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Research Report

Socio-economic assessment of the Danube Region: State of the region, challenges and strategy development. Final Report Part I - Update

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„Socio-Economic Assessment of the Danube Region: State of the Region, Challenges and Strategy Development“

Final Report Part I – Update

October 2015

**Centre for European Economic Research GmbH
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List of Abbreviations

AT	Austria
BA	Bosnia and Herzegovina
BG	Bulgaria
BW	Baden-Wuerttemberg
BY	Bavaria
CZ	Czech Republic
HR	Croatia
HU	Hungary
ME	Montenegro
MD	Moldova
RO	Romania
RS	Serbia
SK	Slovakia
SI	Slovenia
UA	Ukraine
MSA 1	Member States Area 1
MSA 2	Member States Area 2
MSA 3	Member States Area 3

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Key Messages

- The main challenge for the Danube Region is to improve cohesion and increase competitiveness through cooperation. The less developed economies need to catch up at a faster pace with the wealthier Danube countries than they have in the past.
- Capital formation is an important driver of catch-up. Therefore, investment ratios will have to remain highest in the countries with the lowest level of GDP per capita.
- A better investment climate would encourage the activities of domestic investors and also increase the region's attractiveness for inward FDI.
- Labor costs should only be raised according to the increase in labor productivity in order to maintain the region's international cost competitiveness. This is especially important for the countries of the Danube Region with low technological competitiveness.
- Speeding up economic growth will be the main driver of employment creation. In addition, reforms of labour market institutions and of the educational and training systems will be necessary.
- The Danube Region has the potential of becoming a more competitive economic zone by improving transport network connectivity, accessibility, and resource efficiency.
- Reducing transmission and distribution losses in the electricity grid and increasing the share of renewable energy may help to reduce energy import dependency and further diversify the energy mix.
- Although SMEs' managers in the Danube Region still evaluate access to finance as one of the most pressing problems, the availability of external financing has improved in the Danube Region in 2013 compared to the years 2009 and 2011. The efficient use of available resources (multinational, national and private) can spur investment and employment.
- The countries, regions, business organizations and clusters have developed intensive and diverse cooperation activities in the Danube

Region, yet so far largely without fully utilizing the potential provided by the EU Strategy for the Danube Region (EUSDR). There is a need to increase transparency and coordination, and to clarify the relationship between EUSDR initiatives and other programmes and initiatives at the EU level for Southeast Europe and the Eastern Neighbourhood.

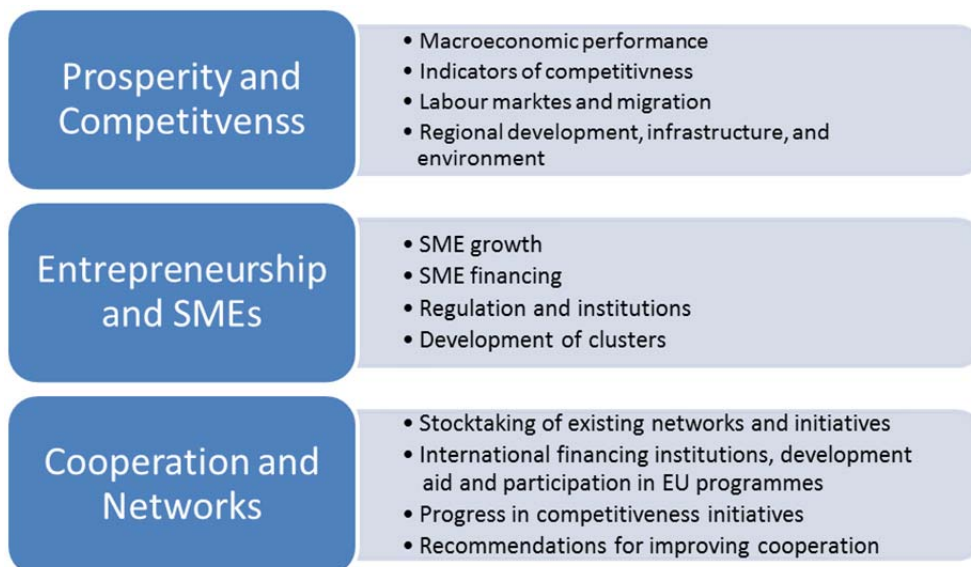
- Cooperation potential for firms and clusters exists all along the Danube based on already existing structures, but – mirroring economic development and institutional gaps – the participation in cooperation initiatives is very uneven. Especially organisations from less developed regions of South-East Europe, Moldova and Ukraine need better integration into the cooperation process of the EUSDR.

