on work obligations and public work programmes that have been successfully applied in other transition economies in the EU-28.

With respect to the design of existing benefits, the most important recommendations are as follows.

- Maximum durations of unemployment insurance benefits (exceeding 6 months) should be checked, especially for those with longer work records or those approaching retirement;
- Elements of “in-work” benefits should be introduced into the social assistance scheme for those in long-term unemployment, e.g., by reducing benefit withdrawal rates against own earned income;
- Besides, changes in the pension scheme which limit entries into disability and early-retirement benefits appear to be appropriate, not only to restore financial viability of the pension scheme, but also to keep up labour-force participation.

In addition, several measures of active labour-market policy should be used in order to frame the behaviour of those who are unemployed or are currently withdrawing from the labour market (at least with respect to official work). In this context, the following options appear to be most promising.

- Recipients of unemployment benefits and social assistance should be subjected to a strict case management, with active counselling, formal search requirements, benefit sanctions, etc.
- Establishing work requirements for longer benefit receipt should be seriously considered, combined with the implementation of public (non-profit) work programmes operated at a municipal level;
- Measures of this latter type could be particularly useful, not only as a means to strengthen work-related habits and fight de-motivation and de-qualification among

the long-term unemployed, but also in order to monitor their time use and prevent them from working in the shadow economy. They can be applied at least as a temporary measure in order to overcome the current period of extremely high unemployment and low activity.

References

- Andersen, Torben M. and Michael Svarer (2007), "Flexicurity: Labour Market Performance in Denmark", *CESifo Economic Studies* 53(3): 389–429.
- Azam, Mehtabul, Céline Ferré and Mohamed Ihsan Ajwad (2012), "Did Latvia's Public Works Program Mitigate the Impact of the 2008–2010 Crisis?", *World Bank Policy Research Working Paper No. 6144*.
- Card, David, Jochen Kluge and Andrea Weber (2010), "Active Labor Market Policy Evaluations: A Meta-Analysis", *NBER Working Paper No. 16173*.
- Croatian Employment Service (2013), 2012 Yearbook, Hrvatski zavod za zapošljavanje (download from: <http://www.hzz.hr/default.aspx?id=14549>).
- Eurostat (2015), Data from the European Labour Force Survey (download from: <http://ec.europa.eu/eurostat/data/database>).
- Hazans, Mihails (2012), "What works when the labour market doesn't?", Peer review paper, European Commission, DG Employment, Social Affairs and Inclusion (download from: <http://ec.europa.eu/social/main.jsp?catId=1070&langId=en&newsId=1950&furtherNews=yes>).
- HZMO (2015), Statističke informacije Hrvatskog zavoda za mirovinsko osiguranje (Statistical Information of the Croatian Pension Insurance Institute, various years; download from: <http://www.mirovinsko.hr/default.aspx?id=723>).
- Koltai, Luca (2012), "Work instead of social benefits? Public works in Hungary", Peer review paper, European Commission, DG Employment, Social Affairs and Inclusion (download from: <http://ec.europa.eu/social/main.jsp?catId=1070&langId=en&newsId=1950&furtherNews=yes>).
- Matković, Teo (2012), "As if nothing had happened: Increasing scope but retaining the tone of public works", Peer review paper, European Commission, DG Employment, Social Affairs and Inclusion (download from: <http://ec.europa.eu/social/main.jsp?catId=1070&langId=en&newsId=1950&furtherNews=yes>).
- Ministry of Finance of the Republic of Croatia (2015), "Consolidated General Government" (download from: <http://www.mfin.hr/en/time-series-data>).
- MISSOC (2015), Mutual Information System on Social Protection (access and download via <http://www.missoc.org>).
- Osterkamp, Rigmar (2016) = Chapter 7, "International experiences of reforms, focusing on labour market regulations and best practices", unpublished manuscript, Ifo Institute for Economic Research.
- Schneider, Friedrich and Dominik Enste (2000), "Shadow Economies: Size, Causes and Consequences", *Journal of Economic Literature* 38(1): 73–110.

- Schneider, Friedrich (2015), "Size and Development of the Shadow Economy of 31 European and 5 other OECD Countries from 2003 to 2015: Different Developments", unpublished manuscript, Johannes-Kepler-Universität, Dept. of Economics (download from: <http://www.econ.jku.at/members/Schneider/files/publications/2015/ShadEcEurope31.pdf>).
- Sinn, Hans-Werner, Christian Holzner, Wolfgang Meister, Wolfgang Ochel and Martin Werding (2006), *Redesigning the Welfare State: Germany's Current Agenda for an Activating Social Assistance*, Cheltenham and Northampton, MA: Edward Elgar.
- Weber, Michael (2016) = Chapter 5, "Labor market challenges in Croatia", unpublished manuscript, Ifo Institute for Economic Research.
- Werdning, Martin (ed., 2006), *Structural Unemployment in Western Europe: Reasons and Remedies*, Cambridge, MA, London: MIT-Press.
- Werdning, Martin (2016) = Chapter 8, "Old-age provision: Policy options for Croatia", unpublished manuscript, Ifo Institute for Economic Research.
- Werdning, Martin and Kai A. Konrad (2012), "Reforming the European Welfare State", in: Thiess Büttner and Wolfgang Ochel (eds.), *The Continuing Evolution of Europe*, Cambridge, MA, London: MIT-Press, pp. 71–118.

7. International Experiences on Labor Market Reforms

Rigmar Osterkamp¹

7.1. Introduction

That institutional characteristics of an economy and particularly institutional features of the labor market may be important determinants of labor market outcomes is a view which was not unanimously held by economists only two decades ago. Paul Krugman, e.g., suggested in 1993 that “... the level of employment is a macroeconomic issue, depending in the short run on aggregate demand and depending in the long run on the natural rate of unemployment, with microeconomic policies like tariffs having little net effect.”

In the meantime, such a view has lost practically all its currency. New developments in microeconomic theory and particularly in the theory of the labor market (e.g. incorporating matching, searching, signaling, shirking), as well as a large number of empirical studies, have shown that institutional (sometimes called “structural”) features of the economy and the labor market are key determinants – or at least important co-determinants – of economic growth and satisfactory labor market outcomes.

This paper looks at the effects of labor market institutions (LMI) on employment outcomes.

Section 7.2 provides a short review of the main problems affecting the Croatian labor market in comparison to Croatia’s peer countries. Section 7.3 reviews empirical findings on the relation between the general institutional setting of countries, and particularly LMI on the one hand and labor market outcomes on the other, by reviewing the results of international empirical studies, mainly about European countries. Section 7.4 and 7.5 consider the reform experiences of Latvia and of Spain, respectively. Section 7.6 summarizes the main findings and draws conclusions for a Croatian labor market reform policy.

7.2. Problems of the labor market in Croatia in comparison

High and persistent unemployment has become one of the most urgent problems to the Croatian economy and society. The total rate of unemployment in Croatia, at 17%, is higher than in most of its peer countries. The same is true for long-term unemployment and youth unemployment, with the latter, at 45%, is particularly troubling.

Croatia not only differs disadvantageously in labor market outcomes from her peers but also in institutional features of the labor market. The World Economic Forum ranks

¹ Bavarian School of Public Policy, formerly at Ifo Institute for Economic Research

Croatia's Labor Market Efficiency very low, indeed lowest among its peer countries. Only slightly better is its Index of Labor Market Regulation, a sub-index of Fraser Institute's Economic Freedom Index.

A similar picture emerges when using the country-comparative CESifo DICE Database to compare Croatia's labor market institutions with that of six other countries which have a similar standard of living, are likewise young EU members, or are Croatia's neighbors. The countries selected for comparison are the Czech Republic, Estonia, Latvia, Lithuania, Slovakia and Slovenia.

The comparison reveals that Croatia differs in many respects strongly from the comparison countries. Unfortunately, the differences are most often not conducive to good labor market outcomes. Croatia exhibits:

- by far the lowest percentage of workers working at night or in the evening;
- ... but the highest percentage of workers working shifts;
- a "yes" for restrictions on weekly holiday work. None of the other countries, except Slovenia, imposes such a restriction;
- the lowest index of "Labor Freedom";
- the highest trade union density in medium and large enterprises;
- the highest value for the "confrontation" index in labor-employer relations;
- a "yes" for priority rules in cases of re-employment. None of the other countries has such a restriction;
- the lowest index for hiring and firing practices (i.e., strongly impeded by rules);
- the lowest index (together with Slovenia) for productivity-related wages;
- the lowest value for management positions held by professionals (instead of, e.g., by relatives).

More details about labor market institutions in Croatia in comparison to other countries are provided in Annex 1.

Not all of these labor market characteristics and institutional features are easily – or at all – accessible for reform policy actions. However, the above specific differences of Croatian LMI to those of the comparison countries do deserve special attention by policymakers.

7.3. What can Croatia learn from international comparisons of labor market institutions and their reforms?

The above-mentioned highly unfavorable labor market outcomes, together with the problematic institutional features, would suffice to allow drawing conclusions for labor market reform proposals on purely theoretical grounds. This is done in other contributions to this publication. Here we want to review the evidence gained in

systematic country-comparative econometric studies of the effects of labor market institutions and their reforms on labor market outcomes.

In the following we present stylized facts about the findings of 12 recent econometric studies (from the past 10 years), including two meta studies. The meta studies review the results of altogether more than 100 country-comparative econometric studies. The findings of the studies are presented in more detail in Annex 2.

7.3.1. Stylized results of international comparisons of labor markets and their reforms: General institutional reforms and employment outcomes

- The two most important determinants of per capita growth are general institutional characteristics – such as political stability, respect of property rights and administrative quality – and the system and rates of individual and corporate taxation.
- General structural (i.e. liberalizing) reforms lead to positive outcomes also in the labor market.
- Within general structural reforms, reforms of labor market institutions play a significant role.
- Such reforms, contrary to what is often maintained, do not lead to an overall destruction of jobs, higher inequality and more poverty.
- Such reforms impact directly on labor market outcomes and not only indirectly via the effects of the reforms on economic growth.

7.3.2. Labor market institutions and their reforms. Effects on employment outcomes

- A large majority of the empirical studies analyzed come to the conclusion that employment, participation, job creation and job re-allocation are negatively associated with a dominance of fixed-term contracts, the size of the tax wedge, the size of unemployment benefits, the duration of duration of benefits, and the level of the minimum wage.
- Higher labor market flexibility turns out to be advantageous for the workers and the economy, at least in the medium- and long-run — but not necessarily in the short-run, particularly during a crisis.

- The between-countries difference in the flexibility of labor market institutions suggests that an increase in labor market flexibility is associated with a reduction of shock-induced unemployment by 2.5 percentage points.
- By contrast, lower labor market flexibility is associated with higher unemployment, a less labor-intensive production and a higher “employment threshold” (i.e. a higher rate of economic growth needed to keep employment at least stable).
- The short-term negative impact of external shocks on employment is larger in countries with more flexible labor markets, while the medium-term effect is larger in countries with more rigid labor markets.
- Labor market rigidity tends to leave young workers unemployed in relatively greater numbers than older workers. This implies that an increase in labor market flexibility favors younger workers relative to older workers.

While the effects of a flexible labor market have been practically unanimously found to be positive for labor market outcomes, the evidence for the effects of union density and the degree of centralization of the wage setting process on labor market outcomes is mixed.

- The degree of centralized wage bargaining and of union density does not show clear effects on employment outcomes.
- However, systems of highly decentralized and of highly centralized wage setting can produce similarly efficient results. The problem often arises in the intermediate situation where (small) unions have the power to protect their own workers but are not large enough to take account of the wider economic and social consequences of their actions.

7.3.3. Effectiveness of Active Labor Market Programs (ALMP)

- ALMPs are generally associated with lower unemployment.
- However,
 - program costs are often unknown and make an even a crude cost-benefit analysis impossible;
 - short-term effects of ALMP are often insignificant or even negative;
 - many programs exhibit significantly positive effects only after 2 to 3 years;
 - significant effects of ALMP can be best expected from incentives and penalties.

- Job-search assistance belongs to the least costly ALMP programs and has been found to be of significant impact on job-finding rates and on unemployment duration.
- Classroom and on-the-job training programs generate positive effects only after some years.
- Training most often has positive effects on re-employment and wage prospects, but the effects are of limited size.
- Training often is more effective when provided within-firm and in connection to counseling, start-up support, wage subsidies.
- A broadly-based vocational educational training (VET) is vital for the employability of young workers. VET systems, however, differ more widely than their outcomes in Europe, making it difficult to provide easy orientation for a reform.
- Public works programs seem to be the least effective possibility of an ALMP in terms of increased long-term employment prospects.
- However, temporary works programs during periods of mass unemployment and targeted to persons of low employability may be important for mitigating income loss and maintaining the link to the labor market.

7.3.4. Two-tier reforms of employment protection

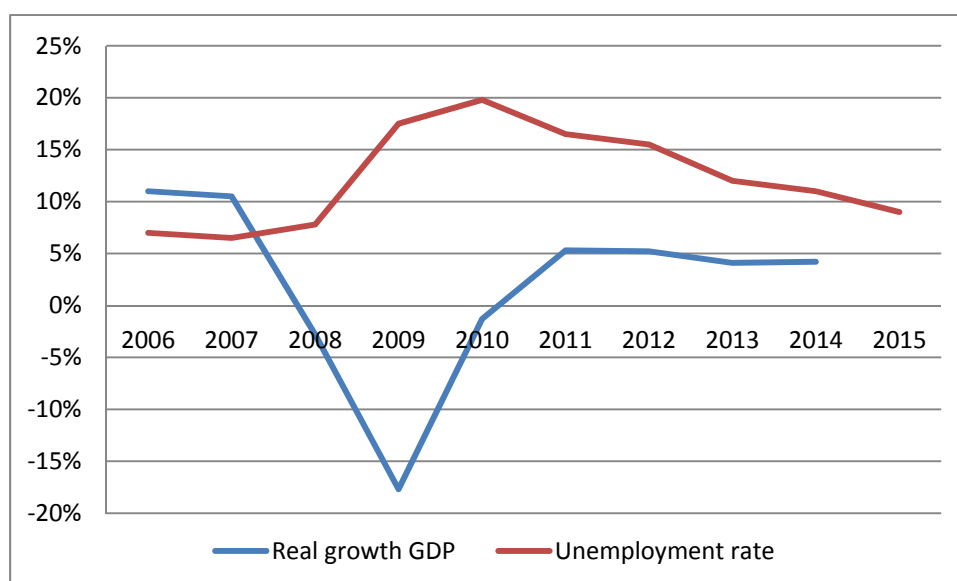
- “Two-tier” reforms of employment protection ease the possibility for firms to offer fixed-term instead of open-ended contracts to additional workers, leaving the position of incumbent workers with open-ended contracts unchanged (a reform on the margin, and not on the core of existing contracts).
- Political resistance against a full-fledged reform of employment protection (liberalizing the core, i.e. the existing open-ended contracts) has led many European governments to pursue a more limited aim, namely to permit fixed-term contracts for additional employees only.
- Whether a reform on the margin can later be extended to a reform of the core seems to depend crucially on the relative proportion of workers with temporary and with open-ended contracts.
- In Europe, only Spain has so far been able to proceed from a marginal reform of employment contracts to a reform of their core. An important reason is that after some years the share of incumbent workers with open-ended contracts dropped to less than 50% of the total active population.

7.4. Latvia's reform experience

7.4.1. Evolution of economic growth and employment

The Latvian economy witnessed high and rising economic growth rates from 2000 to 2007, but was hit hard by the international financial crisis. Real growth became negative and stood in 2009 at -17.7%. But only one year later the downward trend had been reversed. Since 2011 the economy has been growing at positive rates of between 4% and 6% (Figure 7. 1.).

Figure 7.1.: Latvia, Real economic growth, unemployment, 2006 – 2015



Source: Eurostat.

Until 2010, the evolution of economic growth in Croatia was similar to that of Latvia. The difference started in 2011, when Latvia had already regained satisfactory and relatively stable rates of real economic growth. Croatia, in contrast, has witnessed a prolonged period of negative growth. Only for 2015 it may post a (slightly) positive growth rate.

Another parallel between Croatia and Latvia is in the evolution of unemployment. Between 2008 and 2010, Latvia's unemployment rate shot up from 7.8% to 19.8%. Thereafter it decreased steadily, to 11% in 2014, and is projected to reach 9% in 2015. Croatia, on the contrary, was unable to reverse the post-2008 rising trend of unemployment, which today lingers at around 20%.

7.4.2. Reform policy

In the following we consider Latvia's recipe for success, focusing on which major economic policy measures have been taken and what role have reforms of the labor market played.

Since long before the crisis of 2008/2009, Latvia had decided not only to strive for EU membership (which it achieved in 2004) but also to be admitted eventually into the

Eurozone (which occurred in 2014). The commitment to a later introduction of the euro found its expression in a strictly-held peg of the then Latvian currency – the Lats – to the euro. This commitment meant that a nominal currency devaluation was never seriously considered as a possible means to overcome the crisis.

Another possible route to stimulate economic growth, namely deficit-spending, was likewise closed – due to insight on the side of the Latvian government and to the conditions attached to low-interest emergency credit provided by the European Union as well as by the IMF and the World Bank. Thus, Latvia had to embark on a process of internal devaluation to restore economic growth, reduce unemployment and regain international competitiveness.

The first batch of reforms came in the public sector. Within only two years, public sector wage rates and public sector employment fell by around 25%. Half of all public institutions, including many hospitals and schools, have been closed. (The relatively high number of hospitals before the crisis was regarded as an expensive inheritance of the Soviet time. The average rate of seven pupils per school teacher was likewise considered to be no longer affordable.) Pensions have been cut by 10%. Pensioners who still worked had to bear reductions of their pensions of 70% (Weber, 2013).

These decisions led to a steady reduction of the budget deficit. Even in the midst of the crisis, the Latvian government pursued an austerity policy.

The reform measures in the public sector exerted an effect also in the private sector, where nominal wages fell by around 17% in real terms within two years. The non-tradable goods sector shrunk, while the tradables sector expanded. The unemployment rate, which had peaked at around 20% in 2010, improved quickly and steadily and so did real economic growth.

Before the crisis inflation had hit double digits. But the wage cuts, together with a restrictive public fiscal stance, lowered the general price level and increased international competitiveness.

There can be no doubt that the reduction of real wages was an important reason for regaining positive economic growth and higher employment. But two developments were also of help. First, there was – and still is – a considerable net emigration of Latvian workers mainly to EU countries.

An important second reason for a quick improvement of employment lies in institutional reforms of the labor market. The monthly minimum income is set at a rather low level (320 euros, i.e., around 40% of average income). It was kept practically constant from 2011 until the end of 2013. The duration permitted for fixed-term labor contracts has been expanded to three years. The plan of the government for 2015 is to extend the period to five years. Even before the rules for dismissal were liberalized, enterprises found ways to circumvent limiting regulations (Schrader/Laaser, 2014; Zazova, 2011).

Demand for labor has been stimulated by reducing labor taxes and social contributions and by promoting entrepreneurship (business incubators, micro enterprises, and easing administrative barriers for new enterprises). Labor supply has been likewise strengthened by a reduction of the income tax rates for low incomes, by training of unemployed persons (formal and informal education, vocational training), by helping businesses in the start-up phase. Moreover, active labor market measures have been introduced (improvement of the job search system, specific support to the long-term unemployed, temporary employment in public works programs, job subsidies, career counseling, youth workshops) (Government of Latvia, 2014; Government of Latvia, 2013). The personal income tax rate schedule was reduced in 2013, with further cuts planned (EBRD, 2013).

The negative repercussions of the austerity measures and the adjustment process on unemployed persons and the poor have been mitigated by emergency public works programs, creation of temporary jobs, abolishment of healthcare co-payments and additional housing support. These measures have been co-financed by the IMF, the European Social Fund and the World Bank (IMF, 2014).

The strict reform orientation of all governments in power since the crisis has found broad and sustained support by the electorate in parliamentary elections, including the 2014 election.

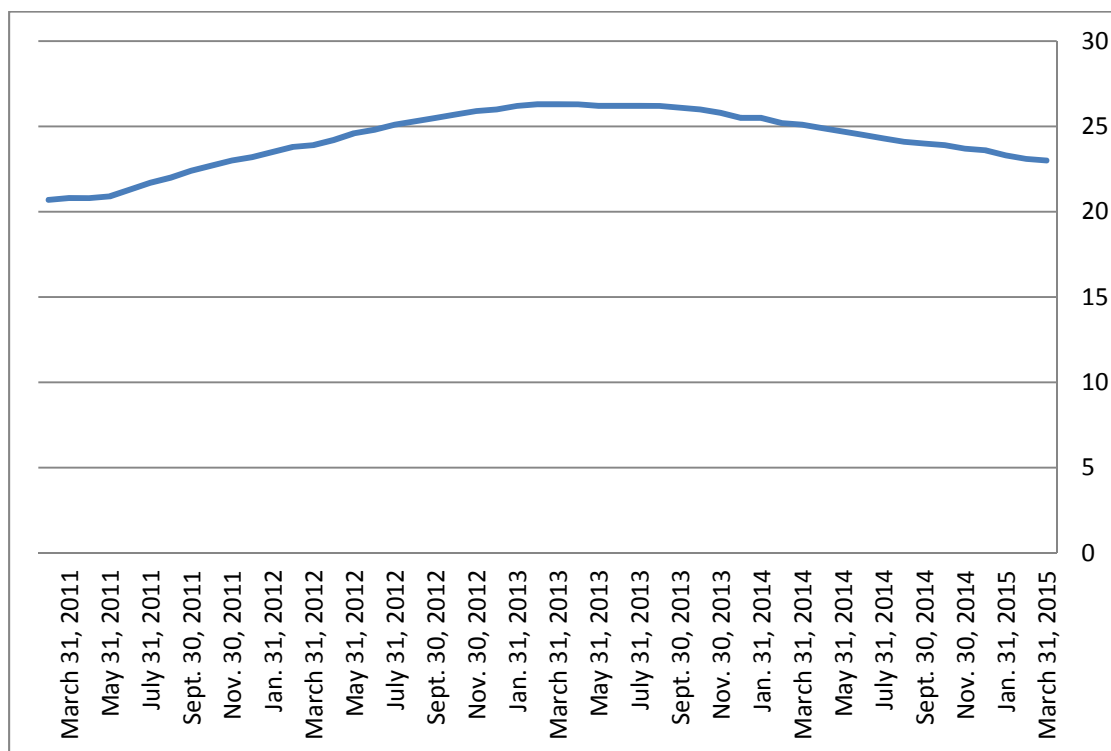
7.5 Reform experience in Spain

7.5.1. Evolution of economic growth and employment

During the first five years after 2000, real economic growth in Spain averaged nearly 5% p.a. After 2005, however, economic growth declined steadily. From 2009 until 2014 the rate was around zero, and even negative in some years. Only in 2015 signs of a slow recovery are becoming evident.

The development of economic growth is mirrored in the evolution of unemployment (Figure 7.2.).

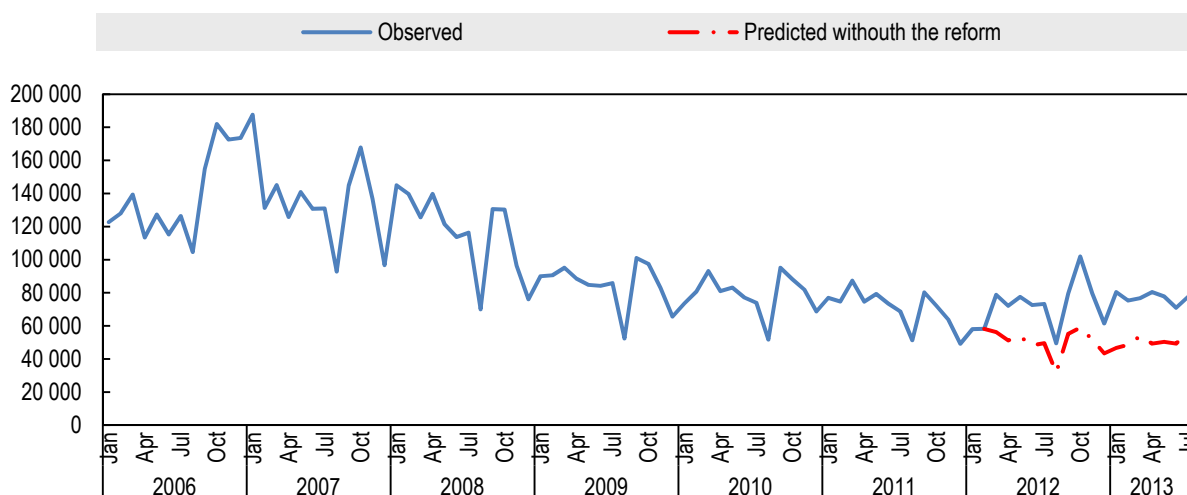
Figure 7.2.: Unemployment rate in Spain, in % March 2011 – March 2015



Source: Eurostat and Ycharts.

Until 2008 unemployment hovered around 8%. Thereafter the rate increased continuously, peaking at around 25% in 2013. Only in 2014 unemployment dropped, slightly, starting a trend that continues today. A particular indicator of a positive development is that the inflow into permanent contracts has been on the increase since 2012, at least as concerns small and medium enterprises (see Figure 7.3.).

Figure 7.3.: Spain: Monthly inflows into permanent contracts, including contract conversions, 2006-2013, (Firms with 100 or fewer employees)



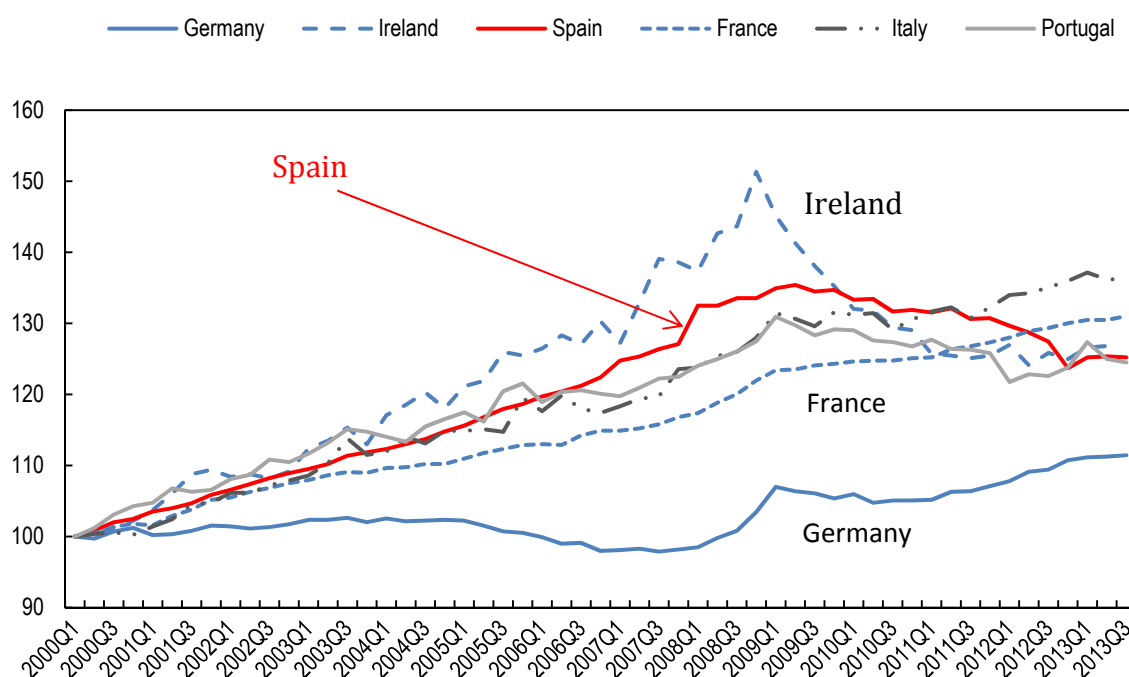
Source: OECD, <http://www.oecd.org/employment/emp/Spain-LaborMarketReform.htm>.

Note: The figure presents the number of new permanent contracts signed each month, as observed in raw data, and as they would have been in the absence of the reform, according to baseline estimates covering the period January 2006-July 2013.

Between 2000 and 2010, unit labor costs increased steadily (see Figure 7.4.), and more strongly than in other EU countries like France, Germany, Italy or Portugal. Only in 2010 did unit labor costs in Spain start to decline in absolute terms, and in relation to the other countries mentioned.

The public sector wage premium over private sector wages was quite substantial until 2008, at around 25% (Hospido and Moral-Benito, 2014), when it started to decline significantly.

Figure 7.4.: Evolution of unit labor costs in selected European countries, 2000-2013
Q1-2000 = 100



Source: OECD, <http://www.oecd.org/employment/emp/Spain-LaborMarketReform.htm>

7.5.2. Reform Policy

In 2012 and 2013, the Spanish government introduced reforms to the labor market, whose main elements were:

- Reduction of severance pay, albeit only in case of unfair dismissal. The compensation in case of fair dismissal remains relatively high in comparison to other EU countries of a similar level of standard of living.
- The power of unions to negotiate collective wage agreements across entire industries or regions has been reduced by the newly introduced right of firms to opt out of such an agreement. This strengthened firm-level wage negotiations.
- The former requirement of an administrative authorization for collective dismissal has been cancelled. However, a provision was recently introduced that obliges firms to provide training and relocation plans for the workers to be laid-off. This seems to have led to uncertainty about the full extent of the new requirements.

- Measures for consolidating the public budget were introduced already in 2008. One important series of steps, with consequences for the whole labor market, was the gradual reduction of the existing public sector wage premium, as mentioned above.

Proper labor market reforms in Spain began only in 2012, with the exception of the gradual reduction of the public sector wage premium, which started in 2009. Thus, it is too early to assess the impact of the reforms on labor market outcomes and to disentangle their effects from effects of other reforms and of external and internal non-reform events.

What can be seen, however, is an effect of the severance payment reduction. The on-the-job search rate for new and better employment was comparatively low in Spain. Orsini and Vila Núñez (2014) found that this search rate has significantly increased under the influence of the reduced severance pay. This is not yet visible in higher job-to-job transitions, because the figures are still too small. But it should – sooner or later – translate into more job transitions. This, in turn, should lead to improved allocation and better economic growth prospects.

What has also been observed is a certain reduction in the duration of spells in unemployment (OECD, 2013).

The Spanish labor market is still segmented into contracts of a permanent and a temporary nature.

7.6. Conclusions

7.6.1. General conclusions from the empirical literature on labor market reforms

- There is overwhelming evidence for significant effects of the institutional design of labor markets on labor market outcomes. The evidence comes both from theoretical insights and numerous empirical studies.
- Labor market reforms introducing more flexibility improve labor market outcomes in the medium- and long-run.
- However: the interactions of the different elements of labor market institutions (LMI) and the transmission channels from institutions to outcomes are complex and country-specific.
- Thus, there is no general blueprint for LMI reforms. The country-specific background and context is decisive for designing LMI reforms (and of other institutions as well).
- This is all the more so as economic policy reforms, and particularly reforms of the labor market, are politically highly sensitive.
- A combination of policies – increasing labor and product market flexibility, as well as macroeconomic policies aimed at reducing macroeconomic volatility – has proved to be particularly efficient in enhancing employment responses to economic activity.

7.6.2. Policy conclusions for labor market reforms in Croatia

- If a nominal currency devaluation is to be avoided, an internal devaluation is unavoidable to regain international competitiveness.
- The necessary reduction of wages and prices in the whole economy can best be started by cutting wages in the public sector.
- Labor costs can also be reduced in an indirect way: by increasing working time, per day, per week or per year.
- To win public support, particularly during the difficult first years of a reform, such a program must be
 - comprehensive, i.e., it must comprise measures on the macro level, on the micro level and in all sectors;
 - socially justifiable, i.e., there should be no pure winners and no pure losers of the reform; unavoidable social hardship must be at least mitigated;
 - pre-announced, so that workers, enterprises, banks and social funds can quickly and early start to adapt to the reforms.
- Reforms of labor market institutions must be an important part of the reform package. The comparison of Croatia with comparable countries shows that many Croatian labor market institutions differ considerably from those of peer countries, in a way that makes reforming such institutions a pressing political undertaking.
- “Flexicurity” – a combination of generous unemployment benefits on the one hand and a liberal employment protection legislation (EPL) policy with strong activating labor market policies on the other hand – has been an example of a “smart” policy which reduces political opposition from the direct and short-run losers of reform by offering them generous benefits and a better reemployment outlook.
- Labor disputes should be resolved out of the normal courts, in a separate system of tribunals and arbitration.
- Tripartite (government, unions, employers) agreements can make more competitive (i.e. lower) wages politically easier, particularly when public sector wage cuts are carried out.
- It is important that enterprises have the right to opt out from centralized wage agreements.
- It is important to ease the restrictions on fixed-term labor contracts. In the long-run, open ended and fixed-term contracts should be made more similar in terms of severance pay and duration.
- Chaining of fixed-term labor contracts should be permitted.
- Wage subsidies should be preferred to an increase in minimum wages.
- Contractual wage scales should allow for suitable pay differences between young and more experienced workers.
- Active labor market policies (ALMP) measures should be an integral part of a labor market reform program. The availability of unemployed workers for such measures should be strictly enforced.

- The caveats against ALMP are:
 - program costs are often unknown and make even a crude cost-benefit analysis impossible;
 - short-term effects of ALMP are often insignificant or even negative;
 - such programs exhibit significantly positive effects only after 2 to 3 years.
 - significant effects of ALMP can be best expected from incentives and penalties.

- Job-search assistance should be a preferred way of performing an ALMP, because it is cost-effective and has been found to have a significant impact on job-finding rates and on unemployment duration.
- Classroom and on-the-job training programs generate positive effects only after some years.
- Training most often has positive effects on re-employment and wage prospects, but the effects are of limited size.
- Training is often more effective when provided within-firm and in connection with counseling, start-up support, wage subsidies.
- Temporary public jobs programs during periods of mass unemployment and targeted to persons of low employability are useful in mitigating income loss and maintaining the link to the labor market.
- Cuts in the hourly wage and through gains in productivity are not the only way to reduce labor costs. Another possibility is the prolongation of working time. This, in turn, can take different forms: increase of daily, weekly or monthly working time, reduction of public holidays, or of days of annual paid leave.

Annex 1

Croatian labor market institutions in comparison

Indicator	Croatia in comparison to a set of countries
Unemployment indicators	
Youth (15 – 24) unemployment rate	By far highest in Croatia among the comparison group.
Middle age (25 – 54) unemployment rate	Highest in Croatia among the comparison group.
Older workers (55 – 64) unemployment rate	Highest in Latvia, Lithuania and Slovakia. Lowest in Czech Republic, Slovenia and Estonia. Croatia in the middle.
Unemployment rate, men	Highest in Croatia and Latvia. Lowest in Czech Republic and Slovenia.
Unemployment rate, women	Highest in Croatia and Slovakia, lowest in Czech Republic and Estonia.
Long-term unemployment, % of total unemployment	Croatia highest rate in comparison group – and in Europe as a whole, except for Macedonia.
Employment indicators	
Employment/Population ratio by age, both genders	In the age groups 15 -24 and 25 – 54, Croatia has the lowest ratio by a considerable margin, around 10 percentage points. Nearly the same applies to the age group 55 – 64, where only Slovenia has a lower rate.
Employment/Population ratio by age, men	In the age groups 15 -24 and 25 – 54, Croatia has the lowest ratio, by a considerable margin of around 10 percentage points. Nearly the same applies to the age group 55 – 64, where only Slovenia has a lower rate.
Employment/Population ratio by age, women	In the age groups 15 -24 and 25 – 54, Croatia has the lowest ratio, by a considerable margin of around 10 percentage points. Nearly the same applies to the age group 55 – 64, where only Slovenia has a lower rate.
Female-to-male participation rate in the labor force	From lowest to highest: Czech Republic, Slovakia, Croatia , Slovenia, Estonia, Latvia, Lithuania.
Minimum wage indicators	
Statutory minimum wage, in euros, per month	Slovenia: highest value, followed by Croatia . All other countries in the comparison group have considerably lower minimum wages.
Monthly statutory minimum wage in purchasing power parity	Same ranking as in euros.
Statutory maximum working hours per day	Most countries of the comparison group, including Croatia , have 8 hours. Czech Rep.: 12, Slovenia: 10.

Working time indicators	
Annual hours worked	Croatia is in the middle of the comparison group.
Annual leave and public holidays expressed as hours p.a.	Croatia is in the middle of the comparison group.
Percentage of workers usually working on Saturday	Lowest value in Lithuania, second-lowest in Croatia . Highest in Slovakia and Latvia.
Percentage of workers usually working at night	By far the lowest value in Croatia . Considerably higher values in the other comparison countries. By far highest value in Slovakia.
Percentage of workers usually working in the evening	By far the lowest value in Croatia . Highest values in Slovakia and Slovenia.
Percentage of workers usually working shifts	Highest value in Croatia , followed by Slovenia and Slovakia.
Restrictions on night work?	“Yes” in Croatia , Estonia, Latvia; “no” in the other countries in the group.
Restrictions on “weekly holiday” work?	“Yes” only in Croatia and Slovenia; “no” in all other countries in the group.
Work contract indicators	
Fixed-term contracts prohibited for permanent tasks?	“No” in Czech Republic, Lithuania and Slovakia; “yes” in Croatia , Estonia, Latvia, Slovenia.
Maximum cumulative duration of fixed-term contracts (in months)	Croatia : 36 months. Czech Republic, Estonia, Lithuania: considerably longer. Slovakia and Slovenia: 24 months.

Labor-employer relation indicators	
Index of Labor Freedom (Sub-Index of Economic Freedom, Heritage Foundation)	With an index value of 39.4, Croatia’s “Labor Freedom” is lowest. The lowest among comparison countries is above 50, and above 80 in the Czech Republic.
Trade union density in firms with 20 – 49 employees	Highest value in Croatia , followed by Slovenia. Lowest value in Estonia, Lithuania and Czech Republic.
Trade union density in firms with 250+ employees	Highest value in Croatia and Slovenia. Lowest in Estonia and Latvia.
Confrontation or cooperation in labor-employer relations? Index 1 – 7. 1: confrontational; 7: cooperative.	Croatia’s index is 3.4; this is the lowest of the comparison group. It is also the lowest in Europe, with the exception of Romania and Serbia.
Employer must notify a third party before dismissing one	“Yes” in Croatia and Slovakia; “No” in all other

redundant worker?	countries in the group.
... before collective dismissal (9 employees)?	“Yes” in Croatia and Slovak Rep.; “no” in all other countries of the group.
Priority rules applying to re-employment?	“Yes” only in Croatia , “No” in all other countries in the group.
Severance pay, in weeks of salary.	With 15 weeks, Croatia is in the middle of the comparison group. Considerably higher in Czech Republic, Lithuania, and Slovakia. Lower in Slovenia and Latvia.
Wage setting centralized or at firm level? Index 1 – 7. 1: centralized; 7: firm level.	Croatia on a similar (middle) level with Czech Republic, Latvia and Slovakia. More at firm level in Estonia and Lithuania. More centralized in Slovenia.
Rigidity of employment. Index 0 – 100 (strongest rigidity).	Croatia : 50. Similar: Estonia and Slovenia; Much lower: Czech Republic, Lithuania, Slovakia.
Hiring and firing practices. Index 1 – 7. 1: impeded by rules; 7: flexible for employers	Croatia lowest index value in the comparison group, except for Slovenia.
How is pay related to worker productivity? Index 1 – 7. 1: not related to worker productivity; 7: strongly related	Croatia and Slovenia have the lowest index value. Considerably higher index value in the other comparison countries.
Firms are led by professional management? Index value 1 – 7. 1: management positions often held by relatives; 7: only by skilled professionals	Croatia : lowest value in the comparison group.
Relevance of brain drain. Index value 1 – 7. 1: scientists and engineers usually pursue chances abroad; 7: usually remain in the country	Croatia , together with Slovakia, lowest value in the comparison group.

Source: author's compilation from CESifo DICE Database.

Annex 2:

Relevance of general institutional reforms on employment outcomes

Hollweg/Lederman/Mitra (2014). Econometric analysis; 60 mainly developing countries, 10 years before and after reforms. Independent variable is a broad composite index of structural reforms. Dependent variables are wages, employment, unemployment rate and participation rate.

- General structural (i.e. liberalizing) reforms lead to positive outcomes also in the labour market.
- Such reforms, contrary to what is often maintained, do not lead to an overall destruction of jobs, higher inequality and more poverty.
- Such reforms impact directly on labour market outcomes and not only indirectly via the reforms' effects on economic growth.

CESifo Institutions Climate Index. It ranks 24 OECD countries by their institutional quality. Data used start in 1990. Dependent variable is per capita economic growth, independent variables are institutional rules and regulations which are grouped in 8 general institutional indicators and 24 sub-indicators. The weights of the indicators are endogenously determined by Factor analysis.

- The two most important determinants of per capita growth are general institutional characteristics – like political stability, property rights and administrative quality – and the system and rates of individual and corporate taxation.
- Labour market institutions also play a significant but less important role. The weight of these institutions in explaining differences of per capita growth is less than half the value of general institutional characteristics and of taxation.
- Within labour market institutions, the sub-indicator of early retirement has a higher (negative) weight than restrictive labour market practices.

Relevance of labour market institutions and their reforms on employment outcomes

European Economic Advisory Group (2013). An interpretation of recent literature about labour market reforms in European countries and their effects on LMI and labour market outcomes, particularly youth unemployment.

- Systems of highly decentralized and of highly centralized wage setting produce similarly – efficient – results. The problem lies in the intermediate situation where (small) unions have the power to protect their own workers but are not large enough to take account of the wider economic and social consequences of their actions.
- Labour disputes may be easier and quicker to resolve when they are taken out of courts and resolved in a separate system of tribunals and arbitration.
- The negative employment effects of minimum wages are small. This may be due to employers' reaction by investing more into their workers and retaining them longer.
- "Flexicurity" – a combination of generous unemployment benefits on the one hand and a liberal employment protection legislation (EPL) policy with strong activating

labour market policies on the other hand – may be an example of a “smart” policy which reduces political opposition from the direct and short-run losers of reform by offering them generous benefits and a better reemployment outlook.

- Higher labour market flexibility will turn out to be advantageous for the workers and the economy, at least in the medium- and long-run – but not necessarily in the short-run, particularly during a crisis.
- Tripartite (government, unions, employers) agreements may make more competitive (i.e. lower) wages politically easier, particularly when *public* sector wage cuts can be realized.
- A step-wise reform of open-ended and fixed-term labour contracts, making both more similar in terms of severance pay and duration (chaining) may prove to be advantageous.
- Labour market rigidity tends to leave young workers unemployed in relatively greater numbers than older workers. This implies that an increase in labour market flexibility favours younger workers relative to older workers.
- Contractual wage scales should allow for suitable pay differences between young and more experienced workers.
- Vocational educational training (VET) is vital for the employability of young workers. But there is no easy orientation of a reform on one of the VET systems in Europe because these systems differ more widely than their outcomes.

Blanchard/Jaumotte/Loungani, 2013. An empirical assessment of the IMF advice on labour market policies during the great recession 2007 – 2010.

- For improved micro flexibility, workers should be better protected through unemployment insurance than through employment protection.
- Opt-out clauses from collective agreements can provide greater flexibility in wage-setting.
- The collective bargaining structure should provide micro flexibility through decentralized wage setting while being combined with macroeconomic coordination.
- Public sector wage cuts have been in many cases an important labour market reform element for regaining international competitiveness and reducing unemployment.
- Differential protection of temporary and permanent workers should be avoided.

Bernal-Verdugo/Furceri/Guillaume, 2012. An Econometric analysis of 97 countries, 1980 – 2008. Independent variable is a composite index consisting of hiring and firing regulations, centralized collective bargaining, mandated cost of work dismissal. The impact of external shocks on labour market outcomes is assessed under different labour market institutions.

- The short-term negative impact of external shocks on employment is larger in countries with more flexible labour markets, while the medium-term effect is larger in countries with more rigid labour markets.
- The between-countries difference in LMI and reforms of LMI suggests that higher labour market flexibility goes with a reduction of shock-induced unemployment by 2.5 percentage points.

- Anticipated changes of LMI induce larger positive effects on employment than not anticipated reforms.
- Gradual introductions of reforms cause lower positive effects on employment than once-and-for all reforms.

Crivelli/Furceri/Toujas-Bernat , 2012. An econometric study of 167 countries, 1991 – 2009. Independent variables are indicators for labour and product market flexibility and for macroeconomic policies aimed at reducing macroeconomic volatility. The dependent variable is the (point) employment-GDP elasticity.

- Employment-GDP elasticities are mostly in the range between 0.3 and 0.8.
 - Increasing labour and product market flexibility as well as macroeconomic policies aimed at reducing macroeconomic volatility have a positive and significant impact on employment elasticities.
 - A combination of policies – increasing labour and product market flexibility as well as macroeconomic policies aimed at reducing macroeconomic volatility – can be particularly efficient in enhancing employment responses to economic activity.
 - These results primarily apply in the medium-term while an effect on job creation in periods of crises can not be taken for granted.
- (see also Flaig/Rottman, 2006).

Flaig/Rottmann, 2011. An econometric analysis of 19 OECD countries, 1960 – 2000. Dependent variable is the trend component of the unemployment rate, independent variables are labour market institutions.

- A higher centralization of the wage bargaining process goes with lower unemployment.
- By contrast,
 - tighter systems of employment protection legislation (EPL),
 - more generous unemployment insurance systems,
 - higher tax wedges go with higher unemployment.
- No effect on employment has been found of union density.

Fialova/Schneider, 2008. An econometric analysis of 19 European countries, 1999 – 2004; independent variables are indexes of EPL, minimum wage, collective bargaining coverage, tax wedge on labour, expenditures for ALMP and unemployment benefits.

- Total tax wedge on labour is associated with higher unemployment
- ALMP is associated with lower unemployment.
- Stricter employment protection, higher tax wedge and minimum wages tend to reduce employment and the activity rate.
- Unemployment benefits are associated with a higher activity rate.
- The degree of centralized wage bargaining did not show significant effects on employment outcomes.

Flaig/Rottmann, 2006. An econometric analysis of 17 OECD countries, 1971 – 2002, about the effects of labour market institutions on the employment threshold. The “employment threshold” signifies that rate of economic growth which keeps employment constant.

- The employment threshold depends on a variety of variables – thereof also on LMI.
- More restrictive employment protection, a higher tax wedge and more coordination of wage bargaining lead to
 - a less labour-intensive production and
 - a higher employment threshold.

(See also Crivelli/Furceri/Toujas-Bernat , 2012).

Arpaia/Mourre, 2005. A meta analysis of 12 econometric studies (1998 – 2005) about LMI and labour market performance and an interpretation of other empirical as well as of theoretical work.

- A large majority of empirical studies analyzed come to the conclusion that employment, participation, job creation and job re-allocation are negatively associated with: size of the tax wedge, of unemployment benefits, of benefits duration, of minimum wage.
- Positive effects on employment are often found for ALMP, subsidies for private employment, coordinated wage setting.
- In some studies, however, the above mentioned relations are found to be of insignificant size.
- Even significant relations between dependent and independent variables often explain only 50% of the variation.

Effectiveness of Active Labour Market Programs

European Commission (2012). A summary of findings, interpreting the available evidence of Active Labour Market Programs (ALMP) on employment outcomes.

- Training most often has positive effects on re-employment and wage prospects, but the effects are of limited size.
- Training often is more effective when provided within-firm and in connection to counseling, start-up support, wage subsidies (Martin/Grubb, 2001).
- It is increasingly observed that wage subsidies can have positive effects on employment (Card et al., 2010; Estevao, 2007, Dauth et al. 2010).
- Activation policies
 - particularly job-search assistance, belong to the least costly ALMP programs;
 - have a significant impact on job-finding rates and on unemployment duration (Blundell, 2004, Martin/Grubb, 2001, Ende et al., 2012).
- Public jobs programs seem to be the least effective possibility of an ALMP in terms of increased long-term employment prospects (Heckman et al., 1999; Card et al., 2010).

- Temporary public jobs programs during periods of mass unemployment and targeted to hardly employable persons may, however, be important for mitigating income loss and maintaining the link to the labour market (Azam et al., 2012).

Card/Kluve/Weber, 2009. A meta analysis of 97 econometric studies about 199 ALMP programs, 1995 – 2007. Dependent variable: employment.

- Short-term effects of ALMP are often insignificant or even negative.
- However, many programs exhibit significantly positive effects after 2 to 3 years.
- Classroom and on-the-job training programs generate positive effects only after some years.
- Subsidized public sector jobs programs and programs for youth are less successful than other types of ALMP programs.
- Differential effects of ALMP programs for men and women did not appear.
- However, program costs are often unknown and make an even crude cost-benefit analysis impossible.

Two-tier reforms of employment protection

Ochel, 2008. An interpretation of the literature about experiences with two-tier reforms in some European countries.

- “Two-tier” reforms of employment protection ease the possibility for firms to conclude fixed-term instead of open-ended contracts with additional workers, leaving the position of incumbent workers with open-ended contracts unchanged (a reform on the margin, and not on the core of existing contracts).
- Political resistance against a full-fledged reform of employment protection (liberalizing the core, i.e. the existing open-ended contracts) has led many European governments to pursue a more limited aim, namely to permit fixed-term contracts for additional employees only.
- Whether a reform on the margin can later be extended to a reform of the core seems to depend crucially on the relative size of workers with temporary and with open-ended contracts.
- In Europe, only Spain was so far able to proceed from a marginal reform of employment contracts to a reform of their core. An important reason is that after some years the share of incumbent workers with open-ended contracts dropped to less than 50% of the total active population.

References

- Arpaia, A., G. Mourre (2005), "Labor market institutions and labor market performance: A survey of the literature", *European Commission Economic Paper* 238.
- Azam, M., C. Ferre, M. I. Ajwad (2012), "Did Latvia's public works program mitigate the impact of the 2008-2010 Crisis?", *World Bank Policy Research Working Paper* 6144.
- Bernal-Verdugo, L., D. Furceri, D. Guillaume (2012), "Crises, labor market policy, and unemployment", *IMF Working Paper* WP/12/65.
- Blanchard, O., F. Jaumotte, P. Loungani (2013), Labor Market Policies and IMF Advice in Advanced Economies During the Great Recession, *IMF Staff Discussion Note*, March 29.
- Blundell, R., M. Costa-Dias, C. Meghir, J. van Reenen (2004), "Evaluating the employment impact of a mandatory job search program", *Journal of the European Economic Association*, vol. 2, p. 569 – 606.
- Card, D., J. Kluge, A. Weber (2010), "Active Labor Market Policy evaluations: A meta-analysis", *The Economic Journal*, 120, p. 452 – 477.
- Card, D., J. Kluge, A. Weber (2009), "Active labor market policy evaluations: A meta-analysis", *CESifo Working Paper* 2570.
- CESifo DICE Database.
- CESifo Institutions Climate Index.
- Crivelli, E., D. Furceri, J. Toujas-Bernat  (2012), "Can policies affect employment intensity and growth? A cross-country analysis", *IMF Working Paper* WP/12/218.
- Dauth, W., R. Hujer, K. Wolf (2010), "Macroeconometric evaluation of Active Labor Market Policies in Austria", *IZA Discussion Paper* 5217.
- Ende, M., M. Peters, A. Biesma, D. Dimitrova, H. Schneider (2012), "Analysis of costs and benefits of active compared to passive measures", Final report for the European Commission, Directorate-General for Employment, Social Affairs and Equal Opportunities, ECORYS Labor and Social Policy, Rotterdam.
- Estev o, M. (2007), "Labor Policies to Raise Employment", *IMF Staff Paper*, 54, p. 113 – 138.
- European Bank for Reconstruction and Development (2013), *Transition Report 2013 – Latvia*. London.
- European Commission (2015), "Country Report Croatia 2015", COM (2015) 85 final, Brussels.
- European Commission (2012), "Labor market developments in Europe", *European Economy* 5/2012.

- European Economic Advisory Group (2013), "Labor market reforms and youth unemployment," in: *The EEAB Report on the European Economy*, CESifo, Munich.
- Fialová, K., O. Schneider (2008), "Labor market institutions and their effect on labor market performance in the new EU member countries", *CESifo Working Paper 2421*.
- Flaig, G., H. Rottmann (2011), "Labor market institutions and unemployment. An international comparison", *CESifo Working Paper 3558*.
- Flaig, G., H. Rottmann (2006), "Labor market institutions and employment thresholds. An international comparison", *Ifo Working Paper No 15*.
- Government of Latvia (2014), *National reform program of Latvia for the implementation of the 'Europe 2020' strategy – Progress report*. Riga.
- Government of Latvia, (2013), *General description of the labor market situation in Latvia*. Riga.
- Heckman, J. J., R. J. Lalonde, J. A. Smith (1999), "The economics and econometrics of Active Labor Market Programs", in O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*, Vol. 3A. p. 1865 – 2095, Amsterdam and New York: Elsevier.
- Hollweg, C. H., D. Lederman, D. Mitra (2014), "Structural reforms and labor market outcomes: International panel data evidence", *World Bank Policy Research Paper 7122*.
- Hospido, L., E. Moral-Benito (2014), The public sector wage gap in Spain: Descriptive evidence from income tax data, (preliminary paper), <http://www.ieb.ub.edu/files/Hospido.pdf>
- IMF (2014), "The IMF's advice on labor market issues", Washington, September.
- Krugman, P. (1993), "What do undergrads need to know about trade?", *American Economic Review*, 83(29), p. 23 – 26.
- Martin, J. P., D. Grubb (2001), "What works and for whom: A review of OECD countries' experiences with Active Labor Market Policies", *Swedish Economic Policy Review*, Vol. 8, No. 2, p. 9 – 56.
- Ochel, W. (2008), "The political economy of two-tier reforms of employment protection in Europe", *CESifo Working Paper 2461*.
- OECD (2013), *The 2012 Labor Market Reform in Spain: A preliminary assessment*, December, Paris.
- Orsini, K., S. Vila Nuñez (2014), The impact of the Spanish labor market reform on the on-the-job search rate, European Commission, *ECFIN Country Focus*, vol. 11, issue 7, June.euro?)

- Schrader, K. C.-F. Laaser (2014, "Lettland: Fit für den Euro?"(Latvia: Fit for the Euro?), *Kieler Diskussionsbeiträge*, Institut für Weltwirtschaft, Kiel.
- Weber, F. (2013), *Lettlands interne Abwertung: Ein Vorbild für Krisenländer der Eurozone? (Latvia's internal devaluation: A role model for crisis countries of the euro zone?)* Bachelor-Thesis, University of Würzburg.
- Zazova, A. (2011), "Labor Market Institutions: An Obstacle or Support to Latvian Labor Market Recovery?", *Baltic Journal of Economics* 11 (1): 5-24.

8. Old-age provision: Policy options for Croatia

Martin Werding¹

8.1. Introduction

According to the latest EU-level “Ageing Report” (European Commission and EU Economic Policy Committee 2015, p. 9), Croatia is among the few countries in the EU-28 where public pension expenditure per GDP is expected to decline notably until 2060. The projected reduction – by 3.9 percentage points, from 10.8% in 2013 – is by far the largest which is reported there. This prospect does not appear to be unrealistic, in spite of an ageing process of considerable scale. This is mainly due to the fact that, over time, pension benefits will become inadequately low under current rules. In fact, the level of benefits is rather low already today, while the system and the entire public budget are currently under enormous pressure. Taken together, this creates a dilemma in which (re-)increasing benefit levels will become an issue at some point in time in the future with an eye on the adequacy of retirement income, while the fiscal room for doing so first needs to be established by further reforming the system, in order to keep pension finances and the general-government budget sustainable.

Currently, old-age provision in Croatia is plagued by lasting consequences of the Great Recession, with a low level of economic activity and massive inflows into disability and early retirement. Also, the system is in the midst of a transition to a new overall structure, following a half-hearted attempt at establishing a funded pillar for younger workers initiated in 2002. It has been subject to numerous discretionary changes in the last few years, partly meant to improve on the generosity of benefits for current pensioners, partly aiming at immediate cuts in expenditure. Setting the system on a sustainable footing needs to be embedded in a broader strategy for stimulating employment and economic growth in the country. But it will also need to address a number of issues relating to the design of pension policy.

In this paper, we will first describe the Croatian system of old-age provision as it is shaped today, in the run-up to a period of acute demographic ageing (Section 8.2). We will summarize a few basic lessons from the theory of old-age provision applying to a situation of this kind (Section 8.3). Against this background, the main current and future challenges for operating the system will be illustrated using projections regarding the expected performance under the existing legal framework over the next five decades (Section 8.4). Last but not least, we will discuss a number of options for reforming the system (Section 8.5), showing their potential impact on pension finances, public budgets

¹ Ruhr Universität Bochum, Ifo Institute for Economic Research & CESifo. My heartfelt thanks go to Marko Primorac (University of Zagreb) who very kindly supported me in accessing Croatian data and institutions and discussed with me the implications of the pension budget on general government public finances.

and retirement incomes to the extent that this appears possible from today's perspective. Section 8.6 concludes, summarizing the main lessons which can be derived.

8.2. The current system

Traditionally, old-age provision in Croatia is dominated by a ("Bismarckian") public pension scheme which is pay-as-you-go financed and offers benefits that are basically related to earlier wages and to the length of individual work records (Nestić and Rašić Bakarić 2008, pp. 82–83). In an attempt to fundamentally overhaul the system, a "second" funded pillar was added in 2002 (Šonje 2011, p. 14) which is financed from earnings-related contributions, operated by a number of private pension funds and will increasingly provide supplementary pensions to its members in the future. Participation in the second pillar was mandatory for all individuals aged up to 40 years at the time of the introduction. Those aged from 40 to less than 50 years had a right to choose whether to participate or not. Everyone aged 50 years and older had to stay entirely with the public or first-pillar scheme. Full contributions to the public scheme amounted to 20% of taxable wages at that time (and have remained constant since then). Those joining the new funded scheme continued to pay the same contribution rate, of which 5 percentage points were channelled to their private pension funds as a "second-pillar allocation". Their benefit entitlements acquired in the public scheme were adjusted accordingly, based on effective contributions of 15% of their wages (or 75% of full contributions) in all subsequent years.

The 2002 reform has triggered a process of transition towards a partially pre-funded system of old-age provision which will last about six decades until (i) all active individuals pay contributions to both pillars and (ii) the large majority of pensioners eventually receives benefits based on full life-time work records under the two-pillar arrangement. Starting from now and throughout the transition period, benefit expenditure of the public scheme will systematically decline, since a growing share of pensioners will have spent at least part of their working lives paying reduced contributions to this branch, while the same individuals will receive growing amounts of supplementary funded pensions. Originally, the plan had been to extend the shift by gradually increasing second-pillar allocations to 10 percentage points (and reducing contributions to the public scheme correspondingly, to 10% of wages or 50% of full contributions; World Bank 2011, p. 6). But a precise timing for this further step to reform was never defined, and it hasn't been taken to date.

The public scheme offers disability, old-age and survivor pensions (the latter being called "family benefits" in Croatia) as a typical package of benefits provided by such schemes (see MISSOC 2015 for detailed descriptions of many features). Early retirement is possible starting from 5 years before reaching the statutory age threshold, provided that individuals fulfil a certain number of qualifying years. The statutory retirement age is 65 for males, while it is increasing from 60 to 65 for females between 2011 and 2030 (the current threshold being 61 years and 3 months in 2015). It has already been legislated that the age threshold will be further increased to 67, for males and females alike, from 2031 to 2038. Benefit assessment is based on a point system translating

individual work records and life-time earnings into pension entitlements for old age (while special rules apply to cases of disablement by which work records are fictitiously extended). Point values and, hence, benefits are up-rated twice a year based on a mixed indexation rule (50% CPI inflation, 50% nominal wage growth). Implicitly, this rule also applies to the valorization of life-time earnings when assessing benefits at award. Therefore, compared to current (respectively earlier) wages, the rule has far-reaching consequences for the average level of benefits (or for individual replacement rates) when it is applied invariably over a longer period of time, say, the next five decades. Early-retirement pensions are subject to permanent deductions against the results of regular benefit assessment, but these deductions are generally low and vary by the number of qualifying years. Survivor benefits are derived (as a certain percentage) from pension entitlements of the deceased; in Croatia, they also apply to divorced spouses, cohabiting partners and parents if any of these persons were economically dependent.

Currently (2014), the gross level of old-age pensions (*i.e.*, average old-age pensions divided by current average taxable wages) is about 32%.² When defined on net terms (deducting relevant public charges from benefits and wages),³ the figure would look a little more friendly (estimated to be around 40% in Worldbank 2011, p.10). Nevertheless, it appears very low compared to benefit levels in other EU or OECD countries (OECD 2013, pp. 134–143). Also, the figure encompasses a number of cases with privileged pension entitlements (mainly for soldiers and policemen, but also for politicians or academics) which are included in the Croatian general public pension scheme and can be substantially higher. Further types of privileged pensions (for war veterans) are administered separately and are even higher. All in all, the system gives rise to considerable inequities, both within and across age cohorts, but it is not very generous on average in terms of granting high amounts of annual benefits. The system is generous, however, in terms of granting access to pensions at a relatively early stage. In 2014, the total number of beneficiaries amounts to 130% of the population of pensionable age (defined by statutory age thresholds). Conversely, close to 20% of the population aged 20 to 64 (for males) or 20 to 59 (for females) are receiving some kind of pension benefits. The support ratio (*i.e.*, the number of active members per beneficiary) is currently no more than 1.16, down from 1.4 around 2000 and 3.0 in 1990 (Nestić and Rašić Bakarić 2008, pp. 88). Also, the system provides minimum pensions that are relatively generous, at least when compared to average pensions.