Executive Summary

In April 2011, the Council of the European Union adopted the **EU Strategy for the Danube Region (EUSDR)**. The Council Conclusion and the accompanying Action Plan defined a road map with concrete priorities for the Danube macro-region to achieve the aims of connecting the Danube Region, protecting the environment in the region, **generating prosperity** and **strengthening the Danube Region** through **institution building and cooperation**. The EUSDR is a political process that is based on an extensive consultation of stakeholders at different levels.

This State of the Region Report aims to support the consultation process by providing for the first time an assessment of the existing conditions in the region in terms of **prosperity and competitiveness from a broad socioeconomic perspective**. Furthermore, an assessment is provided in the report concerning the **quality of SME development and of its network activities**.

Figure 1: The pillars to assess the State of the Danube Region Report



In this report we identify the **opportunities, needs and challenges** of the Danube Region based on an indicator-based analysis, benchmarking the Danube Region with successful regions and best practice guidelines. By applying a

SWOT analysis we identify **potential fields of cooperation** to enhance prosperity and competitiveness of the Danube Region. Finally, we provide a set of **preliminary recommendations** that can stimulate discussions among a wider group of stakeholders and that can be the basis for planning further actions.

The results presented in this report build on a concept that defines competitiveness as the set of **factors, institutions and policies** that affect the level of macroeconomic and microeconomic productivity which enables a country to achieve a high and sustainable path of income and prosperity. It thus builds on a broad understanding of competitiveness by including the relevant factors that make a country or region attractive for doing business and a place for generating job and employment opportunities.

The **Danube Region** includes the Federal States Baden-Wuerttemberg and Bavaria of Germany, Austria, Slovakia, the Czech Republic, Hungary, Slovenia, Romania, Bulgaria and Croatia Serbia, Bosnia and Herzegovina, Montenegro, the Republic of Moldova and some border regions of Ukraine. The Danube Region exhibits very wide disparities. It covers some of the most successful but also some of the poorest regions in the EU. In order to take this heterogeneity into account, we additionally define and assess the following sub-regions: **Member States Area 1** (Bavaria, Baden-Wuerttemberg and Austria), **Member States Area 2** (Hungary, the Czech Republic, Slovakia and Slovenia), **Member States Area 3** (Romania, Bulgaria and Croatia), the **Accession Countries** (Serbia, Bosnia and Herzegovina and Montenegro) and the **Neighbouring Countries** Ukraine and Moldova.

Macroeconomic Performance and Competitiveness

The Danube Region's **GDP per capita**, an indicator which is commonly used to measure welfare, reached less than two-thirds (62.3%) of the level of the **EU-28** member states and 56.7% of the level of the **OECD** countries in 2013. The relative backwardness of the Danube Region in terms of average GDP per capita is due to the less developed country groups. Whereas GDP per capita in Member States Area 1 was more than two times higher than the regional average, it was 71.8% of the average in Member States Area 3, 53.7% in the Accession Countries and less than 40% in the Neighbourhood Countries. These differences are even higher at the level of NUTS2 regions. **The development gap within the Danube Region is a major challenge for defining a common**

development path. At the same time, it provides opportunities for specialization and cooperation resulting in stronger development for all participants.

Even though there is a considerable gap compared to the EU-28 and the OECD, for the past few years **economic growth has been higher in the Danube Region** than in the benchmark regions. Between 2004 and 2014, average annual economic growth in the Danube Region reached 1.8% in real terms, whereas EU-28 countries grew only by 1% and OECD countries by 1.5%. As in Europe as a whole, the long-run upward trend of GDP was temporarily interrupted by the 2009 economic crisis, growth was resumed in the Danube Region in 2013 as well as in the EU-28.