Total expenditure of the public pension scheme amounts to 11.1% of GDP in 2014.⁴ Currently, contributions cover only about 55% of this amount of expenditure. The actual

² The figure is based on own calculations using data kindly provided by the Croatian Pension Insurance Institute (*Hrvatski zavod za mirovinsko osiguranje*, HZMO). Many of these data are published in HZMO (2015). These (and other) data are also used as an important input for preparing long-term projections regarding the future performance of the system (until 2065) presented in Sections 8.4 and 8.5.

³ Looking at net benefit levels instead of gross levels would clearly be much more informative. However, in our long-term simulations we will be unable to project net benefit levels as we are mainly simulating pension parameters, not health-insurance contributions, wage taxes, *etc.*

⁴ Again, the figure is based on own calculations using data provided by HZMO and data on national accounts collected in the EU-level AMECO database (European Commission, DG ECFIN 2015). It is close

current cost rate – *i.e.*, the contribution rate which would balance the budget – is correspondingly higher: including the second-pillar allocation of 5 percentage points, 32.5% of taxable wages would have to be paid by each active member in order to fully cover current expenditure (and make supplementary provisions in the second pillar). Instead, the public scheme regularly receives a sizable state subsidy from the central government budget, amounting to 5.0% of GDP in 2014. One could argue that the subsidy is tax-financed to the extent that the central budget is. In this case, the system would still be pay as you go, though with effects for inter-personal distribution and efficiency which might slightly (but not fundamentally) differ from pure payroll-tax financing. At the same time, the size of the state subsidy compares unfavourably to the current budget deficit of 5.7% of GDP in 2014 (AMECO database). In this sense, the subsidy could also be considered to be largely debt-financed. This would imply a further postponement of actually paying for current benefits and aggravate the effects for intergenerational distribution against the case of regular pay-as-you-go financing. In any case, the scheme imposes a substantial burden on central government finances which are under pressure also for other reasons in the current situation of a lasting crisis (European Commission 2015, pp. 39–47).

The fully-funded second-pillar scheme offers benefits for old age, but also for disability and survivors, based on actuarial principles. It follows a defined-contribution (DC) logic, so that rate-of-return risks lie entirely with the individuals covered, while no funding risks or budgetary risks should arise. As a consequence, individual benefit entitlements are determined by individual contributions, hence by wages and the percentage of the total contribution rate which is ear-marked as a second-pillar allocation in a given year; by the number of years covered with contributions to the second pillar, and by the effective rate of return (including the effects of compound interest) earned by the specific pension fund an individual has joined. First benefits were paid out in 2007, but their total annual amount is still negligible. For the moment, the system is in the early phase of net accumulation of assets. Total assets held in the second pillar have now reached 20% of GDP (HANFA 2015a).⁵ Under current rules, this ratio will continue to grow over the next few decades.

Second-pillar pensions were meant to be operated by a larger number of pension funds competing with each other. After an initial phase, when new funds had to find a certain minimum number of members, four large providers effectively established themselves in this market. This structure has been basically stable since 2003. In 2014, each of these providers had to split their pension funds into three separate (“category A, B and C”) funds, differentiated by risk classes (and expected returns) of their investment. So far, the structure of investment had been rather similar across funds, with about 20% of

to, but not perfectly in line with GDP-ratios indicated in the 2015 Ageing Report (European Commission and EU Economic Policy Committee 2015) as cited in the introduction of this paper. In the following, we will concentrate on results of our own calculations.

⁵ Here and in the following, we use data provided by the Croatian Financial Services Supervisory Agency (*Hrvatska agencija za nadzor financijskih usluga*, HANFA) which is in charge of monitoring second-pillar pension funds and other financial intermediaries.

foreign assets and about 80% of domestic assets. Among the latter, bonds issued by the central government (and by other levels of government, *e.g.*, municipalities) are by far the dominant form of investment. Officially, they currently account for 70% of total assets. Together with shares and corporate bonds issued by (quasi-)publicly owned firms, this fraction is even higher. Preference for domestic government bonds is strongly backed by regulations, requiring initially that at least 50% of assets be held in long-term bonds and debt securities issued by the Croatian government or the central bank. More recently, this rule has been extended to bonds and securities issued by governments and central banks from the EU and OECD (and it is now differentiated across categories of funds), but this had only limited effect for actual investment strategies. Performance of second-pillar pension funds is measured by the MIREX index (HANFA 2015b). Average returns since 2002 have been around 6.1% *p.a.* on nominal terms. As in many other countries with mandatory or voluntary private provision (Mitchell 1998; Dobronogov and Murti 2005), overhead costs charged to members' accounts were an issue of repeated debates. They have been limited by law from the very beginning, the current upper limit being 0.45% of total investment per year, down from 1.2% applying from 2003 to 2006.

While the public branch of the Croatian system of old-age provision is currently struggling with a strained financial situation – due to the persistent crisis, but also to a number of structural problems – the shift towards a partially funded system which was initiated more than ten years ago, basically appears to be a good idea. The reform may have mainly been driven by some optimism regarding the possible impact of high rates of return on future benefit levels which needs to be re-considered, and some features of the new, second pillar may not appear ideal. But the main reason for a fundamentally positive assessment (see also Section 8.3) is the perspective for a process of pronounced demographic ageing which is likely to materialize over the next two to five decades.

Croatia currently has a total population of about 4.3 million individuals, the old-age dependency ratio being around 28 individuals aged 65 and over per 100 individuals aged 15 to 64. For several decades into the future, demographic trends are mostly determined by the age composition of the population which is currently alive. Future fertility, mortality and migration can do something to modify on-going changes, but they cannot alter them entirely. Therefore, the ageing process which can be expected to take place over the next fifty years may be stronger or less strong, depending on how the determinants of demographic change will actually develop (see Appendix A.1 for further details). Total population may shrink only by about 300,000 or by up to 1.5 million individuals over this time period, a reasonable “baseline” variant leading to a reduction by 1 million or by about 20%. Old-age dependency will increase substantially under all assumptions which appear to be realistic, to a ratio between 47 and 71, the baseline result being that it doubles to around 57. Besides the difficult economic situation and some issues in the design of the system, this is a perspective that old-age provision in Croatia had, and still has, to be adapted to.

8.3. Lessons from the theory of old-age provision

In debates held in the 1980s and 1990s in many developed countries, funded pension schemes were often regarded as unambiguously superior to unfunded schemes (Feldstein 1995). The latter were seen as a kind of forced saving, easy to administer but with inefficiently low returns. The internal rate of return in pay-as-you-go schemes is basically given by the rate of payroll growth (Aaron 1966). Since there are strong reasons, both empirical and theoretical ones (Abel *et al.* 1989), to expect that this rate is lower than the capital-market interest rate – apart from exceptional situations which could last only for limited periods of time –, switching to funded systems was generally thought to be a good idea. The expectation was that existing benefit entitlements of the older generation could be paid off, over a transition period of limited duration, by taxing away (part of) the gains of younger generations resulting from higher returns to their retirement savings.

However, closer inspection revealed that this view was simplistic and far too superficial. Breyer (1989) and, in a more general set-up, Fenge (1995) showed that a transition from a “Bismarckian” public pension scheme which is based on the pay-as-you-go mechanism proper is never Pareto-improving, *i.e.*, beneficial at least for future generations, once the transition is completed.⁶ In fact, higher capital-market returns would have to be channelled indefinitely into paying off the implicit public debt involved in outstanding liabilities of an unfunded system (see Sinn 2000 for an elegant demonstration). *Per se*, pay-as-you-go pensions are thus “inter-generationally efficient”. The difference *vis-à-vis* funded schemes starts when systems of both types are initiated: pay-as-you-go pensions can be paid out immediately, without any accumulation of funds, while lower returns for subsequent generations are simply a price for this advantage. Ideally, the “gains” accruing to a first generation of pensioners who have not paid contributions (over their entire working life) should have appeared justified – *e.g.*, by unexpected losses of their pension wealth through hyperinflation, war, natural disaster, or the like, or simply because the public scheme replaced older, intra-family arrangements for old-age provision of a pay-as-you-go nature. But in any case, these gains can never be called back without imposing a burden on members of subsequent generations. Therefore, replacing pay-as-you-go schemes by funded pensions, fully or just partially, is not about efficiency gains, but about inter-generational redistribution, and it should again be justified on these grounds.

This is precisely the point where demographic ageing starts to matter. What was just said about “low” rates of return in unfunded pension schemes and their inter-generational efficiency is true already for the benchmark case of an economy with a “stable” demographic process in the background. If the insured population is ageing due to low fertility, the internal rate of return on contributions tends to become even lower.

⁶ Alternative results obtained for “Beveridgean” pension systems (Homburg 1990) rest on the abolition of distortions resulting from the intra-generational redistribution involved in such schemes (through a combination of earnings-related contributions with lump-sum elements in the assessment of benefits). However, this mixes two effects which could be dealt with separately, without altering the pay-as-you-go nature of a given scheme.

A strategy of increasing contribution rates to keep up the level of benefits (in a notionally-defined-benefits, or NDB, variant of such schemes) is effectively a way of manipulating this internal rate of return. Yet, if low fertility rates persist, this would have to be done again and again until contribution rates could eventually reach a natural limit (that they must not exceed 100%) and may become prohibitively high much earlier. In fact, increasing contribution rates in such a situation could be interpreted as the introduction of a new pay-as-you-go scheme on top of the existing one, with new inaugural gains accruing to the current generation of pensioners. This, in turn, would have to be justified by considerations of inter-generational equity compared to subsequent generations, which might not be easily defensible.⁷ It may simply not be feasible under a strong ageing process, if domestic production is to remain competitive at an international level.

If, therefore, contribution rates remain fixed (in a notionally-defined-contributions, or NDC, variant), the level of benefits which can be financed from pay-as-you-go schemes necessarily declines. Therefore, unfunded pensions need to be supplemented by other means of old-age provision for total retirement income to remain adequate. At an aggregate level, this strategy can be justified by the fact that a generation who engages less in accumulating human capital in order to provide for their old age through pay-as-you-go institutions⁸ can be expected to do so using other instruments, instead of placing ever growing burdens on the decreasing numbers of their off-spring. The only alternative that exists, then, are funded pensions which need to be provided for in good time. In this shift towards partial pre-funding, the use of coercion (or some kind of quasi-obligations that are framing individual decisions) appears appropriate not only for “myopic” individuals, but also due to broad-based evidence regarding other imperfections in individual decision-making which have been collected in recent research on “behavioural finance” (Mitchell and Utkus 2004).

Things are slightly different if (or to the extent to which) demographic ageing is driven by increasing life expectancy. In this case, the internal rate of return to contributions tends to remain constant if contribution rates are fixed, since annual benefits decline, while the retirement period becomes longer. Increasing contribution rates therefore increases returns for current pensioners at the expense of current contributors, with long-run implications that run into similar difficulties as with low fertility. Supplementary funded pensions may again contribute to keeping up annual old-age income during an extended period of retirement. However, a more natural approach which goes to the root of this specific problem is to increase the retirement age, hence to re-define what “old age” means. This is exactly fitting to improvements in age-specific

⁷ With some sense of realism, one may have to add that adjustments of this kind could be needed as a transitory measure, if foresight has been lacking and if policy remained inactive, so that there is no other way of securing adequate retirement incomes for those already in, or close to, retirement.

⁸ In a sense, pay-as-you-go pension schemes *are* funded, *viz.* by human-capital investment affecting the earnings capacity of future tax payers (Werding and Konrad 2012, pp. 90–92). In this perspective, reductions in the number of children only affect the quantitative dimension of human-capital accumulation, but these changes are so strong in many countries, including Croatia, that they are not off-set or even over-compensated by increases in “child quality”, *i.e.*, in investment per child.

productivity and health which go along with higher life expectancy (Garibaldi *et al.* 2010). Also, it directly relaxes the pressure on pay-as-you-go pension budgets through changes in the support ratio, affecting both the nominator and the denominator in a favourable way. Again, these changes may be brought about voluntarily, based on individual strategies for coping with the new situation, or they may be reinforced through mandatory rules, *e.g.*, increases in the statutory pension age which usually offer a particularly strong orientation for relevant decisions.

A further point that emerges from recent discussions in pension theory is that – certainly in a process of adjustment to lower fertility rates – linking parts of unfunded benefit entitlements to having children (or having invested in their human capital) is actually called for. Otherwise, in a generation with low average fertility and heterogeneous agents, the burden of “pre-funding” for future pay-as-you-go pensions is unevenly distributed between those who continue to have two or more children and those who don’t. This is not only a matter of (intra-generational) equity, to avoid overburdening families and children. It may in fact also be relevant with respect to fertility decisions taken by potential parents. Since these decisions create fiscal externalities under conventional pay-as-you-go rules, with benefit entitlements that are only linked to financial contributions, this may have contributed to the fertility decline (Cigno and Werding 2007, ch. 5).⁹ In a number of countries, rules already exist establishing child-related pension benefits, but they are typically far too small to neutralize these effects. On the other hand, exclusively linking unfunded benefit entitlements to having children would most likely go too far. Compared to a conventional design, contributions would then create distortions with respect to individual labour-supply decisions, so that the two approaches to defining pension benefits have to be appropriately balanced.

8.4. Challenges for the Croatian pension system under current rules

To illustrate the challenges that the Croatian system of old-age provision is faced with we now present long-term projections regarding the future performance of the existing two-pillar system (see Section 8.2) under current rules. In order to do so, we will first have to provide a brief discussion of our assumptions and then report on selected results for a “baseline” scenario. We will add a limited number of sensitivity analyses and conclude this section by listing the most pressing challenges.

8.4.1. Assumptions

Given the enormous uncertainties which arise over a long time horizon, constructing a meaningful “baseline” scenario for the future development of Croatian pension finances – with intermediate results regarding employment, wages and GDP growth – is difficult and certainly disputable with respect to virtually any detail. As an important basis, we use the demographic scenarios that were already mentioned (see, again, Appendix A.1),

⁹ While theoretically clear, one could dispute the empirical relevance of this point, for instance, because investment motives with respect to old-age provision are not expected to be strong in (undistorted) fertility choices. However, there is evidence that the introduction or expansion of unfunded pensions indeed had a negative impact on fertility (see, again, Cigno and Werding 2007, ch. 6).

focusing on the medium, or “baseline” scenario (and returning to alternative variants later on; see Section 8.4.3).

For a start, we will look at a “static” scenario for pension finances in which we keep many ingredients for our numerical projections entirely unchanged against current figures. Most notably, this relates to age-specific labour-force participation rates for females and males, the unemployment rate and all age- and gender-specific rates of transition into different categories of (disability, early-retirement, regular old-age and survivor) pension benefits.¹⁰ Possible behavioural changes in response to increases in the statutory retirement age which are on-going or at least enacted are also ignored. The implicit assumption that nothing changes in any of these areas as the population ages does not appear to be very realistic. However, the results are suited to highlight that the system is currently in a very difficult situation.

What is considered to be a true “baseline” scenario is then derived building on the following assumptions:

- Participation rates differentiated by age and gender are projected into the future relying on cohort effects that are present in actual data (using an approach developed by Burniaux *et al.* 2003).
- Entries into disability and early retirement are adjusted accordingly; furthermore, age-specific disability risks are assumed to go down as life expectancy increases (shifting to higher ages with each additional year of life on a one-for-one basis).
- Behavioural reactions to increases in the statutory retirement age are added manually, assuming that a one-year increase in the age threshold leads to one-year delays in actual retirement of everyone within five years below the limit.
- Unemployment is reduced to the current estimate for the NAWRU (14.4% according to the AMECO database) until 2019, thereby removing business-cycle dynamics from our long-term projections.
- Growth rates of labour productivity (and wages) are borrowed from projections for the “2015 Ageing Report” (European Commission and EU Economic Policy Committee 2014, pp. 83–86), the average real growth rate being 1.8% *p.a.*¹¹
- Employment projections and assumptions on productivity growth are combined to obtain simple projections for GDP, which is useful as a background scenario to determine GDP-ratios of many other projected figures.¹²

¹⁰ Actual data for any of these determinants are taken from Eurostat (labour-market data), from the national pension insurance institute, HZMO (public or first-pillar pensions), and from the national agency supervising financial services, HANFA (funded, second pillar), respectively.

¹¹ Calibrating a production function and doing these projections ourselves is beyond the scope of this paper. This reduces the economic content of our projections, but resulting figures defined on relative terms (current cost rates, GDP-ratios) are not very sensitive with respect to productivity assumptions.

¹² Over long time horizons, figures of this kind are easier to interpret than absolute figures, regardless of whether the latter are evaluated on real terms or on nominal terms.

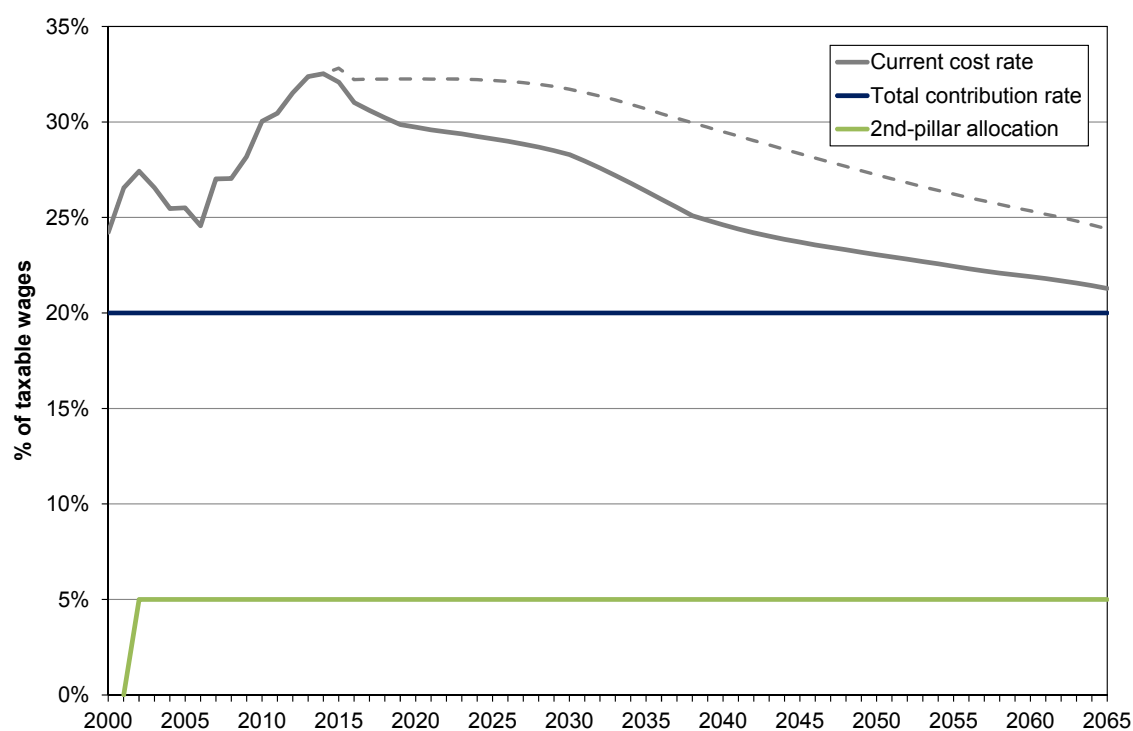
- The real interest rate for government bonds is assumed to be 3% *p.a.*; to the extent that it matters, the inflation rate is set to 2% *p.a.*
- The current legal framework for assessing and up-rating public pensions is modelled as it is; accumulation and decumulation of second-pillar funds is re-constructed assuming that annuitization is actuarially fair.

Some of these assumptions may appear friendly (*e.g.*, those on labour-force participation and retirement), others not (*e.g.*, the relatively high level of structural unemployment). All in all, we believe this to be a balanced scenario for what could plausibly happen, acknowledging our fundamental ignorance about the future. Results for the baseline scenario regarding labour-market performance and economic growth are summarized in Appendix A.2, together with results for parameters of the pension system that we will discuss next.

8.4.2. Results for pension finances

Under the “baseline” assumptions described above, the support ratio in the public pension scheme will stabilize at slightly below 1.2 during the period until 2040, in spite of a considerable increase in old-age dependency. Afterwards, it will start declining again and reach 1.0 by 2065. These projected figures are less unfavourable than they may seem. In the “static” scenario, for which we also display results here for comparison, the support ratio would fall to 1.0 already around 2030, and it would approach 0.8 towards the end of the projection horizon. Also, financial pressure associated with a given level of the support ratio will diminish over time. In the long run, a growing share of pensioners will have paid part of their contributions to the second pillar over considerable fractions of their active period. Their benefit entitlements in the public scheme will automatically become smaller, while they can expect to receive supplementary funded pensions of some size. A further effect is due to annual benefit up-ratings which follow inflation, but reflect only half of real wage growth.

Since contributions currently cover only just over half of total expenditure of the public scheme, their rate – 20% of taxable wages, including a “second-pillar allocation” of 5 percentage points for the vast majority of workers who are now under the new two-pillar system – is not very telling. For the scenarios looked at here, we assume that these rates remain constant throughout. However, we also calculate the “current cost rate”, *i.e.*, the contribution rate which would balance the budget of the public scheme (and also includes the “second-pillar allocation”). Results are shown in Figure 8.1. In the baseline scenario, the cost rate will remain at its current, elevated level only for a few more years.

Figure 8.1.: Contribution rates and current cost rate (1st and 2nd pillar, 2000–2065)

Notes: Solid lines relate to the “baseline” scenario, dashed lines relate to the “static” scenario.

“Current cost rates” are contribution rates that would balance the budget of the public scheme (total first-pillar expenditure per taxable wages), plus the second-pillar allocation included in total contribution rates.

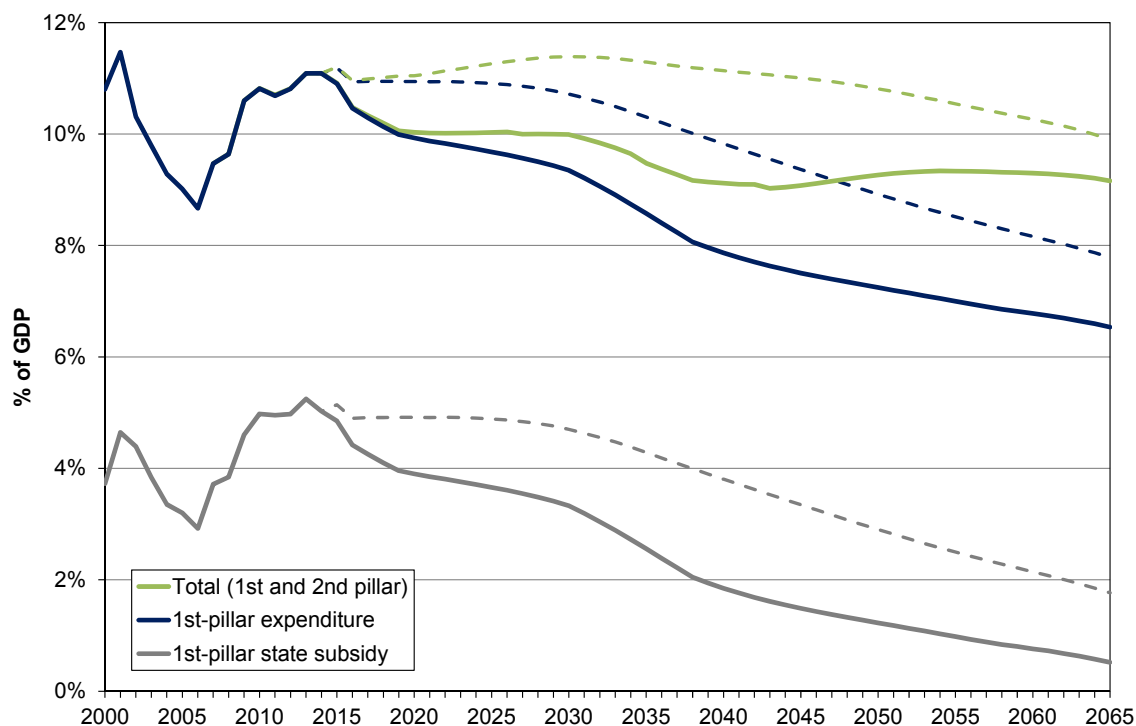
Sources: HZMO; own calculations.

It will then decline a bit between 2020 and 2030 and at accelerated speed until 2040. Nevertheless, it will remain above the total contribution rate until 2065, slowly approaching it towards the end of the projection horizon. Still, these are much better prospects than under the “static” scenario where cost rates remain very high until 2030 and then slowly start declining, the gap *vis-à-vis* actual contribution rates still being considerable in 2065.

As the precise rules governing how pension schemes are financed are rather diverse across countries, an important figure for international comparisons is the fraction of GDP spent on public pensions, or on old-age provision in general. Figure 8.2. illustrates our results on these terms. It shows that, relative to GDP, (public) pension expenditure in Croatia declined noticeably between 2000 and 2006, from around 11% to around 9% in a very short time, mainly due to strong GDP growth. It started increasing again to 9.5% in 2007, following discretionary changes in benefit rules in that year. A substantial further increase was brought about when the Great Recession spread around that still hasn't give way to a recovery. In our “baseline” simulations, taking away the unfavourable business-cycle component from unemployment and letting labour-force participation and retirement behaviour adjust as described above will end the current peak within a few years, bringing pension expenditure per GDP down from 11% to around 10% again. From 2020 onwards, the ratio will continue to decline for more fundamental reasons, again with an accelerated speed in the period between 2030 and 2040. The figure also shows that pension expenditure of the second pillar will be largely

negligible until 2020. Afterwards, it will gradually become more important, adding to public pension expenditure without directly imposing a burden on current tax payers or creating additional pressure on the central budget. In the background, funds accumulated in the second pillar will continue to grow, coming close to 90% of GDP by 2065, when the scheme will be almost mature.

Figure 8.2.: Pension expenditure (1st and 2nd pillar, 2000–2065)



Notes: Solid lines relate to the “baseline” scenario, dashed lines relate to the “static” scenario.

Sources: HZMO; own calculations.

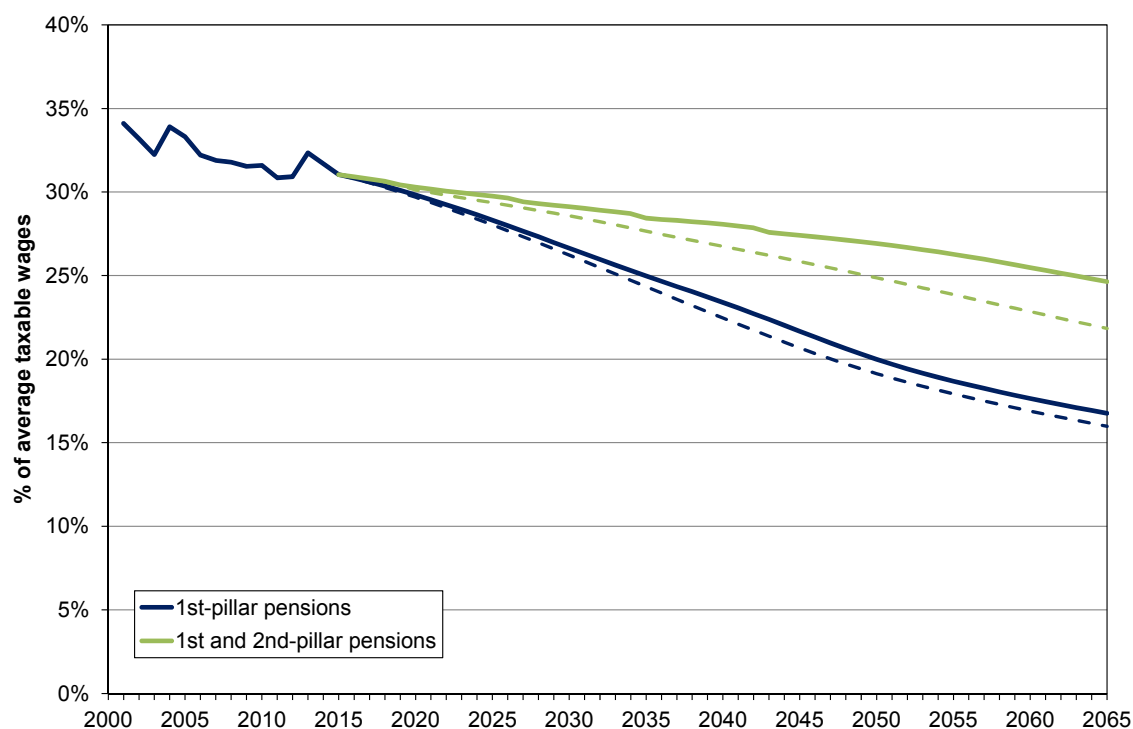
Another important result displayed in Figure 8.2. relates to the state subsidy paid to the public pension scheme on an annual basis. Current levels of around 5% of GDP clearly indicate the strained situation of first-pillar pension finances and their unfavourable impact on the central government budget. If the total contribution rate (including the second-pillar allocation) remains unchanged, the GDP-ratio of the state subsidy is projected to decline in line with public pension expenditure, reaching 4% around 2020, 2% around 2040 and only 0.5% at the end of the projection horizon. Under current conditions, the amount of the state subsidy appears to be directly relevant for the size of the central government’s budget deficit. Assuming that this remains true – for instance, because all other types of public revenues and expenditure remain constant as a percentage of GDP – one could nevertheless conclude that the Croatian pension system as well as public finances in general are sustainable in the long run, provided that the extra-amount of public debt which is incurred through high state subsidies over the next three to four decades does not overturn this assessment.

We already discussed reasons why a long-term decline in current cost rates or in (public) pension expenditure per GDP does not come entirely unexpected, in spite of a pronounced ageing process. Thus far, however, we are unable to fully disentangle the

relative importance of the two main effects which both reduce the burden of financing current pensions for tax payers and the public budget, *viz.*, the on-going shift towards a partially funded system, plus the erosion of benefit levels due to restrictive benefit up-ratings over many years. Figure 8.3. sheds light on this point, as it illustrates results projected for the level of pension benefits. As a meaningful indicator, we take average amounts of old-age pensions paid out by the general public pension scheme (leaving out specific types of privileged pensions offered to war veterans) and relate them to current average taxable wages.¹³ To obtain a fuller picture, we then add average old-age pensions deriving from the second pillar. All relevant amounts are taken gross of taxes and social security contributions, as projecting any of these other determinants of net benefit levels is outside our focus.

The figure illustrates, first of all, that the gross level of public pension benefits has been low already in recent years, modified by a few discretionary changes with transitory effects. It is currently about 32% and will continue to decline to less than 25% until 2035, less than 20% until 2050 and just above 15% at the end of the projection horizon. Again, this shift is driven by the two effects just mentioned. Pensions deriving from the public scheme are more and more determined by benefit entitlements accrued over long years with reduced contributions and additional cover from the second pillar. In addition, pensions become lower and lower on relative terms because up-ratings fall continuously short of wage growth. However, at least the first of these two effects should definitely disappear when we look at the combined benefit level of first and second-pillar pensions – if the scale and the timing of the shift towards partial pre-funding has been designed with sufficient care. Actually, the expansion of supplementary funded pensions does have a visible impact on the overall level of old-age pensions, but this effect is clearly dominated by the reduction of benefit levels in the public scheme. Taking into account second-pillar pensions, the gross benefit level still declines to around 25% of current wages, or by no less than 20% against recent values. This suggests that higher amounts of second-pillar pensions will be needed in the future than those resulting from the 2002 reform. Alternatively, one may have to re-consider the rules for benefit up-ratings at some point in time in the future. Of course, both approaches can be mixed in one way or another – the most important drawback being that they could both have unfavourable effects for current pension finances, either because revenues from contributions will be affected by a higher second-pillar allocation, or because more generous up-ratings will increase pension expenditure.

¹³ Taking together all types of pension benefits would produce even lower benefit levels as, on average, disability and survivor benefits are around 25% smaller than old-age pensions, while early-retirement benefits are almost as high. Over time, however, changes in the composition of pension benefits from these categories would also matter for trends in the joint benefit level.

Figure 8.3.: Gross level of old-age pension benefits (1st and 2nd pillar, 2000–2065)

Notes: Solid lines relate to the “baseline” scenario, dashed lines relate to the “static” scenario.

The benefit level is assessed relating average old-age pensions to average taxable wages, both gross of taxes and social insurance contributions.

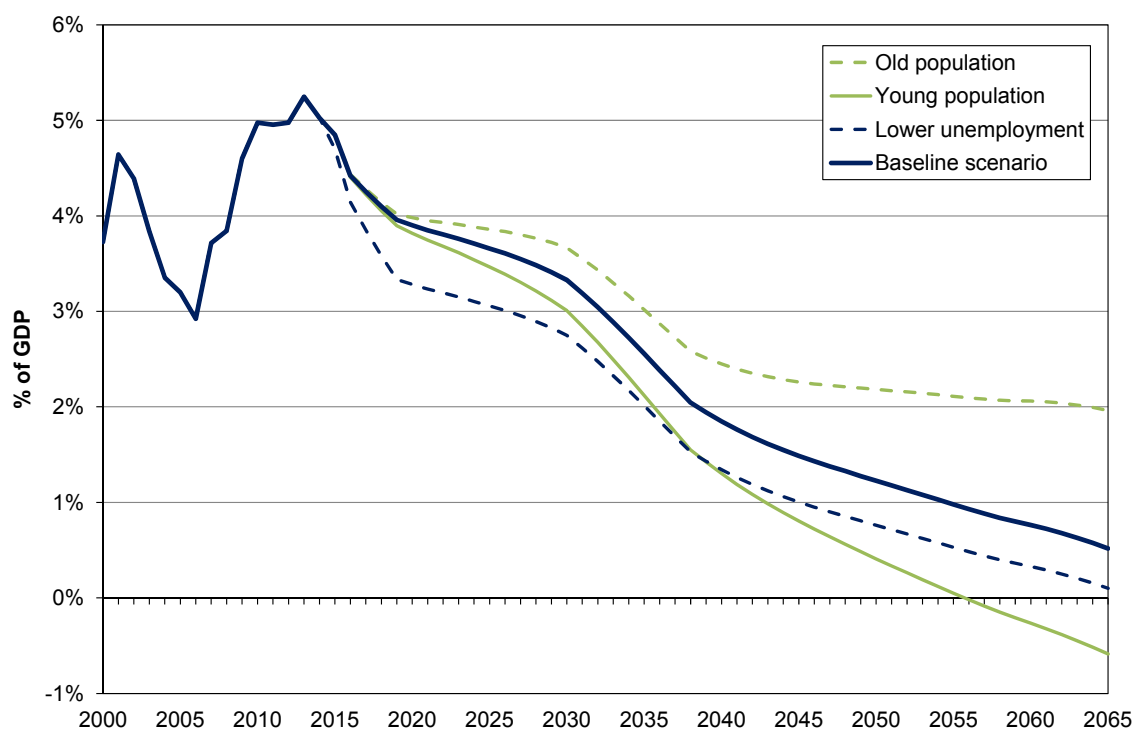
Sources: HZMO; own calculations.

8.4.3. Sensitivity analyses

Projections for the baseline scenario presented here should not be taken as point estimates, and their reliability could never be discussed in terms of confidence intervals or the like. They extend a number of current trends into the future, the main drivers being strong and robust changes in demographic fundamentals, in order to provide an orientation about the direction and dimension of long-term consequences for pension finances and public finances in general. To avoid any misinterpretations, we will add a very limited amount of sensitivity analyses here, effectively concentrating on two different issues and three alternative scenarios.

- We use the two extreme variants of the demographic projections summarized in Appendix A.1 and run projections for a “young population” and an “old population” scenario, leaving all other assumptions unchanged against the baseline variant.
- We also look at the impact of stronger improvements in the labour-market situation, assuming that the unemployment rate will decrease to 9% (instead of 14.4%) until 2019 (which marks the average of current AMECO-NAWRU estimates for transition countries that have joined the EU and was observed in Croatia for the last time in 2008); again, all other assumptions (including the demographic scenario) remain unchanged against the baseline variant.¹⁴

¹⁴ Casual evidence suggests that, in Croatia, there might be a link between labour markets and (net) migration, not only through lower inflows but also through higher outflows as a response to increases in the

Figure 8.4.: 1st-Pillar state subsidy – Sensitivity scenarios (2000–2065)

Sources: HZMO; own calculations.

To illustrate the results, we concentrate on just one set of projected figures which can be considered particularly relevant for characterizing the financial situation of the pension scheme and for thinking about desirable reforms. Therefore, Figure 8.4. shows GDP-ratios of state subsidies to the public pension scheme which we obtain for the alternative scenarios defined above.

Results for the two demographic variants highlight an aspect that can already be seen in the alternative projections for old-age dependency (see Figure A.2 in the appendix). Until around 2030 and even 2040, variation in this ratio is not very strong, even if one combines only favourable or only unfavourable assumptions regarding all major determinants. In other words, demographic ageing cannot be averted altogether for some time into the future, if it has already made some progress through age cohorts who are still in their active period of life. Consequently, GDP-ratios of state subsidies to the public pension scheme look less friendly (“old population”) or more friendly (“young population”) over the next two decades than for the baseline scenario. But the problems in financing current pensions and the impact on the central budget and on public debt are basically the same. Things become really different only in the long run. The conclusion that the pension system is sustainable appears to be more easily defensible in the “young-population” case than in the baseline scenario, while the system may never become financially viable with an “old population”. Taken together, these two alternative scenarios may be taken to indicate something like a plausible band (of

unemployment rate. Note that such a link, provided that it could be backed and quantified through in-depth research and that it would also work in the opposite direction, is not modelled here.

growing width) for actual future developments – at least as far as demographic determinants are concerned. Reality may not exactly correspond to our “baseline” assumptions, but in all likelihood, it will be somewhere between these two alternative variants.

Assumptions regarding the unemployment rate were relatively pessimistic in our baseline scenario. At the same time, labour market performance is a very important determinant of pension finances in any unfunded scheme – more important in the short to medium run, in fact, than demographics. Therefore, the “lower-unemployment” variant concentrates on a more optimistic scenario (neglecting further up-ward risks). The result is as one would expect. Gauged by the time path of the GDP-ratio of state subsidies, there is a favourable effect on pension finances which comes about immediately and then remains largely constant (due to the assumption of persistent differences in unemployment rates). An effect of this kind would be extremely helpful in dealing with the budgetary problems arising in the period until 2030 or 2040, and it may allow to do something about overall benefit levels at an earlier point in time in the future.

8.4.4. Challenges

Having described the system and projected its future performance under current rules, we may now list major challenges for old-age provision in Croatia which ought to be addressed through further pension reforms.

First, high unemployment and a low level of economic activity clearly contribute to budgetary pressures in the short to medium run, for the public pension scheme as well as for public finances in general. Consequences which are directly harmful for the pension scheme are high inflows into disability and early retirement.

Second, a major problem which becomes more and more pressing in the long run is given by demographic ageing. Through the combined effects of low fertility and increasing life expectancy, it leads to a continuous increase in old-age dependency that is an important fundamental for the support ratio of a pay-as-you-go pension scheme.

Third, the system could nevertheless be financially sustainable in the long run (provided that the problems affecting it in the short to medium run can somehow be solved), but this is mainly due to the fact that benefit levels are, or certainly will become, inadequately low.

Fourth, this is partly caused by the fact that the switch to a partially funded system initiated in 2002 is incomplete. Levels of supplementary pensions deriving from the second pillar will be too low to make up for declining levels of public pay-as-you-go pensions.

Fifth, attempts at solving the last two problems are constrained by severe problems with financing the system in the short to medium run, with a close link to current deficits and accumulating debts in the central government budget.

Sixth, the structure of investment of funds accumulated in the second pillar, with a very dominant share of domestic government bonds, is not at all ideal. The latter is an issue which we haven't really discussed thus far. It is problematic not only because it may reduce the rate of return earned in the funded scheme. It actually undermines the strategy of pre-funding for future retirement income. Government bonds need to be redeemed to start paying out second-pillar benefits, which always requires tax payers' money in the same period. Funding pensions through domestic government bonds is thus nothing else but a hidden form of pay-as-you-go financing, subject to all the risks of demographic ageing which apply to systems that are openly unfunded.

8.5. Options for reforms

The challenges just listed effectively set the agenda for options for reforming the Croatian system of old-age provision which we will explore now. Major goals that need to be accomplished are (i) getting the system out of the current situation of enormous financial strain and (ii) setting it on a new path towards sustainability as well as adequacy of old-age provision in the long run. As the problems we have observed are diverse, appropriate reforms will be multi-faceted. Also, some of the elements will have effects for pension finances and retirement incomes that work in opposite directions. Therefore, the ideal timing of reforms will also be an important issue to look at.

8.5.1. Cutting costs

A problem which needs to be addressed immediately is the current huge inflow of working-age individuals into disability pensions and early retirement, mostly caused by continued effects of the most recent crisis for labour-market performance. Measures that are suited to deal with this problem are tighter eligibility criteria for disablement and a higher age for first claiming old-age pensions – say, two or three years rather than five years in advance of the statutory retirement age. When needed, this policy could be supported by raising deductions from benefits in cases of early retirement to actuarial levels, which should clearly exceed 5% *p.a.* and may well reach 6% or more.¹⁵ Also, the status of those already receiving disability pensions could be reviewed, including assessments of perspectives for successful re-integration into activity. Assuming that, by these means, age-specific rates of entries into disablement and early retirement could be reduced by 50% compared to the “baseline” scenario until 2019, budgetary pressure as measured by the share of state subsidies in GDP would be reduced to below 4% until 2020 and to around 3% until 2030, with a permanent, favourable effect on this ratio. Together with improvements in labour-market performance assumed for the “lower unemployment” scenario (see Section 8.4.3), the ratio of state subsidies to GDP would

¹⁵ This would have to be calculated based on contingent life-expectancies at the entry into retirement, making sure that the net present value of life-time pension benefits remains unchanged.

even fall to 3.2% until 2020, to 2.5% until 2030, and it would further decline to 1.1% around 2040 and to 0% at the end of the projection horizon.

Another change that should start taking effect soon, in order to fully unfold over the next few decades, is a further increase of the statutory pension age. We have argued (in Section 8.3) that, within an unfunded pension scheme, increasing the retirement age is an appropriate response to demographic ageing, certainly to the extent that it is driven by increases in life expectancy. However, enacting increases in statutory age thresholds is politically difficult. It is unpopular among those who are approaching the current age limits. They would have to revise their life-cycle planning, thinking that current rules define an entitlement that they have rightfully acquired through long years of economic activity. Among younger workers who would be faced with a substantially higher age threshold it creates uncertainties as to whether these increases will be in adequate proportion to higher life expectancy they will allegedly be experiencing – not knowing whether this perspective is indeed reliable.

An elegant way of dealing with these uncertainties and with political difficulties involved in repeated discussions about adjustments in the statutory retirement age is to link the threshold to observed changes in life expectancy by a transparent, rule-based definition which works automatically. For instance, if the number of years individuals are effectively “expected” to be economically active (from around age 20 to age 60 which, according to our calculations, is the current average retirement age across all types of pension benefits) and then in retirement (for about another 16 years) relate to each other in a 5:2-ratio under the current law, one could try to keep this ratio constant if life expectancy is increasing. As a consequence, a law could be passed by which the statutory retirement age is continuously increased by 1 month against the earlier age limit when life expectancy has increased by 1.4 months in the preceding year (or any multiple of these two figures). Once enacted, political debates about adjusting the statutory age threshold in a discretionary fashion should subside, and actual changes will only come about if longevity indeed goes up. Future retirees can then form meaningful expectations in good time to engage in their life-cycle planning without being faced with additional political risks.

Here, the simple parameters for this rule have been set on a unisex basis, but they should be directly applied only to the situation of males (for which the current statutory pension age is 65). Under the assumptions for the baseline scenario (and the medium variant of the underlying population projection), this age limit would automatically increase to about 70 years of age until 2060 in a continuous process. The increase becomes effective considerably earlier than the increase to 67 starting in 2030 which is already scheduled in the existing legal framework, but it is far less steep in the period between 2030 and 2038. It will therefore have a positive impact on pension finances starting soon, but will avoid inequities between different age cohorts involved in the current law. The age limit for females is currently brought in line with the one for males in an on-going process lasting until 2030. This process should be modified in such a way that it tends to follow the automatic adjustments for males, but avoids extra-increases

which become too strong. Effectively, increases by 3 months per year involved in the current schedule could be further accelerated by about one fourth of the extra-months following from the rule-based procedure for males (so about one week if life expectancy has increased by 1.4 months in the preceding year). As a result, statutory pension ages for females and males would be the same starting from 2038 and move together over the remaining projection period.

Compared to the other options for reform already considered, effects of this element would be relatively weak in the short run, but they would become very strong over time. If everything else remains unchanged against the baseline scenario, the ratio of state subsidies to GDP would decline to 3.8% until 2020, to 3% until 2030, to 1.5% until 2040, and it would fall below zero around 2060. Afterwards, expenditure of the public pension scheme could be fully covered by the contribution rate (effectively, 15% of taxable wages), and the scheme would no longer need a state subsidy. Combined with the reforms considered before, this situation could in fact be reached already by 2050. However, while this result may sound like good news with respect to budgetary effects and financial sustainability, it is still dependent on a level of public pension benefits which declines considerably throughout the projection period – to just over half of the current, low level – and a total benefit level deriving from both pillars which is reduced by close to 20%.¹⁶

8.5.2. Stabilizing the benefit level

This prospect is not satisfactory from a social-policy point of view. It may as well not be politically feasible, since a growing share of older voters may reject the idea that public pensions and the overall level of old-age provision they (can expect to) receive become inadequately low, while they have had to pay the same contribution rate as preceding age cohorts throughout their working life. Within a complex bundle of reforms, there are thus good reasons to do something about future benefit levels and to give future pensioners a share in the cost-saving effects of those options for reform we have considered thus far. Basically, there are two ways of keeping up future benefit levels. The second-pillar scheme for supplementary funded provisions could be strengthened by further increasing the second-pillar allocation. Alternatively, the level of public pension benefits could be stabilized by replacing the current, mixed rule for benefit up-ratings (50% inflation, 50% nominal wage growth) with stronger, or even pure, wage-indexation.

In Section 8.3., we have argued that – besides increasing the retirement age – switching to partial pre-funding is indeed the way to go if existing pay-as-you-go systems can no longer deliver adequate benefits due to demographic ageing (or could do so only with a massive, continued increase in contribution rates or current cost rates). The drawback with this strategy is that it takes time to fully unfold its effects. If a reform of this kind has not been taken well before the financial pressure in the unfunded scheme becomes

¹⁶ The reduction becomes somewhat smaller against the baseline scenario (see Section 8.4.2), because the extended period of activity increases public pensions as well as second-pillar pensions.

acute, or if the switch has not been strong enough, it takes about (another) two decades until (additional) funded pensions will be sizeable, five to six decades until the system is mature. Another problem is that increasing the second-pillar allocation would have an immediate effect on the budget of the public scheme, hence on the amount of state subsidies required from the central budget, if the total contribution rate remained constant. This latter problem can be avoided by increasing the total contribution rate as well, either on a one-for-one basis or at least to partially cover revenue losses for the public scheme. Then, the downside might be an unfavourable effect for total wage costs and/or for labour supply of working-age individuals. However, it can be argued that these effects should be small if the increase is caused by higher injections into a funded pension scheme, not by higher contributions to a pay-as-you-go scheme. The reason is that funded pensions which are actuarially fair are basically just deferred compensation. They contain no tax-like element which might create behavioural responses in the contexts of wage bargaining or labour supply.¹⁷

While expanding supplementary provisions through the second pillar has an impact on the total level of pension benefits only with a considerable delay, more generous up-ratings of benefits deriving from the public pension scheme have an immediate effect. They may thus not be a measure of first choice in the context of ageing, but they could be used to stabilize the level of pension benefits for a limited period of time. Again, a major drawback is that this triggers an immediate effect on the budget of the public pension scheme, hence on the central government budget, if the share of the total contribution rate which is effectively paid to the public scheme is held constant. Yet, an advantage of changes in rules for benefit up-ratings is that they can be used at short foresight. For instance, they can be suspended or cancelled entirely, if other reforms have not established the financial room for manoeuvre which would be required.

8.5.3. Results for a combined reform strategy

Taking together these considerations, a mixed strategy for (re-)increasing future levels of retirement income can be conceived of, combining a further shift towards partial pre-funding which should be initiated soon and should be pursued unwaveringly with (temporary) increases in benefit up-ratings which can be used flexibly, depending on what the benefit level appears to require and what other circumstances allow for. To illustrate the potential effects, we finally look at two scenarios which are built on the baseline scenario (see Section 8.4.1), modified by the following assumptions.

- In both cases, reductions in the unemployment rate (to 9% until 2019) and in age specific rates of entry into disability pensions and early retirement (to 50% of

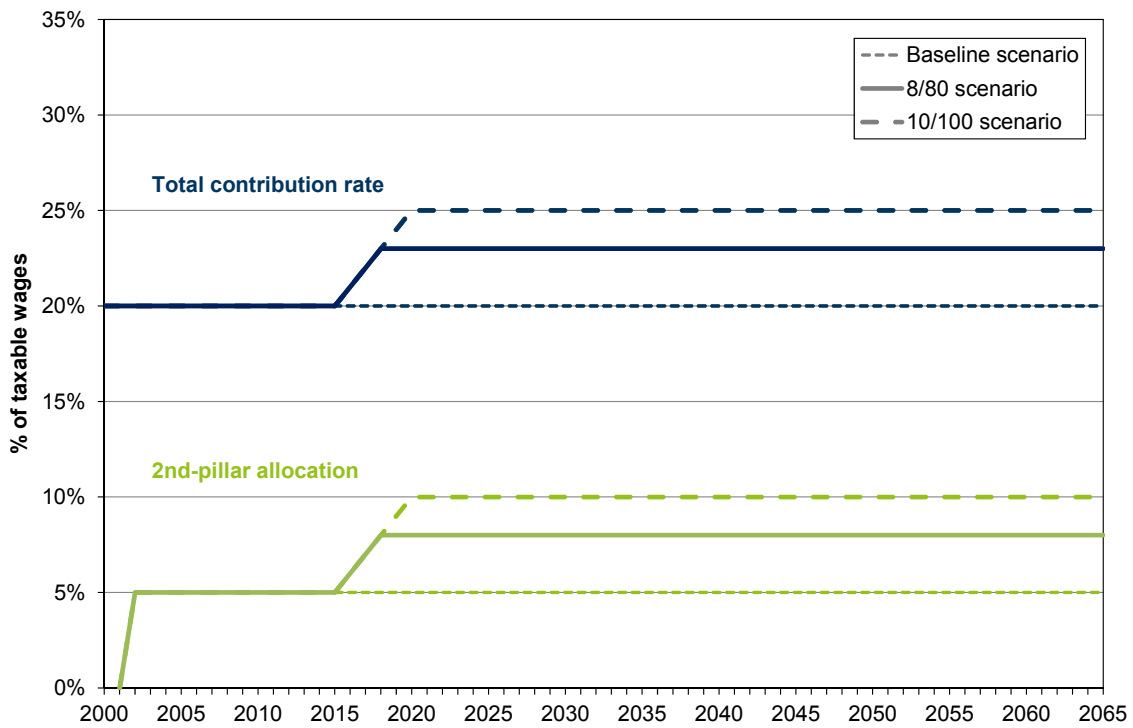
¹⁷ Higher contributions to a funded pension scheme could create distortions, (i) if the scheme is less than actuarially fair, and (ii) as these contributions are actually forced savings and need not correspond to optimal life-cycle plans of the individuals covered. But these effects should be small compared to those of the “implicit tax” involved in contributions to Bismarckian pension schemes or, even worse, to the tax-like character of contributions in Beveridgean schemes (Fenge and Werding 2004). – An effect which remains is that a parallel increase in total contribution rates and second-pillar allocations reduces income that is immediately available for consumption during the active period of life.

- their baseline values until 2019) are assumed to take place, with favourable effects for pension finances that were already discussed.
- The same applies to increases in the statutory pension age (throughout the projection period) that are automatically linked to on-going increases in life expectancy and lead to a uniform age threshold for both males and females at age 70 around 2060.
 - In addition, total contribution rates and second-pillar allocations are increased by 1 percentage point per year against their current values (20% and 5% of taxable wages, respectively) starting from 2016; at least temporarily, the weight of nominal wage growth in the rule for benefit up-ratings (currently: 50%) is also increased; however, these changes come in two possible variants.
 - In the “8/80 scenario”, second-pillar allocations go up to 8% of taxable wages (until 2018) and then remain constant; the weight of wage growth in benefit up-ratings goes up to 80% (until 2018), but declines to 50% again later on (from 2039 to 2041).
 - In the “10/100 scenario”, second pillar allocations go up to 10% (until 2020), while the weight of wage growth becomes 100% (between 2020 and 2042) and then goes down to 50% again (until 2047)

Figure 8.5. essentially illustrates these assumptions regarding total contribution rates and second-pillar allocations. For each of the scenarios considered, they move parallelly, so that the effective contribution rate for the public scheme always remains the same.

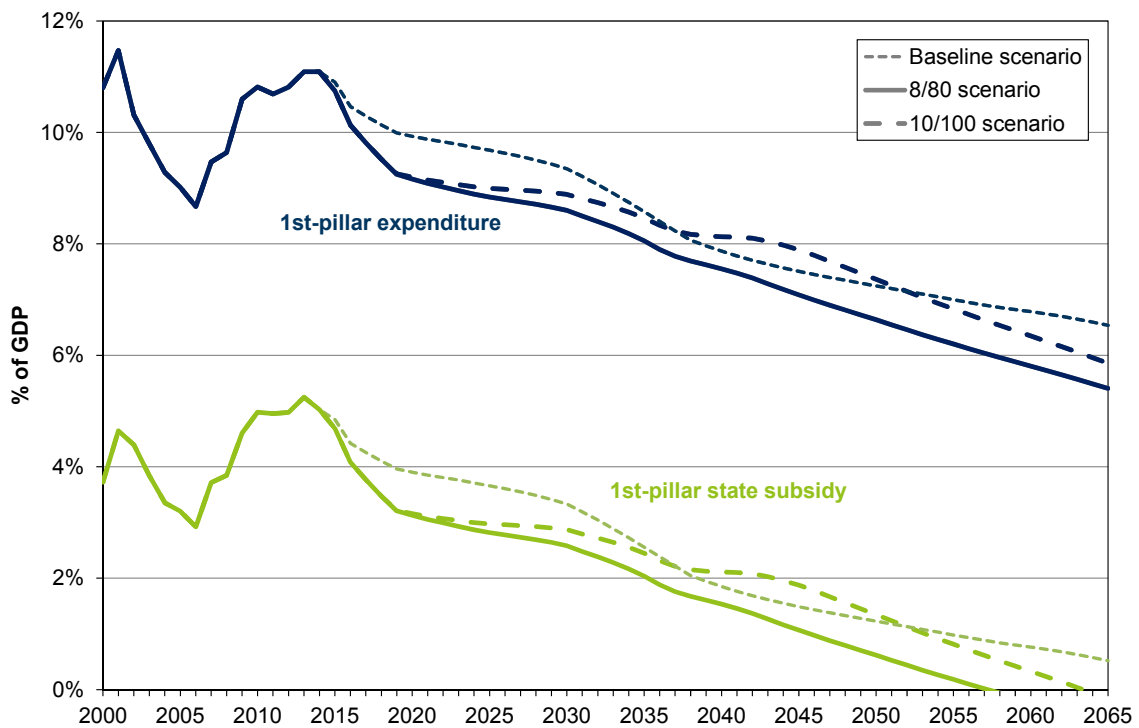
The impact of these reforms on pension expenditure of the public scheme and on the state subsidy, hence on the central government budget, is shown in Figure 8.6. It can be seen that, compared to the baseline scenario, both strategies for reforming the system lead to reductions in expenditure and in the amount of subsidies needed to balance the scheme in the short to medium run. This advantage would be even larger if gradual increases in the weight of wage growth for benefit up-ratings were postponed. Conversely, if cost-saving effects of other elements of reform turn out to be weaker than expected, or if they take more time to come about, postponing these increases could be a way of containing expenditure and avoiding additional fiscal strain at an early stage of the reform process. The increase in second-pillar allocations, however, should rather be phased-in soon, in order to create a sizable impact on total levels of pension benefits as soon as possible (while the impact on the budget of the public scheme is assumed to be fully neutralized by the parallel increases in total contribution rates).

Figure 8.5.: Contribution rates – Reform scenarios (2000–2065)

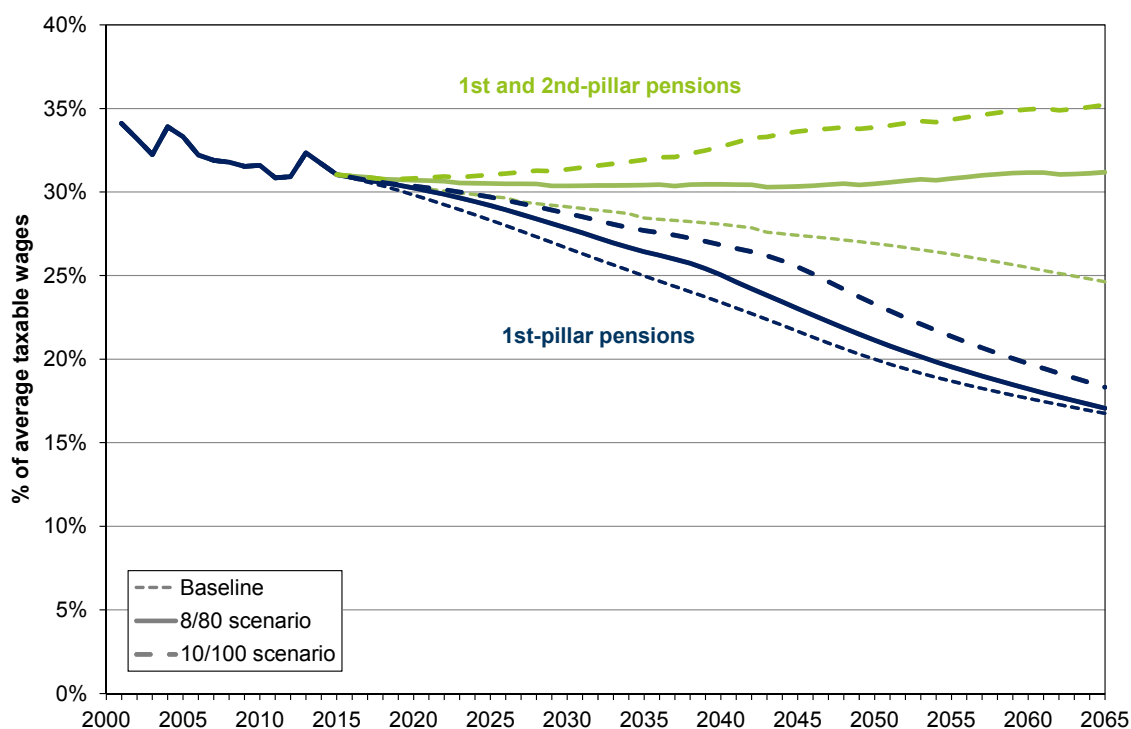


Sources: HZMO; own calculations.

Figure 8.6.: 1st-Pillar expenditure and state subsidies – Reform scenarios (2000–2065)



Sources: HZMO; own calculations.

Figure 8.7.: Gross level of old-age pension benefits (1st and 2nd pillar, 2000–2065)

Notes: The benefit level is assessed relating average old-age pensions to average taxable wages, both gross of taxes and social insurance contributions.

Sources: HZMO; own calculations.

In the “8/80 scenario”, public pension expenditure and state subsidies remain below those in the baseline scenario throughout. The difference becomes larger after 2040, due to the return to the old rule for benefit up-ratings, and the state subsidy falls to zero around 2055. In the “10/100 scenario”, expenditure and subsidies exceed those in the baseline scenario between 2035 and 2050, that is, when they have become acceptably low in all the cases considered here. The reason is that benefit up-ratings are more generous in this period under the “10/100” assumptions, amounting to pure wage indexation. As this rule is phased out in the 2040s, expenditure falls below corresponding baseline figures again, and the state subsidy becomes zero shortly before the end of the projection horizon. Once again, the timing and strength of the phase-out can be adjusted to avoid increasing fiscal pressure or to exploit any unexpected financial leeway.