The **public debt to GDP ratio** of the Danube Region was 53.7% in 2013. According to this indicator that is also used as a European convergence criterion, the Danube countries attain a lower level of public debt than the EU-28 group (85.5%). For the Danube Region, this is a positive result because it implies a lower interest and repayment burden. And in addition, if one neglects possible borrowing restrictions and other factors there will be more scope for financing future public expenditure programmes (e.g. in infrastructure) than in the mentioned benchmark region.

The Danube Region has a large labour force potential and still a **rather low labour productivity**. GDP per person employed was 40,850US\$ (2005, PPP) in 2013. This means that labour productivity was 40% and 43.4% lower than in the EU-28 and in the OECD, respectively. The question is whether this productivity gap also implies an above average level of **unit labour cost**. In 2013, the ratio between labour costs and labour productivity of the Danube Region was 0.45 and thus lower than in the EU-28 countries (0.53). This suggests that the Danube Region has sufficiently low labour costs to compensate its poor productivity. This could be an opportunity of faster economic growth, especially for the Member States Area 3, as this country group exhibits the lowest unit labour costs within the Danube Region.

In terms of **sectoral composition**, the share of value added in the service sector exceeds the respective shares in the other two economic sectors the Danube Region, just like in the benchmark regions. However, contributing 33.2% of GDP in the Danube Region, the industrial sector (including construction) is much more important than in the EU-28 (24.5%) or in the OECD (23.9%). Eco-

conomic development and competitiveness can thus rely on a strong industrial base. The share of the agricultural sector in the Danube Region as a whole accounts for only 2.4% of value added. In contrast, in Member States Area 3, the share of agriculture in value added accounts for 5.7% of GDP. There are agricultural regions especially in the East of the Danube Region which have specific development needs.

A major support to economic growth in the Danube Region is the region's investment propensity which is higher than in the peer countries. Between 2004 and 2012, the Danube Region's **gross investments** accounted for over 23% of GDP. This share is 2 percentage points higher than in the EU-28 (21.4%) or the OECD (21.6%). Among the Danube subgroups, Member States Area 2 and Member States Area 3 reached investment ratios well above average (with 26.3% and 27.3%, respectively). High capital formation may generate expansion of production capacity and more economic growth.

The inflow of **foreign direct investment (FDI)** and **EU structural funds** have been major sources of investment financing in the Member States Areas 2 and 3. Foreign investors have taken over companies and have also established new capacities. As a consequence, in 2013 the FDI stock reached 36.6% of the Region's GDP (inward FDI ratio). Also the outward FDI stock has caught up mainly due to the activity of Member States Area 1. Both inward and outward FDI ratios are below the respective ratios of the EU-28 group meaning that **in terms of Foreign Direct Investment the Danube Region is still less intensively connected with the world economy** than the EU-28. An outstanding feature of the Danube Region is its intensive inter-connectedness within the region as Member States Area 1 ranks first among the home countries of investors in the rest of the Danube Region. Also Member States Area 2 companies have started investing both within the countries of this subregion and in other Danube Region regions. Further supply chain relationships can be a way to support further economic growth in all parts of the region.

The degree of integration in international trade can be expressed in **trade intensity**. Capturing the sum of export and import values relative to GDP, the trade intensity of the Danube Region amounted to 103% of GDP in 2013. The respective numbers for the EU-28 and the OECD were 83% and 55% respectively. Hence, **with respect to trade the Danube Region is more international-**

ly integrated than the benchmark regions. As a sign of internal integration, a large part of this trade takes place among the countries of the Danube Region. Overall, the Danube Region has run an **export surplus** for the past few years. This is partly due to depressed demand in the wake of austerity policies in several countries. It can be expected that imports will take off when the region switches to higher economic growth rates.

Beyond macro-economic conditions, the **institutional environment** for companies is an important precondition for growth and competitiveness. Unfortunately, **the Danube Region has become less attractive for investors over the last few years** – at least this is what the “Global Competitiveness Report 2014-2015”, a survey that interviewed 13,000 business leaders in 148 countries indicates. The Danube Region has fallen back in the global ranking with regard to the indicators ‘Burden of government regulation’, ‘Protection of property rights’, ‘Flexibility of wage determination’ and ‘Trade barriers’. It is up to the region’s governments to improve the conditions for doing business. Business organization may give the necessary impetus.

The indicators for market entry show **strong improvements in lowering administrative obstacles to starting a business.** In 2003, the region was significantly lagging behind the OECD, EU-28 and EU-15 in all measures of regulatory burden. Between 2003 and 2014, both the time and the cost of business start-up have been cut roughly by two-thirds. Minimum capital requirements have, on average, also been cut by two-thirds, and several countries decided to abolish them completely. Still, the 2012 objectives set by the EC were not met by most countries. Thus, there is potential and need for further progress.

Regarding economic freedom, a ranking as “moderately free” predominates in the Danube Region. Over time, there is a divergence between EU members and Accession Countries, which have made progress during the last 6 years, and Neighbouring Countries, in which economic freedom has stagnated and which are still rated as “mostly unfree”.

Corruption is a serious issue for at least a part of the region. This has long been recognised and addressed by policymakers, but national policies have proved to be insufficient. Recently, the issue is also systematically addressed at a supranational level. Although much effort has been taken, there is no clear evidence of an improvement yet.

Labour market conditions and regional development

From the labour market and migration perspective the major challenge are the **large differences in the labour market performance** across the Danube Region. The gap is particularly wide between the most developed Member States Area 1 and the least developed countries in the Accession Countries Area as well as in the Neighbourhood Countries.

Labour market participation rates in the Danube Region have been traditionally lower (at about 68%) than in the EU-28 and EU-15 or OECD countries (over 70%) and the same refers to employment rates. The gap between participation rates of the Danube Region and the three groups of benchmark countries narrowed in the period 2007-2014, ranging between 2 and 4 percentage points below the values for the benchmark regions.

The employment rates of young people (15-24 years) also show remarkable variations. Youth employment rates have been the highest in the OECD area and lowest in the Danube Region. In the period 2008-2014 **youth employment rates decreased** in all regions. Within the Danube Region, youth employment rates fell most significantly in the Neighbouring Countries (by 7 percentage points) and in the Accession Countries (by 6 pp).

The employment rate among highly educated persons (with completed tertiary education) is about 5-6 percentage points lower in the Danube Region than in the EU-15 or in the EU-28. Hence, compared with the EU-15 and EU-28 economies, the Danube Region has a **very strong representation of the medium educated skill groups**. With the exception of the Member States Area 1 the share of the medium educated in total employment exceeds the 60% mark and even close to 70% in the Member states Area 2.

Given the different levels of development of the Danube Region countries' labour market, **tailor-made responses are needed**, with policies that may vary considerably from one country to another. Policies in the less developed countries may focus on the adjustment of vocational training to the needs of the economy and make vocational training in general more attractive for the young; setting up dual training systems may help to combat high youth unemployment enhancing and institutionalising cooperation between the poor and best performers with respect to labour market initiatives, e.g. through the

exchange of best practises; training people in administration/public employment services; strengthen social partnership.

Splitting each country into regions immediately reveals that the economic processes, which seem to be clear at the country level, are in fact the sum of quite heterogeneous patterns at the regional level. Although each of the 65 NUTs regions in the Danube Region is in one way or another special, the regions can be grouped according to **development level** and again split in groups according to their **population density** thus resulting in groups of urban, intermediate and rural regions. It turns out that the more developed country groups have not only higher per capita GDP in most of their regions than the rest, but are also more urbanized, thus able to utilize agglomeration advantages. Less developed and less urbanised areas have a larger agricultural population, higher unemployment and lower educational attainment than the more urbanized regions. Development policies focussing on the special needs of less urbanized areas may help them to catch up economically.