Last but not least, Figure 8.7. displays the impact of the reform scenarios on the (gross) level of average pension benefits – those provided by the public scheme as well as total benefits deriving from the two-pillar system. Our two scenarios have been deliberately designed to demonstrate the options arising in this respect. The “8/80 scenario” stabilizes total pension benefits almost perfectly at their current level. The “10/100 scenario” even leads to a long-term recovery of the benefit level, in case this is considered desirable. Alternatively, it could be a way of stabilizing the net benefit level, if other public charges (*e.g.*, contributions for health care) will increase in the future. In both cases, long-run effects are mainly driven by higher second-pillar pensions, based on increases in second-pillar allocations which start in the near future. Adjustments in up-

ratings of public pension benefits can then be used to fill any gaps in benefit levels which arise in the short to medium run – provided that this is made possible by the budgetary situation of the pension scheme and by favourable effects of other elements of reform.¹⁸

8.5.4. Further issues

There are at least two further issues we haven't dealt with in our projections which are nevertheless of some relevance for current debates on pension reforms in Croatia. In Sections 8.2 and 8.4.4, we have pointed to the fact that funds accumulated in the second pillar are mostly invested in domestic government bonds. This effectively converts the useful strategy of pre-funding for future pension benefits into a hidden form of pay-as-you-go financing. Investment rules that contribute to this bias have long been modified, but there may be informal rules which still are working in this direction. Instead of defining lower limits for the share of domestic government bonds (*e.g.*, a minimum of 50%, as until 2007), new rules imposing an upper limit on this share may be called for in the course of further reforming the second-pillar scheme (*e.g.*, setting a maximum of 50% or even considerably less, while allowing for a sufficient time for restructuring investment). Besides making the system less vulnerable against the impact of ageing, this may well have effects for the rate of return, hence for the level of second-pillar pensions accruing in the future, that we did not want to speculate about in our projections.¹⁹

In Section 8.3, we have also discussed that, as a response to low fertility rates, further reforms of the public pay-as-you-go pillar could link part of the unfunded benefit entitlements to having children. Among other things, this could contribute to a long-term recovery in fertility rates (Cigno and Werding 2007, ch. 8), addressing one of the more fundamental reasons of demographic ageing. Favourable consequences for the financial situation of the public pension scheme would take very long time to materialize – about twenty years until additional children enter the labour market, about forty years until their numbers really make a difference. Yet, this might be one of the long-term tasks which should not be forgotten among the urgent business of keeping the system viable over the next few years. Simulating the effects of a reform of this kind would require substantially more data than we have been able to use here. Also, it would require a fully-fledged proposal for how this simple idea can be implemented. The reform strategy sketched above would offer a number of opportunities. For instance, the means spent on higher benefit up-ratings could be concentrated on those who have children (differentiated, for simplicity, only by their number). Also, second-pillar allocations could be varied inversely, making sure that those who have fewer children

¹⁸ In the overall context of a broader reform agenda for Croatia, it is interesting to observe that shifting to wage indexation may also be helpful if, during an early period of reform, wage growth will be moderate, while inflation may go up a bit (*e.g.*, because prices for imported goods increase following a depreciation of the kuna). In this case, wage indexation temporarily limits the growth in pension expenditure and contributes to budget consolidation, in line with short-term requirements mentioned above. When this period of transition is over, wage indexation will assume its role for stabilizing the level of pension benefits in the long run.

¹⁹ If capital markets would function properly, higher returns should be associated with higher risk. Here, we do not want to enter a discussion about the risks involved in government bonds, or about current regulation and risk-rating which may actually distort this trade-off considerably.

have to save more to obtain funded pensions, while those who invest more in children and their human capital are entitled to receive higher pay-as-you-go pensions as a return to their efforts which stabilize this system. Introducing child-related pension benefits is thus in line with the basic pay-as-you-go mechanism. It may also compensate for reductions in (access to certain types of) benefits and for changes in redistributive features involved in other elements of the reforms we have discussed.

While measures which might be suited to re-increase low fertility rates take a very long time to have an impact, migration is another determinant of demographic trends that may contribute to more favourable developments in the short run. Avoiding emigration and probably also attracting immigration is therefore something that should also be part of a broader agenda for Croatia in its current situation. The pension system itself might not be a first-rate instrument in the context of such policies. As migration is closely linked to labour-market performance which, in turn, is also a very important determinant of pension finances, the same might be said about labour-market policy: it is another field which definitely needs to be addressed within a comprehensive strategy for stimulating employment and economic growth in Croatia. This will have many other positive effects and will help in setting the pension system on a time-path towards sustainable and adequate old-age provision.

8.6. Conclusion

In this paper, we have described a possible reform agenda for the Croatian two-pillar system of old-age provision which is currently in a very difficult situation. Essentially, the agenda consists of two types of measures: (i) measures suited to bring down the high level of pension expenditure in the short to medium term – faster than this can actually be expected to happen under current rules, and with a lasting effect on the pension budget and on public finances in general – and (ii) measures which will avert the decrease in levels of retirement income in the long run.

Specific measures of the first type are changes in eligibility rules for disability and earliest retirement age, plus a gradual increase in the statutory retirement age which is automatically linked to increases in life expectancy. Reforms of this kind ought to be taken soon, and there aren't really many alternatives to going in these directions, given the current budgetary situation of the public pension scheme and the perspective of a strong ageing process. Measures of the second type are a further expansion of the second pillar which can be combined with an increase in total contribution rates that avoids revenue losses for the public scheme and possibly also an intermediate switch to more generous benefit up-ratings in the public pay-as-you-go pillar. These elements can be combined in various ways – with parallel increases in total contribution rates and second-pillar allocations or with other solutions in this regard, in “8/80”, “10/80”, “10/100” or in many other actual variants, and with a timing that can be flexibly adjusted. Only the increase in contributions to the second pillar should not be postponed for too long, as this is an element of reform which appears to be most appropriate to the perspective of demographic ageing and also needs to time to fully unfold its favourable effects.

Of course, none of our reform proposals and scenarios need to be followed exactly as they are. Rather, they show important pre-requisites and further ingredients of successful strategies for fixing the current problems of the Croatian system of old-age provision, offering a set of tools which can be applied and combined with some flexibility, depending on what future pension policy wants to accomplish with particular emphasis and what economic conditions and the various sources of uncertainty permit. All in all, our projections illustrate that there are feasible transition paths for old-age provision in Croatia to remain financially sustainable and deliver adequate benefits, in spite of the current dilemma.

References

- Aaron, Henry J. (1966), "The social insurance paradox", *Canadian Journal of Economics and Political Science* 32(3): 371–374.
- Abel, Andrew B., N. Gregory Mankiw, Lawrence H. Summers and Richard J. Zeckhauser (1989), "Assessing dynamic efficiency: theory and evidence", *Review of Economic Studies* 56(1): 1–19.
- Breyer, Friedrich (1989), "On the intergenerational pareto efficiency of pay-as-you-go financed pension systems", *Journal of Institutional and Theoretical Economics* 145(4): 643–658.
- Burniaux, Jean-Marc, Romain Duval and Florence Jaumotte (2003), "Coping with Aging: A Dynamic Approach to Quantify the Impact of Alternative Policy Options on Future Labor Supply in OECD Countries", *OECD Economics Department Working Paper* No. 371.
- Cigno, Alessandro and Martin Werding (2007), *Children and Pensions*, Cambridge, MA, London: MIT-Press.
- European Commission, DG ECFIN (2015), *Annual Macro-Economic (AMECO) database*, http://ec.europa.eu/economy_finance/db_indicators/ameco/index_en.htm.
- Dobronogov, Anton and Mamta Murthi (2005), "Administrative fees and costs of mandatory private pensions in transition economies", *Journal of Pension Economics and Finance* 4(1): 31–55.
- European Commission (2015), "Country Report Croatia 2015", Commission Staff Working Document, Document No. COM(2015) 85 final.
- European Commission and EU Economic Policy Committee (2014), "2015 Ageing Report: Underlying Assumptions and Projection Methodologies", *European Economy* No. 8/2014.
- European Commission and EU Economic Policy Committee (2015), "2015 Ageing Report: Economic and budgetary projections for the 28 EU Member States (2013–2060)", *European Economy* No. 3/2015.
- Feldstein, Martin S. (1995), "Would privatizing social security raise economic welfare?", *NBER Working Paper* No. 5281.
- Fenge, Robert (1995), "Pareto-efficiency of the pay-as-you-go pension system with intragenerational fairness", *Finanzarchiv* 52(3): 357–363.
- Fenge, Robert and Martin Werding (2004), "Ageing and the Tax Implied in Public Pension Schemes: Simulations for Selected OECD Countries", *Fiscal Studies* 25(2): 159–200.
- Garibaldi, Pietro, Joaquim Oliveira Martins and Jan van Ours (2010), *Ageing, Health, and Productivity: The Economics of Increased Life Expectancy*, Oxford, New York: Oxford University Press.
- Homburg, Stefan (1990), "The efficiency of unfunded pension schemes", *Journal of Institutional and Theoretical Economics* 146(4): 640–647.
- HANFA (2015a), *Statistics*, <http://www.hanfa.hr/EN/nav/106/statistics.html>.

- HANFA (2015b), *Vrijednost MIREX-a (MIREX value)*, <http://www.hanfa.hr/mirex.html>.
- HZMO (2015), *Statističke informacije Hrvatskog zavoda za mirovinsko osiguranje (Statistical Information of the Croatian Pension Insurance Institute, various years)*, <http://www.mirovinsko.hr/default.aspx?id=723>.
- MISSOC (2015), *Mutual Information System on Social Protection*, <http://www.missoc.org>.
- Mitchell, Olivia S. (1998), "Administrative costs in public and private retirement systems", in: Martin S. Feldstein (ed.), *Privatizing Social Security*, Chicago, IL: University of Chicago Press, pp. 403–456.
- Mitchell, Olivia S. and Stephen P. Utkus (eds., 2004), *Pension Design and Structure: New Lessons from Behavioral Finance*, Oxford, New York: Oxford University Press.
- Nestić, Danijel and Ivana Rašić Bakarić (2008), "From work to retirement: Pension system incentives to continued labour market participation in Croatia", in: Maja Vehovec (ed.), *New perspectives on a longer working life in Croatia and Slovenia*, Zagreb: Ekonomski Institut and Friedrich Ebert Stiftung, pp. 81–99.
- OECD (2013), *Pensions at a Glance 2013: OECD and G20 Indicators*, Paris: Organization for Economic Co-operation and Development.
- Sinn, Hans-Werner (2000), "Why a funded pension system is needed and why it is not needed", *International Tax and Public Finance* 7(4/5): 389–410.
- Šonje, Velimir (2011), *Pension Systems and Pension Reforms: Case of Croatia*, Report prepared for the USAID PFS Project, Arlington, VA: Partners for Financial Stability (PFS).
- Werding, Martin and Kai A. Konrad (2012), "Reforming the European Welfare State", in: Thiess Büttner and Wolfgang Ochel (eds.), *The Continuing Evolution of Europe*, Cambridge, MA, London: MIT-Press, pp. 71–118.
- World Bank (2011), *Croatia: Policy Options for Further Pension System Reform*, Washington, D.C.: The World Bank.

Appendix A.1: Demographic perspectives

Demographic projections for the “baseline” scenario have been prepared using data on total population (differentiated by gender and single years of age) for 2013 provided by Eurostat. They are based on cohort-wise, year-by-year projections using the following assumptions:

- The total fertility rate remains constant at 1.5 (children per woman) throughout the projection period
- Life expectancy at birth goes up to 87.6 years for females and to 82.7 years for males until 2060 (year-2013 figures are 80.7 and 74.0 years, respectively)
- Net immigration is zero throughout the projection period

Results for total population and old-age dependency (population aged 65 and over per 100 individuals in the population aged 15 to 64) under these assumptions are included in Figures A.1 and A.2 below.

Given the uncertainties about any of these determinants of future demographic trends, alternative projections are also made, introducing the following changes against baseline assumptions:

- Total fertility rate: ± 0.3 children until 2060 (in a continuous process)
- Life expectancy at birth: ± 3 years for both females and males in 2060
- Net immigration: $\pm 5,000$ per year throughout the projection period

Of the $3 \times 3 \times 3 = 27$ variants that are obtained combining any of these assumptions, two are considered to be particularly interesting. The “old population” scenario is based on assumptions implying declining fertility, a strong increase in life expectancy, and negative net migration. The “young population” scenario is based on assumptions implying increasing fertility, a weak increase in life expectancy, and positive net migration. Results for total population and old-age dependency for all 27 scenarios are shown in Figures A.1 and A.2. The two extreme variants are highlighted, like the baseline scenario, in Figure A.2.

Figure A.1: Total population (2000–2065)

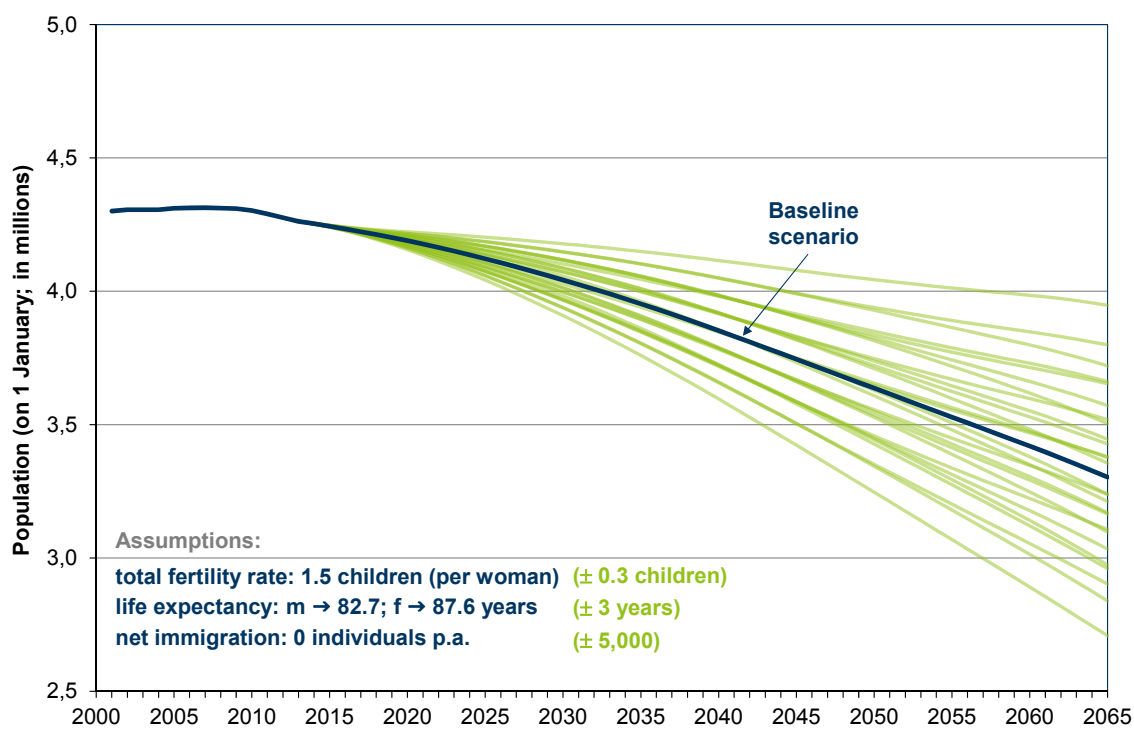
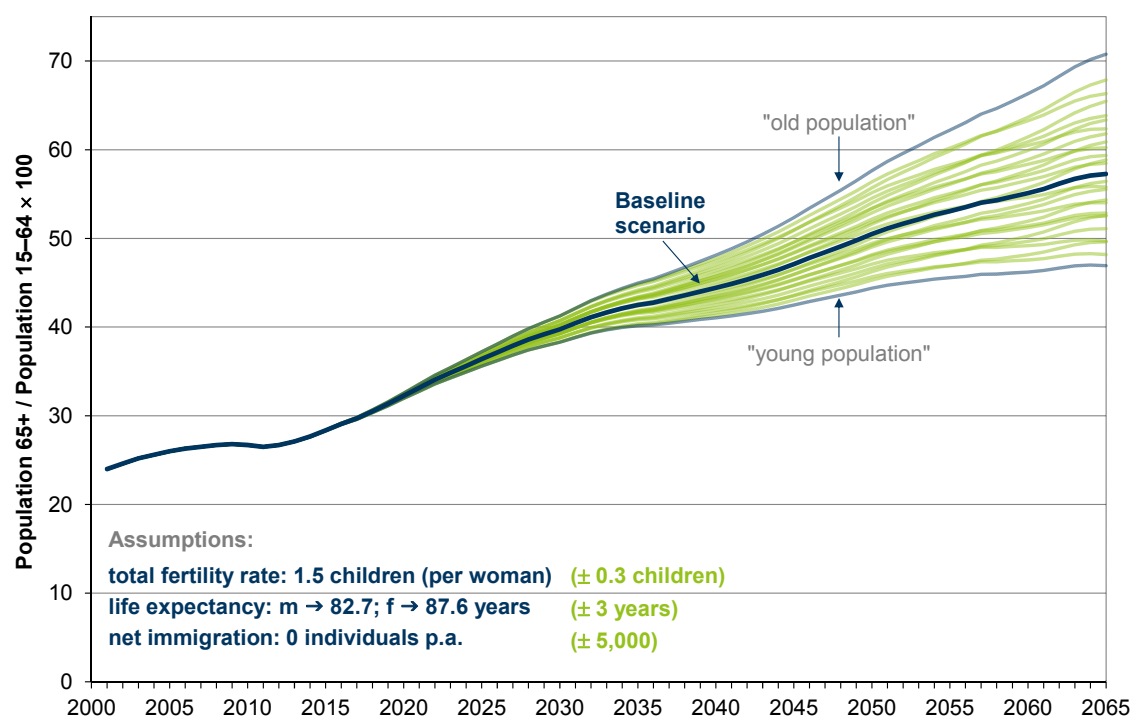


Figure A.2: Old-age dependency ratio (2000–2065)



Sources: Eurostat; own calculations.

Appendix A.2: Results of long-term projections

Table A.1: Selected results for the “baseline” scenario

	2010	2020	2030	2040	2050	2060
Total population (1,000s)	4,303	4,190	4,043	3,852	3,637	3,419
Old-age dependency (%)	26.7	32.3	39.7	44.4	50.5	55.1
Labour force (1,000s)	1,752	1,755	1,696	1,679	1,535	1,403
Employment (1,000s)	1,523	1,487	1,439	1,416	1,295	1,184
Unemployment rate (%)	11.7	14.4	14.4	14.8	14.8	14.7
Labour productivity (\pm % <i>p.a.</i>)	-1.2	1.3	1.9	2.1	1.9	1.7
Real GDP (\pm % <i>p.a.</i>)	-1.7	1.2	1.4	1.3	1.0	0.8
Real interest rate (% <i>p.a.</i>)	5.4	3.0	3.0	3.0	3.0	3.0
Inflation rate (% <i>p.a.</i>)	0.8	2.0	2.0	2.0	2.0	2.0
Pensioners (1,000s)	1,523	1,487	1,439	1,416	1,295	1,184
Support ratio (%)	127	123	116	119	110	104
Total contrib. rate (% wages)	20.0	20.0	20.0	20.0	20.0	20.0
Current cost rate (% wages)	30.0	29.7	28.3	24.6	23.1	21.9
2 nd -pillar allocation (% wages)	5.0	5.0	5.0	5.0	5.0	5.0
1 st -pillar expenditure (% GDP)	10.8	9.9	9.3	7.9	7.2	6.8
State subsidy (% GDP)	5.0	3.9	3.3	1.8	1.2	0.8
2 nd -pillar expenditure (% GDP)	0.0	0.1	0.6	1.3	2.0	2.5
2 nd -pillar funds (% GDP)	11.1	31.1	50.1	62.5	74.8	84.4
Average benefit level (%):						
1 st pillar	31.6	29.8	31.6	31.6	31.6	31.6
Total (1 st and 2 nd pillar)	31.6	30.3	29.1	28.1	26.9	25.5

Notes: Results reported for the years from 2020 onwards are a projection, based on many assumptions explained in the text, never a prognosis. – *Definitions:* “old-age dependency” is measured based on the population groups aged 65+ and 15–64; the “unemployment rate” is measured as a percentage of the total labour force; the “real interest rate” relates to domestic government bonds; the “support ratio” is the number of active workers covered by the pension system divided by the total number of beneficiaries; “total contribution rate” and “current cost rate” both include the “2nd-pillar allocation”; in addition, the “current cost rate” measures the contribution rate (as a percentage of taxable wages) that would balance the budget of the 1st-pillar scheme; the “average benefit level” is assessed relating average old-age pensions to average taxable wages, both gross of taxes and social insurance contributions.

Sources: Actual 2010 data are taken from Eurostat, the EU-DG ECFIN’s AMECO database, HZMO and HANFA as indicated in the text; projected data from 2020 onwards are based on own calculations.

9. Human Capital

Nadine Fabritz and Oliver Falck¹

9.1. Human Capital in Croatia

Human capital is a major determinant of innovation and economic performance for the long run (see e.g. Hanushek, 2013). In addition, the availability of local skills is increasingly a pull-factor for foreign direct investments (see e.g. Nunnenkamp, 2006). According to UNCTAD (2011), *“the complementarities between FDI and human capital development can initiate a ‘virtuous circle’. A strong local skills base tends to attract FDI inflows, while foreign TNCs can, in turn, contribute to the local skills base through spillovers to employees and local firms, induced migration, and participation in local education and training institutions.”*

Given its important role, Croatian policymakers should pay careful attention to the design of the education system, including life-long learning activities. Even though matters may seem more pressing in fields other than the education system, a decline in the human capital base may adversely affect the innovative capacity and economic growth in a longer perspective.

9.2. The Croatian Education System

Education in Croatia is mostly free of charge and financed by the state. Pupils are tracked after primary school, from ninth grade onwards, for upper secondary education into different school types offering courses lasting between one and four years (Croatian Bureau of Statistics, 2014).

At upper secondary level, Gymnasiums (also called grammar schools) provide a four-year general education that allows pupils to enter university after successful completion of a centralized exit exam. About thirty-percent of pupils in upper secondary education attended this type of school in 2013. Technical and related schools, with curricula also lasting four years, offer a more focused, vocational curriculum. This is the dominant form of upper secondary education in Croatia, with a share of about 46 percent of pupils in 2013. Upon completing this type of school, pupils may take the state exam (together with graduates from the Gymnasia) in order to gain university admission. Otherwise pupils can continue their studies in Polytechnics and Colleges of Applied Sciences. The same is true for Art Schools (which have a focus on music, ballet or fine arts and design), even though these play a lesser role, with only 3 percent of pupils attending such schools.

¹ Stefanie Gäbler provided excellent research assistance.

The category “Industrial and Crafts Schools” describes several types of upper secondary vocational courses, lasting between one and three years and with varying degrees of practical on-the-job training, depending on the specific school type. They were attended by about 21 percent of pupils in 2013. This category is divided into “industrial and trade” and “crafts” courses, which are not reported separately in the official statistics (Matković, 2010). Industrial and trade schools on the one hand provide a school-based vocational curriculum with placements in industrial or sales firms. Even though the practical workload is supposed to be around 40 percent, there is little real on-the-job training, as most is organized through in-school workshops. Crafts schools, on the other hand, offer a real dual vocational education curriculum, predominantly in crafts businesses, where two-thirds of the time is spent on the job in apprenticeships, and one-third is spent in school (Matkovic, 2010).

Tertiary education in Croatia takes the form of university studies or professional studies. There are 7 public and 3 private universities, which offer predominantly university studies but where also professional courses can be completed. In addition, over the last decade, there has been an increasing number of Polytechnic Schools and Colleges of Applied Science, offering professional studies that prepare students for direct entry into the labor market. Exceptionally, certified institutions from this category may also offer university studies. Upon completion of undergraduate degrees (University, Polytechnic or College of Applied Science), students can opt for programs of professional higher education. Out of the total number of students who graduated in 2013, 13.8 percent came from Polytechnics and 7.5 percent from Schools of Professional Higher Education. The vast majority, 76.9 percent, graduated from university faculties (out of these, 85.9 percent graduated from university studies and 14.1 percent from professional studies). Another 1.8 percent graduated from art academies (Croatian Bureau of Statistics, 2014).

Infobox: Experience with Universities of Applied Science (Fachhochschulen) in Germany

Universities of applied sciences (Fachhochschulen) were first introduced in Germany by state law in 1968. They were intended to provide a higher education with a strong focus on the practical application of the concepts taught, including a mandatory internship at a firm. Indeed, a key characteristic of a university of applied sciences is its strong cooperation with local firms. Thus, the needs and requirements of the local labor market are taken into account in the educational qualification process. The range of subjects taught by these universities has increased substantially since the early days, but the focus is still on technical and social disciplines.

Empirical studies (Jäger, 2013; Siegler, 2012) show that the opening of a new university of applied sciences in an individual's district increases the likelihood of this individual obtaining a tertiary degree. These new universities of applied sciences have thus been able to attract potential students from the local pool of adolescents who would have not studied in the absence of a local tertiary

education institution. The studies also document important economic returns to this expansion of the higher education system, and suggest that education at universities of applied sciences offers high labor market returns even in an environment featuring a high-quality apprenticeship training system as in Germany.

As part of the Bologna reform, university and “Fachhochschule” degrees became formally equal in Germany through the introduction of Bachelor and Master’s degrees. By contrast, while Croatian universities award the degree of a Master, Croatian polytechnics are only allowed to award the title of a “Professional Specialist”. In Germany, companies do not discriminate between the two types of

higher-education institutions when hiring graduates. In a survey among German enterprises, 72% answered that the kind of higher-education institution is rather or entirely irrelevant. Factors like motivation, communication and other personal skills of the graduates play a more important role on the hiring decision (Konegen-Grenier, 2011). Admittedly, the surveyed enterprises stated that *Fachhochschulen* are more practice-oriented while universities focus more on scientific work; these differences, however, are not significant (Briedis et al., 2011). Some *Fachhochschulen* now want to become more involved in research. Universities regard this development critically. Some expressed the wish that the difference between universities and polytechnics remains unchanged (Weiland, 2008; Fricke and Mersch, 2008).

The Croatian education system underwent several reforms in the pre-accession period. Much effort was done to streamline the education system to align it with European Union standards. In 2007, for instance, compulsory schooling was increased from 8 to 11 years. In the school year 2009 to 2010, a centralized exit exam (matura) was introduced. Since 2005, the Bologna process has been implemented in the Croatian tertiary education system in order to facilitate international mobility and comparability of studies. By now, the Bologna system (Bachelor, Master and Ph.D. degrees) is the predominant form. In 2013, 93.5 percent of students graduated according to the Bologna programs, whereas only 6.5 percent graduated under the pre-Bologna ones. In Croatia, 75-100 percent of the students with a Bachelor degree (as compared to 50-75 percent in Germany) choose to continue studies in a Master program (Exekutivagentur Bildung, Audiovisuelles und Kultur, 2012).

From the academic year 2010/11, the Croatian Government introduced a so-called linear tuition fee system. According to this system, all full-time undergraduate and graduate students can enroll in their first year of studies without paying tuition fees. From the second year on, students who have not accumulated a minimum required number of ECTS points (i.e. 55, where 60 credits is the full annual course load) in the previous year of study must start paying tuition fees. Tuition fees are charged in a “linear” fashion, whereby the fee levels are variable and increase proportionally, depending on how short of the target of 55 ECTS points students are (MSES, 2012). The

average tuition fee charged by Croatian higher education institutions is 8,800 HRK/1,170 EUR per year (Doolan et al., 2012).

Infobox: Tuition Fees: What does economic theory tell us?

A lesson from economic theory is that students should contribute to the cost of their degree. Higher education creates benefits that transcend the individual—benefits in terms of growth, social cohesion, and the transmission of values. Thus, taxpayer subsidies are rightly part of the landscape. However, students also receive significant (often substantial) private benefits. It is therefore both efficient and fair that they bear some of the costs.

Nicholas Barr (2004) thus argues that universities should be financed from a mix of taxation and tuition fees. Each university sets its fees, and students can opt to get a loan that is available to cover such fees. Fees give universities more resources to improve quality and, through competition, help improve the efficiency with which those resources are used. That is not an argument for law-of-the-jungle competition, but for regulated markets. Counterintuitively, variable fees are also fairer since they reduce the regressivity of a system based on tax finance.

The obvious argument against fees is that they deter students from poor backgrounds. That is true of up-front fees, but not when students go to university payment-free and make a contribution only after they have graduated through the repayment of the respective income-contingent loans. Such loans provide student support by covering fees and, in richer countries, also the living costs, with an interest rate broadly equal to the government's cost of borrowing. The rest of financing comes from taxes. From the viewpoint of the graduate, the loan repayments differ from taxes in two ways: they are paid only by people who have been to university, and they do not go on forever. Thus, income-contingent loans are logically equivalent to free higher education financed by an income-related graduate contribution.

For countries such as Croatia, however, the challenge is how to design a loan that mimics income-contingent repayments when there is a large informal sector and only limited capacity to collect income tax.

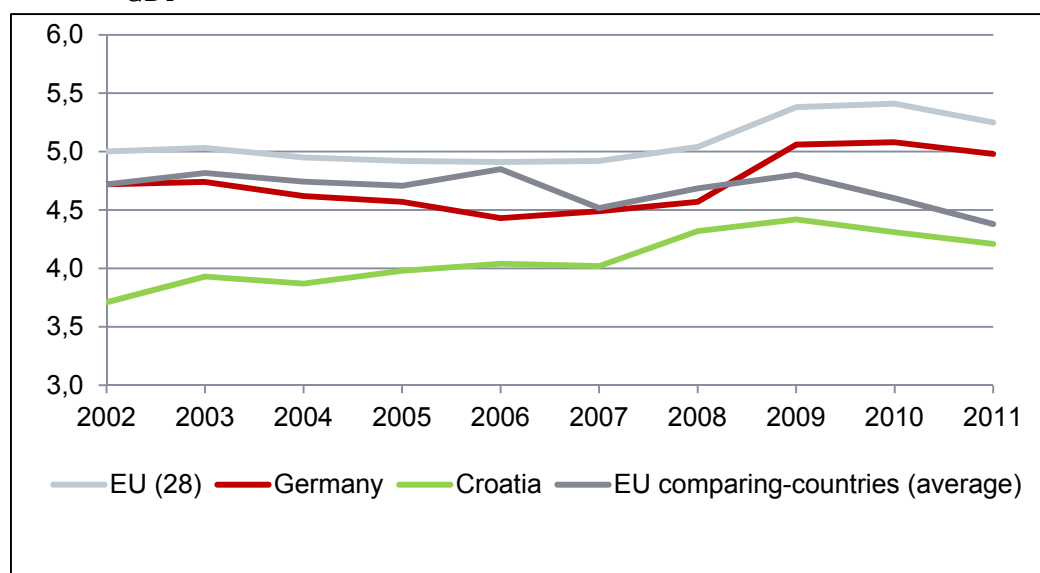
In the most recent period, efforts have been undertaken to further modernize the education system. In late 2014, the government published a new Education, Science and Technology Strategy, a comprehensive reform package encompassing all levels of the education and training system. As regards vocational education, a new national framework curriculum (the Croatian Qualifications Framework, CROQF) aims at better linking educational outcomes with the labor market. The strategy also introduces national competence standards for teachers (CEDEFOP, 2014). In tertiary education, a pilot project observes labor market outcomes of higher education graduates from

professional study programs to better monitor educational efficiency. In addition, performance-based funding of institutions has been introduced to improve the overall incentive structures (European Commission, 2015).

9.3. International Comparisons

Despite the reforms introduced over the last decade, the comparison of most recent indicators for the quality of human capital reveals that Croatia (still) performs relatively poorly. Croatia's public expenditure in education, around 4 percent of GDP on all levels, lies below the EU average, 5 percent, and is also lower than the average spending of the prime peer countries. It is true that Croatia has reduced its spending on education over the past few years, but its lower spending level dates from before the recent financial crisis (see Figure 9.1. below).

Figure 9.1.: Public expenditure on all levels of education, as percentage of GDP



Source: Eurostat, 2014a

Subdividing total expenditure by educational level (i.e., pre-primary, primary, secondary and tertiary education), it appears at first sight that Croatia spends by far most on primary education (42 percent, as compared to the 23-percent EU-28 average), while public spending on secondary education is relatively low (21 percent as compared to the EU-28 average of 42 percent). Closer inspection, however, reveals that in contrast to other European countries, Croatian expenditures in lower secondary education are reported under primary education, with the result that the expenditure profile in Croatia actually does not differ much from the EU average (Eurostat, 2015c).

Test results from the most recent PISA² studies by the OECD indicate that the current pupil cohorts perform worse than the EU average in all three tested categories, namely natural science, mathematics and reading. Croatia also performs worse than countries in

² The Programme for International Student Assessment (PISA) is a triennial international survey which aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students. The most recent test results are from 2012.

the direct peer group, such as Poland, Hungary or Slovenia. Worse, Croatia has achieved no improvements worth mentioning in the PISA scores over time, despite the ongoing reforms to the education system. Figures 9.2. to 9.4. depict the results for 2006, 2009 and 2012. While Romania and Bulgaria, for instance, show large positive growth rates in each subject during this period – albeit from a low base – Croatia experienced a downward trend in natural sciences and only slight improvements in the other two categories. This might be a sign that the implementation of some reforms has not been successful, at least as measured in terms of lower secondary education achievements.

Figure 9.2.: PISA results 2006 – 2012, Reading Scores

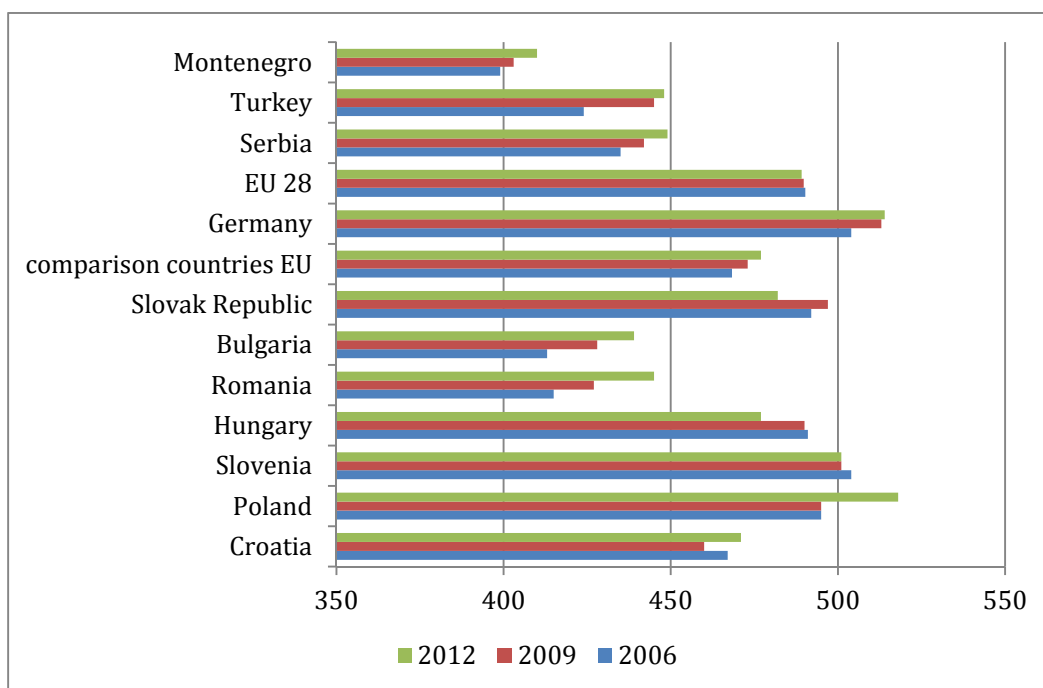
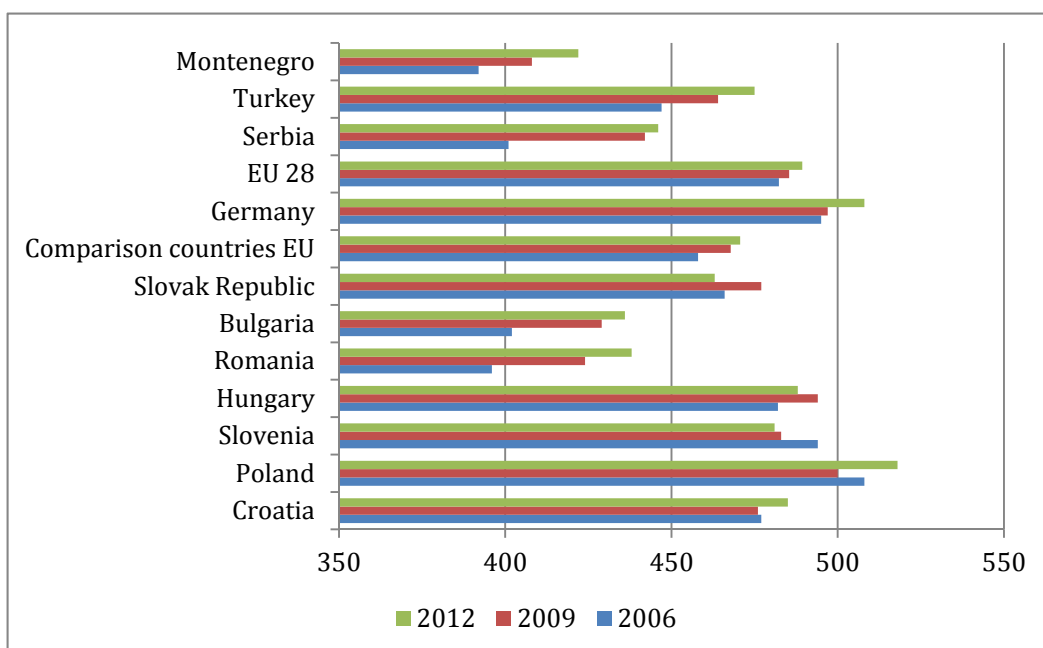
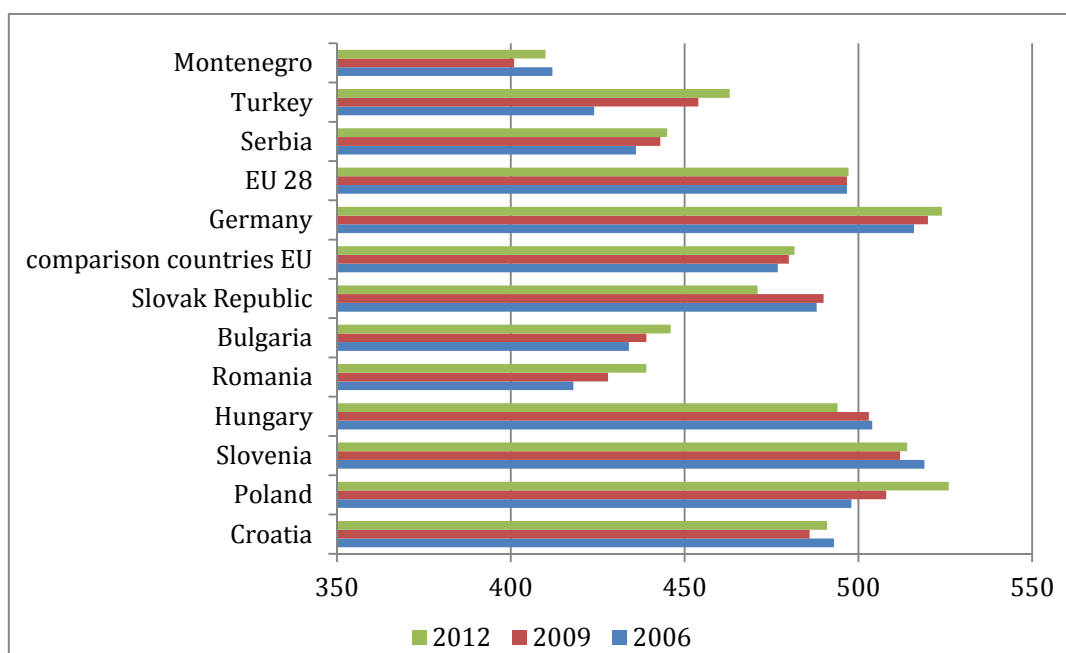


Figure 9.3.: PISA results 2006 – 2012, Mathematics Scores



Source: OECD (2007; 2010; 2014).

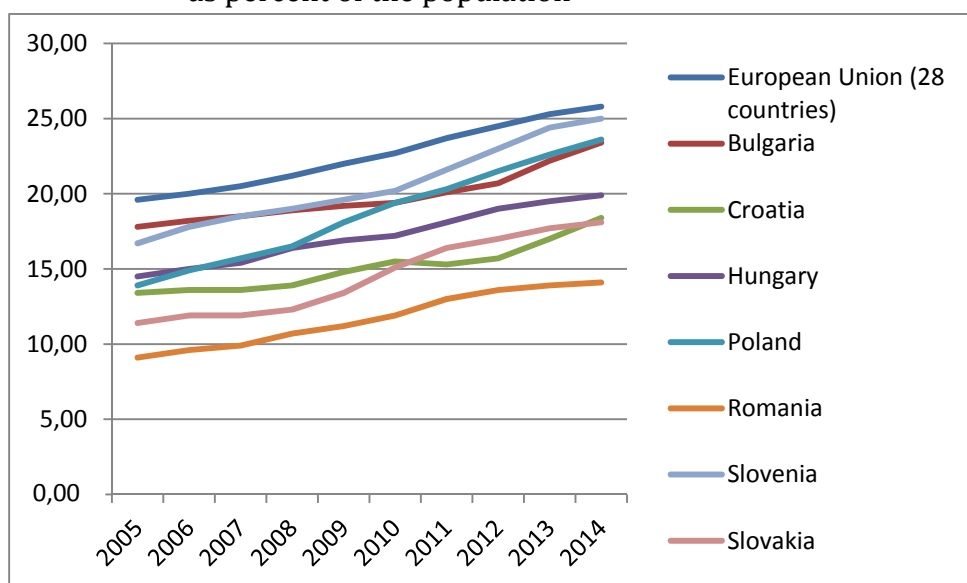
Figure 9.4.: PISA results 2006 – 2012, Natural Science Scores



Source: OECD (2007; 2010; 2014).

Regarding the total workforce, while the share of the population with secondary education completed is very high, the share of people with tertiary education completed, at 18.4 percent in 2014, lies considerably below the 25.8 percent average for the EU-28 (see Figure 9.5.). The share of people with postgraduate or Master's degrees, in turn, is very low compared to other countries, with only 3 percent of tertiary educated graduates, who are very few in any case, obtaining such degrees in 2010 (OECD, 2014a, p.162); this is by far the lowest proportion in the peer group.

Figure 9.5.: Population with tertiary education attainment as percent of the population



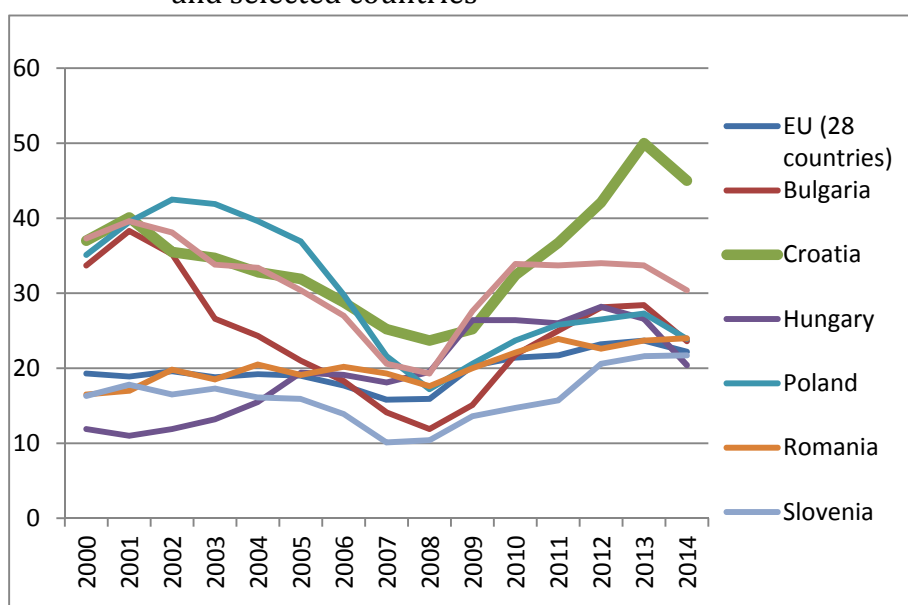
Notes: Tertiary education are ISCED levels 5-8. The underlying populations are people aged 15 to 64 years. Source: Eurostat, 2015.

9.4. Main Challenges Relating to Human Capital

9.4.1. Youth Unemployment

One major threat that Croatia faces in terms of human capital is the exceedingly high level of youth unemployment. The economy experienced a surge in unemployment – and especially in youth unemployment – after 2008. In 2014, the annual average unemployment rate for the below-25 age group was 45 percent, the third-highest in the EU after Greece and Spain, and about twice the average in the EU (22.2 percent). Figure 9.6., which depicts its evolution over time, shows that youth unemployment is much lower in the peer countries.

Figure 9.6.: Unemployment rates (15-24-year age bracket) in Croatia and selected countries



Source: Eurostat 2015a.

Some efforts are underway to tackle this issue. The Croatian government presented a Youth Guarantee Implementation Plan in late 2013, which is the national implementation of the EU-wide “Youth Guarantee”³ initiative. A “Young and Creative” program has been created within this framework, consisting of 23 measures to foster employment of young and inexperienced persons. A number of incentives were introduced to make these persons more attractive to employers, including, among others, direct employment subsidies, training and specialization subsidies, social contribution exemptions for one year, and tax reliefs on contributions paid for two years conditional of employing the person for a third year. In addition, subsidies for self-employment were designed in cooperation with agencies such as Hamag-Brico.

Other measures are public works and continued education after vocational programs (Ministry of Labour and Pension System, 2014; Pavičić, 2013). In 2012, an Employment

³ The European Union established the Youth Guarantee program in 2013 to ensure that people ages 25 and less receive a good quality offer of employment, continued education, apprenticeship or a traineeship within four months of leaving formal education or becoming unemployed (European Commission, 2014a).

Promotion Act was adopted, which allows private sector employers to offer a form of traineeship called “Occupational training without commencing employment”. Under this scheme, employers are reimbursed obligatory contributions if they employ young unemployed persons with less than 12 months of work experience. The young individuals concerned receive a tax-free remuneration for transportation to encourage inter-city mobility (Ministry of Labour and Pension System, 2014). As can be seen in Figure 9.6., youth unemployment has come down from its peak of 50 percent in 2013, for the first time since 2008. Since the measures will be in the implementation phase until 2015, according to the Ministry of Labour and Pension System (2014), further reductions can be expected.

9.4.2. Skills Mismatch

A recurring issue in Croatia is a perceived mismatch between educational qualifications provided and the skills needed on the labor market. According to a study by Matcović (2009, in European Commission, 2014b), less than 50 percent of vocationally educated graduates find a job in their respective field of study. Survey evidence from recent years shows a lack of adequately qualified personnel as an obstacle for Croatian firms’ innovation performance. At the level of tertiary education, science, engineering and mathematics are underprovided, whereas the social sciences and humanities are oversupplied (OECD, 2014a, p. 32). The OECD has also found a lack of in-house capabilities in graphic design, layout and advertising as well as in ICT-related skills such as programming and web design. Capabilities in design and engineering are also moderate. The OECD concludes that there is an under-provision of graduates from professional tertiary courses and from secondary-level vocational courses (ibid., p. 162).

Responsibility for supervising and reforming vocational education in Croatia lies with the Agency for Vocational Education and Training and Adult Education, which formulated the vocational training development strategy for the years 2008 to 2013. A new strategy for the period 2014-2020 was introduced in 2014. In 2009, councils were established by the Ministry of Science, Education and Sports to act as advisory bodies for improving links to the labor market in 13 different professional sectors.⁴ Members come from the ranks of employers, chambers, universities, vocational education institutions and other stakeholders. The councils advise the ministry responsible for education on changes in qualifications standards and the ministry responsible for labor on changes in occupational standards. They also serve as platforms for employers to put forward their requirements to the education system (CROQF, 2015).

⁴ The 13 sectors are agriculture, food and veterinary (1), forestry and wood processing (2), geology, mining, oil and chemical industries (3), textile and leather (4), graphics technology and audio-visual design (5), mechanical engineering, shipbuilding and metallurgy (6), electrotechnics and information technology (7), construction and geodesy (8), economy, trade and business administration (9), tourism and hospitality (10), transport and logistics (11), health and social care (12), security services, personal and other services (13) (ASOO, 2015).

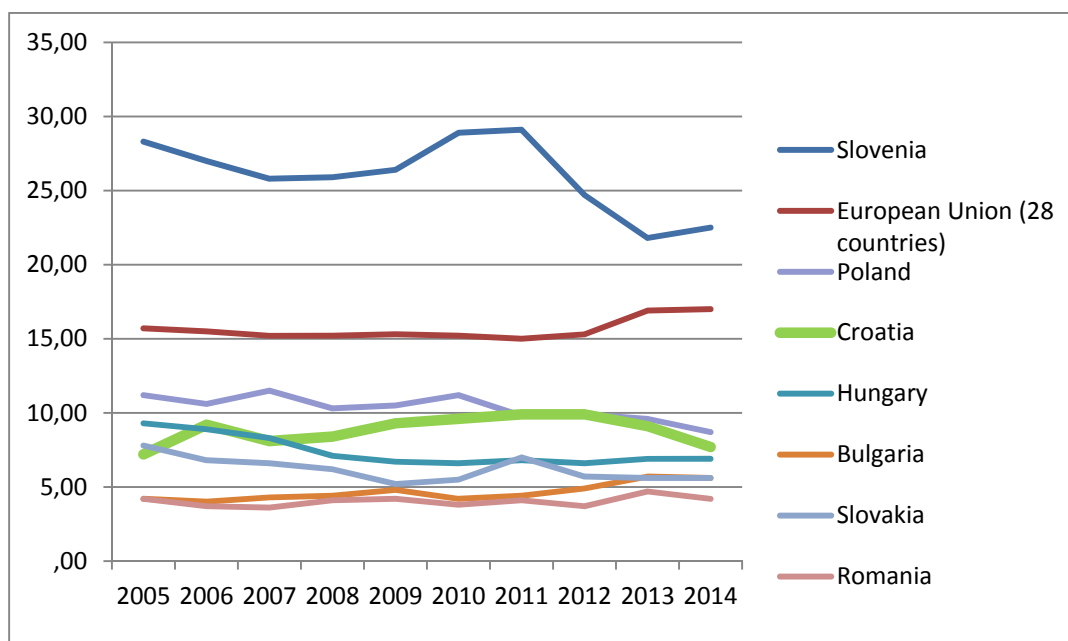
According to a recent evaluation by the European Union (2014a), reforming the vocational system has been slow in recent years. A new strategy for modernizing curricula was put forth in 2014, under which special attention is given to improving the labor market relevance of education and training. A key tool of this strategy is the Croatian Qualifications Framework (CROQF, 2015a) that serves as a quality-assurance tool for the educational system at all levels by formalizing qualification standards, based on learning outcomes, in order to tighten the links between education and the labor market. The inter-sectoral National Council for Development of Human Potential is the body responsible for monitoring and validating the impact of CROQF and of the sectoral councils.

However, there are some signals that the problem lies not only with the education-supply side, but also with the labor-demand side. Companies are incapable of formulating forecasts about how their skill requirements will evolve over time (OECD, 2012). Also, a survey among Croatian employers (in Pavičić, 2013) reveals that 65% of employers feel that the educational system does not provide occupation-related practical skills. At the same time, only about half of the enterprises give opportunities to young people for acquiring these skills by offering apprenticeships, internships or work practice.

9.4.3. Life-Long Learning

Croatian companies and employees lag behind the European Union average in terms of life-long learning activities (OECD, 2014a), exacerbating (or at least not reducing) the skills mismatch. The participation rate in education and training among the population aged 25 to 34 is low in comparison to the EU average, as Figure 9.7. shows. Among the 25 to 34 year-olds, in 2014 a mere 7.7 percent had received any training during the last four weeks, with the trend pointing downwards, against an average of 17 percent in the EU. The peer group countries, apart from Slovenia, lie in the same range or perform even worse. Underdeveloped training activities of firms are evidenced by a relatively low share of companies that offer continuing vocational training (CVT, i.e. education and training occurring during paid working time, or partially paid by employers if training activities are organized outside of paid working time). In 2010, 50 percent of Croatian firms engaged in CVT, compared to an EU-wide average of 56 percent. The figure is even lower in most peer countries (Eurostat, 2014).

Figure 9.7.: Participation rate in education and training



Notes: Respondents of ages 25 to 34 were asked whether they had participated in education or training measures within the last four weeks. Data from EU Labor Force Survey. Source: Eurostat, 2015b.

The Croatian government currently subsidizes training activities through tax rebates amounting to up to 50 percent of expenses for large firms, and up to 70 percent for SMEs for general training, and 25 percent and 35 percent, respectively, for specialized training. This can be increased by 10 percentage points for training for certain groups of disadvantaged employees (e.g. those under 25 years of age who have not been in permanent employment previously) (Ministry of Finance, 2012). However, the uptake of these tax incentives is low in Croatia, because companies are not sufficiently aware of their existence and due to high administrative barriers (European Commission, 2014b).

Furthermore, training measures are financed by the Croatian Employment Service (CES) in the form of direct subsidies for on-the-job training and subsidies and training for self-employment. These measures are targeted specifically at young people (see on-the-job training without commencing employment, Section 9.4). Training of the unemployed (as an active labor market policy, ALMP) is conducted by training institutions through public procurement procedures. This measure aims particularly at high-school drop-outs, prime-working-age women with inadequate education levels, and persons in unfavorable positions in the labor market (Croatian Employment Service, 2014). In addition, the upgrading of worker skills is supported if these workers are to otherwise become redundant due to the introduction of new technologies. Companies undergoing economic hardship may also apply for financial support for training.

9.5. Education Policy and the State of Technology

The established literature (Aghion and Howitt, 2010) proposes an approach to designing optimal education policy that depends on the current state of an economy's

development. Focusing on higher education exerts a stronger impact on economic growth in countries that are close to the technological frontier. Investment in higher education increases a country's ability to make groundbreaking innovations, while investing in primary and secondary education helps in fostering imitation, i.e. implementing existing technologies. Within the European Union, Croatia ranks as a moderate innovator, the second-least innovative category. Croatia has also exhibited very low growth rates in innovative capacity over the past several years and therefore risks falling into the lowest category of "modest innovators" (see European Commission, 2014). We consider Croatia a country to be somewhat below the technological frontier.

The overall goal of this reform agenda is to increase Croatia's international competitiveness and its attractiveness to foreign direct investment (FDI). FDI is an important source of technological transfer, i.e. the imitation of existing technologies. Therefore, in the following this policy paper will focus on secondary and vocational education (the reform of tertiary education is addressed in the innovation policy paper).

9.6. Vocational Education in Croatia

The first reform we propose aims at reducing youth unemployment and, at the same time, better meet the demands of the Croatian labor market. As a country below the technological frontier, Croatia should pay special attention to the education tracks besides tertiary education in order to find solutions to its most pressing challenges. This section concentrates on reforming upper secondary education, in particular as regards vocational education and training (VET). In Croatia, this is regulated by the Vocational Education and Training Act adopted in 2009.

As outlined above, upper secondary vocational education plays a dominant role in Croatia. It is offered by several types of schools, with varying degrees of professional (on-the-job) training. While most school types offer (more or less) full-time schooling courses (Grammar Schools, Technical and Related Schools, Art Schools as well as Industrial and Trade courses), Crafts Schools offer a dual vocational education with the majority of the curriculum spent on the job. This system was introduced in Croatia in 1995 in order to foster practical education (Baljkas et al., 2010). The prerequisite for participation in these types of courses is that pupils apply directly to companies, which must be licensed by the chambers, and enter into an apprenticeship contract with them. The education is school-based (about one-third) and work-based (about two-thirds). The programs typically last for three years.

When it was introduced, the take up of this dual education system was low. One explanation proffered is that these kinds of programs suffered from historically low prestige dating from communist times (Matković, 2010). According to a survey conducted in 2011, Croatia today displays the second-lowest proportion (after Italy) of young people who consider vocational education as an attractive option (European Commission, 2011). Despite this, adoption accelerated somewhat over the years, with an increasing number of different programs on offer (Baljkas et al., 2010).

Infobox: Dual Vocational Education in Germany

The dual vocational training or apprenticeship system has historically been the most dominant form of vocational education in countries such as Germany, Denmark, Austria and Switzerland. Duality refers to the simultaneous combination of on-the-job training and education in school, where typically 3 to 4 days per week are spent at the workplace and 1 to 2 days are spent in school.⁵ Today, approximately half of each cohort chooses an apprenticeship in Germany, 20 percent of which have previously completed the general upper secondary education, which would actually entitle them to attend university. Currently about two-thirds of the total German workforce has completed one such apprenticeship during their lives. In a manner similar to the Crafts Schools in Croatia, students apply to firms directly, while curricula and exams are supervised by the respective chambers. Whereas in Croatia this model is restricted in practice to craft trades (Crnković-Pozaić, 2009), in Germany approximately 350 professions are offered under the dual education system in the fields of crafts trades, industry and trade, agriculture, tourism, the public sector or with certain freelancers (such as pharmacists, doctors, lawyers or tax consultants).

An important element of the system is the inter-company vocational training in certain crafts industries. It covers training aspects that cannot be provided by a single firm, because of unavailability of the relevant machinery or equipment, or of the necessary personnel. In this way, apprentices of small, less-equipped firms are guaranteed a broad and up-to-date education. Training is conducted in the form of block instruction, which lasts several weeks and takes place in workshops maintained by the responsible chambers. The costs for this training are borne by the firms, with subsidies from public funds (Federal Employment Service, 2009).

The apprenticeship system is seen as a source of stability on the labor market. According to the German Federal Ministry of Education and Research (2013), the low levels of youth unemployment in Germany (7.7 percent in 2014) are in large part attributable to this form of education, since it integrates work-based and school-based learning and thus facilitates the apprentice's transition to full-time employment (Hoeckel and Schwartz, 2010). Even though the OECD tends to prioritize the promotion of tertiary education, it has evaluated the German vocational education system very favorably.

A study by Hanushek, Woessmann and Zhang (2011) analyses the effects of dual vocational education on the labor market. The authors make use of individual-level data from 18 countries to compare employment rates of people with general and those with vocational education. They show that vocational education facilitates young people's entry into the labor market after school. The concentration on

⁵ In addition, some vocational education is based on a full-time school curriculum. This concerns mostly professions related to healthcare, social affairs, foreign languages and engineering (Federal Employment Service, 2015).

specific vocational skills makes workers more productive much earlier, making them thus more attractive to employers. However, there is a trade-off over different age profiles, as these advantages disappear over time and workers with vocational education face higher probabilities of being unemployed with increasing age. One plausible explanation for this phenomenon is that a more general education serves as a foundation for further learning and on-the-job training. Since specific skills can become obsolete quickly, the ability to adapt to new technologies is important. It should be noted that the trade-off between employment at a young age and unemployment at an older age is more pronounced in countries with strong apprenticeship systems, such as Denmark, Germany and Switzerland.

The German system, or a similar version of it, has been “exported” to several countries. The Indian government, for example, has set itself the aim to have 500 million people complete a dual vocational degree after the German example by 2020, and cooperates with Germany in implementing the system. Some European countries, in response to the recent economic crises, show increasing interest in the apprenticeship system. In December 2012, Spain, Greece, Portugal, Italy, Slovakia and Latvia signed a memorandum with Germany for close cooperation in the reform of their vocational education systems in the hope of bringing down their high levels of youth unemployment (Federal Ministry of Education and Research, 2015).

Considering the state of Croatia’s economy, and taking into account the high levels of youth unemployment and the mismatch of skills on the labor market, we suggest that Croatia strengthens the vocational upper secondary education. This should be done by widening the scope of the apprenticeship programs beyond crafts, moving towards the German dual vocational education model. This may lead to a win-win situation for employees and firms: Youth unemployment can be reduced, as the school-to-work transition is facilitated, and firms can directly access a pool of workers that they themselves have qualified according to their needs, reducing the skills mismatch between skills needed on the labor market and those provided by the educational system.

Admired as the German system may be, however, it has been in the making for centuries, as the Bavarian Chamber of Commerce and Industry and its sibling the Chamber of Crafts and Trades, both key actors in the German dual education system, rightly point out. To succeed, the system requires the concerted action of many diverse elements, including the legislative and regulatory underpinnings, the labour unions, the educational system, the relevant ministries and funding bodies, the above chambers and, not least, the companies themselves. The chambers of trade and industry and of crafts, for instance, oversee the curricula and, together with other stakeholders, the content of the final examinations, and issue the final certificates. This makes it difficult for the

system to travel well, so careful attention must be paid to which elements should or could be introduced, and in which order.

Given the above, one may think of several obstacles to broadening the apprenticeship system in Croatia. First, firms currently face severe liquidity constraints that may hinder the hiring of additional apprentices. The government should bolster financial incentives for young people linked specifically to the apprenticeship system. These financial incentives should be communicated to firms. In addition, the provision of inter-company workshops (as in Germany) may help in overcoming firms' liquidity constraints. Next, policymakers should make use of the full funding opportunities provided by the European Union for apprenticeship systems from Erasmus+, the European Social Fund, the Youth Employment Initiative EURES, or the European Investment Bank.⁶ It may well be the case that young workers cannot compete with established (older) employees despite financial aid from the state due to tight regulations on the Croatian labor markets (see the policy paper on labor market reforms). Firms' inability to replace workers causes a hiring freeze in economic downturns that is likely to hit recent graduates (i.e. young workers) most severely, as these are not yet protected by regulations. More flexible labor market regulations will therefore also make young employees more competitive compared to the older part of the workforce, and foster the adoption of the apprenticeship system. Finally, the public in Croatia seems to regard vocational education (and therefore also apprenticeships) as a less desirable form of education. Public information campaigns on the advantages of these types of careers can help to improve the image of apprenticeships. Informing firms about the advantages that the system offers them (investment in apprenticeship today leads to higher future payoffs from workers with specific skills) may also mobilize the private sector in adopting the system.

9.7. Life-Long Learning Activities

The next proposal for reform concerns people who have already entered the workforce. A constant upgrading of skills of the actively employed is important to keep current with labor market requirements and to adapt to new technologies. Life-long learning activities in Croatia, as mentioned previously, are rather low. Improving them is one of the key priorities in the government's current education strategy. Subsidizing training for people in employment and vocational training for the unemployed is a substantial part of promoting investment and job creation, not only in Croatia, but in many other countries. These measures aim to upgrade the skills of the unemployed people to labor market requirements, increasing thus their employability. Useful state interventions in order to foster job-related training are direct subsidies or income tax deductibility, as already introduced in Croatia.

Training voucher systems have proved effective, according to the literature, in upgrading the skills of individuals with low levels of qualifications. The main difference

⁶ An overview of the funding opportunities for apprenticeships is provided by the European Commission under the European Alliance for Apprenticeships http://ec.europa.eu/education/library/publications/2014/apprenticeship_en.pdf.

to traditional ALMP training measures is that participants can, to a certain degree, choose the content of the courses rather than for them to be assigned by an agency worker. In addition, participants have free choice of training providers among a list of those certified under the scheme, promoting competition among providers in the process. Lastly, individuals have the freedom not to redeem the voucher. The idea behind this is that a wider set of possibilities for participants should lead to better choices and to increased program effectiveness. In addition, the absence of an obligation to redeem the voucher fuels a positive attitude, since the training course feels more like an offer than an assignment (Doerr et al, 2014).

Infobox: Voucher-Based Training in Germany

In Germany, a system of different vouchers exists at the national and the Federal State levels. At the state level, the North Rhine-Westphalian Ministry of Labour introduced a voucher program (“Bildungsscheck”) in 2006, financed from funds of the European Social Fund. It was originally designed to promote continued vocational education of employees in SMEs, the self-employed, people returning into employment, and in some cases marginally employed. Since 2015, the main target groups of the program are immigrants, employees without completed professional qualification, and job-returnees. Vouchers are awarded to individual applicants or firms. Information centers are available in different institutions such as vocational education centers (“Volkshochschulen”) or Equal Opportunities Offices. Participants can choose freely among certified training providers and receive a discount of 50 percent on the training costs, with a ceiling of 500 euros (Ministry of Labour, Integration and Social Affairs of North Rhine-Westphalia, 2015). Similar programs also exist in Hesse, Brandenburg and Rhineland-Palatinate. A study by Görlitz (2010) analyses the effects of the program in North Rhine-Westphalia. The author finds that a significantly higher portion of firms (around 4-6 percentage points) have invested in training after the vouchers were introduced. However, training intensity within firms and the skill composition of participants has not changed.

At the national level, the Federal Ministry for Education and Research introduced a program for professional training based on a voucher system in 2008 (“Prämiengutschein”). The voucher reduces training costs by 50 percent, up to 500 euros. Persons in employment can apply for training vouchers that subsidize training activities that are relevant for current job positions or for future employment. Entitled are individuals below a certain income threshold (20,000 euros annual income in 2015) aged 25 or older and who are in employment for at least 15 hours per week. Around 550 information centers exist in Germany, located in training institutions or public consulting offices (Federal Ministry for Education and Research, 2015a).

Another national-scale voucher program was introduced by the German Federal Employment Service in 2003 (“Bildungsgutschein”).⁷ It is the most important instrument of the employment agency in promoting professional training for people out of employment. Unemployed persons and those looking for employment can apply for the vouchers. Preconditions for participation are a completed professional qualification or at least three years of employment. Granting the applications is subject to the evaluation by the agency, after consultation meetings at the local employment agency. Upon receiving a positive answer, all related costs, such as participation fees, transportation, child care and so on, are provided for by the state. Prior to the voucher regime, unemployed persons were assigned to training programs by agency workers. Since 2003, training objectives and content are decided jointly with the agency worker, but individuals can freely choose the particular course as well as the (certified) provider of the training.

Doerr et al (2014) investigated the labor market effects of this national voucher program of the Employment Service (“Bildungsgutschein”). The study captures the effect of vouchers awarded between 2003 and 2004 on all participating individuals. The control group consists of a three-percent sample of all other unemployed. The authors find that training increases the chances of employment, but only after four years. No positive effects on earnings are observed. The results furthermore suggest strong and long-lasting employment effects for individuals without vocational degrees (i.e. the low-skilled). Also, programs that lead to a vocational degree exhibit better effects than other courses.

Infobox: Provider Certification in Germany

Prospective training providers and their programs must be certificated in order to be able to offer training programs in cooperation with the German Employment Agency. The accreditation and certification process is regulated by the AZAV – Accreditation and Certification Act for Employment Promotion (in April 2012 the “old” AZWV act was replaced by the new, streamlined regulation) together with the Third Social Act. The admission procedure consists of two parts. First, the provider has to be certificated, and second, the programs it offers. The accreditation is valid for a maximum of five years for the provider and three years for the programs [BMAS (2012)].

The assessment of providers comprises a document audit and verification in the institution. Performance, reliability, human and professional competence, a quality assurance system as well as appropriate conditions for the participants are all assessed. The certification of the institution is a requirement for the approval of

⁷ Another large-scale voucher regime targeted at unemployed persons is the “Adult and Dislocated Worker Program” in the US. Further voucher-based programs exist in Austria, Belgium, Italy and Switzerland.

the programs. Both the accreditation documents for the institution and its services are cross-checked by an evaluation committee. Additionally, the certificated provider is subject to an annual audit (AZAV, 2013; BMAS, 2012).

The fact that unemployed persons benefit more from a voucher system was also confirmed in a randomized field experiment conducted by the Swiss government in 2006, as analyzed in Schwerdt et al. (2012). The purpose of the program was to see whether general voucher programs could stimulate training participation and improve earnings, employment and the propensity to obtain further education. Education vouchers were handed out to randomly selected individuals, entitling them to participate in adult education courses of their choice. The authors conclude that untargeted voucher programs may not be adequate in promoting labor market outcomes. Low-skilled individuals are least likely to redeem vouchers, even though they would profit most from them, suggesting that vouchers, with suitable “encouragement”, should be targeted directly at less-educated individuals. The authors also find that higher participation in voucher-induced privately-financed training seems to crowd out firm-financed training activities. .

Based on the evidence presented, we propose the introduction of a training voucher system in Croatia that is targeted specifically at persons with low or no formal qualifications, since these are the most likely to profit from increased employability. Young people, considering their high unemployment rates, should also be primary targets. Overall, well-targeted vouchers including also in employment and firms, will increase life-long learning and help to reduce the existing skills mismatches.

9.8. Conclusion

The performance of the Croatian education system certainly has room for improvement, as becomes evident in the comparison of key indicators in an international context. Key reforms of the educational system include strengthening competition between private and public schools, and designing competitive teacher salaries and considering teacher redundancies (as discussed in Sopek, 2012, among others). An extensive discussion of every aspect would exceed the scope of this project. This policy paper therefore focuses on the most critical challenges that Croatia is currently facing in order to find viable solutions that may be implemented in a timely manner. The most pressing issues relating to human capital currently are a high rate of youth unemployment and a mismatch of skills provided by the education system and those demanded on the labor market. In order to solve these issues, participation in adult education should be improved to ensure life-long learning, while vocational education should be reformed to better meet the needs of the labor market by broadening the existing apprenticeship system along the lines of the systems found Germany or Austria. This form of education is known to reduce youth unemployment and to help firms in building a pool of adequately skilled workers.

The above should be combined with information campaigns to communicate the advantages to potential apprentices as well as firms. Also, financial incentives to firms

(such as those already in place) are required during economic downturns to promote the adoption of the apprenticeship system.

In order to promote life-long learning among the population, which will also help to reduce the skill mismatch, we propose introducing a system of training vouchers, since they have proved effective in upgrading the skills and improving the employability of low-skilled persons. These vouchers should be made available to people with low or no formal qualifications, irrespective of their labor market status.

References

- Aghion, Philippe and Peter Howitt (2010). Joseph Schumpeter Lecture Appropriate Growth Policy: A Unifying Framework. *Journal of the European Economic Association*, Vol. 4, Issue 2-3, pp. 269-314.
- ASOO (2015). About us. Agency for Vocational Education and Training and Adult Education. Available from <http://www.asoo.hr/default.aspx?id=100> [date accessed: 22.02.2015].
- AZAV (2013). AZWV Anerkennungs- und Zulassungsverordnung Weiterbildung. <http://azwv.de/>, data accessed 02.06.2015.
- Baljkas, Sasa, Markus Androsevic and Reinhard Wessel (2010). Das Kroatische Bildungssystem: Aufbau, Probleme und Reformen. *Länderbericht*, Konrad Adenauer Stiftung.
- Barr, Nicholas (2004). Higher Education Funding, *Oxford Review of Economic Policy*, Vol. 20, No. 2.
- BMAS - Federal Ministry of Labor and Social Affairs (2012). Akkreditierungs- und Zulassungsverordnung Arbeitsförderung (AZAV). <https://www.bmas.de/DE/Themen/Arbeitsmarkt/Arbeitsfoerderung/akkreditierung.html>, data accessed 02.06.2015.
- Briedis Kolja, Christoph Heine, Christiane Konegen-Grenier, and Ann-Katrin Schröder (2011). Mit dem Bachelor in den Beruf, Arbeitsmarktbefähigung und –akzeptanz von Bachelorstudierenden und –absolventen. *Stifterverband für die Deutsche Wirtschaft*.
- CEDEFOP (European Centre for the Development of Vocational Training) (2014). Croatia – Drafting a Strategy for Education, Science and Technology. Available from: <http://www.cedefop.europa.eu/de/news-and-press/news/croatia-drafting-strategy-education-science-and-technology> [date accessed: 19.02.2015].
- Crnković-Pozaić, Sanja (2009). Transition from School to Work: Internships and First Entry to the Labour Market in Croatia. Working paper, European Training Foundation. Turin.
- Croatian Bureau of Statistics (2014). Upper Secondary Schools and Students' Boarding Homes, End of 2012/2013 and Beginning of 2013/2014 School Year. *Statistical Reports*, ISSN 1332-1862. Zagreb.
- Croatian Bureau of Statistics (2014). Higher Education, 2013. *Statistical Reports*, ISSN 1331-7784. Zagreb.
- Croatian Bureau of Statistics (2014b). Migration of Population of Republic of Croatia, 2013; no. 7.1.2.; ISSN 1330-0350; Zagreb.
- Croatian Bureau of Statistics (2015). Personal communication, February 16, 2015.
- Croatian Employment Service (2014). Business Model Study, Country Fiche, Croatia. Available from: <http://ec.europa.eu/social/keyDocuments.jsp?advSearchKey=pes&mode=advancedS>

- ubmit&langId=en&policyArea=&type=0&country=34&year=0 [date accessed: 25.03.2015].
- CROQF (2015). Sectoral Councils. Available from: <http://www.kvalifikacije.hr/sectorial-councils> [date accessed: 26.03.2015].
- CROQF (2015a). Croatian Qualifications Framework. Available from: <http://www.kvalifikacije.hr/hko-en> [date accessed: 20.03.2015].
- Doerr, Annabelle, Bernd Fitzenberger, Thomas Kruppe, Marie Paul and Anthony Strittmacher (2014). IAB Discussion paper 23/2014. ISSN 2195-2663.
- Doolan, K., Dolenc, D., Domazet, M. (2012). The Croatian Higher Education Funding System in a European Context: A Comparative Study. Zagreb: Institute for the Development of Education.
- European Commission (2011). Youth on the move: Analytical Report. Flash Eurobarometer Series No. 319b.
- European Commission (2014). Innovation Union Scoreboard 2014. European Union. Brussels.
- European Commission (2014a). Education and Training Monitor 2014: Volume I. European Union. Brussels.
- European Commission (2014b). Education and Training Monitor 2014: Croatia; Volume II. European Union. Brussels.
- European Commission (2015). Country Report Croatia 2015: Including an In-Depth Review on the prevention and correction of macroeconomic imbalances. Commission Staff Working Document. COM(2015) 85 final. Brussels.
- Eurostat (2014). Training enterprises as % of all enterprises, by type of training and size class [trng_cvts02][date accessed: 20.03.2015].
- Eurostat (2014a). Expenditure on Education as percent of GDP or Public Expenditure [educ_figdp] [date accessed: 19.01.2015].
- Eurostat (2015). Population with tertiary education attainment by sex and age [edat_lfse_07][date accessed: 01.03.2015].
- Eurostat (2015a). Unemployment Rate by Sex and Age Groups – Annual Average, % [une_rt_a][date accessed: 15.03.2015].
- Eurostat (2015b). Participation rate in education and training (last 4 weeks) by sex and age [trng_lfse_01][date accessed: 02.03.2015].
- Eurostat (2015c). Bildungsausgaben in % des BIP bzw. der öffentlichen Gesamtausgaben [educ_figdp] [date accessed: 28.04.2015]
- Exekutivagentur Bildung, Audiovisuelles und Kultur (2012). Der Europäische Hochschulraum im Jahr 2012: Bericht über die Umsetzung des Bologna-Prozesses.

- Federal Employment Service (2009). Überbetriebliche Ausbildung. Available from: <http://www.arbeitsagentur.de/web/content/DE/Unternehmen/Ausbildung/Ausbildungsformen/UeberbetrieblicheAusbildung/index.htm> [date accessed: 10.03.2015].
- Federal Employment Service (2015). Schulische Ausbildung. Available from: <http://www.arbeitsagentur.de/web/content/DE/Veroeffentlichungen/Themenhefte/durchstarten/WeiterdurchBildung/Bildungswege/Berufsabschluesse/SchulischeAusbildung/index.htm> [data accessed: 26.01.2015].
- Federal Ministry of Education and Research (2013). Unterrichtung durch die Bundesregierung: Strategiepapier der Bundesregierung zur Internationalen Berufsbildungszusammenarbeit aus einer Hand. Drucksache 17/14352 from July 5, 2013.
- Federal Ministry of Education and Research (2015). Berufsbildungskooperation: Erfolgreicher Export von Bildungsangeboten. Available from: <http://www.bmbf.de/de/17127.php> [date accessed: 20.02.2015].
- Federal Ministry for Education and Research (2015a). Zahlt sich aus: Die Bildungsprämie. Available from: <http://www.bildungspraemie.info/de/weiterbildungsinteressierte-17.php> [date accessed: 02.02.2015].
- Fricke D. and B. Mersch (2008). FH oder Uni: Was ist besser?. Karriere.de, das Portal von Handelsblatt und Wirtschaftswoche, 26.08.2008. <http://www.karriere.de/studium/fh-oder-uni-was-ist-besser-7700/>
- Görlitz, Katja (2010). The Effect of Subsidizing Continuous Training Investments – Evidence from German Establishment Data. *Labour Economics* 17, pp. 789-798.
- Hanushek, Eric (2013). Economic Growth in Developing Countries: The Role of Human Capital. *Economics of Education Review* 37, pp. 204-212.
- Hanushek, Eric, Ludger Woessmann and Lei Zhang (2011). General Education, Vocational Education, and Labor-Market Outcomes over the Life-Cycle. IZA Discussion Paper No. 6083. Institute for the Study of Labor. Bonn.
- Hoeckel, Kathrin and Robert Schwarz (2010). Learning for Jobs: OECD Reviews of Vocational Education and Training. OECD. Paris.
- Jäger, Simon (2013). The Returns to Higher Education: Evidence from University Openings in Germany, mimeo, Harvard Univesity.
- Konegen-Grenier, Christiane (2011). Bachelor und Master auf dem Arbeitsmarkt: Ergebnisse aus zwei Unternehmensbefragungen. *Wirtschaftsdienst* 2011 | Sonderheft.
- Matcovik, Teo (2009). UNDP and Croatian Ministry of Health and Social Welfare: Mladi između obrazovanja i zapošljavanja: Isplati il se školovati? (Youth between education and employment: it is worthwhile going to university?).
- Matković, Teo (2010). Recent Developments in the Education System and School-to-work Transitions in Croatia. Working Paper no. 138, Mannheimer Zentrum für Europäische Sozialforschung. Mannheim.

- Ministry of Labour and Pension System (2014). Youth Guarantee Implementation Plan. Available from: <http://www.mrms.hr/wp-content/uploads/2014/04/implementation-plan-yg.pdf> [date accessed: 10.03.2015].
- Ministry of Labour, Integration and Social Affairs of North Rhine-Westphalia (Ministerium für Arbeit, Integration und Soziales des Landes Nordrhein-Westfalen) (2015). Beschäftigung sichern, Fachkräfte gewinnen und halten – Förderangebot ab 2015 mit neuer Ausrichtung. Available from: http://www.arbeit.nrw.de/arbeit/beschaeftigung_foerdern/bildungsscheck/index.php [date accessed: 12.03.2015].
- MSES - Ministry of Science, Education and Sports of the Republic of Croatia (2012). Odluka o punoj subvenciji participacije u troškovima studija za redovite studente na javnim visokim učilištima u Republici Hrvatskoj u akademskoj. Retrieved from: <http://public.mzos.hr/fgs.axd?id=18967>
- Nunnenkamp (2006). Determinants of FDI in developing countries: Has globalization changed the rules of the game? Kieler Arbeitspapiere No. 1122. Institute for the World Economy, Kiel.
- OECD (2007). PISA 2006: Science Competencies for Tomorrow's World (Volume I).
- OECD (2010). PISA 2009 Results: What Students know and can do. Student Performance in Reading, Mathematics and Science (Volume 1). <http://dx.doi.org/10.1787/9789264091450-en>.
- OECD (2012). Western Balcan Regional Competitiveness Initiative (RCI). Third Working Group on Human Capital Development – Summary. OECD. Paris.
- OECD (2014). PISA 2012 Results in Focus: What 15-year-olds know and what they can do with what they know.
- OECD (2014a). OECD Reviews of Innovation Policy: Croatia 2013, OECD Publishing. <http://dx.doi.org/10.1787/9789264204362-en>
- Pavičić, Ivana Rogina (2013). Active Labour Market Policy Aimed at Youth. Presentation of the Active Labour market Policy Division, Croatian Employment Service. Zagreb.
- Siegler, Benedikt (2012). The Effect of University Openings on Local Human Capital Formation: Difference-in-Differences Evidence from Germany, BGPE Working Paper 124.
- Schwerdt, Guido, Dolores Messer, Lidger Woessmann and Stefan C. Wolter (2012). The Impact of an Adult Education Voucher Program: Evidence from a Randomized Field Experiment. *Journal of Public Economics* 96, pp. 569-583.
- Sopek, Petar (2011). Efficiency of public expenditure on education in Croatia. Newsletter No. 61, September 2011. *Institute of Public Finance*. Zagreb.
- UNCTAD (2011). Best Practices in Investment for Development: How to Integrate FDI and Skill Development – Lessons from Canada and Singapore. United Nations Conference of Trade and Development, Geneva. ISBN: 978-92-1-112794-2.

Weiland, Anna (2008). FH oder Uni Gleich nur auf den ersten Blick. Frankfurter Allgemeine, 26.04.2008. http://www.faz.net/aktuell/beruf-chance/campus/fh-oder-uni-gleich-nur-auf-den-ersten-blick-1515676-p2.html?printPagedArticle=true#pageIndex_2

World Economic Forum (WEF) (2014). The Global Competitiveness Report 2014-2015: Full Data Edition. Ed. Klaus Schwab. Geneva.

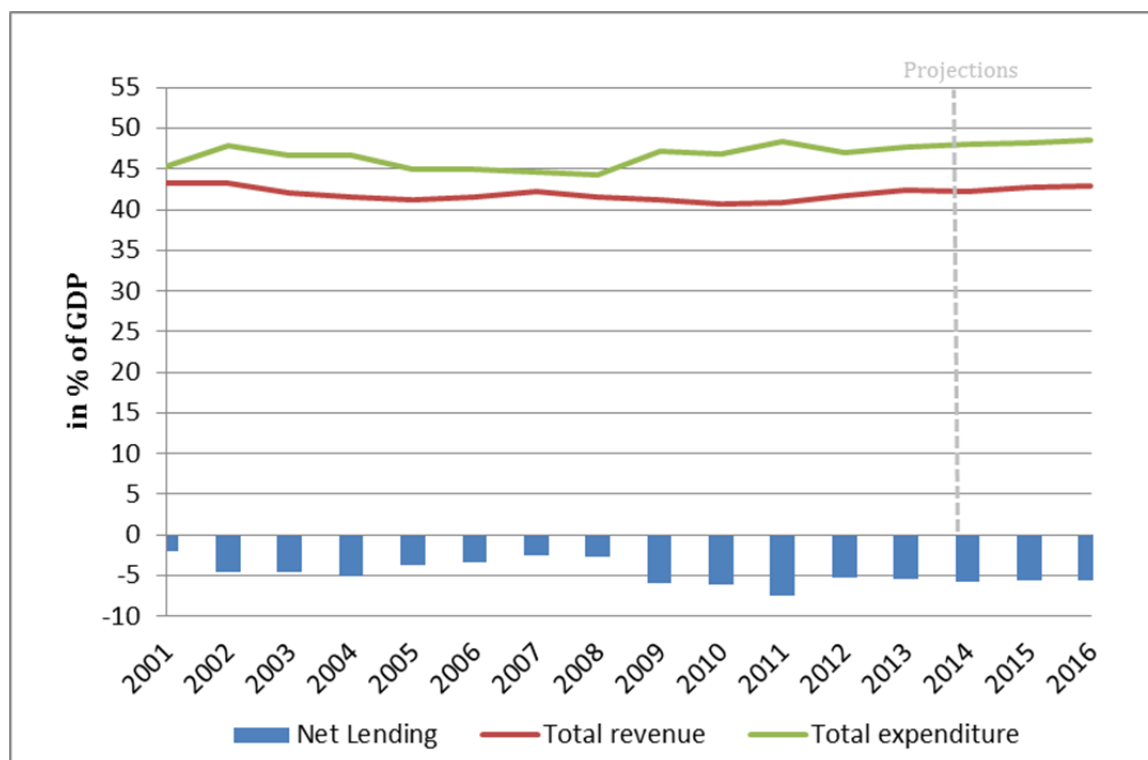
10. Fiscal consolidation

Marina Riem

10.1. Descriptive analysis: Main components of the public budget

During the 1990s Croatia faced the challenge of nation building. The fiscal deficit, however, was kept at a low level as part of a stabilization program to overcome hyperinflation. Rising expenditures were matched by increases in revenues, even though huge pressure on expenditures came from the transition process, the impact of war and subsequent reconstruction, refugees and displaced people. But as revenues remained flat and even started to decline in 2008 and expenditures continued to rise, Croatia's fiscal deficit expanded, leading to a net borrowing of 5.4% of GDP by 2013 (see Figure 10.1.). These unfavorable developments of the public budget, combined with decreasing nominal GDP, raised the government debt ratio as a share of GDP up to 85.0% (Eurostat ESA 2010) in 2014.

Figure 10.1.: General government revenues, expenditure and net lending



Source: Ameco (ESA 2010).

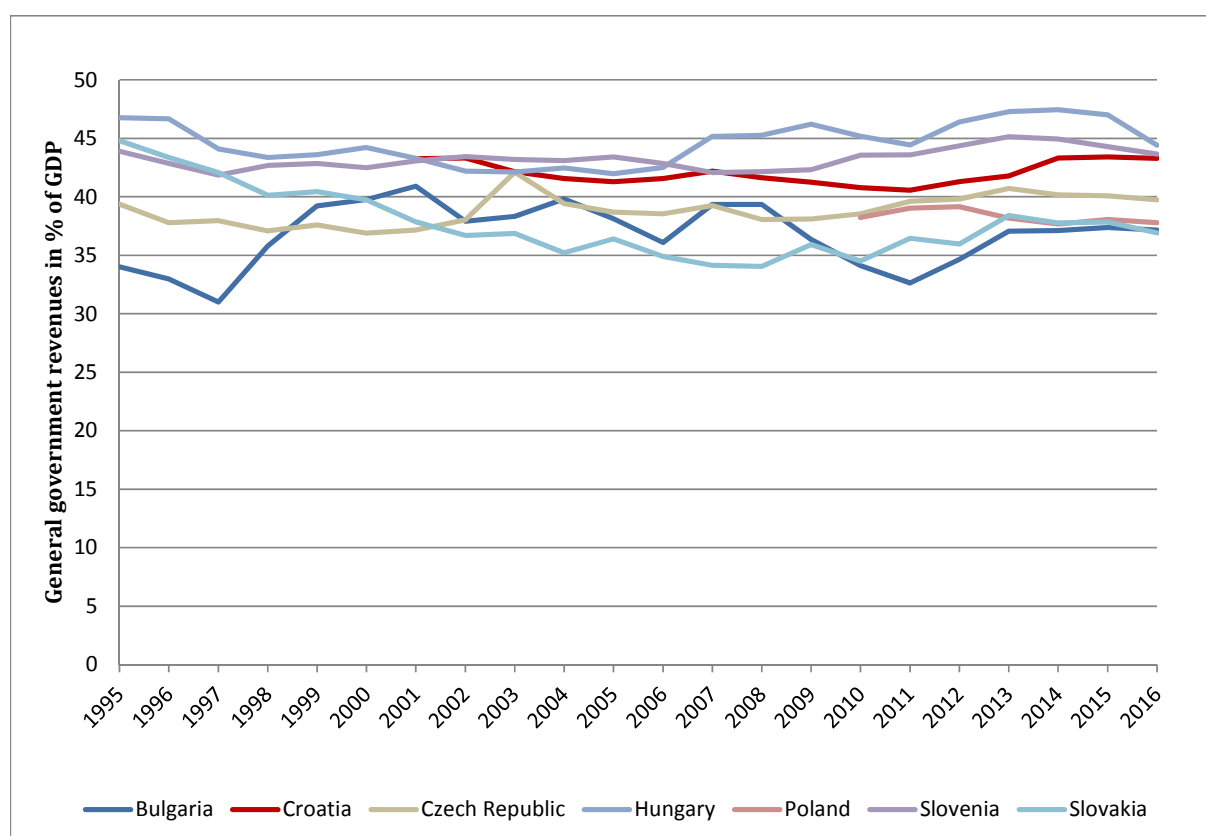
The government finances the budget by borrowing on the domestic and international capital markets. When comparing Croatia to Eastern European peer countries (Bulgaria, Czech Republic, Hungary, Poland, Slovenia, and Slovakia), Croatia's net borrowing is among the highest – in 2013 only Slovenia had a higher net borrowing than Croatia

(Ameco). The general government deficit is forecasted to remain above 3% of GDP in the 2013-2015 period and the structural balance is projected to continue deteriorating to nearly 6% of GDP in 2015 (EC 2014). These developments will be driven mainly by increases on the expenditure side, such as interest outlays, in combination with revenue shortfalls due to low economic activity. Decreasing expected GDP growth rates and unsustainable public finances in the long-run have resulted in a downgrading of Croatia's credit ranking. The Council of the European Union initiated an excessive deficit procedure for Croatia which demands a reduction of the deficit and consolidation of public finances.

10.1.1. Revenues

Revenues as a share of GDP are high in Croatia, at around 40%. Due to low economic activity since the financial crisis hit in 2008, revenues stagnated moderately at an annual level. A mild recovery is forecasted for 2015 and 2016 (EC 2015). Compared to Eastern European peer countries, only Hungary and Slovenia have higher revenue shares than Croatia (see Figure 10.2.).

Figure 10.2.: Total general government revenues as % of GDP

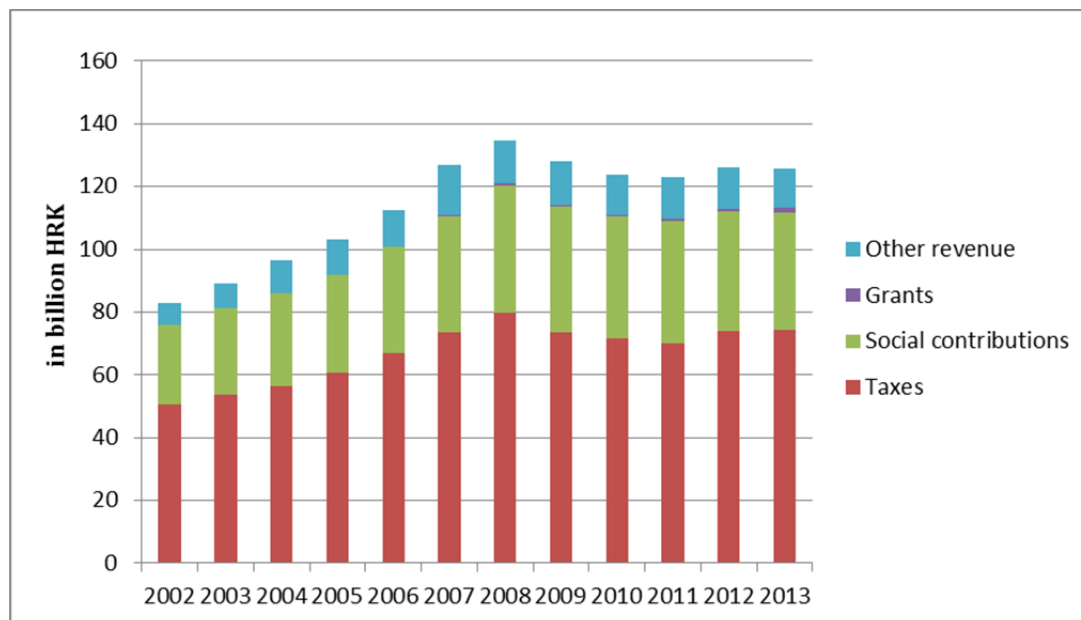


Source: Ameco.

The largest share of revenues (almost 60% in 2013) comes from taxes. The second most significant category of revenues are social security contributions, which made up almost 30% of total revenue in 2013. Social security contributions are paid by employees, employers, self-employed and unemployed. The largest share of contributions comes from employers, mostly in the form of health insurance and unemployment

contributions (MoF 2011), while employee contributions consist almost completely of pension insurance contributions (MoF 2011). Negative labor market trends have depressed social security contributions, causing the drop in revenues observed between 2012 and 2013. The remainder of revenues refers to grants and other revenues such as property income, administrative fees and revenue based on special regulations.

Figure 10.3.: Composition of consolidated general government revenues



Source: Ministry of Finance.

10.1.1.1. Taxation, shadow economy and illicit employment

Tax system

The Croatian tax system is very much compatible with those of EU member countries, and is based around a set of direct and indirect taxes. The tax system includes taxes whose revenues accrue entirely to the national budget, the county budgets or the city and municipal budgets. Revenues collected from personal income tax are divided among national, county, city or municipal budget. For the detailed tax types see Table 10.1. As public policy in Croatia is to a large extent centralized, only about 10% of all public expenditure is allocated to a sub-national level. Municipalities, cities and counties use their budget revenues for financing their self-government activities. Decentralized functions include elementary-school and secondary-school education, social welfare, health care and the fire-fighting system. Local units which do not collect sufficient funds to cover the minimum financial standards receive transfers from the state budget's equalization fund.

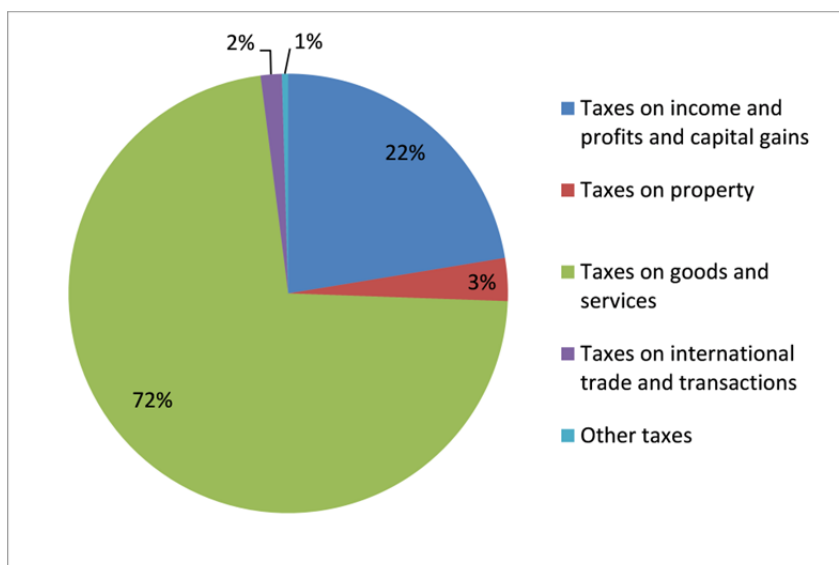
Table 10.1.: Tax system

National level	County level	City or municipal level	Joint taxes
Value added tax	Inheritance and gifts tax	Surtax on income tax	Personal income tax
Corporate income tax (profit tax)	Tax on road motor vehicles	Consumption tax	Real estate transfer tax
Special taxes and excise duties - motor vehicles - insurances - coffee/alcoholic and non-alcoholic beverages - tobacco products/energy - luxury goods - games of chance	Tax on vessels	Tax on holiday houses	
	Tax on gambling machines	Tax on trade name	
		Tax on the use of public land	

Source: Ministry of Finance, Tax Administration.

In 2013, 72% of the overall tax revenue, which amounted to 54 billion kunas, came from taxes on goods and services, with VAT accounting for 40.3 billion kunas. Taxes on income and profits and capital gains amounted to 16.7 billion kunas, which is 22% of overall tax revenues. Taxes on property contribute 3%, taxes on international trade and transactions 2%, and other taxes 1%, to the total tax revenues (see Figure 10.4.).

Figure 10.4.: Composition of tax revenues in 2013



Source: Ministry of Finance.

Comparison of tax rates

Concerning the tax burden on labor, the average tax wedge in Croatia is similar to the surrounding countries. Workers without children earning an average gross wage in production of HRK 7,260 and with a surtax rate of 10% have a tax wedge of 41.2% in Croatia, which is lower than in Hungary, the Czech Republic and Italy, but higher than in Slovakia and Poland (Urban 2009). Marginal tax rates, however, are high at almost all levels of income, reaching almost 60% at a wage twice the average wage (Urban 2009). In a study comparing effective income tax and social security rates at the very top income levels (USD100,000 and USD300,000) Croatia, together with Belgium and Greece, has the highest effective tax rates on USD100,000 incomes (KPMG 2011). Differences in the social security rates, however, are significant. If the employers' social security contributions are included in that measure, Croatia drops in the scale, as some countries impose much higher employers' social security contributions and also have larger total social security contribution rates. The income level at which the highest effective tax rates kick in are quite low in Croatia compared to other countries. The top marginal rate kicks in when monthly taxable income exceeds HRK 10,800 (KPMG 2011). Further tax burden emerges from corporate taxes and indirect taxes. Indirect taxes are paid through the VAT rate, which, at 25%, ranks at the very top in Europe (Kesner-Skreb 2013, KPMG 2014). The corporate tax rate in Croatia is 20%. When looking at the tax system from a business perspective, considering all taxes and contributions paid by a standard company, the total tax rate¹ on corporations in Croatia is among the lowest in international comparison (PwC 2014). The total tax rate includes corporate income tax paid on profits, employment taxes, mandatory contributions, indirect taxes and a variety of smaller taxes including environmental taxes. The total tax rate in Croatia is 19.8%. Taxes on labor paid by corporations in Croatia are moderate, at around 18%. In 2013, the total tax rate decreased further mostly due to the introduction of zero taxation for reinvested earnings (CNB 2014) and the reduction in the employer's health insurance contribution (PwC 2014).

Performance of the tax system

Even though Croatia does not extract too much taxation from firms operating in its jurisdiction, the percentage of firms that identify the tax burden as one of the main obstacles of doing business in Croatia is higher than the regional average (World Bank 2014). The Doing Business report measures not just the taxes and mandatory contributions paid by a company, but also the associated administrative burden. On average, corporations in Croatia incur 19 different tax payments and it takes them 196 hours to comply with them (PwC 2014). In the past, the efficiency of the Croatian

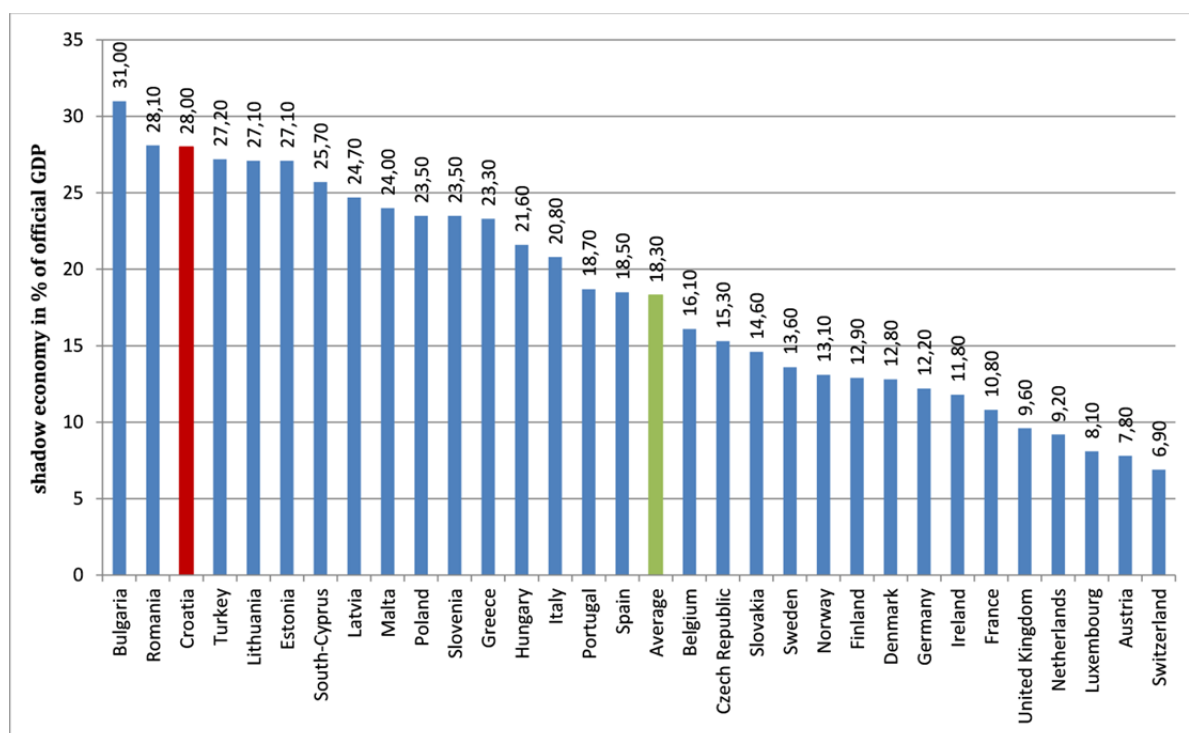
¹ The total tax rate measures the amount of taxes and mandatory contributions borne by the standard company (as a percentage of commercial profit or the profit before all of those taxes, which differs from the conventional profit before tax reported in financial statements) (PwC 2014).

government's tax administration and legislation suffered because of a complex system with lots of tax exemptions that was quite unstable due to many legislative changes. Even though tax rates were low, paying taxes was cumbersome (Sala-i-Martín et al. 2014, p. 25) and hence taxation had negative effects on private investments (Schwab 2014, p. 163). In the past years, however, some reforms have been enacted in the taxation system. In 2011, Croatia introduced a tourist fee, which made paying taxes more difficult and costly. On the other hand, in 2012 Croatia implemented e-filing and e-payment of social security contributions, which reduced the number of payments. In 2013 the health insurance contribution rate and in 2014 the rates for the forest and Chamber of Commerce contributions were reduced.

Tax avoidance and working in the shadow economy

Several escape routes exist for employees who do not want their labor income to be taxed. Workers can deviate to the unofficial economy and evade taxes. Another route is to become inactive and withdraw from labor force in order to seek social benefits from the government. In 2014 the shadow economy amounted to 28% of the official GDP in Croatia (Schneider 2015). Out of 31 European countries, only Bulgaria and Romania have a larger shadow economy than Croatia (see Figure 10.5.). The shadow economy comprises two categories: undeclared work, and underreporting of profits. Undeclared work is widespread in construction, agriculture, and household services. Underreporting of profits is most frequent in wholesale and retail, transport and communications, hotels and restaurants. Key causes of the shadow economy are a high tax burden, low quality of state institutions and benefits, high prevalence of cash payments, and low risk of detection (A.T. Kearney and Schneider 2013). The high taxes on labor, especially at low earnings, are among key causes of the shadow economy in Central and Eastern Europe (World Bank 2012). If the government efficiency is low, it is more normal for people to engage in the shadow economy. Activities in the shadow economy often imply the evasion of direct or indirect taxes. The rate of tax avoidance in Croatia is high and was estimated between 5.5% and 7.5% of GDP in 2000 (Madzarevic-Sujster 2002). The estimations show that the amount of evasion of income tax and contributions amounts to around 4.1-6.1% of GDP, of profit tax to 0.16% of GDP, of general sales tax and VAT to 0.9% of GDP, and of special taxes to 0.3% of GDP (Madzarevic-Sujster 2002). A consequence of tax evasion is the erosion of the tax base. The government is furthermore not able to distribute the tax burden fairly.

Figure 10.5.: Size of the shadow economy in 2014 (in % of official GDP)

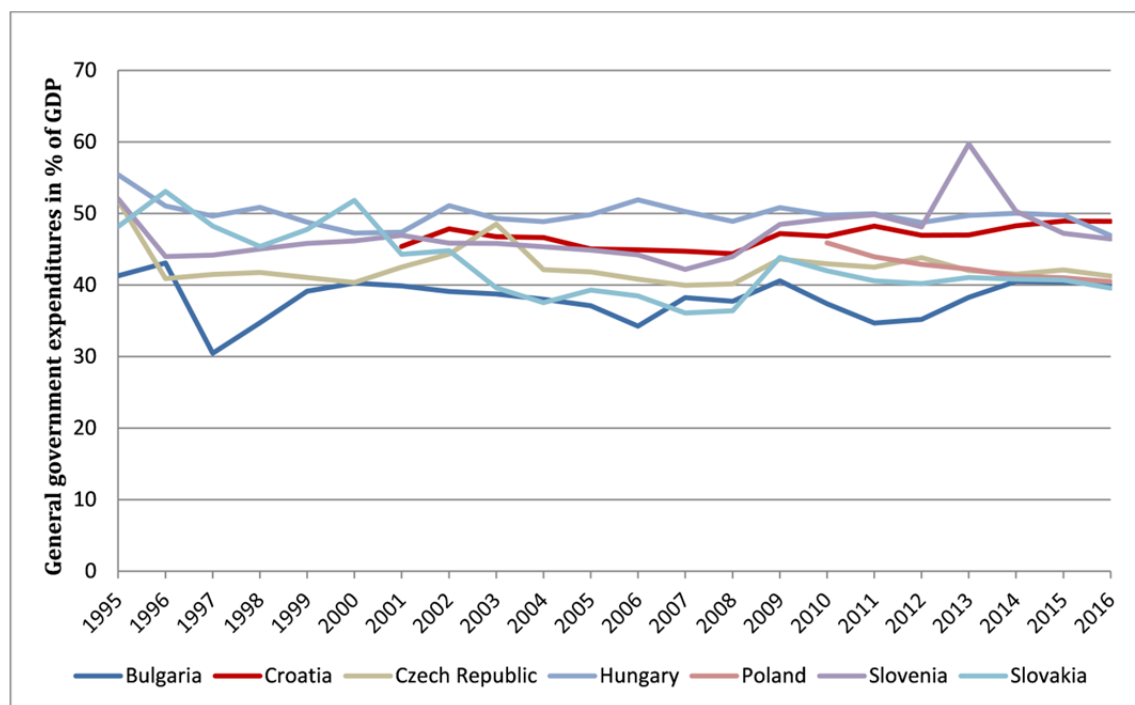


Source: Schneider 2015.

10.1.2. Expenditures

During the transition process, between 1991 and 1999, Croatia's public sector spending increased by more than 16 percentage points. To this day, Croatia has one of the largest public sectors in the region. In comparison to peer countries, only Hungary and Slovenia had a higher expenditure-to-GDP ratio than Croatia in 2013 (see Figure 10.6.). Projections to 2016 indicate that Croatia will have the highest expenditure share out of all peer countries.

Figure 10.6.: Total general government expenditures as % of GDP



Source: Ameco.

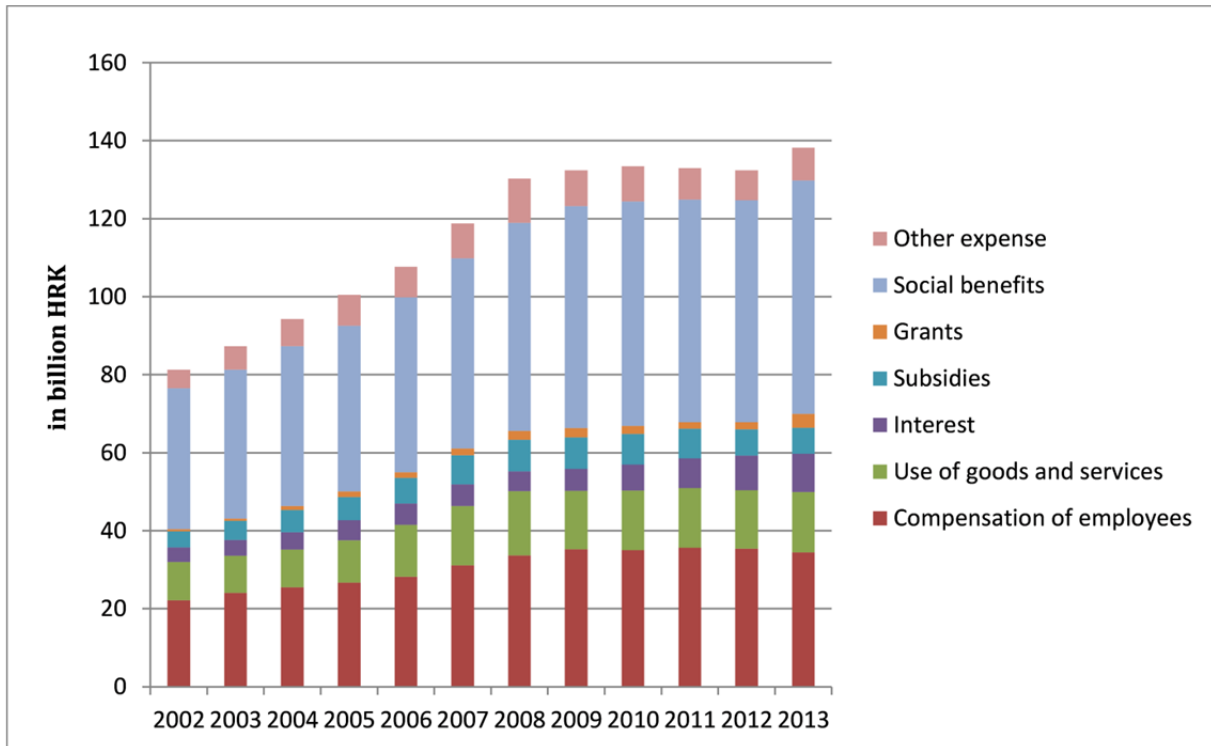
Croatia pursues an expansive fiscal policy, increasing the expenditure side of the government budget. The largest share of expenditure, with 43% in 2013, corresponds to social benefits, while the second-largest, with 25% in the same year, is for the compensation of employees (see Figure 10.7.). These expenditures are also the primary source of the emerging fiscal deficits and are the key factors behind the latest expansion of expenditures. Furthermore, these sectors are affected by major efficiency issues. The remainder of expenditure refers to the use of goods and services, interest expenses, subsidies, grants and other expenses. In 2013, expenditures related to interest expenses and grants increased due to payments to the EU budget (CNB 2014). The largest part of the subsidies refers to agricultural subsidies and subsidies to Croatian Railways. While the amount of subsidies is high in Croatia compared to all other EU members, there is little evidence that they helped improve the performance of the recipients, especially in agriculture and railroads. Outlays for subsidies, however, declined in 2013 as less was paid in subsidies relating to agriculture and railways.

Furthermore, the state still holds stakes in many companies and dominates the transport sector.² Large state-owned companies, such as Croatian Railways, tend to be uneconomic and thus not competitive in the EU. In 2010, the Croatian parliament released a report on the financial status of 69 state-owned enterprises (see Croatian Parliament 2010). Bajo (2010) gives a short analysis of this report, indicating that in 2009 these 69 companies employed 110,504 people and made a net loss of about HRK 3.5 bn –putting a strain on Croatia’s public finances. The government issues guarantees

² State-owned companies belong to the sectors of road, railway, waterway transport and maintenance, electricity generation, oil and gas transport and storage, forestry, and the national lottery, airports, hotels, IT companies, banks, and the Croatian Post.

for state-owned enterprises and often has to assume debts of loss-making companies. Those guarantees, however, are not included in the state budget and are therefore often overlooked when evaluating debt ratios.

Figure 10.7.: Composition of consolidated general government expenditure



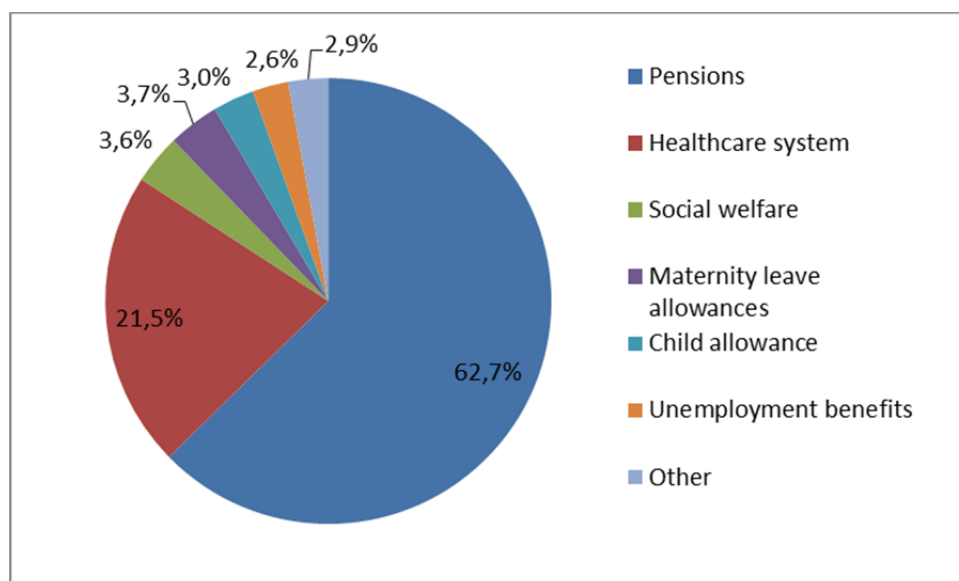
Source: Ministry of Finance.

10.1.2.1. Social security

Pension payments made up 62.7% of social expenditures in 2012 (see Figure 10.8.). Due to the demographic development in Croatia and the low participation in the labor market, a further increase in expenditures for pensions is expected to place an even more severe strain on fiscal sustainability. As revenues from contributions barely cover 60% of the current expenditure on pensions (World Bank 2011), the pension system has become a major source of fiscal stress. The financing gap is currently covered by the state budget. A reform changing the pay-as-you-go system into a multi-pillar system was passed in 2002, which in the short-term put more pressure on the budget as contributions to the state pension fund fell from 20% to 15%, but will have positive long-term effects. Compensations in the healthcare system account for 21.5% of total social benefits. Health spending has grown as well due to increasing costs, decreasing number of health insurance contributors, and high contribution exemptions. The level of co-payments in the health sector is comparably low (World Bank 2002). In 2013 debts of health institutions and the Croatian Institute for Health Insurance accumulated in the previous years were paid with the help of the state budget, resulting in rising health expenditure (CNB 2014). Not all liabilities in the health care sector were settled, so that further increases in health expenditure must be expected. Health sector debt amounts to around 1% of GDP (World Bank 2011). Furthermore, social welfare payments amounted

to 3.6%, maternity leave allowances to 3.7%, child allowance expenses to 3.0%, and unemployment benefits to 2.6% of total social benefits.

Figure 10.8.: Composition of social benefits expenditure in 2012



Source: Ministry of Finance.

10.1.2.2. Public sector employment

Expenditure

General government expenditure for the compensation of employees rose from 11.2% of GDP in 2008 to 12.01% of GDP in 2013. Compared to peer countries, Croatia's expenditures for the compensation of employees are high: in 2008 only Hungary had higher spending than Croatia (see Figure 10.9.), while in 2013 Slovenia's and Croatia's expenditures were the highest out of the peer group. Of the total expenditure for compensation of employees in 2013, 86% refers to wages and salaries and the remaining 14% to social contribution expenses for the employees (MoF 2012).

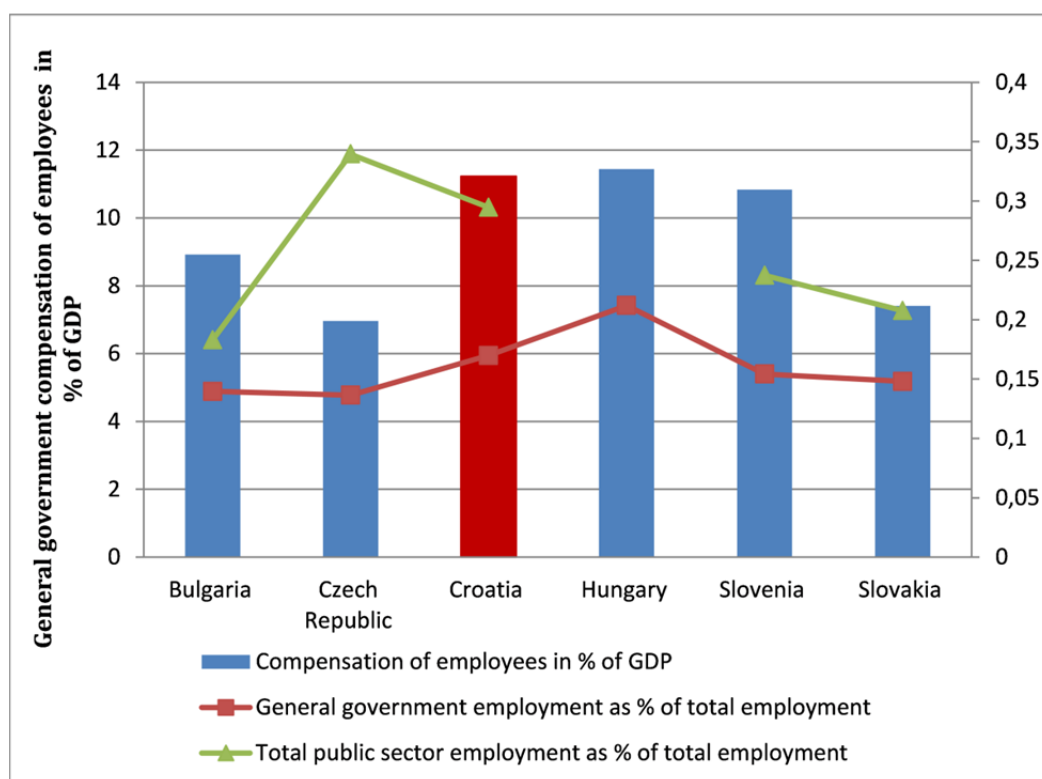
Public employment

Public sector employment in Croatia consists of general government employees and employees in state-owned enterprises. General government includes central government (ministries, offices, state agencies and other budgetary organizations and extra-budgetary funds, including most of healthcare and education) and local entities (429 municipalities, 126 cities and 21 counties). The general government employees can be separated into public services and public administration, as those two areas have different regulatory treatment and separate collective bargaining. Local government units have a certain autonomy over communal activities.

Employment in the general government sector was around 278,000 in 2008, which means that the Croatian general government employed 17% of all people in work (Laborsta 2015). Core areas of general government employment are public administration and defense, education, and the health and welfare sector. Croatia's general government employment is in line with the European average (Bejakovic et al.

2010). Comparing Croatia's general government employment to its peer countries (Bulgaria, Czech Republic, Hungary, Slovenia, and Slovakia), the level ranged from 13% to 17% of total employment in 2008 in all countries except Hungary, where it reached 21.2% (Laborsta 2015).³ Where Croatia stands out in terms of public employment is in the high employment in state-owned enterprises, which, at around 12.5% of total employment, is twice the EU average (Bejakovic et al. 2010). Hence, when looking at Croatia's total public sector employment, including general government employment and employment in state-owned companies, Croatia and the Czech Republic had the highest share of public sector employment among the peer countries (see Figure 10.9.). In 2012, public employment in the public administration, education and healthcare sectors was 23.7% of total employment, while employment in state-owned companies amounted to 19.6% of total employment (according to the definitions of Nestic et al. 2014). During the crisis between 2008 and 2012, private sector employment declined and public sector employment (public administration, education, and health care) increased slightly as private employees suffered more during the crisis. The share of private sector employees, however, increased overall from about 51% in 2004 to about 57% in 2012, which can be explained by privatization and employment reduction in the state-owned companies, whose share fell from 25.1% in 2004 to 19.6% in 2012 (according to the definitions of Nestic et al. 2014).

Figure 10.9.: Comparison of compensation of employees and public sector employment in 2008



Source: Ameco, Laborsta.

³ Comparable data on general government, state-owned companies and total public sector employment are only available until 2008 at Laborsta.

The reason for high expenditure on the compensation of employees is not mainly the unusually large level of employment in the public sector, but the high salaries in the public sector in comparison to the manufacturing sector and to other economies (World Bank 2002) and overstaffing in non-civilian areas (Vidačak 2004, p. 83).

Wage setting

Public sector wages in Croatia are based on job complexity coefficients, introduced by the 2001 Law on Wages in Public Services. The base wage is subject to collective bargaining, which is commonly preceded by union pressure and strikes. If no agreement is reached, the government can decide unilaterally. Coefficient values are determined by government regulations. Trade union density in the public sector is about 60%, with a high concentration of membership in strong national unions (Franičević and Matković 2013). The trade unions negotiate various supplements to coefficients and supplements for working conditions or tenure, as well as various benefits, mostly formalized through collective agreements. Coefficients and supplements have also been a subject of public pressure and informal lobbying, leading to frequent changes. This results in a complex and nontransparent setting of wages and coefficients.

Reforms

Croatia undertook several adjustments to the public sector in the last recession years: The base wage was cut by 6% in May 2009 and frozen later on, while reductions in other benefits were modest (withdrawal of the Christmas supplement and restrictions on travel allowances in 2010). Measures also included a hiring freeze in public administration (2009), which was replaced by a 'one for two' system in 2010, allowing for one new employee to replace two leaving employment (primarily due to retirement) (Franičević and Matković 2013). In 2013, hence, expenditures for the compensation of employees could be reduced slightly due to cuts in the wage bill (since March 2013) and a reduction of special bonuses of civil servants and government employees, no payment of holiday bonuses, and a reduction of the health insurance contribution rate.

Economic studies

Theoretical and empirical economic studies show that expenditures in public sector employment play a crucial role in achieving growth-promoting budget consolidation and that the relationship between public and private sector wages can improve the overall competitiveness of the economy because public sector wage cuts and number of staff reductions will also reduce private labor costs (Hernández de Cos and Moral-Benito 2013). Empirical evidence shows that public and private wages co-move, especially over the business cycle (Lamo et al. 2012, 2013). Public employment crowds out private employment or even reduces total employment if public sector wages are high (Algan, et al. 2002, Behar and Mok 2013).

In Croatia people employed in the public sector seem to earn more than they would earn in the private sector with the same personal characteristics and qualifications. Public sector employees appear to be on average older and better educated than private sector

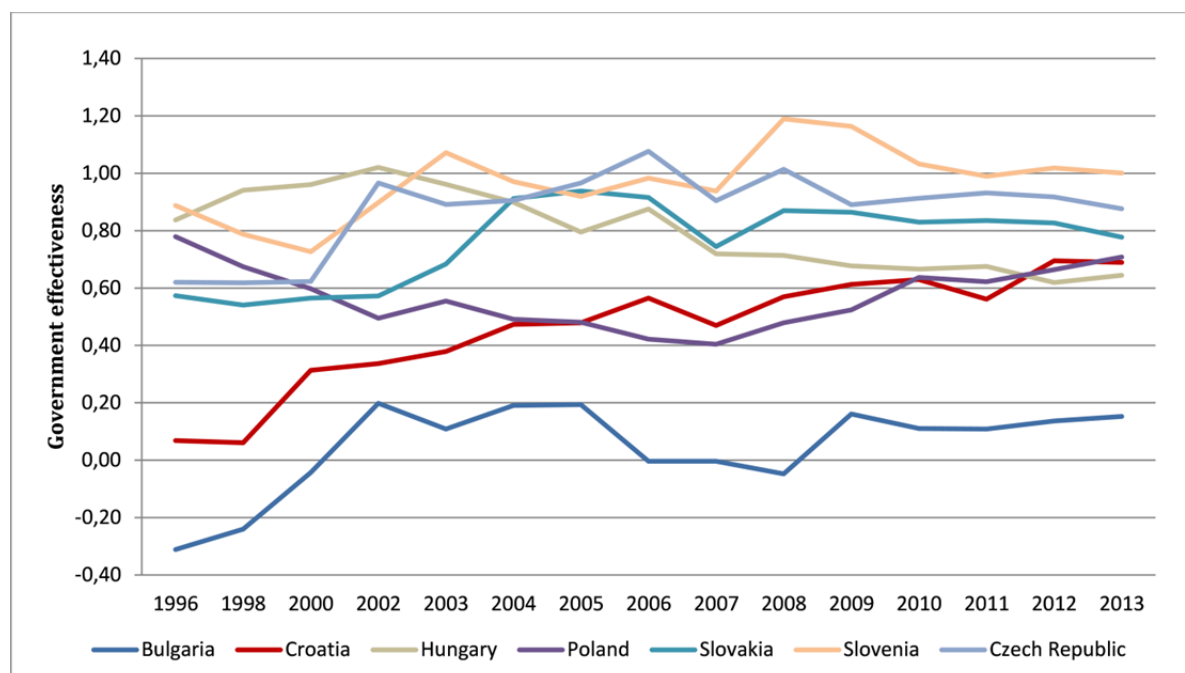
employees (Nikolic et al. 2014). The nominal monthly wage in the public sector was HRK 5,082.04 (2011) (real monthly wage HRK 4,967.78) while in the private sector the nominal monthly wage was HRK 4,142.63 (2011) (real monthly wage HRK 4,049.49) (Nikolic et al. 2014). Hence, on average there seems to be a public sector wage premium. The wage premium measures the pay gap between the public and the private sector given the same labor market characteristics of the person employed. The magnitude of this wage premium, however, varies depending on the definition of sectors and the methodology used in several empirical studies: The so-called public sector wage premium, where the public sector includes all state-owned companies and general government institutions, was estimated at 9% for 2003 and 2008 by Nestic (2005) and Rubil (2013) and at 5.5% for 2011 by Nikolic et al. (2014). A study by Nestic et al. (2014) differentiated between public sector (public administration, education, and health care), state-owned enterprises and private sector. Their results show that the premium on wages for work in the public sector compared to the private sector amounted to about 10% in 2004, 6% in 2008 and 5% in 2012. The premium on wages for work in state-owned enterprises, in relation to the private sector, was 10% in 2004 and 7% in 2012. The public sector pay gap in Croatia seems to be in line with most EU countries. Serbia, for instance, had a higher premium, of 17.9%, in 2011 (Nikolic et al. 2014). But studies find large differences of the wage premium along the pay distribution. Higher premiums prevail at the lower half of the pay distribution, but top-paid workers have higher wages in the private sector than in the public sector. Therefore, the private sector seems to compete only for workers at the higher end of the pay distribution, while workers at the lower half of the pay distribution collect public sector wage premiums. In line with this finding, more workers in the private sector earn only the minimum wage than in the public sector. But the phenomenon that workers at the lower half of the pay distribution receive higher public sector wage premiums than workers at the upper half of the pay distribution is the case for many European countries (e.g. Hospido and Moral-Benito 2013). The Croatian public sector therefore faces difficulties recruiting top-skilled workers into the public sector, while low-skilled workers are overpaid.

Public administration

According to the Global Competitiveness Report 2014/15, among the most problematic factors in Croatia are the inefficient government bureaucracy and corruption (Schwab 2014, p. 162). The most pressing problems with respect to institutions are the burden of government regulation (rank 141 out of 144 countries), the efficiency of the legal framework in challenging regulations (138th) or settling disputes (134th), the transparency of government policymaking (121st) and favoritism in decisions of government officials (119th) (Schwab 2014, p. 163). When looking at the overall government effectiveness indicator, which measures the quality of public and civil service and its independence from political pressures, Croatia was at a low level compared to its peer countries in 1996 (only Bulgaria did worse), but caught up over time, reaching the midfield ahead of Bulgaria and Hungary by 2013 (see Figure 10.10.). Due to the inefficient public administration, firms in Croatia bear high administrative

burdens in terms of time and costs. Croatia does worst in the Doing Business 2015 (World Bank 2015). report in the fields starting a business, dealing with construction permits, registering property and trading across borders. Public administration in Croatia is characterized by poor coordination and duplicated structures among the different units. For social assistance, for example, different programs with different eligibility criteria exist and rules are often not clear to beneficiaries and subject to administrative discretion (World Bank 2002). The administrative culture is mostly of the bureaucratic and authoritarian type, lacking motivation and evading responsibilities. A tendency of over-politization of the administrative system exists (Koprić 2011). The education and competence of the employee seems to be less important than her political position. According to public perception, corruption is widespread. Between 2008 and 2010, 4,108 persons were reported for corruption criminal offences, against 1,420 of who formal trials were conducted, leading to 632 convictions (Mrčela et al. 2012, p. 44). Public servants were mostly reported as being corrupt due to abuse of office and official authority (87.4%) and accepting or offering bribes (9.9%) (Mrčela et al. 2012, p. 46). Croatia has implemented most of the recommended anti-corruption policies by integrating anti-corruption measures in the legislative framework and by formulating an anti-corruption strategy (Mrčela et al 2012). The present territorial organization of the administrative system seems inadequate: 425 municipalities and 124 cities have local administrations, of which almost one-third have insufficient fiscal capacities (Vidačak 2004, p. 85). A prerequisite for public administration reforms is the restructuring of state and local government-owned enterprises and regulatory agencies (Bajo and Primorac 2014).

Figure 10.10.: Government effectiveness



Note: The government effectiveness indicator reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Source: The Worldwide Governance Indicators, 2014 Update.

10.2. Policy recommendations

Fiscal consolidation can be achieved through a mixture of revenue measures and spending cuts. Countries in need of fiscal consolidation should set deficit or debt targets, announce a consolidation plan, and ensure credibility by detailing consolidation measures and how targets will be met. This goes hand-in-hand with the introduction of a public debt management agency or an office for budget responsibility (such as in the United Kingdom), which delivers independent forecasts and monitors the fiscal consolidation and the soundness of public finances. Most countries announcing fiscal consolidation strategies put more weight on spending cuts than on increasing revenues, since spending restraint is more likely to generate lasting fiscal consolidation and better economic performance (Alesina and Perotti 1995). Countries that require greater consolidation, however, rely on a mixture of both measures. Expenditure-based measures often take longer to be fully implemented, while increasing tax revenues can provide immediate gains. These, however, are offset by the equity-efficiency trade-off and the existence of the shadow economy. Fiscal consolidation can also include limiting the size of government in general. The privatization process of state-owned companies can effectively contribute to limiting the scope of government.

10.2.1. Revenue measures

10.2.1.1. Broadening the tax base

Revenue measures should initially concentrate on limiting tax-induced distortions that are detrimental to growth by broadening the tax base. Tax rates in Croatia are in line with the European averages. The government of Croatia should ensure continuity of the tax system to increase confidence in legislation and government. Therefore, the tax system should remain stable and the focus should rather lie on broadening the tax base. Three key elements can help to broaden the tax base:

- (1) Increasing incentives for participation in the regular labor market
- (2) Fighting against tax avoidance and evasion and the shadow economy
- (3) Increasing efficiency of tax administration and reducing tax expenditures

Ad (1)

Labor market reforms should aim at increasing labor market participation and activating the unemployed. Labor market policy should increase firms' hiring and firing flexibility and align labor costs and labor productivity by reducing the nominal rigidity of wages. Incentives to work officially should be increased, especially for the young and the elderly. The quality of active labor market policies (ALMPs) should be improved, and social benefits and ALMPs consolidated and better targeted. For specific details of labor market policy measures, see the policy paper on labor market.

Ad (2)

To fight tax avoidance and the shadow economy, a government must choose the right structural incentives, which means choosing the right incentives for people to stay in the official market. The key structural incentives lie within the tax system and the labor market. The key prerequisite for a successful strategy for formalizing the shadow economy, however, is to create conditions for economic growth, to achieve and maintain macroeconomic stability and stabilize legal and institutional structures of society. An increase in official GDP leads to a decline of the informal sector. In times of low economic growth, businesses will endeavor to compensate for fewer opportunities for doing business in the formal sector by working in the shadow economy. In these circumstances the proposed measures will not be fully effective.

The most important fiscal policy measures for fighting the shadow economy are:

- Reducing distortions introduced by the tax system
- Reducing tax compliance costs
- Reducing the returns to tax evasion
- Reducing tolerance for the shadow economy

Distortions introduced by taxes could be lessened by reducing the number of taxes as well as reducing the number of tax exemptions. Tax compliance costs could be lowered by reducing the number of tax procedures and simplifying them by further promoting e-filing of tax returns and electronic communication with tax authorities. The likelihood that the Tax Administration detects tax evasion should be increased. To ensure this, the number of Tax Administration staff tasked with performing audits should be increased, and their training and case selection methodology improved. In addition, there should be more a consistent implementation of statutory penalties for tax evasion, particularly by courts. Cooperation between the Tax Administration and other government bodies is of particular importance for successfully tackling the shadow economy. Furthermore, the education and public information system must be used to increase the public's awareness of the adverse effects of the shadow economy and so improve tax morality. An improvement in the quality of public goods and services provided by the state would also contribute to achieving this goal.

Recommendations relating to features of the labor market are to reduce the fiscal burden on labor, especially by reducing labor costs for lower wages. An important incentive for formalizing informal employees working part-time jobs could be the introduction of a less restrictive tax treatment for so-called 'mini jobs' and 'midi jobs', based on the positive experiences of Germany. It should also be possible for workers to combine formal employment and welfare benefits, with welfare benefits gradually reduced as earnings increase. An example of such in-work benefits program is the US Earned Income Tax Credit. Moreover, minimum wages should not be too high to avoid driving down demand for formal work. Retirement rules should include actuarial adjustment of pensions to reflect the life expectancy of people who retire earlier, while actuarial rewards should apply to those who continue to work and pay pension

contributions after meeting conditions for full retirement. A better coordination between labor inspection, market inspection, and tax administration should be ensured. Better mutual co-ordination of inspection oversight would also better delimit the powers of the various inspection services and help to close loopholes that have made it possible for the shadow economy to flourish, hindering the implementation of activities designed to combat tax avoidance.

A recommendation related to the financial sector is to incentivize cashless payments. Electronic payment should be especially promoted in sectors dominated by cash, such as restaurants, hospitality, and taxis. Furthermore, government payments should be limited to electronic channels only. This, incidentally, would eliminate one opportunity for corruption. To ensure that all remaining cash transactions take place primarily within formal channels, field audits should be strengthened to ensure fiscal cash registers are used and receipts are issued for all transactions. In the transfer of remittances banks should lower transaction costs and increase the speed and reliability of these services.

Measures related to the business environment are simplifying existing regulatory requirements, lowering costs by removing barriers to entry into particular sectors, and preventing the introduction of unnecessary new administrative burdens. For concrete measures, see the policy paper on doing business.

Ad (3)

There is scope to broaden the tax base by reducing tax expenditures, since large individual items often account for 1% of GDP, while total tax expenditures are worth several percentage points of GDP (Sutherland et al. 2012). Some tax expenditures are distorting, poorly targeted, and contribute to a lack of transparency. The most costly tax expenditures are typically those aimed at boosting retirement savings, promoting homeownership, health insurance and charitable giving (OECD 2010). The OECD (2010) recommends producing publicly available tax expenditure reports and offers guidance with respect to the required methodology. This helps identify potential areas for broadening the tax base and enhances transparency.

10.2.2. Expenditure cuts

10.2.2.1. Structural reforms of the pension and health system

Fiscal consolidation measures include structural reforms in the health and social benefit systems, old-age pensions, and capital infrastructure.

Given the scale of ageing and other spending pressures, reforms to entitlement programs need to be an important part of any longer-term sustainability strategy and could make a marked impact in reducing the amount of fiscal tightening needed to meet long-term debt objectives. Reforms to pension systems, aimed at delaying retirement and increasing labor force participation, can significantly reduce long-run budget pressures. The coming demographic transition dictates that such reforms should be

undertaken quickly, in particular given the long phase-in such reforms typically require (Sutherland et al. 2012). For concrete policy measures and structural reforms of the pension system, see the policy paper on the pension system.

Efficiency of public spending should be improved in the healthcare sector as well, where excess cost growth prevails, i.e. costs increase more than what is expected due to population ageing and real income growth. This excess cost growth can be attributed to demand-increasing features of insurance systems, supply-side factors that prevent the most efficient pricing and delivery of care, and cost-raising technological innovations (Sutherland et al. 2012). The financing of higher spending hence creates difficulties. Studies by the OECD suggest that budgetary savings of reforms are highest and most effective if reforms include strengthening and broadening the role of market mechanisms; changing reimbursement schemes (e.g., from fee-for-service to monthly fixed payments for a package of services (capitation) or a mix of both); improving public management and controlling, and imposing budget caps.

10.2.2.2. Operating measures and reforms in public employment

Operating measures aim at reducing a government' running costs. These measures include wage or staff reductions, government reorganization, and across-the-board efficiency enhancements in the administration.

Measures recommended relating to the public employment sector are:

- Implementing a law on public sector wage determination
- Implementing a system determining staffing requirements
- Cost-cutting in the public employment sector by outsourcing and privatization
- Increasing efficiency and reducing bureaucracy in public administration
- Tackling the overpolitization of public employment
- Introducing a public sector employment registry

The government should implement a law on public administration salaries that provides an easy system of wage determination. Wage indexation formulas should be chosen cautiously. Payment should be based on performance at least to some extent. It is important to disentangle the complex system of wages which is prone to ad-hoc changes due to influential unions. The creation and allocation of staffing positions should also be strictly controlled and a system of determining staffing requirements implemented. Tackling overpolitization and corruption, especially at high administrative levels, can reduce corruption throughout the public administration and increase efficiency.

Most countries focus on wage cuts/freezes or staff reductions rather than reorganization of government.⁴ Reducing wages provides immediate relief to strained public budgets, hence improving fiscal balances quickly. Staff reductions also help

⁴ A country where reorganization of government was implemented successfully is the United Kingdom (United Kingdom HM Treasury 2013).

governments to reduce deficits, but this usually takes time to fully implement and the budgetary gain might appear with a certain time-lag. However, equally important may be the signal sent to markets and the public regarding the government's determination to improve fiscal balances by taking politically tough decisions like public wage and staff reductions.

References

- Alesina, A. and R. Perotti (1995), Fiscal expansions and adjustments in OECD countries, *Economic Policy*, 10, 207-248.
- Algan, Yann, Pierre Cahuc and André Zylberberg (2002), Public Employment and Labor Market Performance, *Economic Policy*, 17(34), pp. 7-66.
- A.T. Kearney and Schneider (2013), *The Shadow Economy in Europe*, 2013.
- Bajo, Anto (2010), Companies of special national interest in Croatia, Institute of Public Finance Press Release No. 25, Zagreb: Institute of Public Finance.
- Bajo, Anto and Marko Promorac (2014), Restructuring of public companies – the key to successful public sector reforms in Croatia, Institute of Public Finance Press Release No. 68, Zagreb: Institute of Public Finance.
- Behar, Alberto and Junghwan Mok (2013), Does Public-Sector Employment Fully Crowd Out Private-Sector Employment?, IMF Working Paper, WP/13/146, Washington: International Monetary Fund (IMF).
- Bejaković, Predrag, Vjekoslav Bratić and Goran Vukšić (2010), Employment in the public sector: international comparisons, Newsletter, No. 51, August 2010, Zagreb: Institute of Public Finance.
- CNB (2014), Annual Report 2013, Croatian National Bank.
- Croatian Sabor (ed., 2010), *Izvješće o poslovanju trgovačkih društava od posebnog državnog interesa u 2009. Godini*. [Business report for companies of special state concern in 2009]. Available online at: <http://www.sabor.hr/fgs.axd?id=16457> [last downloaded: March 2, 2015].
- European Commission (EC) (2014), Council Recommendation with a view to bringing an end to the situation of an excessive government deficit in Croatia.
- European Commission (EC) (2015), *European Economic Forecast, Winter 2015*.
- Franičević, Vojmir and Teo Matković (2013), Croatia: Public sector adaptation and its impact on working conditions, in Vaughan-Whitehead, Daniel (ed.): *Public sector shock: the impact of politic retrenchment in Europe*, Cheltenham, UK, and Geneva: Edward Elgar and International Labour Office, pp. 134–173.
- Hernandez de Cos, Pablo and Enrique Moral-Benito (2013), The Role of Public Wages in Fiscal Consolidation Processes, European Commission, Directorate-General for Economic and Financial Affairs workshop paper, Brussels: European Commission, http://ec.europa.eu/economy_finance/events/2013/20131211_ecfin_workshop/pdf/the_role_of_public_wages_in_fiscal_consolidation_processes_en.pdf

- Hospido, L. and E. Moral-Benito (2013), The Public Sector Wage Gap in Spain: Evidence from Income Tax Data. Mimeo, Banco de Espana.
- Kesner-Skreb, M. (2013), Croatia among the leaders in the level of VAT rates, Institute of Public Finance, Press releases No. 57.
- Koprić, Ivan (2011), Contemporary Croatian Public Administration on the Reform Waves. Croatian Academy of Legal Sciences Yearbook 2(1), pp. 1–40.
- KPMG (2011), Individual Income Tax and Social Security Survey.
- KPMG (2014), Corporate and Indirect Tax Rate Survey.
- Laborsta (2015), Public Sector Employment, <http://laborsta.ilo.org>, accessed 13.2.2015.
- Lamo, Ana, Javier J. Perez and Ludger Schuknecht (2012), Public or Private Sector Wage Leadership? An International Perspective, *Scandinavian Journal of Economics*, 114(1), pp. 228-244.
- Lamo, Ana, Javier J. Perez and Ludger Schuknecht (2013), Are Government Wages Interlinked with Private Sector Wages?, *Journal of Policy Modeling*, forthcoming.
- Madzarevic-Sujster, S. (2002), An Estimate of Tax Evasion in Croatia. Occasional Paper No. 13. Zagreb, Croatia: Institute for Public Finance.
- Ministry of Finance (MoF) (2011), Annual Report of the Ministry of Finance for 2011.
- Ministry of Finance (MoF) (2012), Annual Report of the Ministry of Finance for 2012.
- Mrčela, Marin, Novosel, Dragan, and Dubravka Rogić-Hadžalić (2012), Corruption: legal framework and forms of appearance, 2008 – 2010. Studies and Analyses 110, Zagreb: Croatian Bureau of Statistics.
- Nestić, Danijel (2005), The Determinants of Wages in Croatia: Evidence from Earnings Regressions, in Željko Lovrinčević, Andrea Mervar, Dubravko Mihaljek, Mustafa Nušinović, Sonja Radas, Nenad Starc, Sandra Švaljek and Ivan Teodorović, eds., 65th Anniversary Conference of the Institute of Economics, Zagreb – Proceedings, pp. 131-162, Zagreb: The Institute of Economics, Zagreb.
- Nestić, Danijel, Ivica Rubil and Iva Tomic (2014), An analysis of public and private sector wages in Croatia, EIZ working paper.
- Nikolic, Jelena and Rubil, Ivica and Iva Tomic (2014), Changes in public and private sector pay structures in two emerging market economies during the crisis, EIZ working paper.
- OECD (2010), Choosing a Broad Base – Low Rate Approach to Taxation, Tax Policy Study No. 19, OECD Publishing.
- PwC (2014), Paying Taxes 2014: The global picture.

- Rubil, Ivica, (2013), *The Great Recession and the Public-Private Wage Gap: Distributional Decomposition Evidence from Croatia 2008-2011*, Zagreb: The Institute of Economics, Zagreb, unpublished paper.
- Sala-i-Martin, Xavier, Bilbao-Osorio, Beñat, di Battista, Attilio, Drzeniek Hanouz, Margareta, Galvan, Caroline, and Thierry Geiger (2014), *The Global Competitiveness Index 2014–2015: Accelerating a Robust Recovery to Create Productive Jobs and Support Inclusive Growth*, in: Schwab, Klaus (ed.), *The Global Competitiveness Report 2014–2015*, Report, Geneva: World Economic Forum.
- Schneider (2015), *Size and Development of the Shadow Economy of 31 European and 5 other OECD Countries from 2003 to 2015: Different Developments*.
- Schwab, Klaus (2014), *The Global Competitiveness Report 2014–2015*, Report, Geneva: World Economic Forum.
- Urban, I. (2009), *The tax burden on labour in Croatia*, Newsletter No. 47, Institute of Public Finance, Zagreb.
- Sutherland, D., P. Hoeller and R. Merola (2012), *Fiscal Consolidation: Part 1. How Much is Needed and How to Reduce Debt to a Prudent Level?*, OECD Economics Department Working Papers, No. 932, OECD Publishing.
- United Kingdom HM Treasury (2013), *2012-13 Convergence Programme for the United Kingdom: Submitted in Line with the Stability and Growth Pact*. London: HM Treasury.
- Vidačak, I. (2004), *Croatia: In Search of a PublicAdministration Reform Strategy*. In Friedrich Ebert Stiftung (Ed.): *Reforming Local Public Administration. Efforts and Perspectives in South-East European Countries*. Zagreb: Friedrich Ebert Stiftung, pp. 81–88.
- World Bank (2002), *Regaining Fiscal Sustainability and Enhancing Effectiveness in Croatia: A Public Expenditure and Institutional Review*, Washington, DC: World Bank.
- World Bank (2011), *Croatia - Policy options for further pension system reform*, Washington, DC: World Bank.
- World Bank (2012): *In From the Shadow: Integrating Europe's Informal Labor*, Policy Research Working Paper 5923, World Bank, Washington, DC., September 2012.
- World Bank (2014), *Enterprise surveys: Croatia 2013*.
- World Bank (2015), *Doing Business 2015: Croatia*.

11. Public Debt Policies

Markus Reischmann

11.1. Government Liabilities

11.1.1. Classification of Government Liabilities

Public debt is an important indicator for the sustainability of a country's fiscal policy: high and rising debt levels (usually expressed as a share of GDP) endanger fiscal sustainability. Fiscal risks can result from the currency denomination of public debt, the creditor structure, the maturity structure, and interest rate developments. Liabilities not recorded in the budgetary system ("hidden debt") also impair fiscal sustainability. Comprehensively assessing a country's fiscal sustainability requires considering obligations the government has assumed both inside as well as outside the budgetary system, such as government guarantees on borrowing by public and private entities and liabilities of state-owned enterprises. The government's fiscal liabilities can be categorized by the existence of a legal basis for the obligation and the probability that an actual payment realizes (see Table 11.1.). Explicit liabilities are based on a particular law or contract, while implicit liabilities arise as a result of public expectations, pressure from interest groups and the role of the state in the society (Polackova 1998). Liabilities can be non-contingent or contingent. Non-contingent (or direct) liabilities do not depend on a particular event and must be served in any case, such as public debt recorded in the government's accounting system or liabilities of state-owned companies, which are often not included in the government's accounts. Contingent liabilities, such as government guarantees on borrowing by public and private entities, are only realized if a particular event occurs (see, e.g., Polackova 1998; Polackova Brix and Schick 2002; Giammarioli et al. 2007).

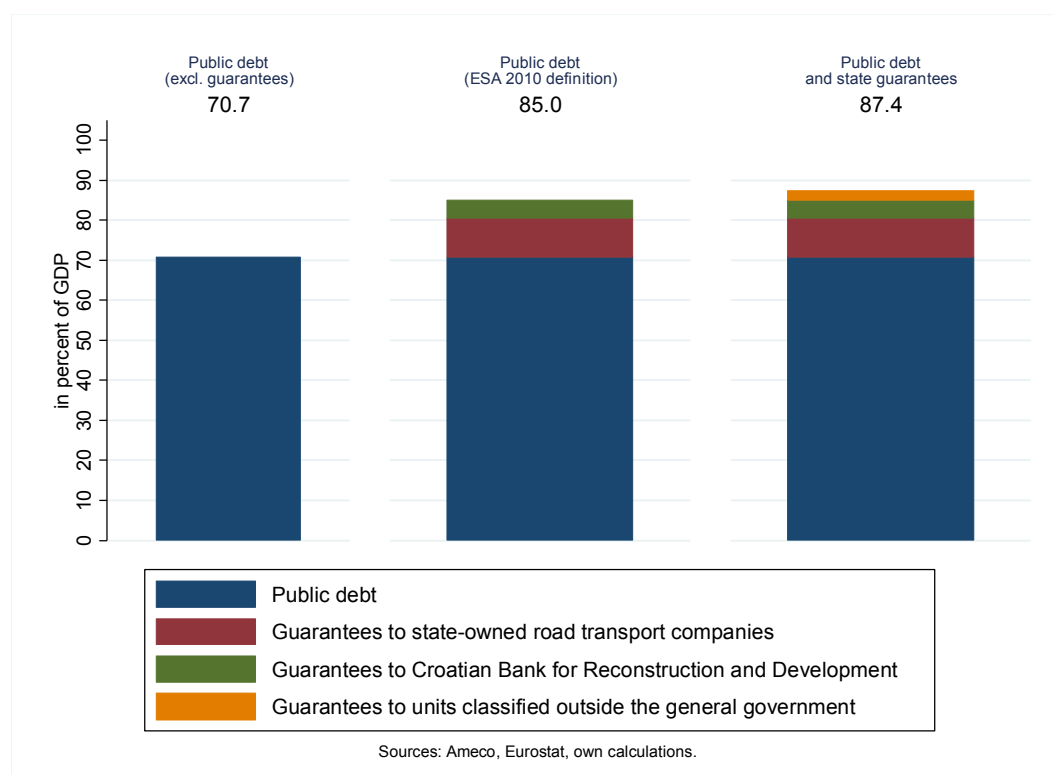
Table 11.1.: Classification of Government Liabilities

	Non-contingent liabilities (payment obligation in any event)	Contingent liabilities (payment obligation if a particular event occurs)
Explicit liabilities (based on a particular law or contract)	<ul style="list-style-type: none"> • Domestic and external general government debt (loans and debt securities issued by the central government, local governments and social security funds). • Liabilities of state-owned enterprises. • Budget expenditures legally binding in the long term (civil servant salaries and pensions). 	<ul style="list-style-type: none"> • Government guarantees for borrowing by public and private entities. • Government insurance schemes (e.g., for bank deposits and returns on private pension funds).
Implicit liabilities (resulting from public expectations, pressure from interest groups and the role of the state in the society)	<ul style="list-style-type: none"> • Future welfare payments (e.g., pension payments related to pension rights that have not yet matured, future healthcare payments). • Future recurrent cost of public investments. 	<ul style="list-style-type: none"> • Bail-outs of defaulting public or private companies (e.g., state-owned enterprises, banks or other private financial institutions, pension and social security funds). • Liability clean-up in companies under privatization. • Disaster relief/environmental damage. • Military financing.

Sources: Polackova (1998), Polackova Brix and Schick (2002), Giammarioli et al. (2007).

This policy paper focuses on Croatia's explicit non-contingent and explicit contingent liabilities.¹ Figure 11.1. shows the composition of the Croatian general government debt, which, according to the Eurostat (ESA 2010) definition, amounted to 85.0% of GDP in 2014. The central government holds 98.1% of general government debt and local governments hold the remaining 1.9% (see Table A. 1 in the Appendix). Central government debt under the Eurostat definition also includes guarantees to the state-owned road transport companies² (about 9.8% of GDP) and the Croatian Bank for Reconstruction and Development (about 4.5% of GDP). Excluding guarantees, general government debt amounts to about 70.7% of GDP (CNB 2014). Additionally, the government has issued guarantees of about 2.4% of GDP to units classified outside the general government that are not included in the Eurostat definition. Eurostat (2015) estimates the liabilities of government-controlled entities classified outside general government (state-owned enterprises) at about 15.9% of GDP and the liabilities related to off-balance public-private partnerships (PPPs) at 0.1% of GDP in 2013.

Figure 11.1: Contingent and Non-Contingent Liabilities of the Croatian General Govt.



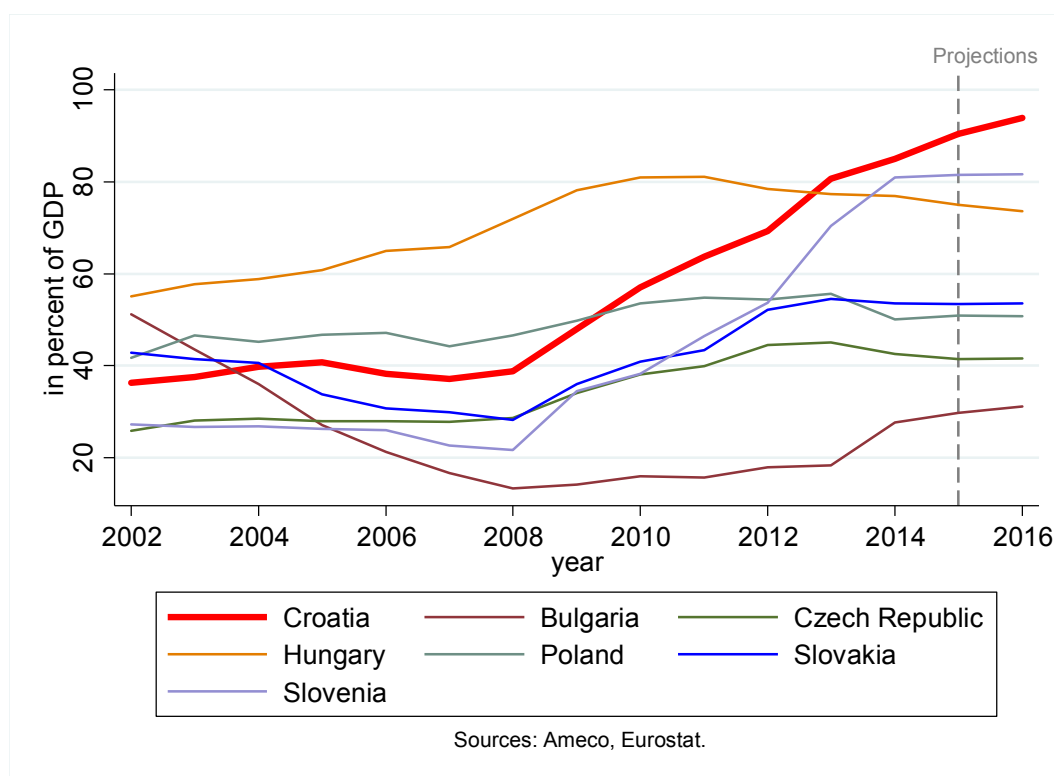
¹ Implicit liabilities are difficult to quantify because they mainly depend upon (unexpected) future events (e.g., financial crises, environmental disasters).

² Croatian Motorways, Croatian Roads, and Rijeka-Zagreb Motorway.

11.1.2. Debt Developments

In 2014, Croatia's general government debt-to-GDP ratio (85.0%) was still below the EU-28 average (86.8%), but compared to central and eastern European peer group countries (Bulgaria, Hungary, Poland, Slovakia, and Slovenia) Croatia exhibits the highest debt-to-GDP ratio (see Figure 11.2.). The Croatian debt-to-GDP ratio is expected to rise further to 93.9% in 2016 (European Commission 2015).

Figure 11.2.: Public Debt in Central and Eastern European Countries, 2002-2016



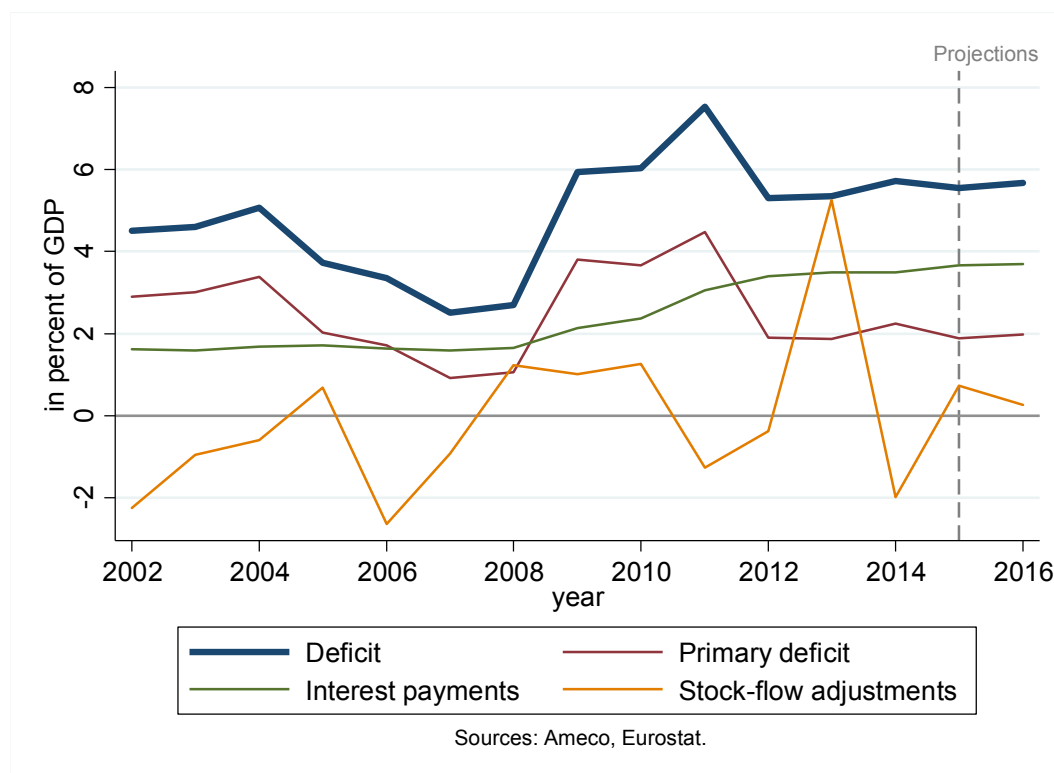
After a moderate decline between 2002 and 2007, general government debt started to increase strongly after the outbreak of the financial crisis in 2008 and the following years of recession. The unfavorable developments of the government budget, combined with decreasing nominal GDP, raised the government debt-to-GDP ratio by about 46 percentage points between 2008 and 2014. Between 2008 and 2011 the primary deficit (net lending excluding interest payments) as a share of GDP increased from 1.0% to 4.5%. After a decline between 2011 and 2013, the primary deficit increased to 2.2% of GDP in 2014. For 2015 and 2016, a primary deficit of 1.9% and 2.0% is projected. Interest payments as a share of GDP increased from 1.6% in 2002 to 3.5% in 2014 and will increase further in the next years (see Figure 11.3.).

Stock-flow adjustments describe the difference between the change in public debt and the deficit. A positive stock-flow adjustment shows that public debt increased by more than the deficit would imply, whereas a negative stock-flow adjustment shows that public debt increased by less than the deficit would imply. Four main components give rise to stock-flow adjustments: Net acquisition of financial assets, valuation and volume

effects, and statistical discrepancies.³ The large stock-flow adjustment of 5.3% in 2013 can be largely explained by an accumulation of currency and deposits when the central government issued bonds denominated in US dollars, and an appreciation of debt denominated in foreign currency (Eurostat 2014).

In 2014, the Council of the European Union initiated an excessive-deficit procedure (EDP) for Croatia because the country does not meet the EU's deficit and debt criteria. Between 2002 and 2014, the deficit was above the 3% reference value in all years except 2007 and 2008. The EDP recommendation required a deficit of 4.6% of GDP in 2014, 3.5% of GDP in 2015, and 2.7% of GDP in 2016. In 2014 the deficit was, however, 5.7% of GDP, and also for 2015 the EDP target is not be expected to be attained (see Figure 11.3).

Figure 11.3.: Budget Indicators of the Croatian General Govt.



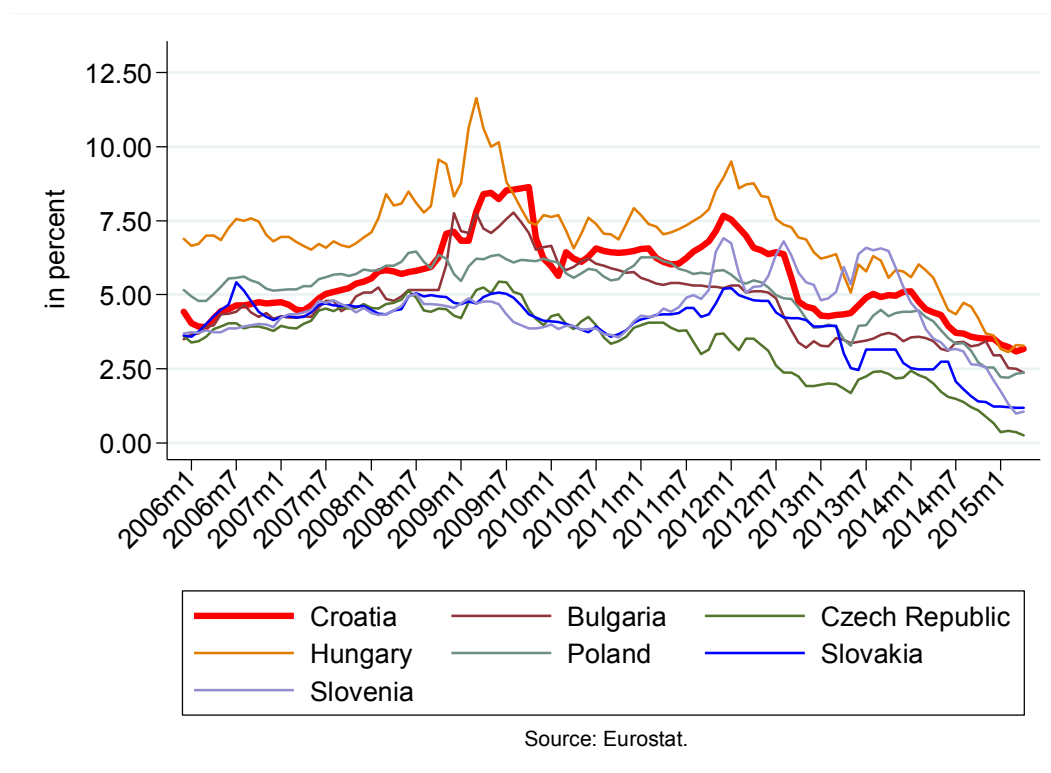
In April 2015, Croatia faced the second-highest interest rate among its peer countries, after Hungary, on long-term government bonds⁴ denominated in national currency (see Figure 11.4.). Domestic borrowing costs for the central government have, however, decreased over the past years and are now at a record low level. High liquidity in the banking sector, supported by an expansionary monetary policy by the central bank, and

³ See, e.g., von Hagen and Wolff (2006) and Buti et al. (2007).

⁴ Long-term government bond yields are calculated as monthly averages (non-seasonally adjusted data). They refer to central government bond yields on the secondary market, gross of tax, with a residual maturity of around 10 years. The bond or the bonds of the basket have to be replaced regularly to avoid any maturity drift. This definition is used in the convergence criteria of the Economic and Monetary Union for long-term interest rates, as required under Article 121 of the Treaty of Amsterdam and the Protocol on the convergence criteria. Data are presented in raw form (ECB, Eurostat).

weak credit demand from the real sector have made lenders focus on financing the state, which has brought down borrowing costs (see also European Commission 2014).

Figure 11.4: Long-Term Interest Rates on Croatian Central Govt. Bonds

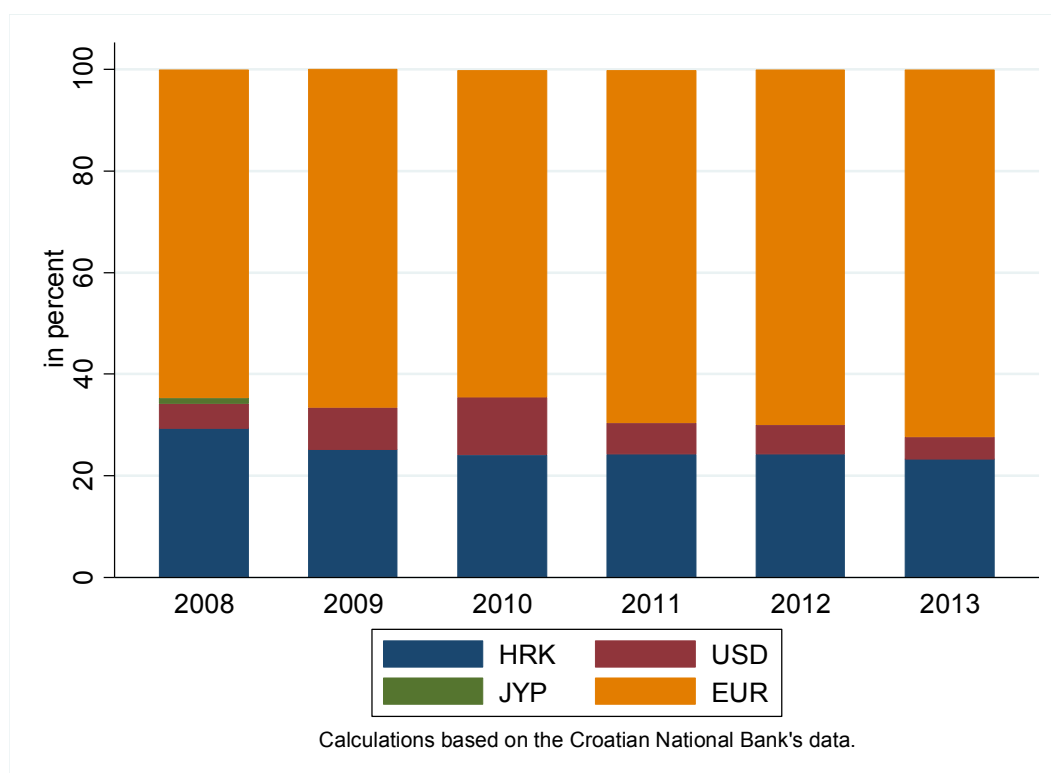


Credit default swaps (CDS) which insure investors against the default of the bond-issuing sovereign, are higher in Croatia than in all peer group countries. CDS spreads are an indicator of the market's current perception of the sovereign's risk of default. At the beginning of 2015, Standard & Poor's cut Croatia's credit rating from BBB to BB, two levels below investment grade, because the government did not manage to reduce the budget deficit and the economy remains in recession (Bloomberg 2015).

11.1.3. Debt Structure

The currency structure of Croatian public debt poses risks to fiscal sustainability because the government has largely issued bonds denominated in foreign currencies. In 2013, only 23.3% of government debt was denominated in kunas, while 72.2% was denominated in euros, 4.3% in US dollars and 0.1% in Swiss francs (see Figure 11.5.). While the share of debt denominated in kunas has decreased by about 6 percentage points between 2008 and 2013, the share of debt denominated in euros has increased by 7.6 percentage points. At about 58.1% of GDP, debt denominated in foreign currency is very large and makes Croatia vulnerable to external shocks and exchange rate risks.

Figure 11.5.: General Govt. Debt Decomposition by Currency



The maturity structure of Croatian public debt is favorable and mitigates public finance risks. In 2014, the share of short-term debt to total public debt was about 15%, which lies below the average of comparable markets (CNB 2014).

The composition of creditors of the general government has changed over time, depending more strongly on domestic borrowing in 2013 than a decade ago (see Figure 11.6. and Table A. 2 in the Appendix). The share of external debt has decreased by about 21.3 percentage points between 2001 and 2013, and amounted to about 39.0% of total debt in 2013. Public debt has thus become less vulnerable to sudden capital outflows, but is still exposed to external shocks. The share of external debt is lower than the share of debt denominated in foreign currencies, indicating that also domestic creditors lend to the government in foreign currencies.

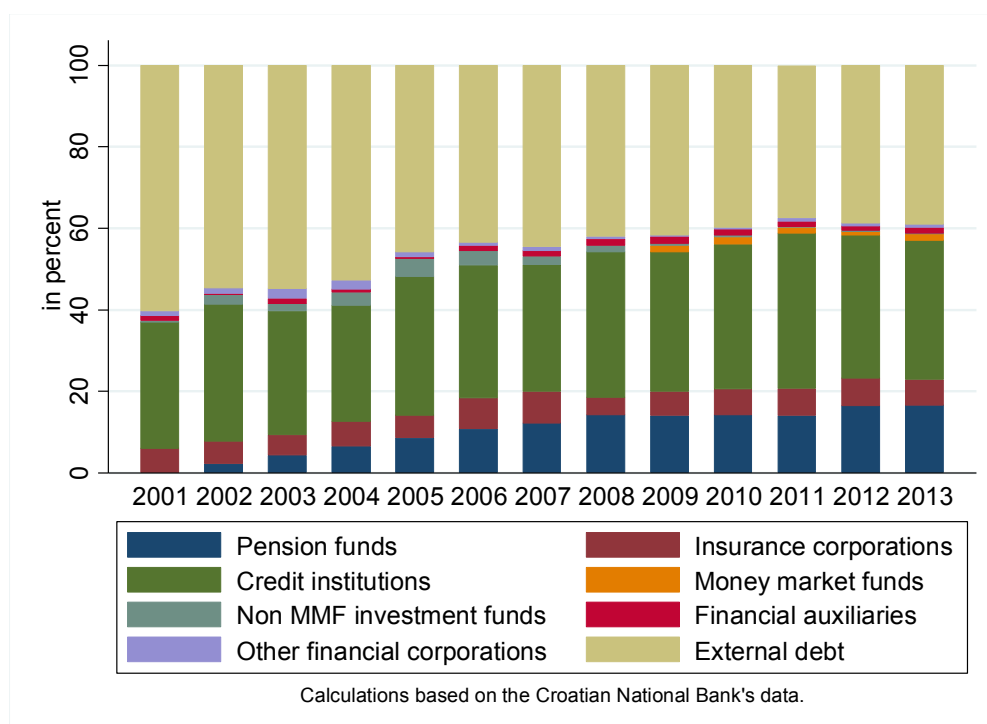
The main domestic creditors of the general government are deposit credit institutions (banks, savings banks and housing saving banks), which held about 34.2% of government bonds in 2013. The share of claims on the general government amounted to about 22.3% of total assets of credit institutions in 2014 (see Table A. 3 in the Appendix). The general government's substantive exposure to the domestic banking sector raises potential crowding out concerns (see also IMF 2011). 68.9% of the credit institutions' claims on the central government are denominated in a foreign currency. Among the 35 credit institutions operating in Croatia, 29 are banks, one is a savings bank, and five are housing savings bank. Among the banks and savings banks, two are state-owned banks, 12 are private domestic banks, and 16 are foreign-owned banks.

Given the owner structure of the banking sector, a large part of borrowing from credit institutions could also be considered de facto as external debt.

The second-largest domestic creditors are pension funds, which held about 16.7% of government bonds in 2013. Pension funds started buying government bonds only in 2002, after the introduction of the second pillar of the pension system. The second pillar is a pension insurance based on individual capitalized savings financed by obligatory contributions (5% of gross wage) to private pension funds (mandatory pension funds/OMF). The pension funds are run by licensed joint-stock or limited-liability pension fund management companies. Four pension funds (AZ OMF, Erste Plavi OMF, PBZ CO OMF, Raiffeisen OMF) are operating in Croatia, all linked to international financial institutions. Initially, pension funds had to invest a minimum of 50% of assets in Croatian government bonds and debt securities. This rule recently has been extended to bonds and securities issued by governments and central banks from EU and OECD countries. Besides the mandatory pension system, a voluntary pension insurance based on individual capitalized savings in private pension funds exists, comprising defined-contribution plans (third pillar). Such schemes can be open (voluntary open pension funds/ODMF) or closed (voluntary closed pension funds/ZDMF), and are offered by ad hoc pension funds or by trade unions and employers. Since 2002 the share of government bonds held by pension funds has steadily increased. Croatian government bonds amounted to about 71.5% of total net assets in pension funds in 2014 (see Table A. 4 in the Appendix).

The third-largest domestic creditors are insurance companies (life assurance, non-life insurance and re-insurance companies), which held about 6.2% of general government debt in 2013. General government debt amounts to about 42% of insurance companies' total assets.

Figure 11.6.: General Government Debt Decomposition by Creditor Sector



11.1.4. Government Guarantees

The Croatian central government issues debt guarantees to ensure favorable borrowing conditions for enterprises that are predominantly in state ownership, local government units, extra-budgetary funds and the Croatian Bank for Reconstruction and Development (see Bajo and Primorac 2011). Guarantees are mainly issued for development and construction projects. The tourist sector, the agriculture sector and shipbuilding projects also received government guarantees. In 2014, government guarantees amounted to about 16.7% of GDP. Government guarantees may become actual liabilities when corporations receiving guarantees are privatized or face financial difficulties. For example, in May 2011 the government enacted a law transferring the credit liabilities of shipyards, which were secured by government guarantees, to direct public debt.

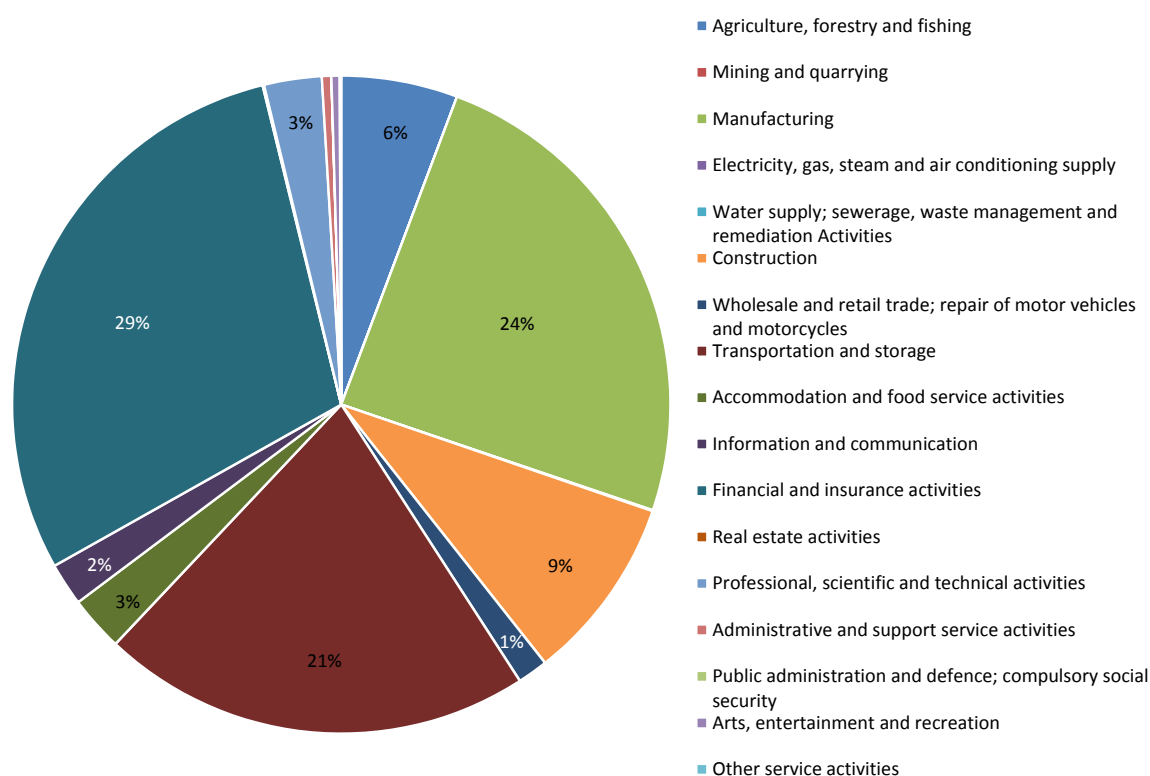
Guarantees approved to the road transport and construction sector, namely the state-owned enterprises Croatian Motorways, Croatian Roads, and Rijeka-Zagreb Motorway, amounted to about 9.8% of GDP in 2014. The government almost fully guarantees the financial liabilities of these three companies. From 2001 until 2006, the main creditors of the road transport companies were international financial institutions, but since 2006 it is usually domestic and foreign commercial banks that lend to the road companies. Over 90% of the approved guarantees to the road transport sector are denominated in euros and about 7.9% are denominated in US dollars, creating exchange rate risks (Bajo and Petrusic 2014).

Guarantees approved for the Croatian Bank for Reconstruction and Development (CBRD), a development and export bank established for providing loans for the reconstruction and development of the Croatian economy, amounted to about 4.5% of GDP in 2014. The CBRD was established in 1992 and originally granted loans with guarantees for financing the recovery of the economy after the war. Since 2006, however, the CBRD also finances small and medium-sized companies, infrastructure and exports, and insures exports. The CBRD also issues guarantees, enters into insurance and reinsurance contracts, and invests in debt and equity instruments. Government guarantees to the CBRD are mainly intended for shipyards and companies that are predominantly in state ownership. A sizeable amount of guarantees also goes to the tourist sector (Bajo and Primorac 2011). Government guarantees to the CBRD are mainly denominated in euros. Guarantees to the CBRD pose a fiscal risk if the government assumes CBRD debt directly or through called-on guarantees.

11.1.5. Liabilities of State-Owned Enterprises

In 2014, the state owned shares in about 641 companies, holding more than 50% of the stock in 79 of them. According to the State Office for State Property Management, the state holds around 46.7 billion HRK worth of shares in companies (14.2% of GDP). Figure 11.7 shows the composition of shares owned by the government by sector. The figure does not include the electricity company HEP, which is by far the largest state-owned company (about 19.8 billion HRK of share capital). The government holds significant shares in financial and insurance services (e.g., CBRD, Croatian Postal Bank, Central Depository & Clearing Company, Croatia Insurance), manufacturing (e.g., INA, Aeronautical Technical Center, Borovo, Lipovica), transportation and storage (e.g., Croatian Post, Croatia Airlines, Jadrolina, Janaf, Luka Rijeka, Plinacro, HZ Cargo), construction (e.g., Croatian Motorways, Croatian Roads, Rijeka-Zagreb Motorway), and agriculture, forestry and fishing (e.g., Croatian Forests).

Figure 11.7: Composition of Total Public Shares (excluding HEP) in 2014



In 2014, the liabilities of 49 state-owned non-financial companies amounted to about 85.8 billion HRK, which is about 26.8% of GDP (State Office for State Property Management 2014; Bajo and Primorac 2014). The companies with the largest amount of total liabilities were Croatian Motorways (23.5 billion HRK), Croatian Roads (9.3 billion HRK), HEP (8.9 billion HRK) and INA (8.3 billion HRK). Total liabilities of the road transport companies amounted to about 40 billion HRK (12.5% of GDP). Total liabilities of the non-financial companies, excluding road transport companies, amounted to about

45.8 billion HRK (14.4% of GDP).⁵ Total liabilities of the state-owned financial companies amounted to about 36.2 billion HRK (11.3% of GDP).

Table 11.2.: Total Liabilities of State-Owned Non-Financial Enterprises in 2014

Name	Total liabilities (billion HRK)	Share of GDP
Hrvatske Autoceste D.O.O. / Croatian Motorways	23.5	7.4%
Hrvatske Ceste D.O.O. / Croatian Roads	9.3	2.9%
Hrvatska Elektroprivreda (HEP) / Croatian Electricity Company	8.9	2.8%
INA	8.3	2.6%
Autocesta Rijeka - Zagreb D.D. / Rijeka-Zagreb Motorway	7.1	2.2%
Hrvatska Pošta / Croatian Post	6.7	2.1%
Hrvatske Vode / Croatian Water	3.0	0.9%
HŽ Infrastruktura D.O.O. / Croatian Railways Infrastructure	2.6	0.8%
Plinacro D.O.O.	2.0	0.6%
Petrokemija D.D.	1.5	0.5%
...		
Total	85.8	26.9%
Road transport companies	40.0	12.5%

Sources: Ministry of Finance (2014), own calculations.

Table 11.3.: Total Liabilities of State-Owned Financial Enterprises in 2014

Name	Total liabilities (billion HRK)	Share of GDP
Hrvatska Poštanska Banka D.D. / Croatian Postal Bank	17.6	5.5%
Hrvatska Banka Za Obnovu I Razvitak (HBOR) / CBRD	15.8	5.0%
Croatia Banka D.D.	2.7	0.8%
...		
Total	36.2	11.3%

Sources: Ministry of Finance (2014), own calculations.

⁵ Eurostat (2015) estimated the liabilities of government-controlled entities classified outside general government at about 15.9% of GDP for 2013.

11.2. Policy Recommendations

Three key elements should characterize public debt policies and debt management:

(1) Budget consolidation should be aimed at long-term sustainability via structural reforms, including the privatization and restructuring of state-owned enterprises, rather than short-term fiscal adjustments.

(2) Debt policies and standards for accounting and reporting should address implicit as well as explicit, and contingent as well as non-contingent fiscal risks.

(3) Sound institutions should be developed to evaluate, regulate, control, and prevent financial risks, particularly a debt management strategy and a debt management agency.

11.2.1. Structural Reforms and Privatizations

To slow down the accumulation of public debt, the budget deficit has to be reduced. Fiscal consolidation should aim to achieve a balanced primary budget in the medium term. Reducing the primary deficit requires implementing structural reforms to increase revenues and reduce expenditure. Fiscal consolidation is discussed in more detail the policy paper on the public budget.

The proceeds from privatization could help to reduce the stock of debt. Privatization and restructuring of state-owned (SOE) enterprises has proceeded slowly in the past several years. Privatization plans have given rise to controversy and public mistrust in Croatia after the experience of unsuccessful privatization projects, deterioration of privatized companies, and poor selections of strategic partners. To restore support for the privatization process, a clear and transparent privatization and restructuring strategy should be developed.

First, the state-owned enterprises should be categorized into those of competitive and purely commercial nature (e.g., manufacturing, banking), infrastructure (e.g., transport, telecommunication, energy), and public goods (e.g., water, forest lands). Privatization programs in OECD countries have been typically initiated with the sale of firms in the competitive and purely commercial sectors of the economy. In Croatia, the first stage of the privatization process should include firms in the manufacturing, banking, hospitality and food services sectors. The sale of infrastructure assets, such as transport infrastructure (railways, highways and roads), telecommunications, energy, and sewage should be considered in later stages of privatization. The sale of assets in the infrastructure sectors embodies public policy considerations such as consumer protection from abuse of monopoly pricing and addressing issues of universal access, and thus poses complex regulatory and competition issues. International experience shows that governments have sought to build credibility for privatization programs concentrating on competitive sectors in the first stage of privatization, and only later addressing infrastructure assets. Additionally, establishing market and regulatory frameworks is essential to the success of the transactions (OECD 2003). Certain firms

with public good characteristics, such as water and forest lands, furthermore, require special regulation and protection.

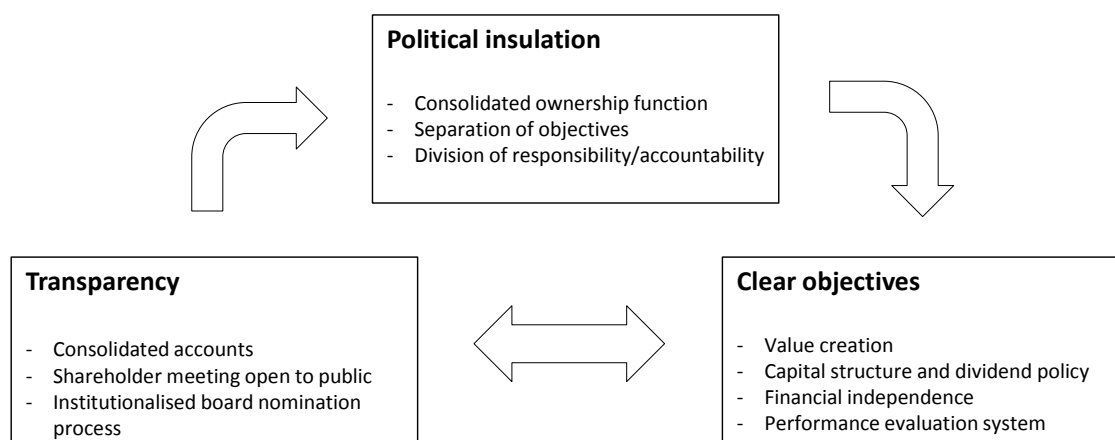
Second, companies of strategic interest that are not planned to be privatized should be carefully selected. Companies of strategic interest typically come from the infrastructure sector and have public-good characteristics. Under the Act on the Management and Disposal of State Assets, the incumbent government has already defined 27 state-owned companies (including companies in the sectors of road, railway, waterway transport and maintenance, electricity generation, oil and gas transport and storage, forestry, and the national lottery) to be of strategic interest (see Table A. 5 in the Appendix) and 32 companies (including airports, hotels, IT companies, banks, Croatian Post) to be of special interest (see Table A. 6 in the Appendix). According to the Act on the Management and Disposal of State Assets, the state-owned companies of strategic interest are not planned to be privatized. Twenty-six companies of special interest predominantly under state ownership are planned to be restructured, privatized, sold or listed on the capital markets. Six companies of special interest where the state holds less than 50% of the stock and which are listed on regular markets are planned to be sold or purchased by third parties (State Office for State Property Management 2014; Bajo and Primorac 2014).

In recent decades, the sectorial distribution of SOEs in OECD countries has become more skewed toward the utilities sector, as countries have pushed ahead with privatization programs in other sectors. In most OECD countries, the largest SOEs are in the telecom, energy and railway sectors. The second-largest concentration of SOEs typically can be found in the financial sector. The bulk of the SOEs in the financial sector, however, do not concentrate on banks listed on stock markets but mostly on insurance, pensions and specialized financing entities (Christiansen 2011).

The companies that are not planned to be privatized in the first stage need to be restructured. Restructuring should include (i) depoliticizing the SOE management (political insulation) and increasing managerial autonomy and accountability, (ii) setting clear objectives, performance evaluation and incentive structures, and (iii) instituting transparent disclosure (see Detter 2006). Figure 11.8. illustrates the three pillars of restructuring. Political insulation aims at creating a clear chain of command, disseminating responsibilities and accountability at all relevant levels. Responsibilities should be divided between the owner, the Board, and the management. A consolidated ownership function requires consolidating all relevant SOEs within one ministry and separating the Minister responsible for the ownership function from any other policy responsibilities. The government, as the shareholder of an SOE, appoints the directors to the Board, which should consist of representatives of ministries as well as politically independent experts. The board decides on strategic questions and has the power to hire and fire the management. The management, in turn, is responsible for the daily business, and its performance is evaluated following clear and transparent criteria. The SOEs should be encouraged to obtain a credit rating and seek funding from private

lenders, which can reduce the government's influence and foster corporate discipline in the SOEs.

Figure 11.8.: Three Pillars for Restructuring State-Owned Companies



Sources: Dettler (2006), own illustration.

11.2.2. Controlling Contingent Liabilities

To control contingent liabilities, government guarantees should be reduced. This requires publicly recognizing and communicating the limits of the state's responsibilities. Currently, there is no mechanism to prevent a continued rise of guarantees. Reducing government guarantees also reduces moral hazard. Institutional arrangements and standards for budgeting, accounting, financial planning, reporting, and auditing must address both non-contingent and contingent liabilities.

Privatizing and restructuring (troubled) state-owned enterprises reduces contingent liabilities and future government expenditures, such as subsidies or recapitalization costs, thereby strengthening the sustainability of public finances. The restructuring of road transport companies should be accelerated. In the absence of more ambitious restructuring efforts in the railway and road infrastructure companies, the main recipients of state guarantees, the risk of additional public debt increases remain significant (see also European Commission 2014).

11.2.3. Institutions

A sound debt management strategy remains crucial to reducing vulnerabilities in the public sector. The last debt management strategy released by the Ministry of Finance covered the years 2011-2013. After the change in government in 2011, however, the debt management strategy did not go into implementation, and the new government has not introduced a new debt management strategy. The basic objectives of the 2011 strategy were (i) to contribute to the stabilization of the debt as a percentage of GDP, (ii) to prolong the average maturity of debt and to reduce of the share of short-term debt in total debt, (iii) to introduce a foreign exchange risk mitigation mechanisms, (iv) to develop a productivity curve on the domestic and foreign markets, and (v) to continue the development and enhancement of the domestic securities market (Ministry of Finance 2011). These issues are still relevant today. A new debt management strategy

must be developed, clearly communicating the government's debt policy. The new debt management strategy should address the following issues:

(i) The share of bonds issued in foreign currencies should be reduced to lessen the risks stemming from exchange rate fluctuations, concentrating more on domestic currency financing of public debt.

(ii) The share of short-term debt should be kept at the current low level and even reduced in the coming years.

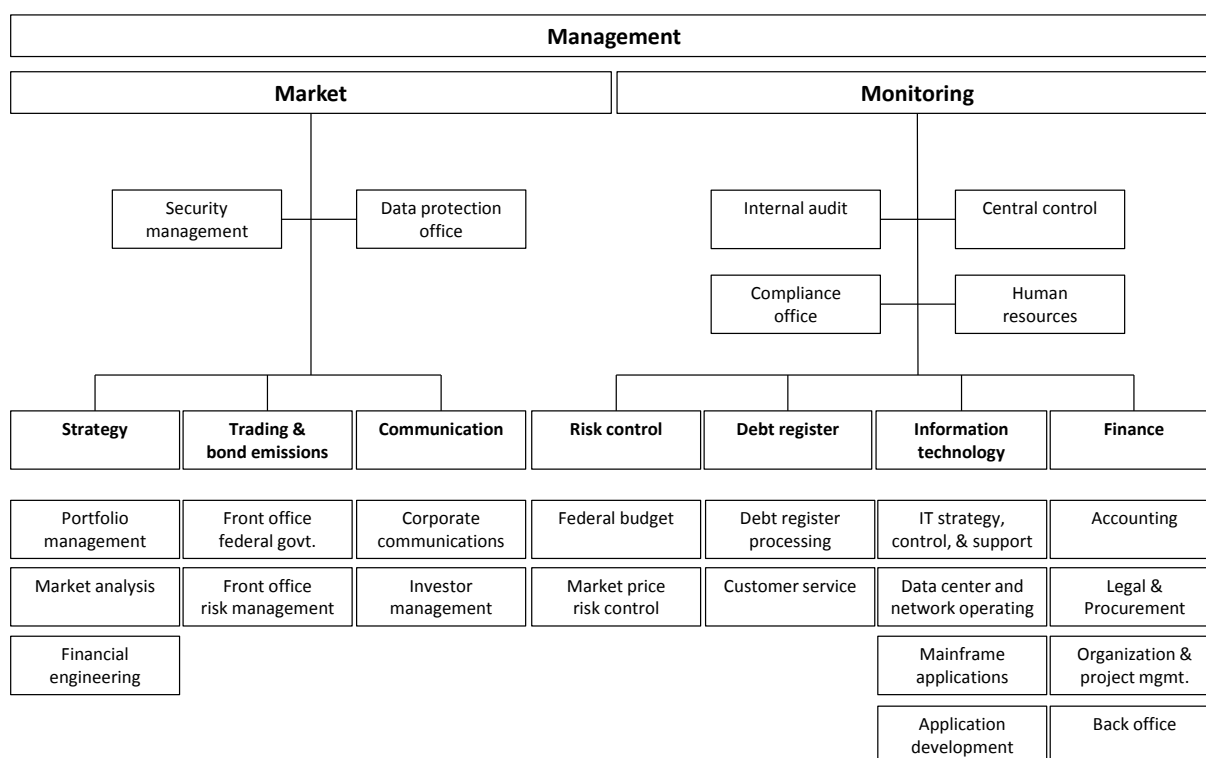
(iii) All guarantees to public and private entities and liabilities of public companies should be included in a comprehensive debt report.

(iv) The creditor structure should be closely monitored. The share of debt held by external creditors should be reduced to lower risks stemming from external shocks.

Croatia has a Fiscal Policy Commission for devising and evaluating the implementation of fiscal rules, which is chaired by the head of the Finance and State Budget Committee. The independence of the Fiscal Policy Commission from all budgetary authorities should be strengthened and adequate financial resources for the commission have to be ensured. The mandate of the commission should be broadened, in particular with respect to the monitoring of all fiscal rules and the ex-ante and ex-post assessment of forecasts (see also European Commission 2015). Croatia should also consider introducing a budget-balance rule that sets a limit on net borrowing and/or a debt rule that sets an explicit limit or target for public debt as a share of GDP.

A debt management agency could be established to ensure optimal financing conditions for the central government. Currently, in the absence of such an agency, the debt is managed by the Ministry of Finance. In Germany, for example, the "Deutsche Finanzagentur" agency, whose shareholder is the Ministry of Finance, manages the central government debt. The agency takes loans on the money and credit markets to repay maturing debts and to ensure that all government expenditures are financed. The agency's responsibilities also include supporting bond emissions, borrowing via promissory note bonds, and portfolio optimization using derivative financial instruments. Additionally, the agency carries out market analyses, develops models for an optimal borrowing strategy, and is responsible for liquidity management and risk monitoring. The agency also keeps contact with investors, provides press and public relations services for federal government bonds, and is responsible for the private customer business for federal government securities. Figure 11.9. shows the organizational structure of the Deutsche Finanzagentur.

Figure 11.9.: Organizational Structure of the German Debt Management Agency (Deutsche Finanzagentur)



11.3. Concluding Remarks

High and rising public debt endangers Croatia's fiscal sustainability. Between 2008 and 2014, persistent primary deficits and rising interest payments, combined with decreasing nominal GDP, raised the government debt-to-GDP ratio by about 46 percentage points, to its current 85%. Fiscal risks arise especially from the large share of debt denominated in foreign currencies and the large share of external debt, the interest burden, contingent liabilities stemming from government guarantees, and liabilities of state-owned enterprises. Investor's doubts about Croatia's solvency are reflected in the high value of Credit Default Swaps, which are an indicator of the market's current perception of the sovereign's risk of default, and the downgrading of Croatian government bonds to below investment grade at the beginning of 2015.

To slow down the accumulation of public debt, Croatia has to implement structural reforms to reduce the primary deficit. Additionally, privatization receipts should be used to reduce the stock of debt. Privatization should proceed in two stages: In the first stage, it should start with the sale of state-owned companies in the competitive and purely commercial sectors of the economy, such as manufacturing, banking, hospitality and food services sectors. The sale of infrastructure assets, such as transport (railways, highways and roads), telecommunications, energy, and sewage, should only be considered in later stages of privatization. The sale of assets in the infrastructure sectors embodies public policy considerations such as consumer protection from abuse of monopoly pricing and issues of universal access, and thus poses complex regulatory and competition issues. Certain firms with public goods characteristics, such as water and

forest lands, require special regulations and protection. The companies of strategic interest that are not planned to be privatized should be carefully reviewed.

The state-owned enterprises that are not planned to be privatized in the first stage and the companies of strategic interest need to be restructured. Restructuring should include (i) depoliticizing the SOE management and increasing managerial autonomy and accountability, (ii) setting clear objectives, performance evaluation and incentive structures, and (iii) instituting transparent disclosure.

Debt policies and accounting and reporting standards should address implicit as well as explicit, and contingent as well as non-contingent fiscal risks. To better control contingent liabilities, government guarantees should be reduced. This requires publicly recognizing and communicating the limits of the state's responsibilities. Privatizing and restructuring (troubled) state-owned enterprises reduces contingent liabilities and future government expenditures, such as subsidies or recapitalization costs, thereby strengthening the sustainability of public finances.

Sound fiscal institutions should be developed to evaluate, regulate, control, and prevent financial risks. A debt management strategy is crucial to reducing vulnerabilities in the public sector. A debt management agency could be established to ensure optimal financing conditions for the central government.

References

- Bajo, A., and J. Petrusic. (2014) "Government Guarantees and Financial Liabilities of State Owned Road Transport Companies in Croatia." *Institute of Public Finance Newsletter* No. 92, November.
- Bajo, A., and M. Primorac (2011) "Government Guarantees and Public Debt in Croatia." *Financial Theory and Practice*, 35, 253-276.
- Bajo, A. and M. Primorac. (2014) "Restructuring of Public Companies – the Key to Successful Public Sector Reforms in Croatia." *Institute of Public Finance Press Release* No. 68, October.
- Bloomberg. (2015) "Croatia Cut to BB by S&P on Policy Inertia Amid Recession." Online available at: <http://www.bloomberg.com/news/articles/2014-01-24/croatia-cut-to-bb-by-s-p-on-policy-inertia-as-recession-extends>.
- Buti, M., J. N. Martins, and A. Turrini. (2007) "From Deficits to Debt and Back: Political Incentives Under Numerical Fiscal Rules." *CESifo Economic Studies* 53, 115–152.
- Christiansen, H. (2011) "The Size and Composition of the SOE Sector in OECD Countries." *OECD Corporate Governance Working Papers* No. 5.
- CNB. (2014) *Financial Stability 13/2014*. Croatian National Bank.
- Detter, D. (2006) "Valuable Companies Create Valuable Jobs. The Swedish Reforms of State-Owned Enterprises – A Case Study in Corporate Governance." *Mimeo*.
- European Commission. (2014) "Macroeconomic Imbalances Croatia 2014." *Occasional Papers* 179.
- European Commission. (2015) "Country Report Croatia 2015." *Commission Staff Working Document*.
- Eurostat. (2014) "Stock-Flow Adjustment (SFA) for the Member States, the Euro Area and the EU28 for the Period 2010–2013, as Reported in the April 2014 EDP Notification."
- Eurostat. (2015) "First time release of date on contingent liabilities and non-performing loans in EU member states." Eurostat News Release, February.
- Giammarioli, N., Nickel, C., Rother, P., Vidal, J.-P. (2007) "Assessing fiscal soundness: Theory and practice." *ECB Occasional Paper Series* No. 56, March.
- IMF. (2011) "Republic of Croatia Selected Issues." International Monetary Fund, June.
- Ministry of Finance. (2011) "Strategija Upravljanja Javnim Dugom Za Razdoblje 2011.-2013."

- Ministry of Finance. (2014) "Izvešće O Poslovanju Trgovačkih Društava I Drugih Pravnih Osoba Od Strateškog I Posebnog Interesa Za Republiku Hrvatsku U Prvom Polugodištu 2014." Zagreb.
- OECD. (2003) "Privatizing State-owned Enterprises- an Overview Of Policies and Practices in OECD Countries." Online available at: http://www.apec.org.au/docs/10_tp_pfi%204/privatising%20soes.pdf
- Polackova, H. (1998) "Contingent government liabilities." *World Bank Policy Research Working Paper* 1989, October.
- Polackova Bixi, H., Schick, A. (2002) *Government at Risk – Contingent Liabilities and Fiscal Risk*. Oxford University Press, New York.
- State Office for State Property Management. (2014) "Plan upravljanja imovinom u vlasništvu republike hrvatske za 2015."
- von Hagen, J., and G. B. Wolff. (2006) "What Do Deficits Tell Us About Debt? Empirical Evidence on Creative Accounting with Fiscal Rules in the EU." *Journal of Banking and Finance* 30, 3259–3279.

Appendix

Table A. 1: Composition of General Government Debt

	31.12.2013			31.12.2014		
	Million HRK	% of GDP	% of Total (3)	Million HRK	% of GDP	% of Total (3)
1 Domestic debt of general government	156,250.0	47.3	58.7	165,715.1	50.4	59.3
1.1 Domestic debt of central government	151,670.6	45.9	57.0	160,735.9	48.9	57.5
Short-term debt securities	22,838.9	6.9	8.6	24,235.4	7.4	8.7
Long-term debt securities	72,884.6	22.1	27.4	83,754.8	25.5	30.0
Loans	55,947.2	16.9	21.0	52,745.7	16.0	18.9
1.2 Domestic debt of social security funds	0.9	0.0	0.0	3.5	0.0	0.0
Short-term debt securities	0.0	0.0	0.0	0.0	0.0	0.0
Long-term debt securities	0.0	0.0	0.0	0.0	0.0	0.0
Loans	0.9	0.0	0.0	3.5	0.0	0.0
1.3 Domestic debt of local government	4,761.2	1.4	1.8	5,174.5	1.6	1.9
Short-term debt securities	0.0	0.0	0.0	0.0	0.0	0.0
Long-term debt securities	151.7	0.0	0.1	74.8	0.0	0.0
Loans	4,609.5	1.4	1.7	5,099.7	1.6	1.8
2 External debt of general government	109,883.6	33.3	41.3	113,853.8	34.6	40.7
2.1 External debt of central government	109,400.2	33.1	41.1	113,721.4	34.6	40.7
Short-term debt securities	539.8	0.2	0.2	642.5	0.2	0.2
Long-term debt securities	62,695.6	19.0	23.6	64,691.9	19.7	23.1
Loans	46,164.8	14.0	17.4	48,387.0	14.7	17.3
2.2 External debt of social security funds	0.0	0.0	0.0	0.0	0.0	0.0
Short-term debt securities	0.0	0.0	0.0	0.0	0.0	0.0
Long-term debt securities	0.0	0.0	0.0	0.0	0.0	0.0
Loans	0.0	0.0	0.0	0.0	0.0	0.0
2.3 External debt of local government	483.4	0.1	0.2	132.4	0.0	0.0
Short-term debt securities	0.0	0.0	0.0	0.0	0.0	0.0
Long-term debt securities	132.7	0.0	0.1	130.4	0.0	0.0
Loans	350.7	0.1	0.1	2.0	0.0	0.0
3 Total (1+2)	266,133.7	80.6	100.0	279,569.0	85.0	100.0
4 Central government guarantees to units classified outside general government	7,827.9	2.4		7,962.8	2.4	
Domestic debt	3,626.7	1.1		3,761.6	1.1	
o/w: Guarantees for CBRD loans	825.1	0.2		1,878.3	0.6	
External debt	4,393.5	1.3		4,201.2	1.3	
5 Total (3+4)	274,419.7	83.0		287,531.8	87.4	
Annex: Central government guarantees (definition before 2015)	23,874.2	7.2		22,837.1	6.9	
Domestic debt	7,933.9	2.4		5,901.1	1.8	
o/w: Guarantees to CBRD	4,309.7	1.3		1,681.1	0.5	
o/w: Guarantees for CBRD loans	825.1	0.2		1,949.3	0.6	
External debt	15,940.3	4.8		16,936.0	5.1	
o/w: Guarantees to CBRD	11,546.9	3.5		12,547.5	3.8	

Source: Croatian National Bank.

Table A. 2: Creditor Structure of General Government Debt

Creditor sector	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Non-financial corporations	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central bank	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Credit institutions	31.0	33.7	30.5	28.6	34.1	32.7	31.2	35.7	34.3	35.6	38.2	35.0	34.2
Money markets funds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.7	1.3	1.0	1.6
Non-MMF Investment funds	0.3	2.4	1.8	3.0	4.4	3.7	2.0	1.5	0.6	0.5	0.2	0.1	0.2
Other financial corporations	1.1	1.5	2.6	2.1	1.4	0.9	0.8	0.5	0.3	0.4	0.8	0.7	0.8
Financial auxiliaries	1.3	0.1	1.2	0.9	0.4	1.1	1.5	1.7	1.6	1.5	1.3	1.2	1.3
Captive financial institutions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Insurance corporations	6.0	5.6	4.9	6.2	5.6	7.5	7.6	4.2	5.9	6.2	6.6	6.8	6.2
Pension funds	0.0	2.1	4.3	6.4	8.5	10.7	12.2	14.3	14.0	14.2	14.0	16.5	16.7
Central government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Local government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Social security funds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Households	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-profit institutions serving households	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
External debt	60.3	54.6	54.7	52.8	45.7	43.3	44.6	42.0	41.7	39.9	37.4	38.7	39.0

Source: Croatian National Bank Website, Statistics/Statistical Data/Financial Accounts Statistics/Annual, Non-consolidated.

Table A. 3: Asset Structure of Credit Institutions

Type of asset	31.12.2013		31.12.2014	
	Million HRK	% of Total (11)	Million HRK	% of Total (11)
1 Reserves with the CNB	49,707.5	12.0	48,560.4	11.6
1.1 In kuna	45,288.8	10.9	44,815.6	10.7
1.2 In f/c	4,418.8	1.1	3,744.8	0.9
2 Foreign assets	36,681.3	8.8	43,943.3	10.5
3 Claims on central government and social security funds	84,366.5	20.3	88,834.7	21.2
In Kuna	26,223.1	6.3	29,919.8	7.1
Securities	19,428.9	4.7	24,987.5	6.0
Loans and advances	6,794.1	1.6	4,932.3	1.2
In foreign currency	58,143.5	14.0	58,914.8	14.1
Securities	13,135.0	3.2	12,695.0	3.0
Loans and advances	45,008.5	10.8	46,219.9	11.0
4 Claims on other domestic sectors	234,115.5	56.4	229,584.8	54.8
4.1 Claims on local government	4,231.8	1.0	4,714.0	1.1
4.2 Claims on non-financial corporations	102,452.6	24.7	98,399.2	23.5
4.3 Claims on households	127,431.1	30.7	126,471.6	30.2
5 Claims on other banking institutions
6 Claims on non-banking financial institutions
7 Claims on non-MMF investment funds	322.7	0.1	336.3	0.1
8 Claims on other financial intermediaries	7,814.3	1.9	5,906.4	1.4
9 Claims on financial auxiliaries	1,247.7	0.3	1,335.7	0.3
10 Claims on insurance corporations and pension funds	762.4	0.2	744.9	0.2
11 Total (1+2+3+4+5+6+7+8+9+10)	415,017.8	100.0	419,246.4	100.0

Source: Croatian National Bank.

Table A. 4: Asset Structure of Pension Funds (OMF, ODMF and ZDMF)

Type of asset	31.12.2013					31.12.2014				
	OMF	ODMF	ZDMF	Total		OMF	ODMF	ZDMF	Total	
	Million HRK				% of net assets	Million HRK				% of net assets
Cash	600.5	33.8	10.1	644.4	1.1	1,083.0	61.1	32.0	1,176.0	1.7
Receivables	618.1	24.3	1.5	643.9	1.1	111.8	3.5	0.5	115.8	0.2
Securities and deposits	57,625.0	2,158.2	483.9	60,267.0	98.9	65,848.6	2,605.8	565.3	69,019.7	99.3
Domestic	50,165.0	1,894.1	424.9	52,484.0	86.1	57,095.6	2,294.0	492.9	59,882.5	86.1
Shares and GDRs	6,631.1	279.2	56.0	6,966.3	11.4	6,776.0	313.0	64.3	7,153.4	10.3
Government bonds	40,131.6	1,424.6	342.9	41,899.1	68.8	47,452.3	1,832.4	411.7	49,696.3	71.5
Municipal bonds	29.9	2.7	0.0	32.5	0.1	20.0	1.8	0.0	21.8	0.0
Corporate bonds	1,190.9	113.9	10.0	1,314.8	2.2	587.3	72.8	4.9	665.0	1.0
AIFs	7.9	0.0	0.0	7.9	0.0	165.8	0.0	0.0	165.8	0.2
UCITS funds	1,511.3	27.7	8.1	1,547.1	2.5	639.6	13.7	4.0	657.4	0.9
MM instruments	305.7	2.0	2.0	309.7	0.5	147.7	0.0	0.0	147.7	0.2
Deposits	356.6	44.0	6.0	406.6	0.7	1,306.8	60.4	8.0	1,375.2	2.0
Foreign	7,459.9	264.1	59.0	7,783.0	12.8	8,753.0	311.8	72.4	9,137.2	13.1
Shares	4,609.8	161.3	41.7	4,812.8	7.9	5,435.6	214.0	50.6	5,700.2	8.2
Government bonds	564.4	13.5	0.0	578.0	0.9	464.0	1.8	0.0	465.7	0.7
Municipal bonds	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
Corporate bonds	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
AIFs	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
UCITS and OIF	2,285.7	89.2	17.2	2,392.2	3.9	2,853.4	96.0	21.8	2,971.2	4.3
MM instruments	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
Deposits	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
Other assets	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
Total assets	58,843.6	2,216.2	495.5	61,555.4	101.0	67,043.3	2,670.3	597.9	70,311.5	101.1
Total liabilities	605.9	8.1	0.9	614.9	1.0	761.8	18.4	1.7	781.8	1.1
Net assets	58,237.7	2,208.1	494.6	60,940.4	100.0	66,281.6	2,652.0	596.2	69,529.7	100.0

Source: HANFA.

Table A. 5: Companies of Strategic Interest (2014)

#	Company Name	Sector	Share capital (Bill. HRK)	State share
1	Hrvatske ceste d.o.o. / Croatian Roads	Road construction	107,384.8	100.0
2	Hrvatske autoceste d.o.o. / Croatian Motorways	Road construction	131,140.1	100.0
3	Autocesta Zagreb – Macelj d.o.o. / Zagreb-Macelj Motorway	Road construction	88,440.4	49.0
4	Autocesta Rijeka – Zagreb d.d., / Rijeka-Zagreb Motorway	Road construction	2,152,000.0	100.0
5	HŽ Infrastruktura d.o.o. / Croatian Railways Infrastructure	Railway construction	224,188.0	100.0
6	Plovput d.o.o.,	Waterways	111,546.2	100.0
7	Odašiljači i veze d.o.o. / Transmitters and Communications	Telecommunication	138,568.2	100.0
8	Hrvatska kontrola zračne plovidbe d.o.o.,	Air navigation services	412,759.6	100.0
9	HŽ Putnički prijevoz d.o.o. / HŽ Passenger Transport	Infrastructure	75,627.3	100.0
10	Bina Istra d.d.	Joint stock company to facilitate construction and subsequent management of an Istrian Y motorway	25,641.7	<50.0 (HAC)
11	Agencija za komercijalnu djelatnost d.o.o.	Manufacturer of smart cards for digital tachographs	232,000.0	100.0
12	Jadranski naftovod (JANAF) d.d.	Crude oil transportation	2,821,442.4	78.5
13	Podzemno skladište plina d.o.o.	Gas storage systems	535,020.1	100.0 (Plinacro)
14	Hrvatski operator tržišta energije d.o.o.	Organisation of electricity and gas markets	9,300.0	100.0
15	Hrvatska elektroprivreda d.d. (HEP) / Croatian Electricity Company	National power company	19,792,159.2	100.0
16	Plinacro d.o.o.	Gas	912,022.0	100.0
17	Hrvatske šume d.o.o. / Croatian Forests	Forest management	1,171,670.0	100.0
18	Hrvatska lutrija d.o.o. / Croatian Lottery	Lottery	50,000.0	100.0
19	Središnje klirinško depozitarno društvo d.d. / Central Depository & Clearing Company	Management of depository of dematerialized securities	57,000.0	62.3
20	Pomorski centar za elektroniku d.o.o.	Naval combat information, communications, and navigation systems	14,954.9	100.0
21	Agencija Alan d.o.o	Import and export of armament and military equipment	1,305.0	100.0
22	Financijska agencija (FINA)	Financial mediation and application of IT	NA	100.0
23	Hrvatska banka za obnovu i razvitak (HBOR) / Croatian Bank for Reconstruction and Development (CBRD)	Bank	7,000,000.0	100.0
24	Državna agencija za osiguranje štednih uloga i sanaciju banaka (DAB)	State agency for deposit insurance and bank resolution	NA	100.0
25	Hrvatska agencija za obvezne zalihe nafte i naftnih derivata (HANDA)	Forming and maintenance of compulsory stocks of crude oil and petroleum products	NA	100.0
26	Hrvatske vode / Croatian Water	Water management agency	NA	100.0
27	Centar za restrukturiranje i prodaju (CERP)	Restructuring and sale center	NA	100.0

Source: State Office for State Property Management (2014).

Table A. 6: Companies of Special Interest (2014)

#	Company Name	Sector	Share capital (Bill. HRK)	State share
1	Adriatic Croatia Club International (ACI) d.d.	Tourism	399,816.0	78.9
2	Croatia Airlines d.d.	Airline	277,879.5	97.8
3	Jadrolinija Rijeka	Shipping company	209,054.1	100.0
4	Luka Rijeka d.d., Rijeka	concessionaire for shipping and reload of dry cargo	598,047.5	82.9
5	Zračna luka Osijek d.o.o.	Airport operator	26,208.0	55.0
6	Zračna luka Pula d.o.o.	Airport operator	81,400.0	55.0
7	Zračna luka Rijeka d.o.o., Omišalj	Airport operator	144,203.1	55.0
8	Zračna luka Zadar d.o.o., Zadar	Airport operator	103,820.0	55.0
9	Zračna luka Split d.o.o., Kaštel Štafilić	Airport operator	322,200.0	55.0
10	Zračna luka Dubrovnik d.o.o.	Airport operator	375,050.0	55.0
11	HŽ Cargo d.o.o.	Cargo transport	531,006.5	100.0
12	Zračna luka Zagreb d.o.o.	Airport operator	804,429.6	55.0
13	HP – Hrvatska pošta d.d. / Croatian Post	Post	952,636.1	100.0
14	Luka Vukovar d.o.o.	Port of Vukovar	38,072.4	100.0
15	Brodarski institut d.o.o. / Brodarski Institute	Institute of applied technical sciences	74,265.2	100.0
16	Croatia banka d.d.	Bank	474,600.0	100.0 (DAB)
17	Hrvatska poštanska banka d.d. / Croatian Postal Bank	Bank	966,640.4	71.6
18	Croatia osiguranje d.d., Zagreb	Insurance company	601,575.8	30.6
19	Agencija za podršku informacijskim sustavima i informacijske tehnologije (APIS IT) d.o.o.	Information systems for the public and government sector	238,800.0	51.0
20	Zrakoplovno-tehnički centar d.d. / Aeronautical Technical Center	Aircraft maintenance	274,962.0	100.0
21	Narodne novine d.d.	Publisher of official gazette	289,519.0	100.0
22	Hrvatska brodogradnja – Jadranbrod d.d.	Monitoring of the restructuring process and modernization program of Croatian shipyards	3,460.0	100.0
23	Imunološki zavod d.d.	Institute of Immunology / Pharmaceutical company	85,607.9	73.4
24	Club Adriatic d.o.o.	Travel agency	120,947.4	100.0
25	Brijuni Rivijera d.o.o.	Tourism development agency	4,500.0	66.7
26	Park Prevlaka d.o.o.	Tourist facility with an apartment settlement, campsite, and hotel	0.005	51.0
27	Državne nekretnine d.o.o.	Real estate	NA	NA
28	Petrokemija d.d.	Fertilizer company	133,093.4	43.8
29	INA – Industrija nafte d.d.	Oil and gas	9,000,000.0	44.8
30	Đuro Đaković Holding d.d.	Holding	64,741.4	41.5
31	Končar elektroindustrija d.d.	Holding	1,208,895.9	25.1
32	Podravka d.d.	Food	1,084,000.6	20.5
33	Sunčani Hvar d.d.	Hotel company	333,651.5	32.4

Source: State Office for State Property Management (2014).

12. Doing Business in Croatia

Nadine Fabritz, Oliver Falck and Julio Saavedra¹

Good framework conditions for setting up and running businesses are essential to an economy's long-run growth, since entrepreneurial activity acts as a motor to the economy. Croatia has achieved much in this regard since independence in 1991, transforming into an open, market-based economy that grew until 2008. However, the global financial crisis exposed certain weaknesses in its approach to doing business. Improving these conditions is very well worth the effort, since in many cases it can be done in a cost-effective way without putting too much stress on the public budget. This paper is based on the comprehensive reports prepared by the Doing Business organization of the World Bank, which are co-published with the International Finance Corporation.

12.1. Ease of Doing Business

Ease of doing business refers to how easy or difficult it is for an entrepreneur to set up and run a business when complying with relevant regulations. It measures and tracks changes in regulations affecting 10 areas of small and medium-sized enterprises (SMEs) operating in a country's largest business city: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency.² In addition, it separately measures labour market regulation.³ The report includes 189 economies by the ease-of-doing-business index, put in order by their distance to the regulatory frontier, i.e. their distance to the country with the best practice in the respective field, as well as overall.⁴ A high score (closeness to the frontier) indicates a regulatory environment that is conducive to setting up and operating a business. In addition, rankings from 1 to 189 are provided based on the simple average of its percentile rankings on each of the 10 topics listed above. The ranking on each topic, in turn, is the simple average of the percentile ranking on its component indicators. It should be noted, that not the countries with no regulation score highest, but those where regulations support market interactions without hindering the private sector.

The benefits of a business-friendly regulation are manifold and have been confirmed by empirical studies. Making it easier to start a business, for example, is positively related

¹ Stefanie Gäbler provided excellent research assistance.

² World Bank. *Doing Business 2015: Going Beyond Efficiency*. Washington, D.C., World Bank Group, 2014.

³ Labour market regulations are not covered in this chapter, as a separate paper deals with them.

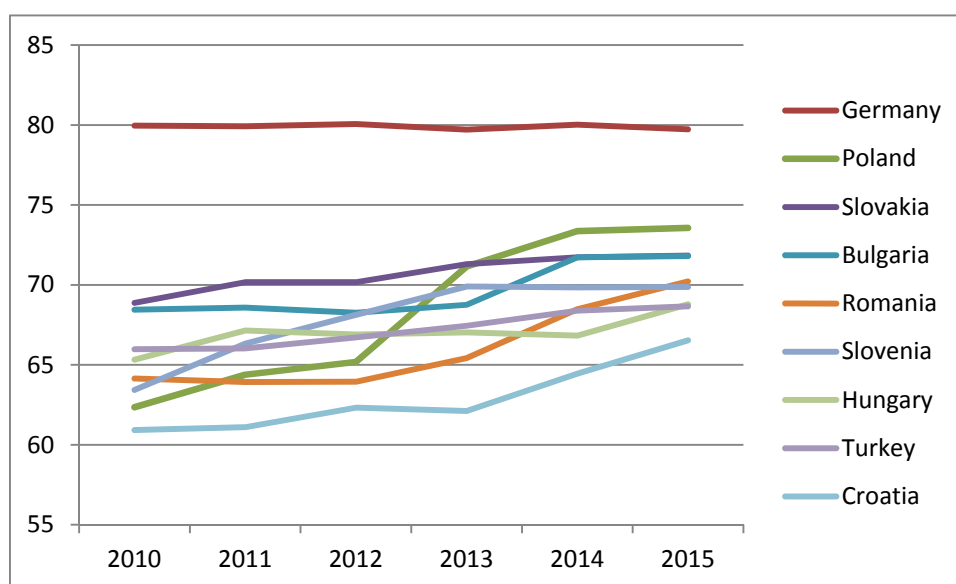
⁴ The methodology was changed in 2014 and the distance to frontier was introduced as a supplement to the simple ranking.

to firm concentration, which in turn creates jobs and promotes growth. Klapper and Love (2010) find that an improvement in the overall distance-to-frontier score is associated with an increase in new firm density. Effects are stronger for higher improvements in terms of distance to frontier. Also, even though the Doing Business reports were originally designed to reflect the situation of domestic small and medium-sized enterprises (SMEs), Doing Business scores are found to be positively correlated with inflows of FDI (Corcoran and Gillanders, 2012). In addition, case study evidence suggests that countries with favourable conditions for starting a business benefit more from FDI (Anderson and Gonzales, 2013). These findings suggest that Doing Business reflects the overall investment climate in the private sector, beyond the concerns of domestic SMEs.

12.2. Croatia's Performance in Doing Business

Out of 189 listed economies, Croatia ranked 65th in 2014, gaining two positions compared to the previous year.⁵ This corresponds to a distance to frontier score of 66.53. Figure 12.1. displays the development over time of the absolute Doing Business ranking for Croatia and comparison countries, namely Bulgaria, Hungary, Poland, Romania, Slovakia and Slovenia. In addition, Germany, which ranked 14th in 2014, is shown as a point of reference. Regarded against comparable countries, which all rank well in the middle field, Croatia does relatively bad.

Figure 12.1.: The Doing Business ranking over time, distance to the regulatory frontier



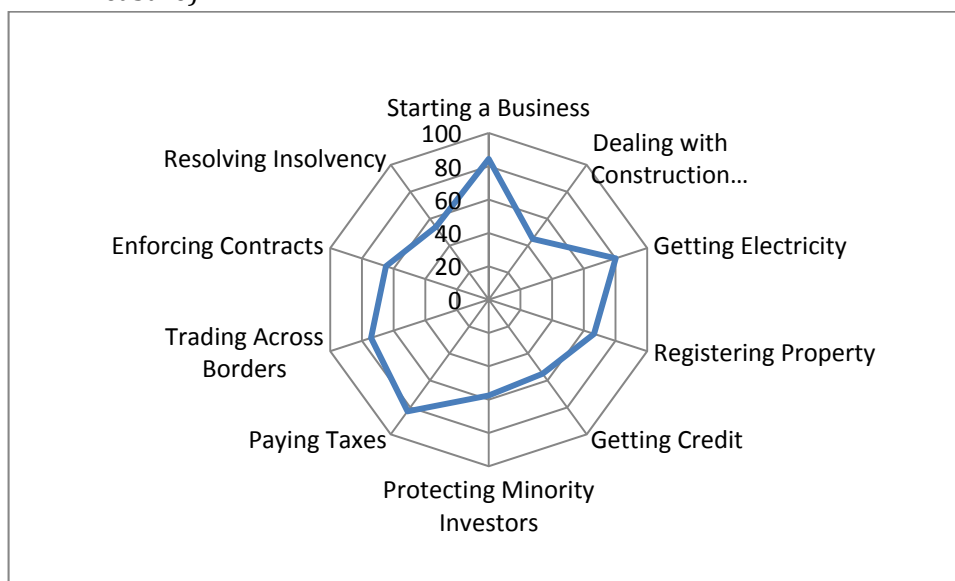
Note: Doing Business Index measured as distance to frontier. Source: Doing Business Database, 2014.

⁵ The methodology was changed in the Doing Business Report 2015. Rankings for the previous reports have been adjusted in accordance with the new methodology to allow for direct comparison.

Methodological breaks in the Doing Business indicator do not allow for an over-interpretation of the development over time, but the relative order among countries remains valid in each given year.

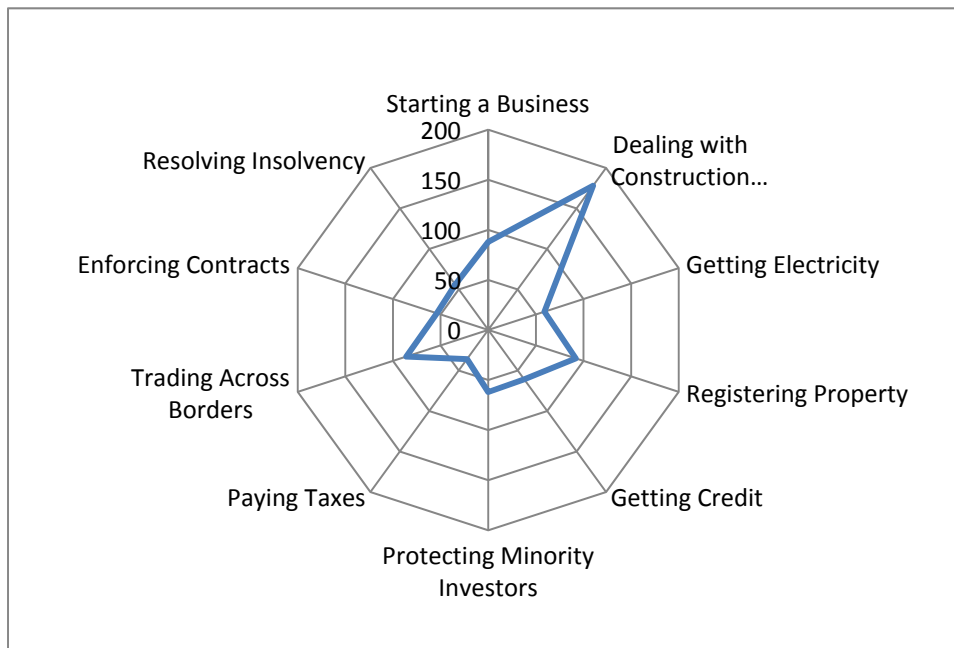
Croatia has introduced a number of regulations in the past decade in an effort to improve matters, earning a place among the 30 economies which improved most between 2013 and 2014 (World Bank, 2014). It even was among the top 10 reformers in the period between 2006 and 2007.

Figure 12.2.: Croatia's Distance to Frontier Scores on Doing Business Topics (cardinal measure)



Note: The rankings are based on the average of each economy's distance to frontier (DTF) scores for the 10 topics included in the aggregate ranking. The distance to frontier score benchmarks economies with respect to regulatory practice, showing the absolute distance to the best performance in each *Doing Business* indicator. An economy's distance to frontier score is indicated on a scale from 0 to 100, where 0 represents the worst performance and 100 the frontier. Source: Doing Business Database, 2015.

Figure 12.3.: Croatia's Rankings on Doing Business Topics (ordinal measure)



Note: The rankings are benchmarked to June 2014 and based on the average of each economy's ordinal ranking for the 10 topics included in the aggregate ranking. An economy's rank is indicated on a scale from 1 to 189, where 1 represents the best performance and 189 the worst. Source: Doing Business Database, 2015.

The relatively poor score stems from the fact that, despite the reforms, some critical areas remain. Figure 12.2 displays the strengths and weaknesses of the ten fields in Croatia, measured as the distance to the frontier. Figure 12.3 shows the ordinal ranking in absolute terms. Each indicator, as well as a few of its main components, will be analysed in detail in the following pages, where the most critical aspects, notably starting a business, getting a construction permit, registering property and trading across borders, are covered in more depth.

12.2.1. Starting a business (rank 88/189)

When it comes to starting a business, Croatia not only does not score well, at rank 88, but has slid since 2013 from rank 85. It still ranks better than, for instance, Germany (114) or the Czech Republic (110). The number of procedures is fairly low (7) and the time it takes (15 days) is comparable to 14.5 days in Germany but high compared to Hungary or Italy (5 days each). The paid-in minimum capital requirement lies at 26.6 percent of the average per capita income.

Among the measures introduced over the years to improve this indicator are a streamlining of procedures through a one-stop shop (2008), allowing limited liability companies to file their registration application electronically (2010), and introducing a new form of limited liability company with a lower minimum capital requirement and simplified incorporation procedures (2013). In addition, reduced notary fees in 2014 made starting a business less costly.

The efforts of the past few years have paid off, bringing Croatia since 2004 nearly 11 percentage points closer to the regulatory frontier. However, at the same time, other economies have caught up even faster, leading to a relative decline in Croatia's ordinal ranking. Evidently, more must be done. The highest-performing country in this category is New Zealand, where one procedure, half a day and 0.3 percent of per capita income is all one needs to set up a business. In addition, the minimum capital required is zero (as is the case for 111 economies out of the 189 in the ranking). A limited liability company can be registered online by reserving a name and completing the incorporation application, subject to a small fee of currently about 100 euros (Companies Office, 2015). In Croatia, the one-stop-shop programme, which goes by the name of HITRO, is supposed to encourage the development of the information society. In practice, however, it is not possible to register a limited liability company solely online with the Commercial Court, as the e-signature has not yet been established in the process. Besides having to submit the registration application as hard copy, picking up the registration poses another bottleneck: it may only be done on Fridays and Tuesdays (World Bank, 2014). These are good examples of how efficiency gains can be achieved at relatively low cost, by introducing the electronic signature and allowing for more user-friendly opening hours of the court registry.

12.2.2. Dealing with Construction Permits (rank 178/189)

The issuance of construction permits plays a big role in whether an economy runs smoothly — or not. Overly arduous and costly procedures not only deter business starts, but tend to foster corruption and create incentives to build illegally. The benchmark figures describe what it takes for a limited liability company to obtain all the necessary approvals to build a warehouse in Zagreb, to connect it to basic utilities and to register it. The outcome is a miserable rank of 178. Clearly, construction permits are Croatia's weak spot for doing business, even if it has moved up from rank 185 in the previous year. Croatia does worse than Bulgaria (rank 101), Hungary (103), Poland (137) or Romania (140), and it is a far cry from Germany (8).

On the bright side, Croatia is the country that improved most in this field between 2013 and 2014. In addition, it is the area in which Croatia achieved its largest improvement over the same period. Between 2005 and 2015, the distance to the frontier shortened by nearly 34 percentage points, a considerable feat achieved by rigorous reforms (the average annual number of reforms in the past five years was 19). In 2010, the process was made easier with the establishment of a one-stop shop and enforcement of the building code. One year later, the location permit and project design confirmation were replaced with a single certificate, simplifying and speeding up the process. Much was also done between 2013 and 2014, when the time for all procedures was reduced by about six months over the period. Among the most recently conducted reforms were new regulations in the Physical Planning and Building Act (2014), under which the order of the procedures was relaxed (building permits can now be obtained prior to paying contribution fees and utilities), thus allowing for considerable time savings. Moreover, fees for building permits were reduced. Registering the building with the land registry is

now carried out by the municipality without further action by the builder. The process of final inspection for the occupancy permit has also been speeded up.

As a result things have improved, but the procedures are still laborious. In 2014 no less than 21 procedures were required, involving a wide range of institutions, including the municipal authority, the Inspectorate for Fire at the Ministry of Interior Affairs, the National Croatian Electric Grid, the Waste Collection Department and the Cadastre, to name just a few. The whole process takes 188 days (still an improvement over the 379 days in 2013) and costs, in the case used as a study, 10.9 percent of the building's value.

The benchmark in terms of the number of procedures is Hong Kong, where only 5 are required (submission of applications, inspection of the foundation strata, certificate of completion, joint inspection by licensing authorities, obtaining water connection) which take 66 days to complete. In terms of speediness, Singapore leads with 26 days to complete all procedures, and the process was recently further facilitated by the introduction of more flexible workplace and health regulations, under which companies in low-risk industries are permitted to submit documents online.

12.2.3. Getting Electricity (rank 59/189)

Getting electricity is fairly straightforward. The indicator describes the steps necessary as well as the time and costs related to getting a standardized warehouse connected to the local utility grid. Croatia scores 59, one place up since 2013, significantly better than Bulgaria (125) and the Czech Republic (123), but far worse than Germany (3). It requires 5 procedures, takes 70 days and costs 316.7 percent of the average local per capita income.

For comparison, in Korea, the best-ranked country in this field, the same undertaking requires 3 procedures, takes 18 days and consumes roughly 41 percent of per capita income. While the connection costs lay below Bulgaria's (320 percent of per capita income) and Romania's (496 percent), they far exceed those in Poland (21 percent), Hungary (112 percent), and Slovakia (60 percent). However, since no details on the subsequent pricing structures in the respective countries for the contracting suppliers are available, the direct comparison of initial fixed costs is not straightforward.

12.2.4. Registering Property (rank 92/189)

Registering property is another weak element in Croatia; ranked 92, it holds the worst position among its peers, even though it closely follows Germany (89) and Slovenia (90). This ranking represents the procedures, cost and time that buyers and sellers incur by a standard property transfer to a buyer's name. The main institutions involved are the Land Registry and the Cadastre. During 2006 and 2010, on-going improvements at the Croatian land registry considerably speeded up the process (World Bank, 2015a). While it took a staggering 956 days in 2006 to register a warehouse in a new owner's name, this was already reduced to 173 days by 2008.

Measured by the distance to the frontier, Croatia has not made significant progress in this field since 2010. As of today, it requires 5 procedures to complete the process at a

cost of 5 percent of the property value. In addition, it still takes 72 days to complete the procedure. The bottleneck for this long procedure is the Land Registry Court, where recording the sale agreement takes around 60 to 80 days; in some other courts it takes even longer. However, it should be noted that just by starting this process a buyer already obtains “quasi-ownership” of the property, until the final completion of the registration. Also, in 2008 a one-stop shop was established as part of the “Real Property Registration and Cadastre Joint Information System (JIS)”, which was launched in 2014 (Uredjena Zemlja, 2015). It allows users to access the land registry and cadastre databases online, which were inconsistent and not harmonised before that time. Even though the number of applications than can be completed online is increasing, the final implementation of electronic procedures is still some way off. Land extracts, for example, can only be obtained for properties already in the database.

The top performer in registering property is Georgia, where only one procedure is necessary. It can be completed in between one and four days. The Georgian procedure is facilitated by the fact that purchase agreements do not need to be notarized. Moreover, since 2007 an online registry of property has been available. All properties in the capital city, Tbilisi, have been transferred into an electronic database, allowing for extracts to be issued online.

12.2.5. Getting Credit (rank 61/189)

Getting credit is a composite measure from two indices: First, the ‘depth of credit information’ index, which evaluates the extent to which credit information is available through a credit registry or a credit bureau. Second, the ‘strength of legal rights’ index captures the ease of lending through certain features inherent in the collateral and bankruptcy laws. Higher scores stand for more credit information and stronger legal rights of borrowers and lenders, both of which will facilitate access to credit for borrowers.

Croatia has done some progress in improving access to credit. In 2008, it implemented a unified system of securities registry and set up a new private credit bureau, the HROK. The establishment of a unified collateral registry also strengthened access to credit. In 2012, the HROK started to collect and distribute information on firms, improving the credit information system. And yet Croatia slid down 6 places, from 55 in the previous year to 61 now, notably despite maintaining the same absolute value of distance to the frontier, 55 percentage points. It lies far behind Romania (7), Poland and Hungary (both 17), Germany and Bulgaria (23) and Slovakia (36). The only comparison country that scores worse is Slovenia, at rank 116.

The globally best-performing economy in this field is New Zealand.

12.2.6. Protecting Minority Investors (rank 62/189)

Protecting minority investors is basically concerned with shareholder protection from directors self-dealing for personal gain. A safe environment for investors generates trust and thus increases companies’ ability to raise required capital. The score captures the

simple average of two composite indices. The first is the extent to which minority shareholders are protected from conflict of interest arising in the form of misuse of corporate assets by directors for personal gain. Protection from misuse is influenced by the extent of disclosure, the extent of director liability, and shareholder's ability to sue directors. The second index measures shareholders' rights in corporate governance. It includes shareholders' say in major corporate decisions, their protection from undue board control, as well as the transparency on ownership stakes, compensation, audits and financial prospects.

At rank 62,⁶ Croatia slid one place and currently sits right amid the comparison countries, which range from Slovenia and Bulgaria jointly at rank 14, to Hungary at rank 110. Croatia's worst sub-index is the 'extent of disclosure index', where it only achieves 3 points, since in the case of a conflict of interest (i.e. a transaction with personal gain by and for the director), no disclosure to the board of directors, the shareholders or the public is required. In addition, no external body must review the terms prior to the transaction. As measured by Doing Business, no reforms have occurred in Croatia over at the last 6 years in order to strengthen investor protection.

12.2.7. Paying Taxes (rank 36/189)

Paying taxes is one of Croatia's brighter spots. To compile this index, Doing Business measures the annual taxes and mandatory contributions as well as the associated administrative burden affecting businesses. Croatia does fairly good, ranking at 36, meaning that it does not extract much taxation from companies operating in its jurisdiction. Germany, by comparison, ranks 68, and Slovakia 100.

Over the past few years, quite a few reforms have been done to the taxation system. In 2011, Croatia introduced a tourist fee, which made paying taxes more difficult and costly. But then, in 2013 the health insurance contribution rate was reduced. In addition, in 2014, it simplified matters by introducing an electronic system for social security contributions and by reducing the rates for the forest and Chamber of Commerce contributions. On average, firms incur 19 different payments, spend 208 hours on the administration of taxes, and pay 18.8 percent of profits per year.

In the United Arab Emirates, the best-ranked economy in terms of paying taxes, companies do not pay corporate taxes (with the exception of oil companies and foreign banks), but a municipal tax of 10% is levied. Altogether, including social contributions, the burden comes to 14.8 percent of profit, levied in 4 payments and done in as little as 12 hours a year in tax administration (filing, preparing and actual payment of taxes).

⁶ The field of protecting minority investors was revised for the Methodology in the Doing Business 2015 report. Under the old methodology, Croatia scored 157 in DB 2014 and 61 under the new methodology. Such dramatic changes do not occur for the remaining revised fields (getting credit, paying taxes, resolving insolvency)

12.2.8. Trading across Borders (rank 86/189)

Trading across borders is an important determinant of the international success of domestic businesses. In addition, it can directly influence multinationals' FDI decisions. Large multinationals increasingly invest in low-cost countries in order to use them as a base from which to export to other countries (Helpman, 2006). The indicator measures the number of documents, and the time and costs associated with exporting and importing a standard product by sea transport. Despite Croatia's favourable geographic location, with good access to the coast and a number of well-equipped seaports, this field could definitely be improved. Croatia ranks only 86, and though displaying a slight upward trend (from 88), it is bested by such land-locked peers as Slovakia (71) and Hungary (72), as well as by coastal ones such as Romania (65) and Bulgaria (57). According to *Doing Business*, exporting/importing a standard container of goods requires six/seven documents, takes 16/14 days and costs \$1,335/\$1,185, respectively.

Hampering Rijeka's role as a transit hub to the European Union are the insufficiently equipped transport facilities in the hinterland (see the chapter on infrastructure). However, some improvements have been made over the past few years: in 2009, Croatia undertook port infrastructure enhancements that decreased export and import time. In addition, recent efforts for improving the physical infrastructure and the information system at the port of Rijeka made trading across borders easier. Furthermore, in preparation of the accession to the European Union, Croatia introduced a new customs system which allows for electronic submissions and processing.

In Singapore, the best benchmark economy in this field, things are considerably easier. Only three documents are required to export or to import, namely a bill of lading, a commercial invoice and a customs declaration. Croatia, in addition, requires a cargo release order, a packing list, a clean report of findings and terminal handling receipts. Preparing the documents only takes one to two days in Singapore, six days less than in Croatia.

12.2.9. Enforcing Contracts (rank 54/189)

Enforcing contracts is Croatia's second-best field, where it ranks 54. Three of its prime peers, Romania, Poland and Slovakia, rank in the same range (at 51, 52 and 55, respectively), but Hungary sets a good example at 20. This field shows the effectiveness (in terms of time, costs and overall complexity) of commercial dispute resolution, which fosters the trust that is essential for encouraging business relationships. In addition, small enterprises may lack the resources to endure long settlement processes. In Croatia, it takes 572 days, 38 procedures and costs 13.9 percent of the claim to enforce a contract. While procedures fall well in line with the comparison groups, the costs associated with dispute settlement are relatively low. In 2013, Croatia made enforcing contracts easier by streamlining litigation proceedings and transferring certain enforcement procedures from the courts to state agencies.

Again, Singapore serves as the top benchmark. What meets the eye in terms of processes is that the already low number of procedures can be further reduced by the option of electronic filing of court cases.

12.2.10. Resolving Insolvency (rank 56/189)

A robust system for resolving insolvency is important for an economy, for it ensures the efficient return of a firm to business operation. In addition, a transparent, reliable insolvency system generates trust among investors, thereby increasing access to finance. Croatia ranks in this field well among its peers. It takes 3.1 years to solve the procedure and costs about 14.5% of the debtor's estate value. It is, however, more likely that the procedure results in the liquidation of the firm rather than in the continuation as a going concern. The recovery rate for creditors is 30.5 cents to the dollar, a low value compared to, for instance, Finland, which ranks best with 90.2 cents on the dollar, and where it takes less than one year to complete the procedure.

While no relevant reforms in this field have been observed by Doing Business for some years, Croatia managed a dramatic jump towards the regulatory frontier (from 32.45 to 53.92) between 2012 and 2013. This surge resulted from the Pre-Bankruptcy Settlement Agreement Act that came into force on October 1, 2012. While the pre-existing Insolvency Law addresses bankruptcy proceedings, which hardly allow for restructuring of the business, the new law introduced an out-of-court restructuring procedure where creditors and debtors can reach an agreement. It was intended by the Croatian government as an anti-recession measure to address the widespread illiquidity of many Croatian firms due to the recent financial crisis (Vukelic et al., 2014). The new law is more flexible and allows companies' survival and therefore increases creditors' (including the state) chances of repayment of obligations. The proceedings are run by the Croatian Financial Agency (FINA) and pre-bankruptcy must be completed within 120 days, thus significantly speeding up the process.

12.2.11. Interim Conclusion

Even though Croatia has made good efforts to improve the business climate over the past few years, other countries have done so more rapidly or more deeply, leading to a relative decline in the Croatian economy's ranking. What becomes apparent is that firms in Croatia bear high administrative burdens in terms of time and costs. Since the Ease of Doing Business report does not consider time spent on gathering information on the necessary – and in many cases cumbersome – procedures, their effective burden is even higher. In terms of the ordinal ranking, Croatia does poorly in four fields, namely starting a business, dealing with construction permits, registering property and trading across borders. These areas should be at the core of future reforms.

12.3. Policy implications

Based on the considerations outlined above on Croatia's performance as well as the best-practice examples, this section briefly reviews some suggestions for further improvement of Doing Business in Croatia.

In starting a business, things could be considerably facilitated by supporting the full implementation of e-government processes, by establishing the e-signature as a fully valid element for all relevant procedures. The restriction imposed by being allowed to pick up the business registration only on Tuesdays and Fridays should be eliminated forthwith.

In the field of construction permits, careful consideration should be given to removing unnecessary regulations. Following Singapore's lead, procedures in registering property could be differentiated for industries with different risk profiles, allowing for easier procedures (such as online registration) for low-risk industries.

To speed up the process of registering property, Croatia could introduce maximum duration on certain "bottleneck procedures", such as the request for property registration at the Land Registry Court.

In addition, the implementation of e-government procedures should be promoted in registering by speeding up the building of the electronic JIS database.

Trading across borders would most likely profit from a reduction in the number of necessary documents. Also, Croatia should invest in complementary infrastructure in the hinterlands to make Croatia's ports a competitive alternative to other European ports and to better exploit its favorable geographic location.

What becomes evident throughout the analysis of the business environment is the fact that the globally best-ranked economies in many cases exhibit high adoption of e-government in their procedures, allowing for fast and efficient handling. In order to fully exploit the potential offered by electronically filed applications, their adoption and use should be promoted at all levels of the public agencies associated with the doing business topics.

The Network Readiness Index (Bilbao-Osorio et al., 2014) of the World Economic Forum index provides comparative rankings of 148 economies in terms of their propensity to reap the benefits that information and communication technologies (ICT) could potentially offer. The Network Readiness Index consists of three components: the market-, political-, regulatory-, and infrastructure environment for ICT; the ICT readiness of key stakeholders (firms, individuals, and governments); and the actual ICT usage by these stakeholders. In 2014, Croatia occupied rank 46, a better rank than all direct peers apart from Slovenia, which was ranked 36. However, the Network Readiness Index also reveals that the Croatian government does particularly badly at promoting ICT (rank 110) and gives low priority to ICT in the overall political agenda (rank 98).

Furthermore, results from the European Commission's Digital Agenda Scoreboard show that overall Croatian firms seem to have adopted ICT more broadly than the general population. While firms rank 17th in web presence, 10th in use of e-Government services and even third in turnover from online sales, the population considerably lags

behind, ranking 25th in medium or high Internet skills and 24th in use of e-Government services. Regarding the e-Government services themselves, Croatia lags considerably behind in online services, for instance for starting a business or for regular business operations.

One European country that has been very successful in promoting e-Government is Estonia, where an electronic ID card was introduced as early as 2002. This card serves as a national ID card for legal travel within the European Union and is recognized by all EU member states. Other examples of what the ID card can be used for include a digital signature, which is legally equivalent to a manual signature since 2000, access to government databases (for instance to check medical records), or for filing taxes online. Authentication of the card is provided by a microchip containing a certificated digital authentication to log into online portals via a 4-digit PIN code. It also contains a certificate for the digital signature, with which any type of document can be signed legally via a 12-digit PIN code. The institutional trust in this electronic system is very high; even foreigners can apply for a “e-residency” and can thus access Estonian private and public e-services.

Estonia ranks second in the “digital public services” in the EU’s Digital Economy and Society Index 2015 (where Croatia ranks 19th). Not surprisingly, Estonia is ranked 17th in the Ease of Doing Business 2015, ahead of Switzerland and very close to Germany.

All these facts indicate that Croatia should place a higher focus on the development of digital public services. Such a focus might even have a triple dividend: First, Croatia could improve its “Doing Business” standing through the implementation of e-government applications. Second, the public procurement of innovative e-government solutions might spur businesses’ R&D in ICT. And third, the opportunities for corruption along the many procedural steps would be curtailed.

12.4. Concluding Remarks

It should be borne in mind that the World Bank’s Doing Business report used to prepare this note cannot make claims for completeness. There are some very important determinants of business success that are not included in the report, such as market size, corruption or political stability. None of the cost indicators, for instance, includes bribes. As outlined by the latest Corruption Perceptions Index (Transparency International, 2014), Croatia is ranked 61st out of 174 economies. Among its prime peers, only Bulgaria and Romania are ranked worse. This dimension puts additional pressure on Croatia’s international competitiveness. Sound institutions, transparent regulations, electronic procedures and a reduction in the number of steps required for the granting of permits or the registrations of businesses and property would reduce the grounds and opportunities for corruption.

In sum, while Croatia has introduced or streamlined regulations to improve the ease of doing business in the past several years, it still has a long way to go to come closer to such desirable peers as Poland, which scores 32. The analysis of the various Doing

Business topics shows that firms in Croatia still bear relatively high administrative burdens in terms of time and costs. Challenges to further improve the situation lie ahead. The measures suggested in this paper provide simple and straightforward ways to improve the business climate in Croatia.

References

- Anderson, John and Adrian Gonzales (2013). *Does Doing Business matter for foreign direct investment?* Doing Business, World Bank. Washington.
- Bilbao-Osorio, Benat, Soumitra Dutta and Bruno Lanvin (2014). The Global Information Technology Report 2014; Rewards and Risks of Big Data. World Economic Forum, Geneva.
- Corcoran, Adrian and Robert Gillanders (2012). Foreign Direct Investment and the Ease of Doing Business. *Working Papers* 201219, School of Economics, University College Dublin.
- Companies Office New Zealand (2015). Starting A Company. Available from: <http://www.business.govt.nz/companies/learn-about/starting-a-company> [date accessed: January 22, 2015].
- Doing Business Database (2014). Washington, DC: World Bank. Available from: <http://www.doingbusiness.org/data>. [date accessed: January 18, 2015]
- Eurostat (2015). Households having access to the internet by type of connection: Percent of all households. Available from: <http://ec.europa.eu/eurostat/tgm/download.do?tab=table&plugin=1&language=en&pcode=tin00073> [date accessed: February 5, 2015].
- Helpman, Elhanan (2006). Trade, FDI and the Organization of Firms. *Journal of Economic Literature*, 44:3, pp. 589-630.
- Klapper, Leora and Inessa Love (2010). The Impact of Business Environment Reforms on New Firm Registration. *Policy Research Working Paper Series* No. 5493, The World Bank.
- Transparency International (2014). Corruption Perceptions Index 2014: Results. Available from: <https://www.transparency.org/cpi2014/results#myAnchor2> [date accessed: December 10, 2015].
- Uredjena Zemlja, 2015. One Stop Shop. Available from: <http://www.uredjenazemlja.hr/default.aspx?id=136> [data accessed: December 15, 2014].
- Vukelić, Luka, Martina Prpić, Blažo Nedić, Branko Radulović and Luka Andrić (2014). Trends in Corporate Restructuring – Croatia and Serbia examined and contrasted. In: *Law in Transition Online*, October 2014. EBRD, London.
- World Bank (2014). *Doing Business 2015: Going Beyond Efficiency*. Washington, DC: World Bank. DOI: 10.1596/978-1-4648-0351-2. License: Creative Commons Attribution CC BY 3.0 IGO

World Bank (2015a). Registering Property. Available from:
<http://www.doingbusiness.org/data/exploretopics/registering-property/reforms>
[date accessed: February 2, 2015.]

13. Infrastructure and Energy Supply

Johannes Steinbrecher

13.1. Introduction

Infrastructure is considered essential for the economic development of a region.¹ A well-developed transportation and communication infrastructure reduces the effect of distance between regions and connects international markets at low costs. Furthermore, it makes it easier for workers to move across regions to the most suitable jobs. In this way, the access and use of infrastructure are of particular importance for the participation of individuals and households in economic and social interactions (e.g. World Bank, 2003).²

While infrastructure matters to a certain extent for all economies, it affects economies in a different way depending on their stage of economic development.³ In early stages, economies are factor-driven and companies compete primarily on the basis of prices. By connecting markets at lower costs, a well-developed infrastructure is a key factor to increase competitiveness of low developed countries. However, as wages rise countries need to enhance efficiency and innovation of products and production processes. Thus, in later stages of economic development, an appropriate and efficient infrastructure changes from a main driver to a precondition of competitiveness.

Given these considerations, one would expect that Croatia already provides a well-developed and relatively competitive infrastructure. Moreover, given its stage of economic development, additional economic stimulus should be induced by optimization rather than extension of infrastructure. As expected, Croatia's infrastructure is relatively competitive compared to that of its peer countries, but still lacks competitiveness compared the most developed countries (see Figure 13.1. i) in the Appendix). On the other hand, only few peer countries have lower Total GCI scores, indicating that Croatia's overall competitiveness is still relatively low. Furthermore, while Croatia's infrastructure competitiveness has improved in recent years, no improvements in Total GCI scores can be observed.⁴ Evidently, Croatia's relatively weak overall competitiveness (indicated by its low Total GCI scores) can hardly be attributed to an inadequate supply of infrastructure. Consequently, infrastructure supply currently poses no severe obstacle for doing business in Croatia (see ii) in Figure 13.1. only 2.5%

¹ A recent overview on the impact of infrastructure on economic growth and income inequalities is provided by Calderón and Servén (2014).

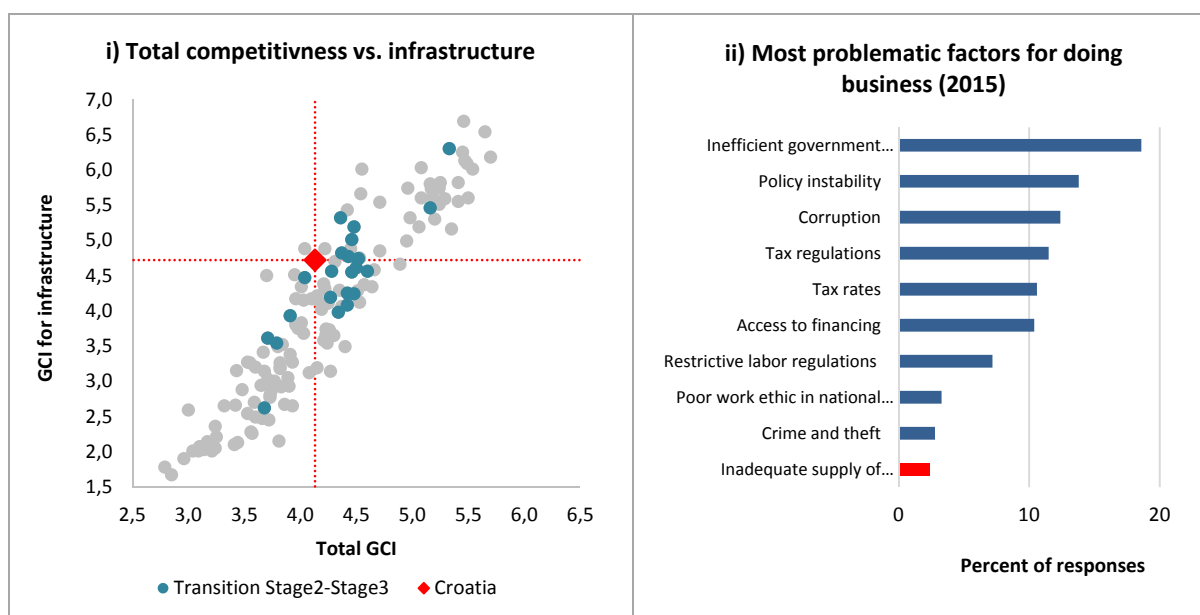
² If not cited otherwise, all data in this paper refers to public Eurostat databases.

³ See Porter (1990) for an extensive discussion of the theory of economic stages.

⁴ Since 2010, the overall competitive score of Croatia (Total GCI) increased only by 0.1 to 4.13 in 2014, while the infrastructure score increased from 4.26 in 2010 to 4.72 in 2014.

of the Global Competitiveness survey responses addressed the supplied infrastructure as problematic.

Figure 13.1: Croatia's infrastructure and general competitiveness



Note: The left chart depicts the overall scores and scores for infrastructure of the Global Competitive Index (World Economic Forum, 2014) for the 144 participating countries (grey dots), the peer group countries (blue dots), and Croatia (red diamond). The higher the score, the higher the competitiveness of a country.

Source: World Economic Forum (2014), own calculations.

Accession to the European Union entails several opportunities and challenges for the Croatian economy. Croatian firms can benefit from access to the integrated European market, but also face an intensified competition with foreign firms. Croatia could also benefit from its strategically important location within Europe, with major ports in the Adriatic Sea and connection to Pan-European (TEN-T) transport corridors. Hence, sufficient infrastructure will be a crucial prerequisite for domestic firms to compete with European competitors and explore foreign markets.

The following sections will discuss whether the infrastructure is already capable of providing these supporting functions and to which extent further reforms seem necessary. Section 13.2. summarizes the current status of three selected areas of infrastructure: transport sector, broadband internet, and energy supply. Section 13.3. concludes, outlining further challenges and reform potentials. All supplementing figures are provided in the Appendix.

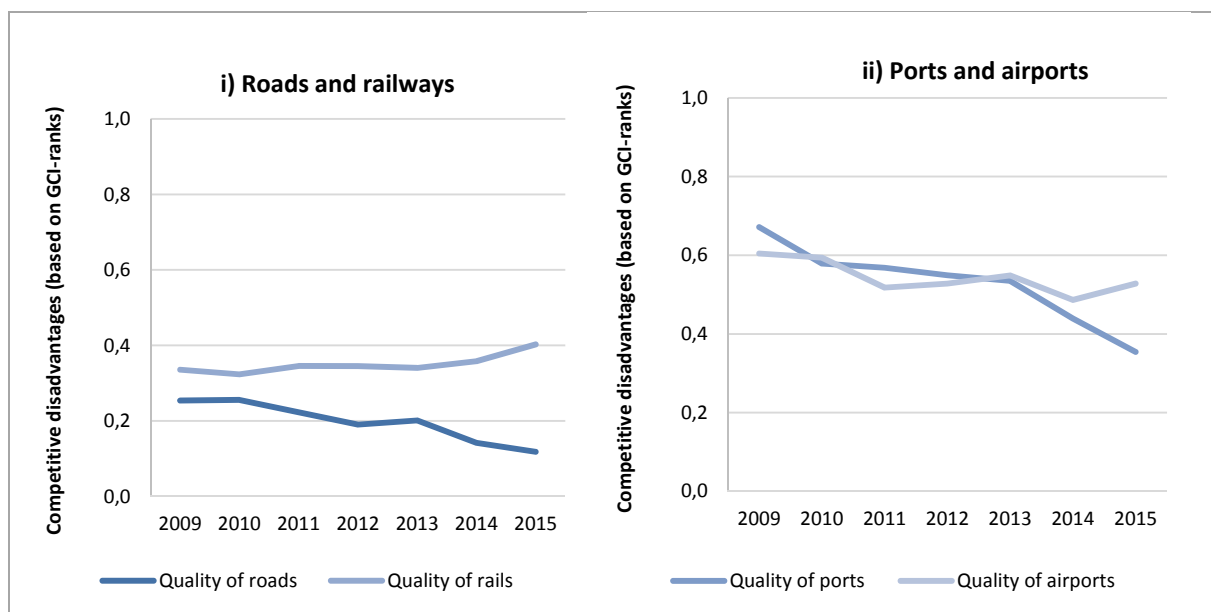
13.2. Croatian Infrastructure: Selected Issues

This paper focuses on three selected topics of infrastructure in Croatia: First, transport infrastructure as a prerequisite for exploiting its strategically advantageous location. Second, broadband internet, as a general-purpose technology with strong impact on knowledge-intensive activities across all economic sectors. Finally, energy supply, as a crucial requirement for sophisticated production technologies and services.

13.2.1. Transport Infrastructure

Croatia's location within Europe – with core transport corridors crossing the country and several seaports on the Adriatic coast – is of importance for the transport strategy of the European Union and for neighboring countries.⁵ Consequently, an adequate and efficient transport infrastructure is critical to exploit these geographic advantages.⁶ On the other hand, the burden of the communist era and the damage caused by the Croatian War of Independence influence the development of infrastructure and its operators to this day. As a result, the competitiveness of the transport infrastructure varies heavily from mode to mode (see Figure 13.2.), as discussed in the following sections.

Figure 13.2: Competitiveness of transport sector



Note: The figure depicts the share of countries which perform better or equal than Croatia regarding a specific sector of infrastructure. Thus, the lower the value, the higher the competitiveness of the sector. The scores are calculated as the ratio of Croatia's rank in the Global Competitiveness Report and the number of countries considered in the report. Hence, the ratio becomes one if Croatia is ranked last, meaning that 100% of the participating countries perform better or equal. On the other hand, if Croatia is ranked first, the ratio becomes (almost) zero. A value of 0.5 indicates that half of all participating countries perform better.

Source: World Economic Forum (2009) – World Economic Forum (2014), own calculations.

13.2.1.1. Ground transportation

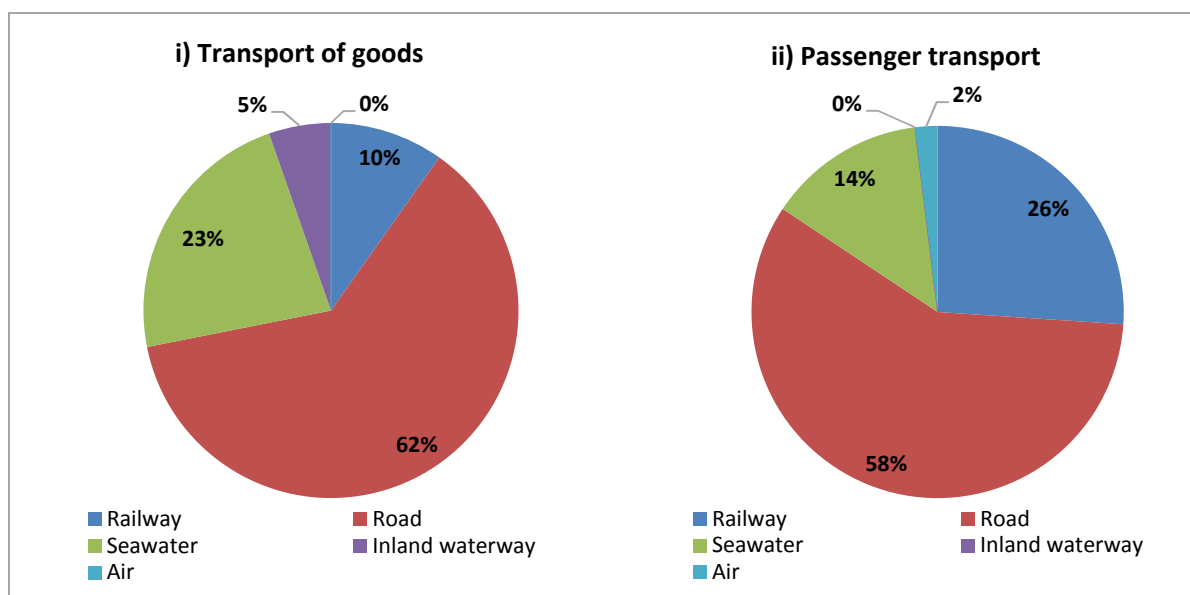
Ground transportation is the most important transport mode in Croatia: 72% of goods and 84% of passengers were carried by road or railway in 2013 (see Figure 13.3.), with road transport being the dominant form. Since independence, the majority of investments in the transport sector went to road network development, partly to

⁵ With respect to the current transport strategy of the European Union (TEN-T), two core network corridors cross Croatia: the Mediterranean Corridor, which connects Rijeka and Budapest via Zagreb; and the Rhine-Danube Corridor, as a major European inland waterway. Moreover, Croatia is crossed by two other main transport axes: the former pan-European corridor X, which connects Ljubljana and Belgrade via Zagreb; and the former corridor Vc, which connects the port of Ploče and Budapest via Sarajevo. In addition, Croatia's access to the Adriatic Sea is the basis for extensive maritime transport of passengers and goods.

⁶ For instance, Artuc et al. (2014) show that exports from Croatian counties are significantly correlated with motorway and road density.

compensate from the low level of investment during the Yugoslavian times (Vallejo Sarmiento, 2012). Even in recent years, Croatia has placed a strong focus on road investments (see Figure 13.4. i).⁷ The upshot is that Croatia today offers a dense network of motorways (compared to the EU average), with its state roads kept in good condition. Few major locations are still not connected to the motorway network (in particular Dubrovnik), although projects are planned or in progress to bring them into the network. In operational terms, the road network is based on state companies managing the state roads (*Hrvatske ceste d.o.o.*) and motorways (*Hrvatske autoceste d.o.o.*), and the concession societies dealing with construction, maintenance and operation of motorways, and toll collection.

Figure 13.3: Share of main transport sectors in Croatia



Source: Croatian Bureau of Statistics (2014c).

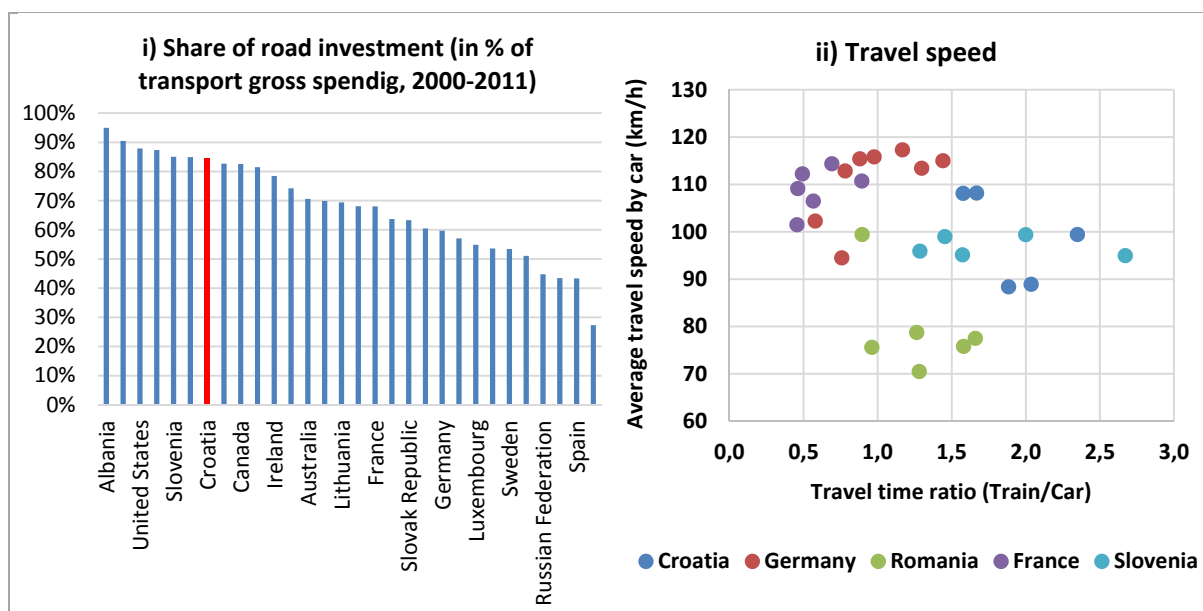
Croatia has several main railway routes, with Zagreb as the most important hub. Most railways are in need of modernization, and the competitiveness of the sector is relatively low (see Figure 13.2.). The share of single tracks and non-electrified tracks is still high, with few improvements in the past ten years (Croatian Bureau of Statistics, 2014c).⁸ The challenging geography (very steep gradients, sharp bends) and lack of investments in the railway infrastructure result in low average speeds. Consequently, travel time by train is still very high, in particular if compared to the (well-developed) motorway infrastructure (see Figure 13.4. ii)), although improvements have already been made (e.g. increased average speed on the Zagreb-Novoska-Vinkovci line thanks to the introduction of tilting trains; Vallejo Sarmiento, 2012). There is still no railway connection to Dubrovnik, Ploče, and Istria (HŽ Infrastruktura, 2014). Istria is only connected via Slovenia, Ploče is connected to a major transport corridor to Bosnia, but

⁷ Road investments accounted for 84% of transport gross spending between 2000 and 2011 (OECD, 2014).

⁸ I must be kept in mind that a lot of investments were primarily needed to reconstruct the existing lines and cope with post-war damages. For instance, the severely damaged connection from Vinkovci to Osijek – one of the most heavily used lines before the dissolution of Yugoslavia – was not reopened until 2008 (Vallejo Sarmiento, 2012).

Dubrovnik has no connection at all. As a consequence, traffic intensity in the railway system is relatively low, in particular with respect to the transport of goods. The railway sector is managed by five companies: HŽ Holding, HŽ Cargo, HŽ Passenger Transport, HŽ Traction, and HŽ Infrastructure. Although technically privatized, the Croatian railway system still strongly relies on government funding (World Bank, 2013).

Figure 13.4: Competitiveness of ground transport sectors



Note: The right chart depicts the competitiveness of the railway sector in terms of travel time for selected European countries. The travel time ratio (abscissa) is calculated as the ratio of the average travel time on main railway routes according to the official schedule and the travel time by car according to Google maps. A value of one indicates that both transport modes require the same amount of time, a value lower than one indicates that travelling by train is faster (and vice versa). The ordinate depicts the average travel speeds by car to give a rough approximation for the quality of the road/motorway network.

Source: OECD (2014), Google maps, national railway operators, own calculations.

13.2.1.2. Seaports

Several seaports are located along Croatia's mainland coast, with Rijeka and Ploče the most important ports for freight, and Split the most important for passenger transport. Rijeka dominates freight transport, generating more than 60% of total port traffic (Dundović et al., 2012), and offering the shortest overland distance to Belgrade and Budapest, in addition to being connected to the Mediterranean TEN-T core network corridor. The port of Ploče is the second biggest in Croatia, and is the starting point of the former Pan-European Corridor Vc. Both ports are strategically located next to main axes and are the most suitable options for "Motorways of the Sea" services⁹ in Croatia (Dundović et al, 2012). That notwithstanding, the relevance of the ports (e.g. in terms of freight volume) is still relatively low, in particular compared to their competitors in the Adriatic Sea. A number of improvements in port competitiveness have already been made (e.g. Rijeka gateway project; new container terminal in Ploče). Nevertheless,

⁹ *Motorways of the Sea* is a transport concept of the European Union, which aims to introduce new intermodal maritime-based logistics chains in Europe, meaning an efficient combination of sea and land transport. Four corridors have been designated. Croatia is located along the south-east Europe Motorway of the Sea, which connects the Adriatic Sea to the Ionian Sea and the Eastern Mediterranean.

Croatian ports need further improvements. This is particularly true for the port of Rijeka, given its strong competitors nearby: Koper, Trieste, and Venice. For this purpose, substantial additional investments in seaport infrastructure have already been done or are planned (e.g. approximately €280m for the ports of Rijeka and Ploče between 2012 and 2014; Oblak et al., 2013).

13.2.1.3. Inland waterway and air transport

Except for tourism, air transport does not play a significant role in the present Croatian transport sector (see Figure 13.3.). Croatia has five main airports (with more 150,000 passengers per year), three of which account for around 90% of all passengers carried. Zagreb is the most important airport (2.3m passengers in 2014) followed by Split (1.6m) and Dubrovnik (1.5m). Inland air transport accounts for only 10% of passenger volume. Croatian main airports do not face strong competition from other international airports. The closest major airports, with more than 5m passengers per year (Budapest and Vienna), are at least 350 km away from Zagreb. Several projects have already been carried out to improve airport competitiveness (e.g., €236m for a new terminal at the Zagreb airport, and approximately €220m for new terminal at Dubrovnik airport). However, the competitiveness of Croatian airports is still relatively low (see Figure 13.2. ii). Moreover, the importance of air transport is still relatively low as well, even for passenger transportation (amounting to approximately one-fifth of the seaport passenger traffic volume).

Regarding inland waterway transport, Croatia has two main inland waterways: the Danube as an international transport corridor (main port at Vukovar), and the far less important Sava (most-upstream port at Sisak). Transport volume via inland waterways is still very low. Although strong growth rates have been observed in recent years, this increase is mainly driven by transit transport on the Danube (Croatian Bureau of Statistics, 2014c). Transport on the Sava is hardly relevant. Consequently, market demand between cargo on the Danube and on the Sava is very unbalanced. However, transport on the Sava could have significant potential: less than 0.4m tons of freight were carried in 2007, compared to 5.7m tons of freight in 1990, and even 9.5m tons in 1982 (Pacific Consultants International, 2008; Milković, 2010). An additional obstacle for increased inland waterway transport is the missing connection of inland ports to the main transport corridors. Moreover, the development of inland waterways is complicated by the fact that all rivers are (more or less) border rivers. Hence, infrastructural projects require international cooperation and coordination with the neighbor countries. Two major projects are currently in progress to promote the inland waterway transport: the Danube-Sava Canal and the upgrade of the Sava river (which, however, has been delayed due to the 2014 floods and to financing issues in neighboring countries; European Commission, 2015b). The supporting infrastructure (ports, connections to main roads and railways) needs further improvements to increase the efficiency of the inland waterway transport sector.

13.2.2. Broadband Internet Access

13.2.2.1. Internet and broadband accessibility and penetration

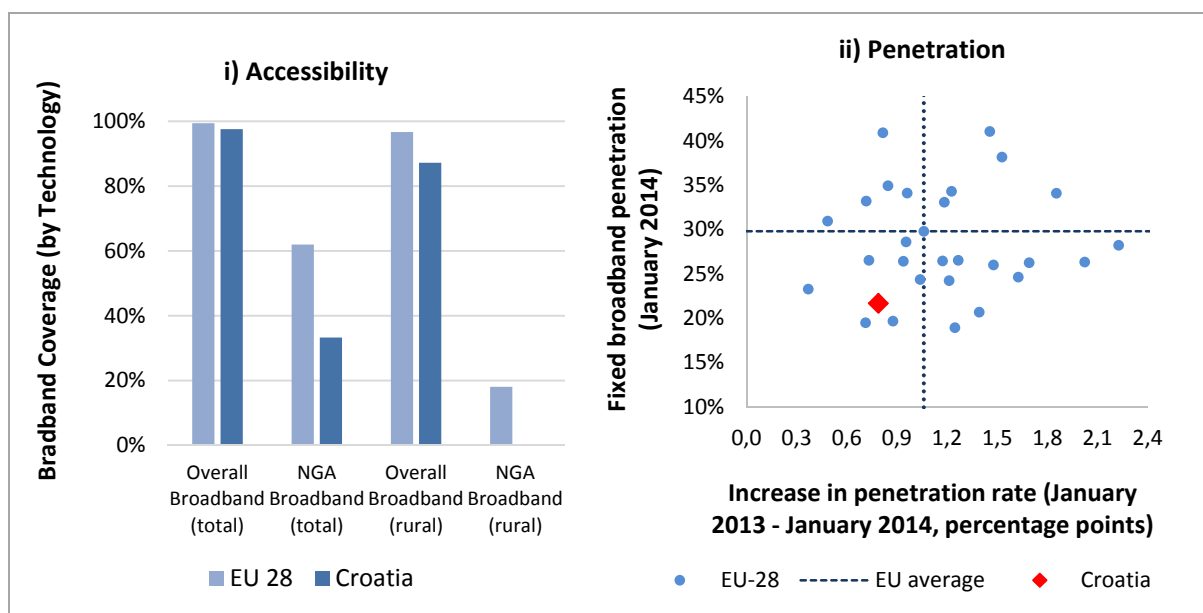
Although empirical evidence suggests that competition in the Croatian communication market has increased in recent years (e.g. Bach et al., 2013), the market is still dominated by the incumbent operator *Hrvatski Telekom* (HT). HT has a market share of 69% in broadband internet, 70% in fixed telephony, and 47% in mobile telephony. The main competitor is VIPnet with market shares of 14.5% in broadband internet, and 37.9% in mobile telephony (European Commission, 2014d).

The overall broadband internet accessibility is (almost) at the EU Average (97.6%; fixed broadband only 97.1%), although the coverage of high speed Next-Generation-Access (NGA) is significantly below the EU average (see Figure. 13.5.i)). Consequently, accessibility is no obstacle for using internet services; only 3% of individuals without internet access address a lack of accessibility as a reason (Croatian Bureau of Statistics, 2014b). However, broadband coverage is unequal between regions. The highest fixed broadband coverage rate can be observed in Zagreb and the Zagrebačka County, and the lowest in the Požeško-Slavonska County (less than 15%; European Commission, 2014d). In general, the availability of broadband internet in rural areas is still relatively low (86%, the second-lowest rate in the EU) and there is no Next-Generation-Access in rural areas (European Commission, 2014d).

Broadband penetration is relatively low compared to both overall accessibility and the EU average (see Figure 13.5 ii)), although mobile broadband penetration is above average.¹⁰ On the other hand, penetration rates increased significantly in recent years: 68% of households had access to the internet in 2014, compared to 41% in 2007. In addition, penetration rates are already higher than in several advanced EU countries, like Greece and Portugal. The penetration rate in sparsely populated areas is 62% (31% in 2007) and again, higher than in Italy, Greece, or Portugal. Due to poor accessibility, NGA subscriptions are the lowest in the EU (1% as of January 2014; European Commission, 2014d).

¹⁰ Since Croatia's typology (mountain regions, islands) makes the provision of fixed broadband infrastructure more challenging, mobile broadband penetration rate is higher than the EU average; Source: European Commission (2014d; p. 52)

Figure 13.5: Broadband accessibility and penetration



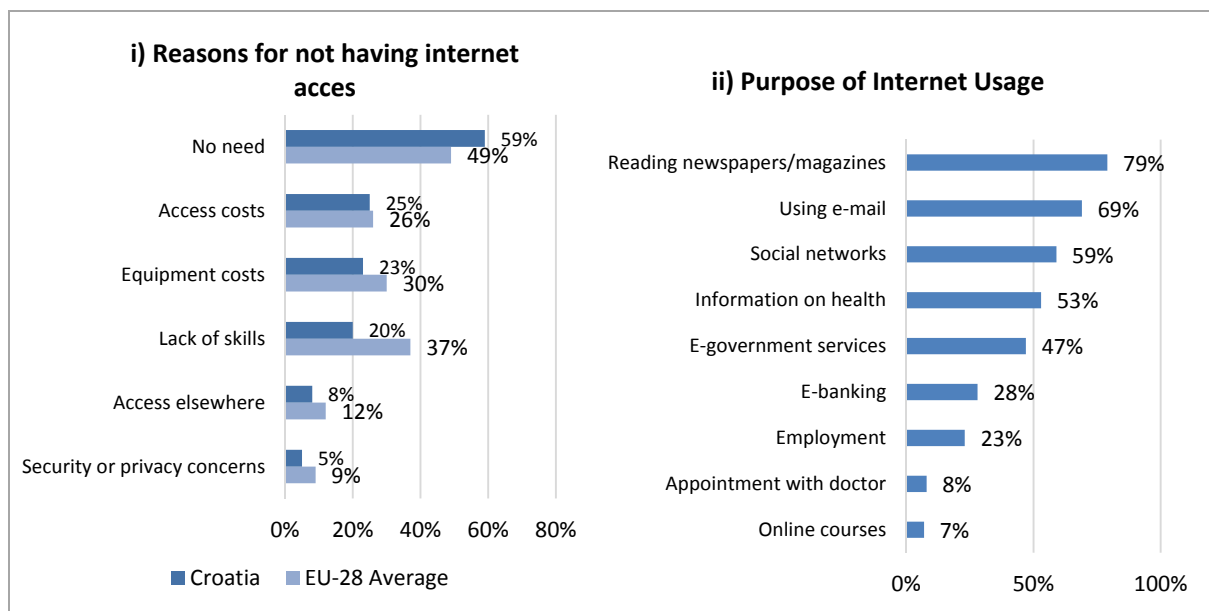
Source: European Commission (2014a, 2014c).

13.2.2.2. Usage of internet-related services

More than 60% of individuals in Croatia used the internet at least once a week in 2014 (compared to 32% in 2007). The share of Croatians who have never used the internet decreased from 56% in 2007 to less than 30% in 2014. The internet is also important to domestic enterprises: 96% of them have internet access, and 66% own a website (Croatian Bureau of Statistics, 2014a).

The usage of internet-related business by individuals is still relatively low, but has increased in recent years. Most of the individuals use the internet to read newspapers and magazines (79%), write and read e-mails (69%), gather information on goods and services (59%), and participate in social networks (59%). On the other hand, the usage of supporting or searching services is still low: only 28% use e-banking services, while information on education is gathered online by only 21%. Job search and application (15%) and appointments with a doctor (8%) are scarcely made via the internet (see Figure 13.6. ii)). Moreover, only 28% of the population ordered goods or services online in 2013 (EU average: 47%), although this share increased significantly in recent years (10% in 2010; Croatian Bureau of Statistics, 2014b; Digital Agenda Scoreboard 2014, 2014).

Figure 13.6: Internet usage



Source: Croatian Bureau of Statistics (2014b), Digital Agenda Scoreboard 2014 (2014), Eurostat.

Croatian enterprises seem to be more eager to use online services and e-commerce; the percentage of enterprises using online technologies is in line with or higher than in other European countries, e.g., the usage of cloud computing (European Commission, 2015a). Regarding SMEs, Croatia ranks 3rd in online sales (25% of SMEs sell online, EU average: 15%), 8th in e-commerce turnover (11% of the turnover comes from online sales, EU average: 8.8%), and 11th with regard to cross-border online sales (8.4%; EU average: 6.5%; European Commission, 2015a).

The usage of e-government is still low. Only 25% of individuals used e-government services in 2013, one of the lowest values in the European Union. One of the main reasons may be the relatively low quality of digital public services: 58% of Croatian e-government users experienced at least one problem when using e-government websites, the fourth-highest value in the European Union. Moreover, important online services are to a great extent still not being provided to the Croatian population, e.g. the usage of pre-filled forms is almost impossible (score of 2/100; EU average: 45/100) and the provision of online service completion is also significantly below EU average (score of 54/100; EU average: 75/100; European Commission, 2015a).

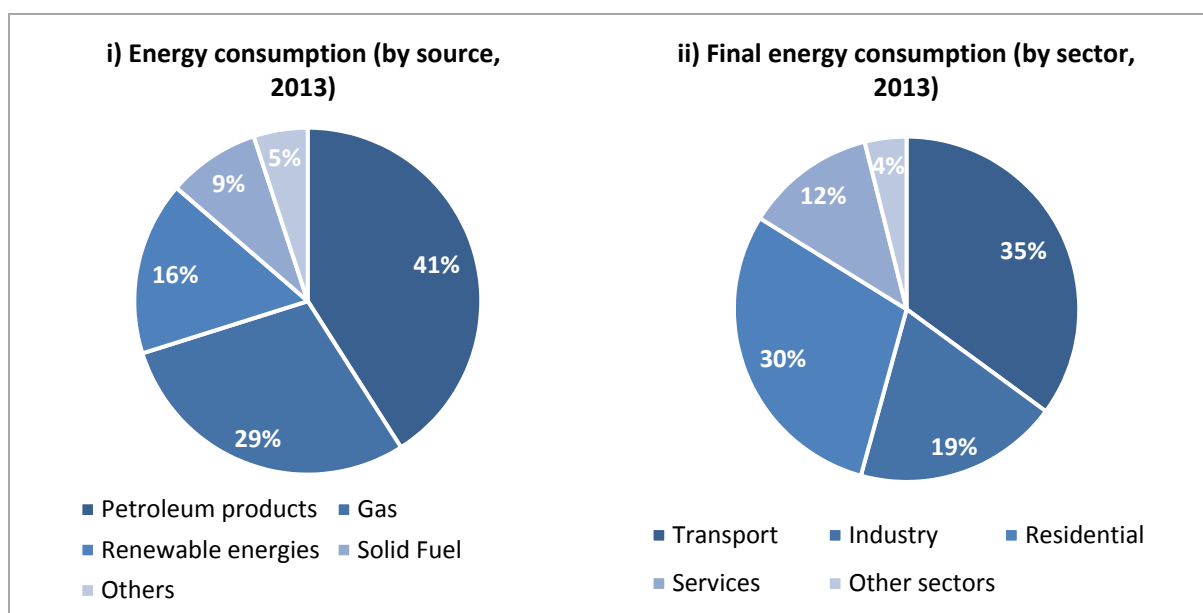
13.2.2.3. Obstacles for broadband subscription and internet usage

Competition in the broadband market, prices and skills/equipment of the population are seen as the main obstacles for a more extensive usage of broadband internet in Croatia (Republic of Croatia, 2011b). Prices for broadband access in Croatia are indeed relatively high (particularly for high-speed access). The costs for a stand-alone fixed broadband subscription in Croatia can reach up to 3% of the average gross income, more than twice the EU average of 1.35% (European Commission, 2015a). Even the prices for moderate speeds are well above EU average (e.g., 60% above EU average for an 8-12Mbps line; European Commission, 2014f). Consequently, 25% of individuals

without internet access mention high costs as an obstacle (Figure 13.6. i); EU average 26%). Moreover, 23% name high equipment costs as an obstacle (EU average 30%). Another obstacle for higher subscription rates may be the low trust in internet services and the low quality of these services: internet provision and mobile telephone services belong to the services with the most problems in Croatia (European Commission, 2014b).

Besides high prices, a lack of skills seems to be a main obstacle for a more extensive usage of internet services: almost 60% of the Croatian population has no or only low digital skills (EU average: 47%; Digital Agenda Scoreboard, 2014). Furthermore, 75% of disadvantaged people in Croatia have an insufficient level of digital skills (EU average: 64%).¹¹ On the other hand, low skills are not regarded as an obstacle by Croatian users. Only 20% of the individuals without internet access address a lack of skills as a reason for not using the internet (Croatian Bureau of Statistics, 2014b) compared to the EU average of 37% (Digital Agenda Scoreboard, 2014). In line with the relatively low level of digital skills, the awareness of potential benefits from internet usage and services is low: 59% of individuals who do not have internet access consider internet access as not useful (EU average 49%; see Figure 13.7. i)).

Figure 13.7: Energy production and consumption



Source: Eurostat.

13.2.3. Energy Supply

Economies rely on affordable, reliable and robust electricity supply so that modern factories with sophisticated production technologies can work unimpeded. Since its accession to the EU, Croatia's energy policy faces new challenges and opportunities. The commitment to the EU's 20-20-20 targets requires adjustments in domestic energy production and consumption patterns. Moreover, enhanced competition with other

¹¹ Individuals are defined as disadvantaged if they belong to at least one of the following three groups: aged 55-74, low-educated or unemployed, retired or inactive (Digital Agenda Scoreboard, 2014).

European countries underscores the need for affordable and reliable energy sources. On the other hand, the EU membership opens opportunities for cooperation and EU funding for the development of a sustainable energy infrastructure.

13.2.3.1. Energy Production and Consumption

Croatia's gross inland energy consumption was 327.64 PJ in 2013, a decrease of approximately 3.5% from the previous year and of 16% from the pre-crisis period (2007). Total electricity generation amounted to 48.35 PJ in 2013, which is an increase of more than 25% compared to 2012, significantly exceeding the pre-crisis level of 44.1 PJ (in 2007). As depicted in Figure 13.7.), the main energy sources in gross energy consumption are petroleum products, gas, and renewable energy sources (mainly hydropower). With respect to electricity production, hydropower accounted for almost 60% of total gross production in 2013. The transport sector, with 35% of final energy consumption (90% of which is accounted for by road transport) is the main consumer (see Figure 13.7. ii). Residential accounts for 30%, industry for 19%, and services and other sectors for 16% of final energy consumption.

Although final energy consumption has decreased by 10% since 2009 (strongest decrease in industry, with -21%; weakest decrease in services, -3%), Croatia is still relatively heavily dependent on energy imports. In 2013, 52.3% of the gross inland energy consumption was covered by net imports. The main imported energy sources are petroleum products, with a share of approximately 60% of all imports.

13.2.3.2. Energy infrastructure and distribution

The Croatian power system is relatively small. The domestic power plants have a total capacity of approximately 4000 MW, compared to a peak demand of approximately 3200 MW (European Commission, 2014e). Although the power system is potentially self-sufficient, the high import shares indicate a relatively low level of efficiency in energy production. Obviously, the import of energy is more (cost-)efficient than domestic production.¹² The public operator HEP runs 34 power plants (26 hydropower and 8 thermal power plants) with a total capacity of approximately 3800MW in 2013 (HEP, 2014).¹³ In addition, there are several small power generators that are not owned by HEP but have an offtake agreement with HEP. These generators account for an additional capacity of roughly 400 MW (AHK, 2014).

The domestic electricity grid includes a 7,437-km total transmission network, of which 1,247 km are high-voltage lines (400kV), and 1,210 km are medium-voltage lines (220 kV). Moreover, there are 129 transformer substations in the transmission network

¹² In 2013 approximately 80 PJ were lost due to conversion losses (of which over 71 PJ correspond to electricity generation), which accounts for 39% of primary energy production (Republic of Croatia, 2014b). Moreover, energy consumption by the energy sector, although already reduced, is still 60% above the EU average.

¹³ This capacity includes the power plants Plomin A and Plomin B. On the other hand, the 50% share on the nuclear power plant Krško in Slovenia (approximately 700 MW in total) is not considered.

(HOPS, 2015).¹⁴ The electricity grid is in further need of modernization, indicated by one of the highest shares of transmission and distribution losses in Europe, lying 100% above EU-average.¹⁵ The majority of losses arise in the distribution network, primarily caused by outdated infrastructure.¹⁶ In addition, insufficient transmission network capability limits the capacity for generation from renewable energy sources (RES), according to HEP in March 2012, pointing to a need for further investment (GTAI, 2012).

To ensure the security of future electricity supply, significant investments in the energy sector are needed. Until 2020, approximately 1,200 MW of capacity will be lost due to decommissioning of power plants (GTAI, 2014). Several projects are already planned or underway, such as an investment in the 500-MW Plomin C power plant, while investors are being sought for a 500-MW gas plant in Osijek (European Commission, 2014e). However, most major projects are still highly controversial. The Plomin C project is criticized for its technology (combustion of imported coal) and for the economic risks due to uncertain future prices of electricity and emission certificates. The close location to a Hungarian nuclear power plant raises questions on the profitability of the planned power plant in Osijek. Moreover, the Ombla hydropower plant project is faced with massive environmental concerns and the expiration of building permits (GTAI, 2014).

Croatia has significant potential in renewable energy sources (RES): hydropower is already a main energy source, more than 40% of the land area is covered with wood, there is a high level of solar irradiation – in particular in the Dalmatian region – and there are promising preconditions for geothermal and wind energy production. Although Croatia imports a significant share of its energy, the importance of RES – despite the large hydropower plants – is still relatively low. As of February 2015, 1,104 RES power plants (large hydropower plants excluded) with a total capacity of more than 400 MW were registered by the domestic energy market Operator HROTE. Even though this reflects a significant increase in recent years, the total RES capacity still accounts for only approximately 10% of Croatia's total power system capacity. Currently, wind power plants (339 MW capacity) have the largest share of installed capacity, followed by solar (35 MW), biogas (14 MW), and biomass (7.7 MW). Wind power also dominates the RES energy production (83.6%, or 84.4 GWh). Photovoltaic power plants contribute only 2% to total RES energy production, while biomass (4.3%) and biogas (7.5%) contribute significantly more than indicated by installed capacities.

13.2.3.3. Electricity market and prices

Croatia's national energy regulator is HERA, established in 2004 and funded independently from the government budget via self-financing by fees and compensations. Although HERA issued 24 licenses for electricity generation (European

¹⁴ The distribution network has a length of 135,728.9 km (HEP ODS, 2014).

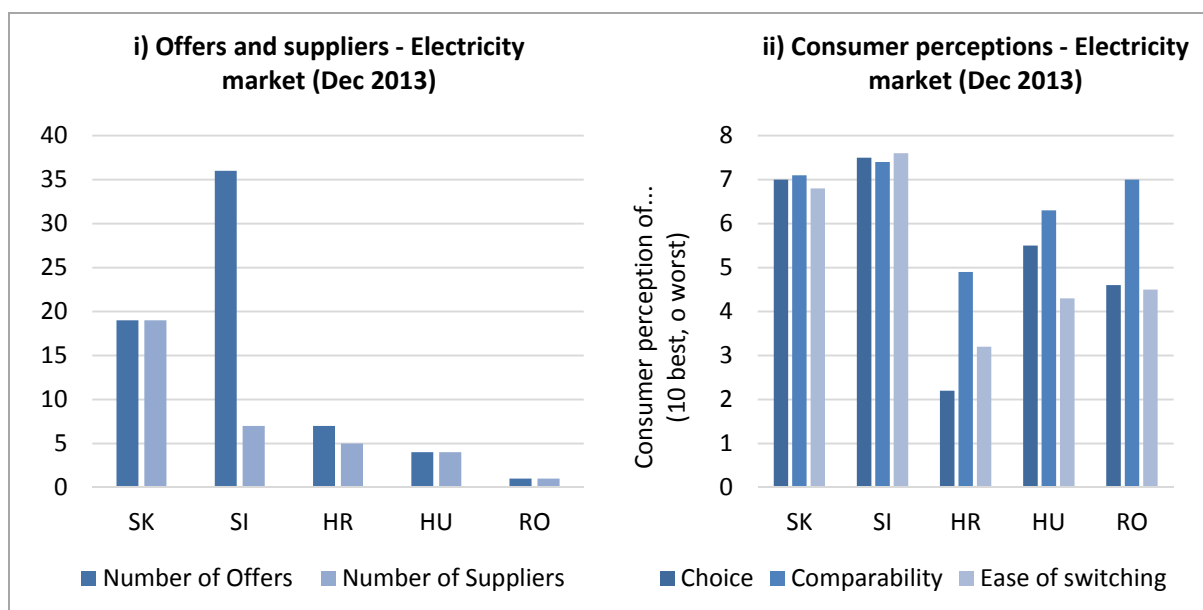
¹⁵ In 2011 Croatia's energy losses in the transmission and distribution system amounted to 17.1% of total output, which is much higher than in most European countries (e.g., Germany 4.3%, Czech Republic 5.1%, Slovenia 5.2%, and Hungary 10.5%; World Bank, 2015).

¹⁶ Štritof, I. (2008) argues that a large share of distribution losses (more than 50% of the total) is caused by insufficient investments for the modernization of the distribution network, since most investments were needed for the reconstruction and rebuilding of old networks destroyed in the war.

Commission, 2014e) the incumbent operator HEP has a market share of 82%. The main independent producer is TE Plomin d.o.o. (co-owned by HEP and RWE Power), with a 210-MW thermal power plant (European Commission, 2014e).

Electricity prices in Croatia include electricity consumption and system usage charges. In addition, all customers are charged with an extra duty of 0.005 HRK/kWh to finance RES promotion (AHK, 2014). Electricity prices (after taxes) are below EU average (ACER, 2014), but in purchasing power parity terms they are about EU average for domestic consumers and above the average for industrial consumers. Although 100% of the population have access to electricity, consumer conditions in energy markets are quite unfavorable, for instance in terms of choice, ease of switching, and price comparisons (see Figure 13.8.). Poor consumer conditions may prevail because of a relatively low level of competition. Only five suppliers, with seven different offers, operated in the Croatian electricity retail market in 2013, including two new power retailers that entered the market in June 2013 (ACER, 2014).¹⁷ Moreover, the state-owned incumbent electricity operator HEP is engaged in almost all business activities in the energy market (European Commission, 2014e).

Figure 13.8: Energy market consumer conditions



Source: ACER (2014).

13.3. Conclusions

Based on the foregoing, the following implications can be drawn to improve Croatia's infrastructure.

Tackle general obstacles and challenges

A number of market liberalization measures have already been implemented, such as the Railway Act and the Electricity Power Market Act. However, the relatively low

¹⁷ For comparison: in Slovenia 36 offers are made by 7 suppliers, and in the Czech Republic 61 offers are made by 32 suppliers (ACER, 2014).

market pressure remains a major problem in all markets discussed. Increased competition in these markets could improve both consumer conditions and the competitiveness of domestic firms. Moreover, market discipline remains a prerequisite for corporate governance to work – even in developed countries (Bozec and Dia, 2007). In addition, greater market pressure would force state-owned enterprises (SOEs) to increase both the quality of their services and the efficiency of their business activities. Furthermore, stronger competition in domestic markets could also make the issue of strategic important SOEs less relevant. Hence, administrative burdens for business formation should be reduced and market entry of new competitors should be facilitated (e.g. see chapter 12 – Ease of Doing Business). Corporate governance of SOEs needs also further improvements, in particular with respect to the expertise and political independence of board members, transparency, and disclosure (see OECD (2011) for an extensive survey of recent corporate governance reforms).

Sustainable development of the sectors discussed here will require the know-how and investments of strategic partners and foreign investors. Hence, policy should ensure a stable economic and political environment – such as a stable currency, or relinquishment of control by the government – to enhance attractiveness for strategic partners (see chapter 2 – Exchange Rate Policy in Croatia and chapter 4 – FDI and Export).

Given the fiscal situation, the budgeting process should be reconsidered to optimize public investments in particular with respect to EU funding (cf. papers on public budget). EU funds can significantly contribute to infrastructure development in Croatia, but the co-financing requirements should be considered as well. Hence, only projects with a significant economic return should be pursued, even when funded primarily by the EU. Moreover, the running costs of projects need to be considered, since the appropriation of EU funds can induce unavoidable costs in the long run if unprofitable projects are implemented. Therefore, projects of questionable profitability should be discarded from the outset.

Carefully prioritize traffic projects and policy

To fully exploit Croatia's geographically advantageous location, intermodal transport needs to be enhanced. For this purpose, competitiveness of international ports and the railway sector (in particular along the main axes) needs further improvements. The transport policy should focus on quality instead of quantity (for instance on minimizing travel time). In addition, an efficient flanking infrastructure (e.g. signaling and interlocking systems in the railway sector) is a prerequisite for the efficiency of the transport sector and, therefore, should be considered appropriately in transport sector investments.

Since the public budget is under pressure and the stimulating effects of additional infrastructure extensions are questionable (e.g. Melo et al., 2013), transportation projects should be carefully prioritized. The strategic location of ports should be a key aspect to guide decision-making. The priorities should be: interconnection of all

strategic locations to the Croatian transport network (enhance interconnectivity of important ports, connect Istria to the railway network), an improvement in the quality and efficiency of existing infrastructure (in particular ports and railways), and enhancement of transport operator efficiency (see next subsection).

A provident transport policy should also consider the long-term costs and benefits of infrastructure projects and resist the temptation of EU funding opportunities if projects are only of minor priority. Regional needs and geographic specificities should be carefully assessed with respect to costs and benefits (e.g. the role of regional airports). Costly “prestige projects” must be avoided.

Ensure sustainability and efficiency of transport sector operators

An efficient transport sector needs efficient operators. However, major operators in the Croatian transport sector still lack competitiveness, are highly leveraged, and strongly rely on government funding (in particular the railway sector).

With respect to their strategic importance, the optimality of ownership structures of transport sector operators should be reconsidered with regard to costs and quality of services, as well as agency problems – such as asymmetric information or opposing objectives between the management and the state as the owner – in the respective sector.¹⁸

Sectors of minor national importance (e.g. regional airports) should be privatized. Furthermore, the corporate governance of all SOEs should be improved independently of future ownership structure, e.g., by appointing experts to the board and avoiding political influence on management decisions. The strengthening of corporate governance in SOEs requires the privatization of management control – for instance by increasing the expertise and political independence of the supervisory board members – in addition to the privatization of the management. An extensive disclosure of recruitment, board appointments and business activities could be a first step to increase transparency in this context. By strengthening the governance of state-owned companies, the efficiency of operators of strategically important infrastructure that is not slated to be privatized could also be improved.

The high indebtedness of state-owned companies is a burden for the operating business, in particular with respect to further market liberalization or privatization. However, subsidies and government funds should not be granted to cover operating costs. High debts and operating losses indicate structural problems and should be countered by restructuring programs and a professionalization of the management.

Further increase of accessibility and speed of broadband internet

¹⁸ Therefore, the list of strategic important companies should be reconsidered (see chapter 11 - *Public Debt* for a discussion of strategic companies in Croatia). International evidence suggests that (semi-)private firms can efficiently provide most services and infrastructure of strategic or special interest. For instance, the main German airport in Frankfurt/Main is operated by a primarily state-owned but publicly listed company (Fraport AG, listed in the MDAX).

Significant improvements in broadband accessibility have already been made: broadband is accessible in almost all areas of Croatia, and the accessibility is higher than in several advanced EU countries. However, a further increase in the accessibility – in particular the accessibility of NGA technologies – is necessary to strengthen Croatia's competitiveness.

According to the national reform program, a primary objective is “to ensure the availability of broadband access under equal conditions throughout the whole Croatian territory” (Republic of Croatia, 2014a). However, this objective should be pursued with respect to costs and benefits of the technology employed and regional demand patterns. For this purpose, Croatia should ensure broadband access in all regions via the most suitable and (cost-)efficient technology: the extension of ultra-high-speed and NGA internet access should primarily focus on regions where it is needed, particularly in economic core regions. On the other hand, mobile broadband should continue to be considered as an efficient option to provide internet access in rural and inaccessible areas.

Reduce main obstacles to higher broadband penetration rates

Since the positive economic effects of broadband internet access result from higher penetration rates (not accessibility *per se*), obstacles that prevent consumers from broadband subscriptions should be removed. Although the usage of internet services has increased significantly in recent years, the share of internet users in Croatia is still relatively low. While the national reform program focuses on accessibility, the expansion of the broadband infrastructure will have no significant effect if the demand for broadband internet remains weak. Thus, besides accessibility, obstacles for a higher demand for broadband internet should be reduced. International experience suggests that the main obstacles for broadband subscription can be tackled in several ways.¹⁹

The obstacle of high prices could be improved via enhanced competition (new entries in the market). Since Hrvatski Telekom still holds a dominant market share, increased competition should improve customer conditions and reduce prices. Another way to improve affordability, even in the short-term, could be the granting of state support for broadband customers, e.g. via tax credits as in Italy, Denmark, or Sweden (see Hauge and Prieger, 2009). The lack of awareness of individuals could be countered by awareness-raising programs. Several approaches may be suitable, such as campaigns like “Speak up for Broadband” and “Broadband for Scotland” in Scotland (Howick and Whalley, 2008) or practical projects like the “Data Bus” in the Danish “Datastuer” project (Hilding-Haman et al., 2009b). Moreover, further improvements in quality and quantity of e-government and improved conditions for firms to offer online services may also increase the awareness of utility of online services. The lack of skills or digital literacy is more severe for older and less-educated people and could be tackled by specific programs. There are several best-practice examples in EU countries that could be adapted, such as

¹⁹ An extensive survey of demand-side programs is provided by Hauge and Prieger (2009). Hilding-Haman et al. (2009a) summarize best practice examples to increase digital literacy in the European Union.

the aforementioned “Datastuer” project in Denmark, to help elderly citizens to use ICT in their daily lives (Hilding-Haman et al., 2009b). Other examples are the “Senior Internet Helpers” in Germany, with the goal of making computers and internet available to senior citizens in rural areas, or the “PCs Against Barriers” training program for disabled persons in the Czech Republic.

Secure a reliable and affordable energy supply

Although currently self-sufficient, Croatia’s high energy imports indicate a low efficiency level of the domestic energy system. A main goal therefore should be to increase the efficiency of existing and future power generation and transformation. To this purpose, the decommissioning of power plants must be countered by an early and appropriate planning of replacements. A key concern is that major current projects are still highly controversial, with not alternatives announced.

A further modernization of the electricity grid must also be pursued. According to the HEP website, “intensified modernization... is planned for the following period”, but without announcing anything specific. The national reform program does not yet address this topic. The increasing capacity needs due to higher shares of RES in energy production²⁰ and the significant losses in the transmission and distribution network must be addressed with a degree of urgency. Although grid extension and modernization can be costly, a modern grid would contribute significantly to a reliable energy supply.

The Croatian energy system strongly relies on hydropower. As a consequence, a broad mix of energy sources should be targeted to hedge supply risks in periods of low water levels and droughts, in particular with a view to climate change. This also includes a stronger use of alternative renewable energy sources, such as biomass power plants. Croatia has much potential for the use of RES energy production. Given the state of the electricity grid and the challenges of transmitting and distributing energy from RES, an increased energy production by smaller and local power plants (with the most suitable technology) close to consumers could supplement the energy production of large (but distant) power plants. However, appropriate incentives and a lean bureaucracy are needed to promote such investments.

Finally, to cope with its current (and at least mid-term) dependence, Croatia should ensure access to reliable and affordable energy imports, in particular leveraging its position as a member of the anticipated integrated European energy market (European Energy Union). Several projects are already planned or in progress, such as the Liquefied Natural Gas Terminal on Krk, or the Ionian Adriatic pipeline. Further grid connections with neighboring countries can contribute to this goal as well. On the other hand, many of the required infrastructure projects have not yet been implemented, such as the development of cross-border connections. Investors have barely sought to cover this need, and many trans-European projects are still stuck in the planning stage (Buijs et al.,

²⁰ In March 2012 HEP stated that grids in Croatia could only sustain 400 MW of electricity from renewable sources, whereas applications for wind (power) plants with more than 500 MW were already filed at the same time (GTAI, 2012).

2011). Therefore, although an integrated European energy market may eventually decrease the need for national autarky, an efficient and sufficient domestic energy production will be a key element to ensure reliable and affordable energy supply in Croatia, at least from a mid-term perspective.

Promote sustainable development via resource-efficient growth

Croatia's per capita energy consumption is already relatively low. In addition, several measures have been already taken to increase energy efficiency (e.g. the new Building Act). However, in terms of energy consumption by unit of GDP, Croatia ranks in the lower third of the EU, indicating significant potential to increase energy efficiency. Moreover, domestic output of the main energy sources (gas and petroleum products) will decrease significantly in the future. Hence, energy efficiency should be enhanced in all relevant dimensions: energy production, distribution, and consumption.

Croatia must focus on its potentials and increase the usage of RES energy production. To ensure an efficient energy production, the technologies chosen should strongly depend on their suitability (location of production and demand pattern) and cost-efficiency rather than on political or other reasons. Moreover, a combination of technologies should be considered whenever portfolio effects can be expected (such as continuous production via photovoltaic energy during the day and wind energy at night). The tradeoff between the optimal location and the distance to the consumer should be considered as well. A recent analysis for Germany shows that two opposing costs determine the total costs of an extension of RES energy production (Agora Energiewende, 2013). On the one hand, direct costs of extension are lower if the power plant is built at an optimal location (in terms of efficiency). On the other hand, the indirect costs (for cut-offs in high generating periods and electricity grid extensions) are lower if the plant is built close to the consumers.

To promote resource-efficient growth, the transport sector, as a main energy consumer, should also increase its efficiency. The transport sector currently accounts for 25% of greenhouse gas emissions, of which over 70% are generated by road transport (European Commission, 2015b). Although Croatia is on its way to meeting the EU energy efficiency targets, the energy sector is lagging behind. This also holds true for the share of renewable energy sources in the transport sector (European Commission, 2015). Therefore, intermodal transport should be promoted, in particular the combination of shipping and railway. Traffic intensity in the railway sector is relatively low, in particular in freight. But railway transport is more efficient in terms of social and economic costs (Worldbank, 2013) and could therefore contribute significantly to a more efficient transport sector. A stronger usage of RES can increase energy efficiency and reduce ground transport greenhouse gas emissions (e.g. electricity from RES for railway transport). However, an appropriate infrastructure (interconnection of ports, electrified railways, and efficient engines) is needed to pursue this objective.

References

- ACER (2014): ACER/CEER- Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2013, October 2014.
- Agora Energiewende (2013): Kostenoptimaler Ausbau der Erneuerbaren Energien in Deutschland: Ein Vergleich möglicher Strategien für den Ausbau von Wind- und Solarenergie in Deutschland bis 2033, Mai 2013.
- AHK (2014): *Zielmarktanalyse Kroatien 2014 – Nutzung von Solarenergie und oberflächennaher Geothermie im Tourismussektor*, Deutsch-Kroatische Industrie- und Handelskammer - Njemačko-hrvatska industrijska i trgovinska komora, January 2014.
- Artuc, E., Iooty, M., and Pirlea, A. F. (2014): Export Performance and Geography in Croatia, *Worldbank Policy Research Working Paper No. 6999*, August 2014.
- Bozec, R., and Dia, M. (2007): Board structure and firm technical efficiency: Evidence from Canadian state-owned enterprises, *European Journal of Operational Research*, 177, 1734–1750.
- Buijs, P., Bekaert, D., Cole, S., Van Hertem, D., and Belmans, R. (2011): Transmission investment problems in Europe: Going beyond standard solutions, *Energy Policy*, 39 (3), 1794–1801.
- Calderón, C. and Servén, L. (2014): Infrastructure, Growth, and Inequality - An Overview, Policy Research Working Paper No. 7034, World Bank Group.
- Croatian Bureau of Statistics (2014a): Usage of Information and Communication Technologies (ICT) in Enterprises, 2014, First Results, http://www.dzs.hr/Hrv_Eng/publication/2014/02-03-01_01_2014.htm.
- Croatian Bureau of Statistics (2014b): Usage of Information and Communication Technologies (ICT) in Households and by Individuals, 2014, First Results, http://www.dzs.hr/Hrv_Eng/publication/2014/02-03-02_01_2014.htm.
- Croatian Bureau of Statistics (2014c): Statistical Yearbook of the Republic of Croatia 2014, Zagreb, December 2014.
- Czernich, N., Falck, O., Kretschmer, T., and Woessmann, L. (2011): Broadband infrastructure and economic growth. *The Economic Journal*, 121 (May), 505–532.
- Digital Agenda Scoreboard (2014): Digital Agenda for Europe - A Europe 2020 Initiative, European commission, <http://ec.europa.eu/digital-agenda/download-scoreboard-reports>, last updated on 26/02/2015.
- Dundović, Č., Jugović, A., and Žgaljić, D. (2012): Analysis of Croatian Ports to Motorway of the Sea implementation, *International Maritime Science Conference, Book of Proceedings*, 2012, 35-49.

- European Commission (2014a): Broadband Coverage in Europe 2013 - Mapping progress towards the coverage objectives of the Digital Agenda, Final Report, Luxembourg, Publications Office of the European Union.
- European Commission (2014b): Consumer Scoreboard - Making markets work for consumers, 10th edition, June 2014.
- European Commission (2014c): Telecommunications data files, Digital Agenda Scoreboard 2014, http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=5935, 2014-06-03.
- European Commission (2014d): Implementation of the EU regulatory framework for electronic communications - 2014, 2014-07-14.
- European Commission (2014e): EU energy markets in 2014, DOI: 10.2833/2400, October 2014.
- European Commission (2014f): Broadband Internet Access Cost (BIAC) 2014, Final Report, 15 December 2014.
- European Commission (2015a): The Digital Economy and Society Index (DESI), <https://ec.europa.eu/digital-agenda/node/66894>, last updated on 24/02/2015.
- European Commission (2015b): Country Report Croatia 2015 Including an In-Depth Review on the prevention and correction of macroeconomic imbalances. *Commission Staff Working Document*, SWD (2015) final, 26 February 2015.
- GTAI (2012): Kroatiens Kraftwerksprojekte stoßen auf Widerstand, Germany Trade & Invest, 16.03.2012, www.gtai.de/GTAI/Navigation/DE/Trade/maerkte,did=539336.html. *called* called February 13th 2015.
- GTAI (2014): Kroatien bastelt noch an seinem Energiemix, Germany Trade & Invest, 17.07.2014, <http://www.gtai.de/GTAI/Navigation/DE/Trade/maerkte,did=1050234.html>, *called* March 13th 2015.
- HEP (2014): Annual report 2013, <http://hep.hr/hep/en/publications/Annual/default.aspx>, downloaded March 10th 2015.
- HEP ODS (2014): Annual report 2013, <http://www.hep.hr/ods/en/publications/publications.aspx>, downloaded April 9th 2015.
- HOPS (2015): Transmission network, <https://www.hops.hr/wps/portal/en/web/hops/data/network>, called April 9th 2015.
- Hauge, J., and Prieger, J. E. (2009): Demand-Side Programs to Stimulate Adoption of Broadband: What Works?, *Working Paper*, <http://ssrn.com/abstract=1492342>, October 2009.
- Hilding-Haman, K. E., Meyerhoff Nielsen, M., Overgard, J., and Pedersen, K. (2009a): *Supporting Digital Literacy: Analysis of Good Practice Initiatives*, Topic Report 3,

- Final Report, Danish Technological Institute - Centre for Policy and Business Analysis, February 2009.
- Hilding-Haman, K. E., Meyerhoff Nielsen, M., Overgard, J., and Pedersen, K. (2009b): *Supporting Digital Literacy: Analysis of Good Practice Initiatives*, Topic Report 3, Annexes, Danish Technological Institute - Centre for Policy and Business Analysis, February 2009.
- Howick, S. M. and Whalley, J. (2008): Understanding the Drivers of broadband adoption: the case of rural and remote Scotland” *Journal of the Operational Research Society*, 59, 1299–1311.
- HŽ Infrastruktura (2014): 2015 Network Statement, December 2014.
- Melo, P. C., Graham, D. J., and Brage-Ardao, R. (2013): The productivity of transport infrastructure investment: A meta-analysis of empirical evidence. *Regional Science and Urban Economics*, 43(5), 695–706.
- Milković, Z. (2010): Sava River Basin-inland waterway regulatory framework and infrastructure, Pomorski zbornik - Annals of Maritime Studies, 46 (1), 51–60
- Oblak, R., Bistričić, A. and Jugović, A. (2013): Public-private partnership - management model of Croatian seaports, *Management*, 18 (1), 79-102.
- OECD (2011): *State-Owned Enterprise Governance Reform: An Inventory of Recent Change*, OECD Publishing.
- OECD (2014): Transport infrastructure investment and maintenance spending, https://stats.oecd.org/Index.aspx?DataSetCode=ITF_INV-MTN_DATA, downloaded March 23rd 2015.
- Pacific Consultants International (2008): *Feasibility Study and Project Documentation for the Rehabilitation and Development of Transport and Navigation on the Sava River Waterway*; Final Report – Executive Summary, 25 September 2008.
- Porter, M. (1990): *The Competitive Advantage of Nations*. The Free Press, New York.
- Republic of Croatia (2014a): National Reform Program, April 2014.
- Republic of Croatia (2014b): Energy in Croatia 2013, Annual Energy Report, Ministry of Economy, December 2014.
- Štritof, I. (2008): Electricity Losses and Analysis of Work Aiming to Decrease the Losses – Case Study Croatia, ERRA Tariff/Pricing Committee Meeting, September 15-16, 2008, Skopje, <http://www.erranet.org/index.php?name=OE-eLibrary&file=download&id=5862>, downloaded April 23rd 2015.
- Vallejo Sarmiento, Y. (2012): *Transports and Logistics in Croatia*, Belgian Economic and Commercial Office in Croatia, 2012.

- Worldbank (2003): *Inequality in Latin America and the Caribbean: Breaking with History?*, World Bank Latin America and Caribbean Studies, The International Bank for Reconstruction and Development / The World Bank.
- Worldbank (2013): *Croatia - Railway policy note*, Worldbank Report No. 78689, June 2013.
- Worldbank (2015): *Electric power transmission and distribution losses (% of output)*; <http://data.worldbank.org/indicator/EG.ELC.LOSS.ZS/countries?display=default>, downloaded March 9th 2015.
- World Economic Forum (2007): *The Global Competitiveness Report 2007–2008*, World Economic Forum, Geneva, 2007.
- World Economic Forum (2009): *The Global Competitiveness Report 2009–2010*, World Economic Forum, Geneva, 2009.
- World Economic Forum (2010): *The Global Competitiveness Report 2010–2011*, World Economic Forum, Geneva, 2010.
- World Economic Forum (2011): *The Global Competitiveness Report 2011–2012*, World Economic Forum, Geneva, 2011.
- World Economic Forum (2012): *The Global Competitiveness Report 2012–2013*, World Economic Forum, Geneva, 2007.
- World Economic Forum (2013): *The Global Competitiveness Report 2013–2014*, World Economic Forum, Geneva, 2013.
- World Economic Forum (2014): *The Global Competitiveness Report 2014–2015*, World Economic Forum, Geneva, 2014.

14. Innovation Policy

Nadine Fabritz and Oliver Falck¹

14.1. Innovation and Growth

Continuous technological progress is the most basic prerequisite for maintaining long-run economic growth (see, e.g., Aghion and Howitt, 1998). This progress takes the form of innovations, which are inventions that are implemented in the economy. According to the OECD's Oslo Manual (2005), they may occur in the form of new products, processes, marketing practices or organizational change.

The overall goal of the comprehensive reform program for Croatia is to generate conditions that make Croatia an attractive destination for foreign direct investment (FDI). On average, multinational companies are generally more productive and innovative than domestic firms (see, e.g., Criscuolo, 2005). FDI can thus be a substantial source of technological transfer for transition countries and it could help Croatia in moving closer to the technological frontier. In addition, the government can and should adopt some best practices to promote innovative activity. This paper gives a brief outline of the innovative landscape in Croatia, together with an evaluation of the country's current capacity to innovate. Next, the key points hindering innovation are described with subsequent recommendations for reform.

14.2. Innovation in Croatia

14.2.1. The Croatian Research and Innovation System

At the European level, the main programs to support innovation are Horizon 2020 and Eureka. Horizon 2020 is the European framework for research and development (R&D), with an overall budget of 77 billion Euros in the funding period from 2014 until 2020². The funding period from 2014 to 2015 focusses on 13 technological areas.³ The framework budget finances several programs relating to research and innovation in the public and private sector (such as BONUS for research projects relating to

¹ Stefanie Gäbler and Philipp Kerler provided excellent research assistance.

² Horizon 2020 bundles different public funding programs for innovation at the European level. Enterprises, universities, research facilities, public institutions as well as different organizations and associations can apply for the programs covered by Horizon 2020 (German Federal Ministry for Economics and Energy, 2014).

³ SMEs can receive funding in the following topics: ICT innovations (1), nanotech, or other advanced tech for manufacturing and materials (2), space research and development (3), clinical research for the validation of diagnostics devices and biomarkers (4), sustainable food production and processing (5), blue growth (6), low-carbon energy systems (7), greener and more integrated transport (8), eco-innovation and sustainable raw material supply (9), urban critical infrastructure (10), biotechnology-based industrial processes (11), mobile e-government applications (in 2015 only) (12) and SME business model innovation (2015 only) (13) (European Commission, 2015a).

environmental protection, or COST for international cooperation in research within Europe). Eureka is a European initiative for financing market-oriented projects from different technology areas, unconditional on the field of technology. The aim is to encourage small and medium-size enterprises to collaborate in research and development with international partners. Universities and research organizations can only apply as second partners. The funding is provided by grants, with a maximum of 50% of eligible costs not exceeding €150,000 per project (Eureka, 2014). The Croatian Budget for 2014 amounted to 5 million kunas (approximately 651,500 euros) (Hamag-Bicro, 2014). Both initiatives (Horizon 2020 and Eureka) jointly finance the Eurostars program, a funding and support program for small and medium enterprises (SMEs) that engage in R&D projects with international cooperation partners (European Commission, 2015c).

The Croatian government received 20 million euros for the funding period 2013 to 2017 from the International Bank for Reconstruction and Development to stimulate demand for EU funds among institutions in the research and science sector. The responsibility for this Second Science and Technological Project lies with the Ministry of Science, Education and Sports (in cooperation with the Ministry of Finance and the World Bank).

At the national level, the main responsibility lies with the Ministry of Science, Education and Sports (see, e.g., Švarc and Račić, 2014, for a detailed description of the Croatian institutions related to research and innovation). The highest advisory board is the National Science Council, which standardizes the overall progress of the Croatian innovation system and proposes an annual budget of public funding to the ministry (together with the National Council for Higher Education). The Agency for Science and Higher Education provides nationwide quality assurance throughout the system. Hamag-Bicro, an independent body under the supervision of the Ministry of Science, Education and Sports and the Ministry of Entrepreneurship and Crafts, is the key governmental organization for catalyzing innovation processes. Hamag-Bicro's main objective is to mobilize the private and public sectors in encouraging investment in R&D, with a focus on SMEs. It also acts as the national Eureka/Eurostars office. Besides the negotiation of the European funds, Hamag-Bicro offers several national innovation support programs for the public and private sector. In the private sector primarily micro, small and medium-sized enterprises can apply for funding, while in the public sector it is mainly universities and research facilities that are eligible for subsidies. Hamag-Bicro typically is in charge of the evaluation, management and monitoring of the projects. In the following, the main programs are briefly described.

The RAZUM program finances pre-commercial stages of research projects. It provides subsidies to knowledge-based firms and academic spin-offs. It funds start-ups of established SMEs that engage in applied research for product and process innovations (Ohler, 2014). Pre-commercial projects are funded with up to 12,000,000 kunas (approximately 1,564,000 euros), or a maximum of 70 percent of the eligible expenses. The IRCRO program aims to establish stronger ties between SMEs and the public research sector. Projects in which an SME commissions a research organization to

conduct R&D for a period of at least two years are subsidized with up to 50 percent of the eligible costs, with a ceiling of 900,000 kunas (about 118,000 euros) (Ohler, 2014). ENN (Enterprise Europe Network) is the only initiative providing exclusively advisory (and no financial) assistance to entrepreneurs. The POC (Proof-of-Concept) program provides pre-commercial capital, among others for protecting intellectual property, developing prototypes, concepts and strategies, as well as market analyses (OECD, 2014). In the private sector, entrepreneurs' projects can be subsidized with a maximum of 70 percent of the eligible project costs, or 350,000 kunas (approx. 45,600 euros). In the public sector, scientists can apply for funding of up to 90 percent of eligible project costs, or 350,000 kunas (Hamag-Bicro, 2014). Two more programs available to projects in the public sector are THECRO and TEST. Both offer uncapped funding opportunities to successful applications. THECRO has a relatively wide scope of funding. It aims at the provision of "technology infrastructure" to facilitate the transfer of technology, through e.g. office buildings or IT supply. Also, more elaborate measures are funded, such as technology incubation centers which provide host laboratories. THECRO contains four program lines: Technological founder's centers, Technological business centers, Competence centers, as well as Research centers and developing centers. TEST encourages pre-commercial research for new processes, products or services. It fosters the linkage between basic research and implementation of its outcomes for use in the industry (OECD, 2014).

Besides the Ministry of Science, Education and Sports – but to a lesser extent – the Croatian Ministry of Regional Development and EU Funding is involved in the funding of science and innovation between 2014 and 2020 with the program "Competitiveness and Cohesion". The aim is to strengthen economic competitiveness through better access to finance for small and medium-sized enterprises, support for research and development investments, and the promotion of technological transfer to industry (European Commission, 2015b).

The Croatian Science Foundation acts as the main source of grants for scientific research. It provides grants to fundamental, applied and developmental scientific research that are of "strategic interest" for Croatia. Funding encompasses all areas of science and is targeted at grants, projects and scholarships of doctoral and postdoctoral students. In its statute, the foundation names as goals the international exchange of research (e.g., through the Unity Through Knowledge program) to attract researchers to the country, the collaboration between scientific institutions and industry, and research support of humanities and social sciences (Croatian Science Foundation, 2013).

14.2.2. Reforms in Research and Innovation

In recent years, the Croatian research and innovation system has undergone several reforms. In July 2013, a new Act on Science and Higher Education was adopted, motivated by the necessity to cut expenditure on R&D in response to the ongoing economic crisis, which generated pressure for more efficient allocation of the available funds. The new Act has stimulated fresh policy efforts. In September 2013, a "National Strategy for the Croatian Innovation Development 2013-2020" was set underway by the

Ministry of Economics and the Ministry of Science, Education and Sport with the support of the OECD.

Overall, the government's priorities have largely remained the same as in the preceding strategic document, the Science and Technology Policy 2006-2010 (Švarc and Račić, 2014). These are to increase investment in R&D towards the target of 3 percent; to build synergies in the available potential and to better integrate universities; to foster cooperation between science, government and the industry for higher rates of capitalization; and to promote the participation of Croatian scientists in the framework programs of the European Union.

Still, the new act highlights several changes in the Croatian research and innovation system, the main reform points of which are listed below:

- A new model of financing of science by funds from the Ministry of Science, Education and Sport was introduced. These are awarded as multi-annual institutional financing in the form of block-grants (Švarc and Račić, 2014). This results in a shift from project financing to program-based financing.
- The Croatian Science Foundation has introduced a rigid evaluation process of competition-based research projects, with the aim of funding only a few, high quality projects at an acceptance rate of around 20 percent (rather than the previous 80 percent) (Švarc and Račić, 2014).
- Croatia has introduced performance-based criteria for the funding of higher education institutions (European Commission, 2015).
- Scientific centers of excellence have been set on their way. Their purpose is to fund research groups with high potential. Until 2015, between 3 and 5 scientific centers are expected to be set up from national funds (Švarc and Račić, 2014).
- Furthermore, some changes among institutional organizations were introduced, such as the takeover of the Unity through Knowledge Fund by the Croatian Science Foundation and the fusion of the National Science Council and the National Council for higher Education into the National Council for Science, Education and Technology Development.

Despite all these changes, according to a recent evaluation by the European Commission (2015), reform of the innovation system is progressing slowly and innovation policies have not yet been sufficiently implemented.

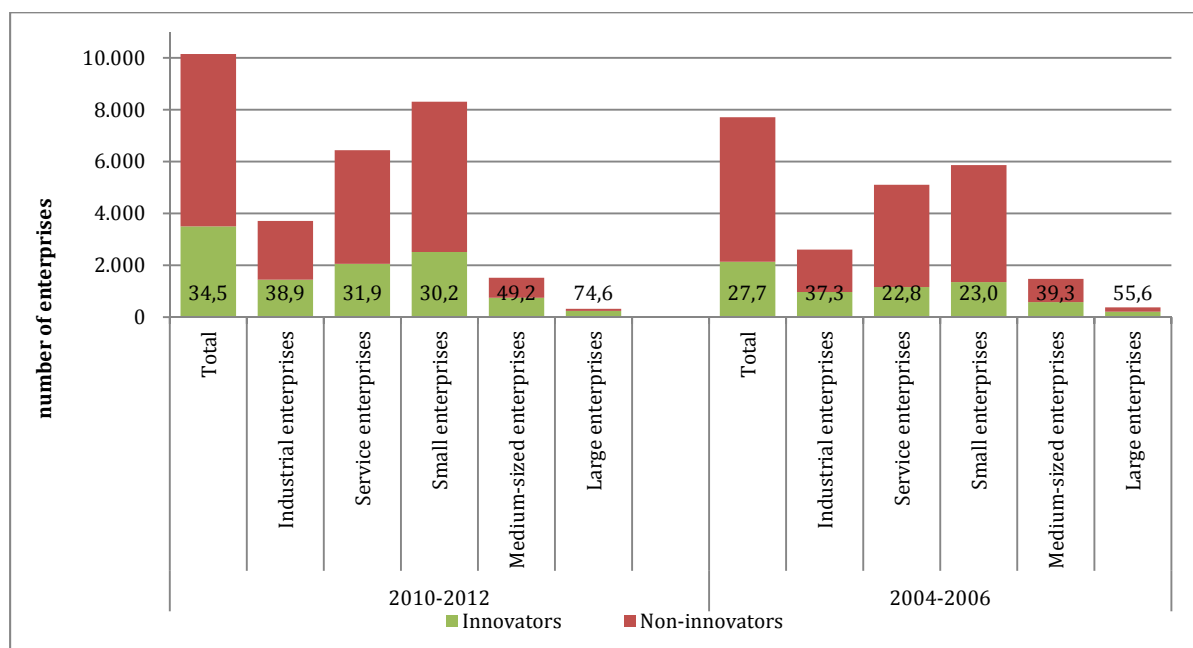
14.2.3. Innovative Capacity in Croatia

Overall, the comparison of indicators for innovative capacity reveals that Croatia's innovative capacity should be improved in the longer run, despite recent efforts from policymakers. The IMF (2015) most recently identified innovation as a driver of growth

in the Western Balkan countries and pinpointed large gaps in Croatia compared to the European Union average.⁴ As measured by the EU's Innovation Union Scoreboard, which measures innovation performance along 25 dimensions, Croatia is a “moderate” innovator and falls into the third out of four categories, together with the Czech Republic, Hungary, Poland and Slovakia. With a low growth rate in innovative capacity, Croatia even runs the risk of falling into the lowest category, of “modest” innovators, in future evaluations (European Commission, 2014).

As reported in Figure 14.1., a survey among enterprises shows a relatively high self-reported share of Croatian firms that innovate (Croatian Bureau of Statistics, 2014). The picture differs somewhat when looking at patenting activity with international patent offices, as a measure of significant innovations that are worth the administrative effort. Figure 14.2. shows the number of patent applications per 100,000 inhabitants filed under the PCT⁵ in an international comparison. Even though it ranks well among its peers, Croatia is the only country with a clear downward trend over the whole period. Moreover, Figure 14.3. reveals that the absolute number of patents – with the European Patent Office (EPO) as well as the PCT as two meaningful patent offices – peaked in 2002 and 2003, respectively, and that the trend had been negative subsequently.

Figure 14.1.: Enterprises by innovation performance, activity and size (2010-2012 and 2004-2006; share of innovative enterprises)

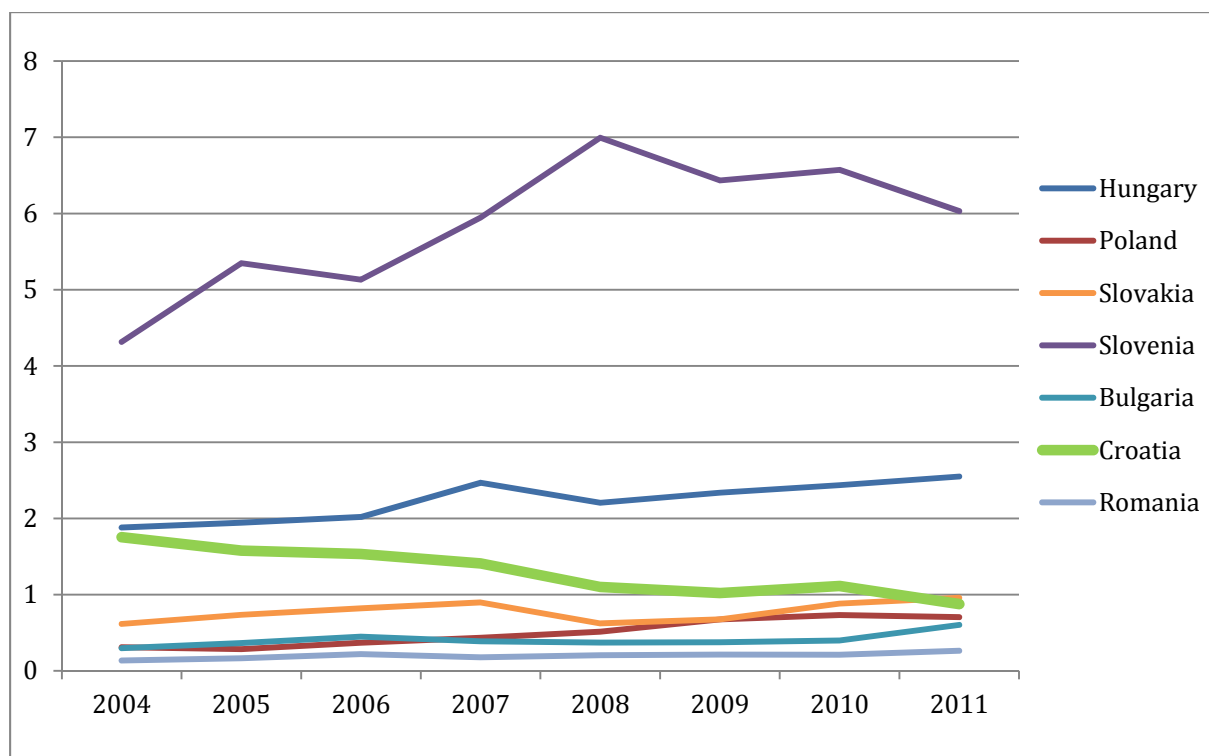


Source: Croatian Bureau of Statistics (2014)

⁴ The IMF (2015) does not consider innovation among the top five reform priorities in Western Balkan countries, since other fields exhibit greater impacts. Nevertheless, it finds a positive effect of innovative capacity on growth.

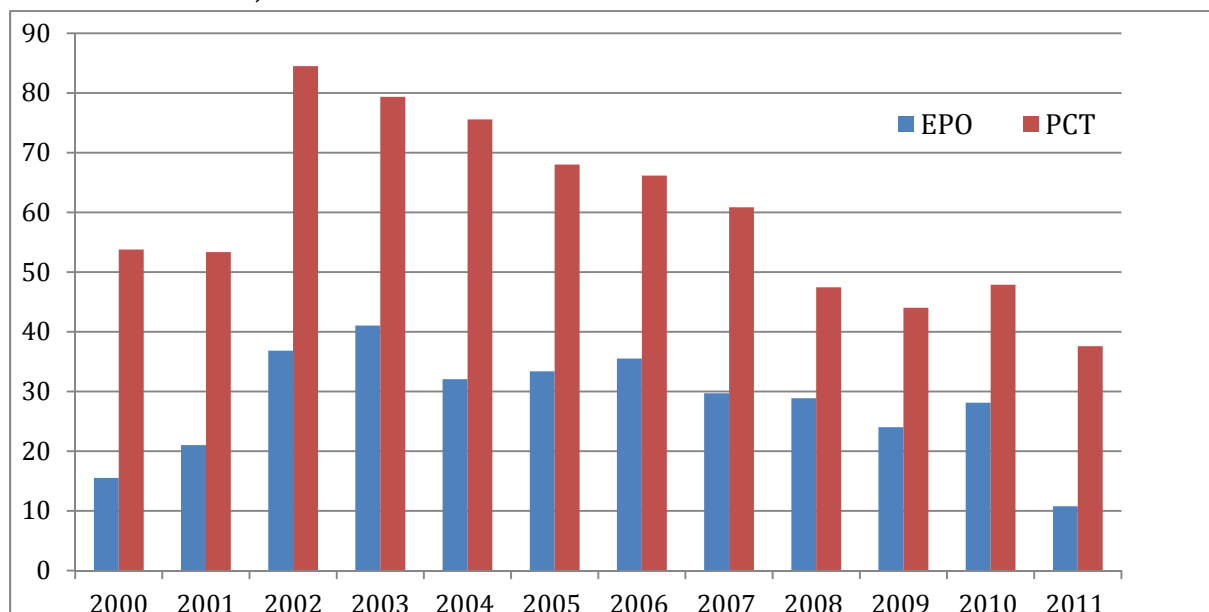
⁵ PCT = Patent Cooperation Treaty. This system of 148 cooperating states allows applicants who seek patent protection in several countries to file one single international application. A PCT application is equivalent to a regular filing in each of the PCT contracting states (Intellectual Property Office, 2015).

Figure 14.2.: Patent applications filed under the PCT, per 100,000 inhabitants



Notes: Inventor(s)'s country of residence. Source: own calculations based on OECD (2015)

Figure 14.3.: Total patent applications from Croatian inventors filed under the EPO and PCT, 2000-2011



Notes: Inventor's country of residence. Source: OECD (2015)

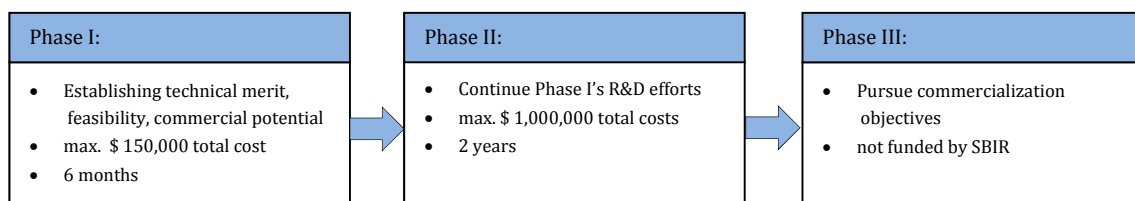
A study by Božić (2011) investigates the reasons for the low innovation performance of Croatian firms. Based on data from the Croatian Community Innovation Survey in 2006, she examines the innovative activity of over 1000 firms. Her analysis focuses on the decision to abandon or delay innovations. The results suggest that a number of constraining factors play an important role in abandoning innovation projects in Croatia.

Firms lack external and internal sources of finances. They moreover have insufficient information on existing technologies. In many markets, a dominant incumbent discourages innovation. The main reasons for delaying innovation projects are a lack of external finances and information. Additionally, a lack of qualified personnel and the unsuccessful search for cooperation partners in R&D are related to delaying innovations.

Infobox: Experience with the Small Business Innovation Research Program (SBIR)

The U.S. Small Business Innovation Research program (SBIR), established in 1982, supports domestic small and medium-sized enterprises in conducting research and research and development (R/R&D) with potential for commercialization. Federal agencies with an external R&D budget that exceeds \$ 100 million are mandated to spend 2.8 per cent of their R&D budget to encourage R/R&D in enterprises with at most 500 employees. The structure of the program includes three phases, where the first two, covering the determination of feasibility, commercial potential and technical merit, are funded by SBIR (see figure below) (SBIR/STTR, 2015).

Figure 14.4.: SBIR Phases



Source: SBIR/STTR (2015).

By providing capital to transform ideas into innovations, the program supports technological innovation and scientific excellence in critical American priorities (SBIR/STTR, 2015). SBIR funds more than 4,000 R/R&D proposals with overall two billion dollars annually (Connell, 2006).

In-depth ex-post evaluations of the program suggest that it has had no effects on employment and R&D. Lerner (1999) did not find any positive employment effect of enterprises joining the SBIR program, in comparison with enterprises that did not benefit. Wallsten (2000) obtains the same result, and also shows that the SBIR subsidies do not have an impact on firm R&D activities; firm-financed R&D expenditures are crowded out one-to-one.

Infobox: Do innovation vouchers help SMEs to cross the bridge towards science?

In 2004, the Dutch Ministry of Economic Affairs introduced an Innovation Voucher Scheme to foster knowledge diffusion between small and medium-size enterprises and research institutions. To receive a research voucher, which is valued €7,500, enterprises must submit an application. Because the number of applications

exceeded the number of vouchers, the vouchers were allocated by lottery.⁶ After receiving the voucher, firms formulated a research question and assigned a research institution to answer it. The research question had to be application-oriented, so that the company could use the knowledge gained to enhance operational processes or their products (Cornet et al., 2006).

Cornet et al. (2006) used the fact that the vouchers were randomly assigned among the applicants to evaluate the impact of the Dutch innovation voucher. They investigated whether the voucher had an impact on the number, size and timing of knowledge transfer projects. The results show that there are indications of a small timing effect, which means that a limited number of project realizations were strategically postponed to profit from the voucher introduction. There was no effect on the values of assignments. Overall, one out of ten vouchers was not used; one voucher out of ten was used for a project that would have been implemented in the future anyway, but eight were used for projects that would otherwise not have been conducted.

Another measure for research output is scientific publications. In terms of quantity, measured as the share of publications in a specific field in total publications, Croatian researchers perform well in natural sciences and social sciences (17% and 108%, respectively, above the average of comparison countries⁷). Croatia is less competitive in life sciences (14% below the average) and physical sciences (15% below the average), while they publish on average in arts and humanities. Within the social sciences, the output fields ranking highest above the average are Anthropology, Social Issues, Social Work, Sociology and Planning Development. In the category of natural sciences, the fields that stand out most are Marine Engineering and Materials Sciences Textiles. Sport Science, Medical Laboratory Technology, Biology and Toxicology are the high rollers in life sciences, while several branches of Psychology perform rather poorly.

Compared to the peer countries, Croatia reaches high quality, measured as citations per paper, in space science, where only Hungary and Germany perform better. Other fields with a relatively high number of citations per paper are Environment and Ecology, Physics, and Pharmacology and Toxicology; otherwise, citations per paper are rather low (Csajbók et al. 2013)⁸.

Concentrating on Croatian cities that host a university or polytechnic school of professional higher education, Zagreb is shown to be the scientific center, followed by Rijeka and Split. An overview of the number of published papers, the mean citation rate and the h-index, which measures citation impact and publication activity for different Croatian locations, is provided in Table 14.1.

⁶ 1,044 SME's applied for 100 vouchers.

⁷ The countries are: Germany, Latvia, Lithuania, Estonia, Romania, Slovakia, Slovenia, Hungary, Turkey and Greece.

⁸ Data cover the period from the 1st January 1996 until 8th August 2006.

Table 14.1.: Publication Performance in Croatia, 2005-2014

Location	Published papers	Mean citation rate	h-index
Dubrovnik	382	3,73	18
Osijek*	2	6,5	2
Rijeka	5250	5,14	52
Split	7251	11,25	89
Zadar	360	2,45	14
Zagreb**	46831	6,85	130
Pula	191	1,85	9
Karlovac	155	1,5	7
Vukovar	60	1,03	5
Gospic	16	1,44	3
Knin	64	4,39	10
Pozega	91	2,18	8
Varazdin	113	1,99	8
Slavonski	546	2,18	15
Sibenik Brod	53	2,42	6
Cakovec	92	2,28	8

*long tradition in training teachers explains exceptionally low output

** estimated by Glänzel's model (Glänzel, 2006)

Source: Own calculations on the basis of Web of Science Core Collection, 2005-2014

Where do Croatia's strengths lie? The European Commission (2014a) evaluates Croatia's performance under the 7th Framework Programme, in which it has been actively participating since 2007. Overall, the success rate of Croatian applicants for funding was 17 percent, slightly below the EU-28 average, 20.5 percent. The EC names Croatia as particularly successful in receiving funding in the technology fields of ICT, biotechnology, and food safety and environment. Table 14.2. lists the top 10 beneficiaries from the 7th Framework Programme in Croatia. First in terms of the number of participants as well as EU funding contribution was Ruer Boskovic, a public institute conducting science in 14 disciplines (such as physics and chemistry). It should be noted, however, that the University of Zagreb would come first if all succeeding faculties were counted together rather than being reported separately. The EC also reports an increasing number of Croatian SMEs as applicants.

Table 14.2.: Top 10 beneficiaries to which financial contribution was granted under the 7th Framework Programme

Name	Number of Participants	EC financial contribution € million
RUDER BOSKOVIC INSTITUTE (RBI)	31	11.30
SVEUCILISTE U ZAGREBU FAKULTET ELEKTROTEHNIKE I RACUNARSTVA (UNIZG-FE)	21	8.35
SVEUCILISTE U ZAGREBU (UNIZG)	11	5.34
SVEUCILISTE U ZAGREBU, MEDICINSKI FAKULTET (MEDICINSKI FAKULTET)	7	5.20
SVEUCILISTE U RIJECI, MEDICINSKI FAKULTET (UNIVERSITY OF RIJEKA FACULTY OF MEDICINE MEDICINSKI FAKULTET U RIJECI)	6	4.83
GENOS DOO ZA VJESTACENJE I ANALIZU (GENOS DOO)	6	4.44
FACULTY OF SCIENCE UNIVERSITY OF ZAGREB (FACULTY OF SCIENCE UNIVERSITY OF ZAGREB)	7	3.36
MINISTARSTVO ZNANOSTI, OBRAZOVANJA I SPORTA (MZOS)	12	3.04
UNIVERSITY OF ZAGREB-FACULTY OF VETERINARY MEDICINE (FVM)	7	2.93
CROATIAN CHAMBER OF ECONOMY CCE (CCE)	7	1.94

Source: European Commission (2014a).

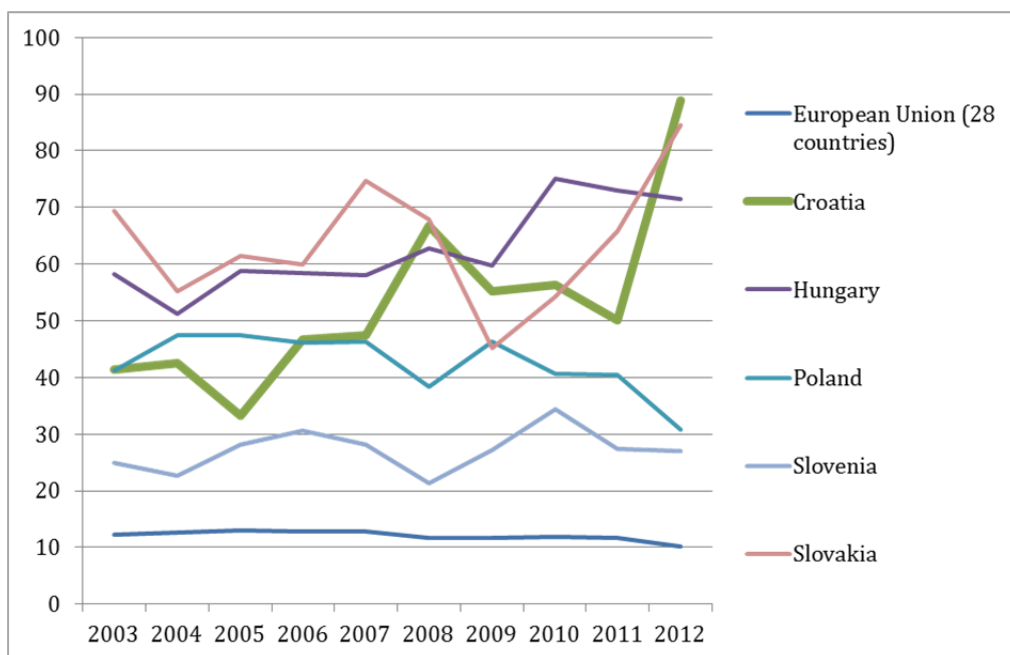
As mentioned above, patenting activity is not very high in Croatia, and it has been declining. However, in terms of fields of technology, over the past few years, patent applications have regularly been filed with major international patent offices (EPO, PCT) in the fields of pharmaceuticals and ICT. According to the national statistics, which do not only report internationally important patents, other fields with high output in terms of recent (national) patenting activity are agronomy and textile technology (Croatian Bureau of Statistics, 2014a, p. 43).

14.3. Leverage Points for Innovative Capacity

14.3.1. Increase FDI

On average, multinational companies are generally more productive and innovative than domestic firms (see, e.g., Criscuolo, 2005). Foreign direct investments can thus be a substantial source of technological transfer for transition countries, and they could help Croatia to move closer to the technological frontier. Figure 14.5. shows the relative, and increasing, role that foreign owners play in patent applications, especially compared to the European Union average.

Figure 14.5.: Foreign ownership of domestic inventions in patent applications to the EPO

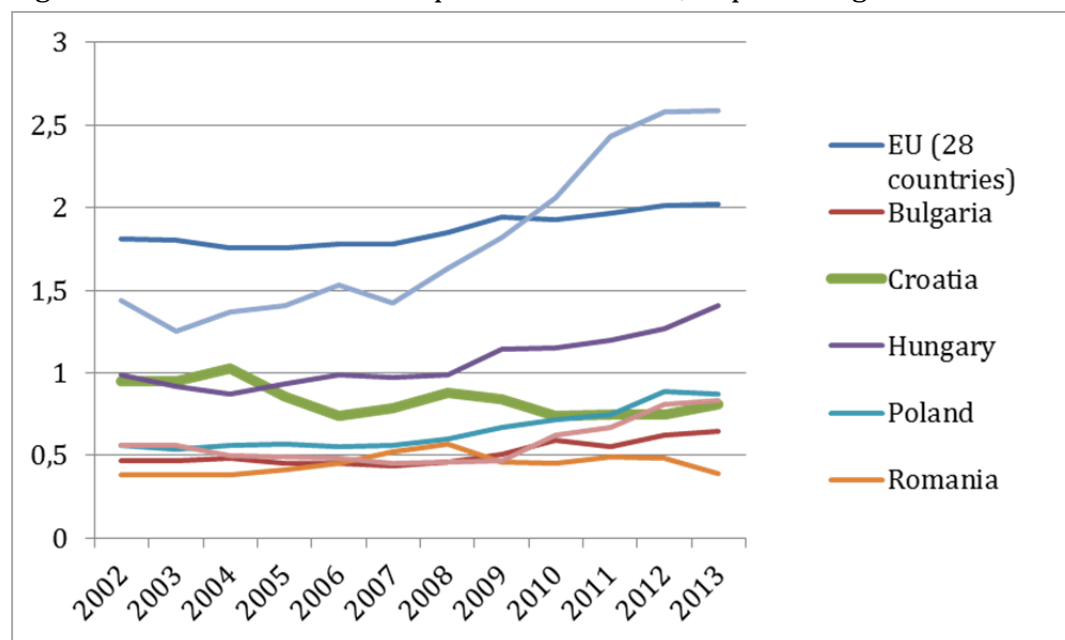


Source: Eurostat, 2015.

14.3.2. Mobilize R&D Expenditure in the Private Sector

Research and Development expenditure is low in Croatia (see Figure 14.6.). In 2013, only about 0.8 percent of GDP was spent on R&D, compared to an average of 2 percent in the European Union.

Figure 14.6.: Gross domestic expenditure on R&D, as percentage of GDP



Source: Eurostat (2015)

Between 2011 and 2013, Croatian expenditure in R&D was highest in the technology fields of engineering (39.5%), life sciences (21.4%), biomedicine and health (16.8%), and biotechnical sciences (8.7%). Industry sectors with the highest R&D expenditure are pharmaceuticals, telecommunications, motor vehicles, manufacture of food and beverages, and computer programming.

R&D funding is dominated by the public sector, which is counteracted by comparably low R&D expenditure in the private sector. This development calls for policies that stimulate private sector innovation activities. Demand for innovations is the major incentive for firms' innovation activity.

One means of creating demand for Croatian innovations is an increased public procurement activity. According to the World Economic Forum's Global Competitiveness Index 2014-2015, Croatia ranks 129 (out of 144) in the public procurement for technological products to increase demand for innovations. The drawback of such procurement policies is that they do not alleviate the pressure on the public budget. In addition, just as it is the case with R&D funding, discretionary decisions on which technology fields to promote must be based on sound evaluation of the internationally competitive potential of Croatian industries. In this context, public procurement of innovative eGovernment solutions could generate a double dividend for Croatia by increasing the efficiency of the public administration (see policy paper on Doing

Business) and increasing private R&D in a technological field with high potential for spillovers.

International evidence on public support for R&D suggests that there is a high risk of public money crowding out private R&D (see, e.g. the Infobox on the U.S. SBIR program, or Wilson (2009) for R&D tax credits). However, introducing competition for public R&D funds seems to reduce the risk of crowding out (Lichtenberg, 1988).

Infobox: Competition for public funds and R&D performance

Lichtenberg (1988) studies the effects of different types of government R&D contracting in the USA. He finds that the overall effect of government R&D contracting on private R&D investment is negative because the negative effect of noncompetitive R&D contracting outweighs the positive effect of competitive R&D contracting. One major type of competitive government R&D contracting in the USA is “procurement by design and technical competition.” Such a procedure begins when a federal agency (such as the Department of Defense) issues a formal request for proposals. Three or four firms typically submit proposals. The federal agency then begins an elaborate review process. The firm that submits the proposal receiving the highest ‘score’ is generally selected as the contractor.

In the European Union, a similar procedure exists under the label “competitive dialogue”. It consists of three phases. First, firms are encouraged to submit their participation applications. In the second phase, a competitive dialogue with selected applicants is conducted, where customized solutions are developed. In the third phase the applicants submit their proposals (European Commission, 2004). The competitive dialogue offers high flexibility and an intensive interchange between both parties, and is therefore an ideal procedure for the public procurement of innovations (Crasemann, 2012). However, compared to the total procurement volume, the competitive dialogue has a share of less than 1 percent (Falck, Wiederhold, 2013).

Croatia is a small country, with limited financial resources. Therefore, innovation support for promising technologies should be concentrated on few technology fields that have the potential to be competitive in the international market. Ideally, these technologies then generate spill-over effects for the entire economy. One such potential technology field could be ICT-related innovations, where Croatia already engages in mainly privately funded research activities. It should be noted, however, that a careful revision of Croatian industries, that is re-evaluated regularly, is necessary for such decisions.

14.3.3. Prevent Flight of Human Capital

Croatia is suffering from brain drain, i.e. the phenomenon that highly-skilled people leave the country, which may have severe consequences for the development of the economy’s future innovative capacity. In fact, while in the 2000s the overall number of emigrants from Croatia to the OECD countries has decreased, the share of highly-skilled

among the emigrants has increased from 16 to 26 percent (see Figure 14.7.). Policymakers should thus aim at setting favorable framework conditions in order to keep, and attract, human capital.

Figure 14.7.: Brain Drain from Croatia

Total number of Croatian nationals aged 25 years and older, living in each of the 20 OECD destination countries considered



Source: IAB Brain Drain Data, <http://www.iab.de/en/daten/iab-brain-drain-data.aspx>.

Infobox: Promotion of Return Migration in Poland

After accessing the European Union, and after the EU opened its labor markets in 2004, Poland experienced a massive population outflow, which peaked in 2007, with 6.6 per cent of the Polish population working abroad. Due to sectoral labor shortages and demographic problems, the Ministry of Labor and Social Policy enacted “The Return Programme” in 2007 (terminated in 2011), which was based on a close cooperation between major administrative bodies. The program’s main goal was to create favorable conditions for the return, particularly of those highly qualified Poles who had left the country for economic reasons (OECD, 2013, Lesińska, 2013). For Poles who stayed at least one year abroad, the program contained, among other enticements, a reduction of social insurance contributions for a period of two years after returning. Furthermore, the Ministry of Foreign Affairs tried to improve the image of Poland among Polish emigrants, and the Ministry of Labor and Social Policy established an information service about job opportunities and the economic situation in Poland. Another national program for return migration in Poland (“Have you got a PPlan to return?”) was launched in 2008 and is still active (OECD, 2013). Its main objective is to provide necessary information to actual and potential returnees to facilitate their return and reintegration into the society and labor market (Lesińska, 2013). In addition,

several regional and local programs target potential returnees to Poland (OECD, 2013). An ex-post evaluation of the effectiveness of all these measures is, however, still pending.

In the private sector, this could mean improving the doing business environment to create a better environment for Croatian entrepreneurs (cf. the policy paper on Doing Business).

In the context of academia, policy should aim at turning the brain drain into “brain circulation”.

Research cannot take place without adequate funding. Investment by public institutions in R&D should therefore be a priority to policy makers, as soon as budget restrictions can be relaxed.

Currently, salaries of researchers in Croatia are mainly based on seniority and determined on a national scale⁹. Linking scientific output to productivity would be more suitable to attracting talented young researchers.

In general, the international exchange of scientists should be encouraged to promote the interchange of knowledge and to capture spill-over effects from collaborations abroad. In this context, one element to consider are scholarships that allow top graduates to spend prolonged research visits abroad, bound to the commitment of working in Croatia for a certain amount of time after completion.

Infobox: International Student Mobility and Return Obligation

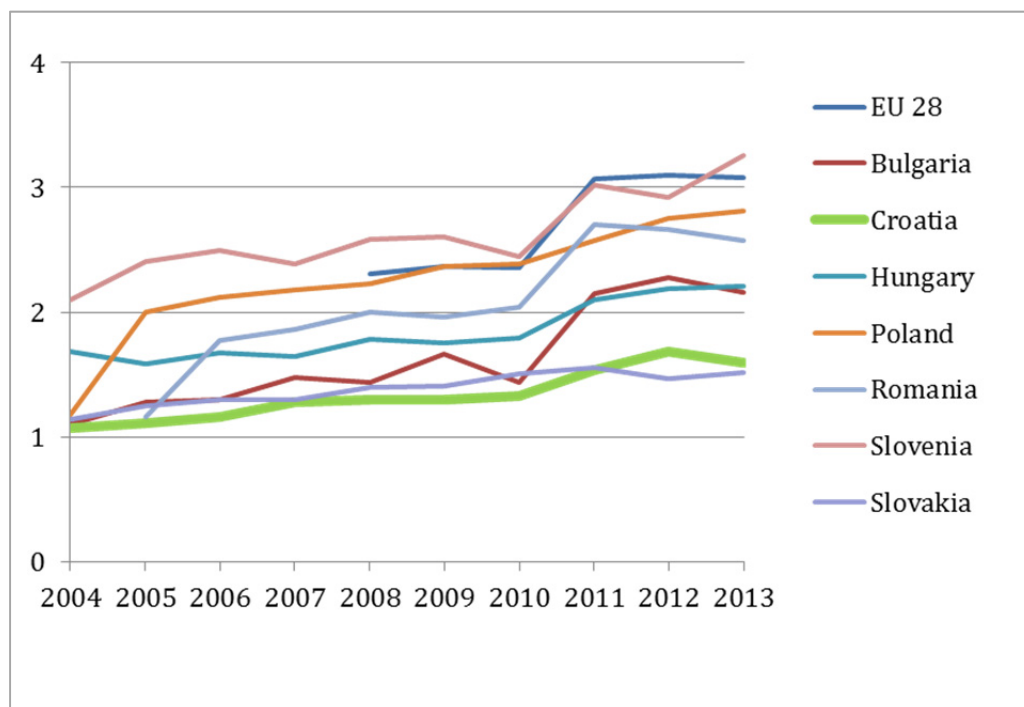
The British Council and the German Academic Exchange Service (DAAD) (2014) investigated 183 nationally funded scholarship programs from 102 countries as regards international student mobility. Over 80 percent of the programs from developing and developed nations include an obligation to return to the home country after successful graduation. The return obligations mostly contain a fixed working period in the home country, for instance two years for programs in China, Mexico and Vietnam, five years in Kazakhstan and Pakistan, or the same span as studied abroad in Brazil. If the students do not return, or fail to graduate, most countries demand a reimbursement of the scholarship, e.g. in Egypt, Mexico, Pakistan and Vietnam; in Indonesia students have to pay double the total cost of the scholarship. According to officials, most students return after graduation. The programs are mainly only eligible to study at top universities according to international rankings. Besides obtaining a qualification and excellent academic training, returnees improved their communication skills, employment prospects and gained a deeper understanding of different cultures. The programs indeed seem to have a quantifiable impact on a country’s human capital.

⁹ More II Study available from:

http://ec.europa.eu/euraxess/pdf/research_policies/more2/country_files_more2/2013_07_05_country_profile_HR.pdf

The development of the share of scientists and engineers (see Figure 14.8.) among the population indicates that Croatia is likely already constrained in innovation by the availability of adequately skilled human capital. The chart also reveals that there are relatively fewer scientists and engineers compared to the European Union average—and even compared to the peer countries, except Slovakia.

Figure 14.8.: Scientists and engineers as a percentage of the population, 2004-2013



Source: Eurostat (2015a)

With regard to currently available employees in Croatia, their life-long learning activities must be enhanced in order to strengthen the absorptive capacities of firms that consider the lack qualified personnel an obstacle to innovations (Bozic, 2011). This could be done by the promotion of adult education, through e.g. education vouchers (cf. policy paper on Human Capital).

14.3.4. Promote University Governance

The economic literature (e.g., Aghion et al., 2010) has found evidence that competition and autonomy of universities are positively linked to university output. Extra funding to universities is more effective if (i) they are more autonomous and (ii) they face more competition from private research universities.

Infobox: The Link between Autonomy and Performance: Evidence from a Survey Among European Universities

Aghion et al. (2010) examined the association between university governance and research output to find out whether autonomy affects research output. The degree of university autonomy is measured by the university's share of competitive research grants and core government funds in its budget, and whether the

university needs to obtain government approval for its budget. Other factors are hiring practices, setting of curriculum, ownership of the university buildings, level of endogamy, independent selection of bachelor students, and flexible or centralized, rank-based payment of faculties. University output is evaluated on the basis of the Shanghai Ranking of World Universities, which puts weight on different indices such as Nobel prizes, published papers, and cited researchers, and is one of the best-known measures for a university's research output. In fact, autonomy of European universities is positively correlated with the inverted rank in the Shanghai Ranking. Universities from the U.K. and Sweden have both a high degree of autonomy and high research output. In contrast, Spanish universities have low values for both autonomy and output.

Croatia's Universities, notably the University of Zagreb, are characterized by high degrees of fragmentation of single faculties. At the same time, the degree of autonomy seems relatively low, regarding, for instance, the hiring and remuneration of academic staff or the selection of students. We advise granting a higher degree of autonomy to the universities.

Croatia's performance in international rankings of universities shows that the University of Zagreb faces little competition within Croatia. This is primarily explained by the small size of Croatia. Still, some private universities have started to develop, including three private universities and several colleges of applied science.¹⁰

Public-sector researchers in Croatia have relatively fewer resources than researchers in any peer country. Furthermore, there is little competitive funding in both absolute and relative terms, and funding has been volatile, especially during the crisis. Not only is competitive funding small, but not very selective as well.¹¹ In accordance with OECD suggestions, we therefore propose increasing both research funding *and* the share of funding, for which universities and research facilities must compete with each other, as already indicated under the most recent innovation strategy.

14.4. Summary of Policy Implications

In the longer run, the share of GDP that is spent on R&D must certainly be increased. This could be achieved by simply increasing public funds. However, a more desirable path would be to create incentives for businesses to increase private spending. This could be achieved by stronger public procurement of technological innovations.

A small country such as Croatia should follow a narrow focus in innovation support, concentrating on Croatia's strongest technological fields. Ideally, these are technologies with high spill-over effects, such as e.g. ICT-related technologies. PCT and EPO patent data further reveal that pharmaceuticals and biotechnology are two other technological

¹⁰ See EC (2010), Higher Education in Croatia, available from: http://eacea.ec.europa.eu/tempus/participating_countries/reviews/croatia_review_of_higher_education.pdf

¹¹ OECD (2014). OECD Reviews of Innovation Policy: Croatia, p. 225.

fields with sufficient innovation capacities in Croatia. In addition, programs should be designed in such a way that they induce competition among applicants.

Careful attention must be paid to the flight of human capital from Croatia. This challenge could be met by providing adequate research facilities and by fostering international exchange of researchers, while simultaneously creating incentives for returning.

In the academic sector, policymakers should aim to increase the autonomy of universities and research institutions and foster competition among these institutions. More competition be achieved by promoting research endeavors of private institutions and by increasing the share of competitive funding. Also, research funding, which is lowest in Croatia compared to any other peer country, should be increased in absolute terms in the longer run.

Beyond this, the best innovation policy for Croatia is probably undertaking structural reforms to improve the conditions for FDI, since FDI is a substantial source of technological transfer for transition countries, and it could help Croatia to move closer to the technological frontier.

References

- Aghion, P.; Dewatripont, M.; Hoxby, C.M.; Mas-Colell, A. and A. Sapir (2010). The Governance and Performance of Research Universities: Evidence from Europe and the U.S.; *Economic Policy*; January 2010; pp. 7–59.
- Aghion, Philippe. and Howitt, Peter (1998). *Endogenous Growth Theory*. Cambridge MIT Press.
- Božić, Ljiljana. J. (2011). Constraints to Innovation Activities in Croatian Enterprises. The Institute of Economics, Zagreb. No 62 (3-4), pp. 177-189.
- British Council and DAAD (2014). Going Global 2014 - The rationale for sponsoring students to undertake international study: an assessment of national student mobility scholarship programmes.
- Cornet, Maarten, Björn Vroomen und Marc van der Steeg (2006). Do innovation vouchers help SMEs to cross the bridge towards science?; CPB Discussion Paper 58. The Hague: CPB Netherlands Bureau for Economic Policy Analysis.
- Csajbók, E.; Berhidi, A., Vasas, L. and Schubert, A. (2013). Hirsch-index for countries based on Essential Science Indicators data, *Scientometrics*, Vol. 73, No. 1 (2007) 91–117.
- Crasemann (2012): „Innovationsorientierte öffentliche Beschaffung.“ In: Eßig, M., Bundesverband Materialwirtschaft, Einkauf und Logistik (Hrsg.): „Exzellente öffentliche Beschaffung: Ansatzpunkte für einen wirtschaftlichen und transparenten öffentlichen Einkauf.“ Wiesbaden: Springer Gabler.
- Criscuolo, Chiara (2005). The Contribution of Foreign Affiliates to Productivity Growth: Evidence from the OECD Countries. OECD Science, Technology and Industry Working Papers 2005/8, OECD Publishing.
- Connell, D. (2006), “Secrets” of the World’s largest seed capital fund: How the United States Government Uses its Small Business Innovation Research (SBIR) Programme and Procurement Budgets to Support Small Technology Firms; Centre of Business Research, University of Cambridge.
- Croatian Bureau of Statistics (2014). Innovation Activities in Croatian Enterprises”; Education, Research and Development, Culture and Social Welfare; Research and Development; First Releases; downloaded 17.12.2014.
- Croatian Bureau of Statistics (2014a). Research and Development, 2012. Statistical Reports no. 1524. ISSN 1337 – 8247. Zagreb.
- Croatian Science Foundation (2013). Statute of the Croatian Science Foundation. Available from: <http://www.hrzz.hr/UserDocsImages/Statute%20of%20the%20Croatian%20Science%20Foundation.pdf> [date accessed: 27.03.2015].

- Eureka (2014). Eureka – Innovation Across Borders. Available from: <http://www.eurekanetwork.org/croatia/funding> [date accessed 18.12.2014].
- European Commission (2004): Explanatory note – Directive 2004/18/EC Competitive Dialog. http://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCQQFjAA&url=http%3A%2F%2Fec.europa.eu%2Finternal_market%2Fpublicprocurement%2Fdocs%2Fexplan-notes%2Fclassic-dir-dialogue_en.pdf&ei=r0xcVbinEYOuUcy8gdgN&usg=AFQjCNFa2pE6s7Pp-L-dwur4pbOPyj4XXg&bvm=bv.93756505,d.d24, date accessed 20.05.2015.
- European Commission (2014). Innovation Union Scoreboard 2014. ISSN: 1977-8244.
- European Commission (2014a). Horizon 2020: Country Profiles and Featured Projects for Croatia. Available from: http://ec.europa.eu/research/fp7/pdf/country-profiles/croatia/country_profile_and_featured_projects.pdf#view=fit&pagemode=none [last update: 22.09.2014] [date accessed: 31.03.2015].
- European Commission (2015). Country Report Croatia 2015: Including an In-Depth Review on the Prevention and Correction of Macroeconomic Imbalances. Commission Staff Working Document, SWD(2015) 30 final. Brussels.
- European Commission (2015a). Horizon's 2020 SME Instrument. Available from: <http://ec.europa.eu/easme/en/horizons-2020-sme-instrument> [date accessed: 13.03.2015].
- European Commission (2015b). Competitiveness and Cohesion OP. Regional Policy – Inforegio. Available from: http://ec.europa.eu/regional_policy/country/op/index.cfm?cci=2014HR16M10P001&lan=EN&lang=EN [date accessed: 22.01.2015].
- European Commission (2015c). The Eurostars Programme. Available from: <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/eurostars-programme> [data accessed: 29.01.2015].
- Eurostat (2014). Öffentliche Finanzierung von Unternehmen nach NACE Rev. 2 Tätigkeit und Grössenklasse [inn_cis8_pub] [date accessed: 17.12.2014.]
- Eurostat (2015). Gross Domestic Expenditure on R&D (GERD),% of GDP. Available from: http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=t2020_20&plugin=1 [date accessed: 12.01.2015].
- Eurostat (2015a). HRST by Category, Sex and Age: Scientists and Engineers. Available from: <http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do> [date accessed: 12.01.2015].
- Falck, O. and Wiederhold, S. (2013): Nachfrageorientierte Innovationspolitik; Studien zum deutschen Innovationssystem Nr. 12-2013.

- Glänzel (2006). On the h-index – A mathematical approach to a new measure of publication activity and citation impact, *Scientometrics*, Vol. 67, No. 2 (2006) 315–321.
- Hamag-Bicro (2014). Inovacije. Available from: <http://www.hamagbicro.hr/inovacije/> [date accessed: 18.12.2014].
- IMF (2015). The Western Balkans: 15 Years of Economic Transition. Regional Economic Issues Special Report. International Monetary Fund. Washington, D.C..
- Intellectual Property Office (2015). Patent Cooperation Treaty (PCT) for Private Applicants. January 2015.
- Lerner, J. (1999): The Government as Venture Capitalist: The Long-Run Effects of the SBIR Program; *Journal of Business* 72, 285–318.
- Lesińska, M. (2013). The Dilemmas of Policy Towards Return Migration. The Case of Poland After the EU Accession; *Central and Eastern European Migration Review*; <http://www.ceemr.uw.edu.pl/vol-2-no-1-june-2013/articles/dilemmas-policy-towards-return-migration-case-poland-after-eu> ; date accessed 12.05.2015.
- Lichtenberg, F. (1988): „The Private R&D Investment Response to Federal Design and Technical Competitions.” *American Economic Review* 78, 550-559.
- Ministry for Economics and Energy (2014). Horizont 2020 - Rahmenprogramm für Forschung und Innovation (2014-2020). Förderdatenbank. Available from: <http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html?get=views;document&doc=11711> [date accessed: 04.12.2014].
- More II (2012). Support for Continued Data Collection and Analysis Concerning Mobility Patterns and Career Paths of Researchers. Country Profile – Remuneration, Croatia. Brussels.
- OECD (2005). *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition*, The Measurement of Scientific and Technological Activities, OECD Publishing. doi: 10.1787/9789264013100-en.
- OECD (2013). Coping with Emigration in Baltic and East European Countries, OECD Publishing; <http://dx.doi.org/10.1787/9789264204928-en>; date accessed 12.05.2015.
- OECD (2014). OECD Reviews of Innovation Policy: Croatia 2013. OECD Publishing. <http://dx.doi.org/10.1787/9789264204362-en>
- OECD (2015). Patents by Technology. Available from: http://stats.oecd.org/Index.aspx?DatasetCode=PATS_REGION# [downloaded 23.01.2015].
- Ohler, Fritz (2014). Ex Post Evaluation of BICRO's Technology Programmes (PPA-CS-13). Final Report to the Ministry of Science, Education and Sports of the Republic of Croatia. Technopolis Group, Vienna.

- SBIR/STTR (2015). About SBIR; <https://www.sbir.gov/about/about-sbir#sbir-program>; date accessed 19.05.2015.
- Švarc, Jadranka and Domagoj Račić (2014). Erawatch Country Reports 2013: Croatia. JCR Science and Policy Reports, Report EUR 26752 EN. European Commission, Brussels.
- Wallsten, S. (2000). The Effects of Government-Industry R&D Programs on Private R&D: The Case of the Small Business Innovation Research Program; *RAND Journal of Economics* 31, 82–100.
- Wilson, D. (2009): „Beggars Thy Neighbor? The In-State, Out-of-State, and Aggregate Effects of R&D Tax Credits”. *Review of Economics and Statistics* 91, 431-436.