Infrastructure, Energy and the Environment

The assessment of **transportation infrastructure** indicators shows that in most countries of the Danube Region the **railroad and port sectors** are underperforming in relation to other infrastructure sectors, in particular the electricity sector. In general, there is a gap in infrastructure quality from the western to the eastern countries of the Danube Region. This is true for roads, railroads, ports and airports, with only a few exceptions.

The quality of the **Danube River shipping and its ports** needs vast improvements. In principle, waterborne transport on the Danube has the potential to manage the growing transport volumes that are expected in the region. For this purpose, however, the river needs to be cleaned up and deepened, ports reconstructed and developed into multi-modal hubs.

As regards to the **energy sector**, all Danube countries are relatively well developed. However, the eastern part of the Danube Region is again found to be performing less well. The Danube Region is energy-import dependent since it does not have many natural energy resources. Interconnection of the electricity grids as well as gas transport lines can improve the security and efficiency of supply all through the Danube Region.

Electricity prices, including taxes and fees, are relatively high in the western parts and decline towards the east. **Electricity transmission and distribution losses** draw the inverse picture of electricity prices. Transmission and distribution losses are high where electricity prices are low. Renewable electricity is almost exclusively produced from **hydro power** in the former Yugoslavian and Soviet countries of the Danube Region. Most other Danube countries have significant shares of **solar and wind energy**. **Energy use, electricity use, and CO2 emissions per capita** are highest in the western parts of the Danube Region. Nonetheless, the western countries are the most CO2 efficient, i.e. they have the lowest CO2 emissions per PPP \$ of GDP. There is no universal trend towards the east: some countries reach the EU-27 and/or OECD benchmarks, while others fail them considerably. These uneven quality indicators suggest that there is wide room for cooperation and trans-border projects to improve energy efficiency and environmental conditions.

Entrepreneurship and SMEs

The assessment of **entrepreneurship and SMEs** reveals that the number of **start-ups** in relation to the working age population in the EU countries of the Danube Region¹ was below those in the EU-15 countries and EU-27 countries for the period 2004-2012. Start-up rates (number of start-up in relation to the stock of firms) in the period 2008-2010 and the period 2010-2012 were similar to those in the EU-15 and EU-27 countries. Around 19 percent of all start-ups were established in **research and knowledge intensive sectors** between 2004 and 2012, which tends to be below the corresponding rates in other European countries.

Closure rates (number of firm closures in relation to the stock of firms) were similar to those for the EU-15 countries both for all closures and for closures in the research and knowledge intensive sectors in the period 2008-2010. The **stock of active firms** in the Danube Region as a whole has not changed much in the period 2008-2010. The closure rate has been almost as high as the start-up rate. This holds both for all sectors and for the research and knowledge

¹ No data on firm dynamics for the non-EU countries of the Danube region are available.

intensive sectors. However, the research and knowledge intensive sectors seem to have been gained in importance as the increase in the stock of firms in the research- and knowledge-intensive sectors is higher than the increase in the stock of firms in all sectors.. There are **large differences** detectable between the different sub-regions of the Danube Region with respect to **firm dynamics**. While the stock of firms in the countries of Member States Area 1 is in a kind of equilibrium, noticeable turbulences in the stock of firms can be observed for the Member States area 2 and 3.

Access to finance is crucial and can be an issue at all stages of the development cycle of SMEs. In contrast to large businesses, which have access to capital markets, the vast majority of SMEs does not have such access and is more reliant on other sources such as bank lending or internal funds. The current economic environment with tightened credit conditions has brought SMEs' financial needs into the focus of European policy. A wide range of financial support institutions and instruments have been developed to support SMEs at the different stages of their life. Managers across the Danube Region rated "making existing public measures easier to obtain" (for example through the reduction of administrative burdens) and "tax incentives" as the two most important measures, when asked to rate the importance of a number of different mechanisms to help their company's financing in the future.

Financial support for SME has been provided at **European level** but also at **national and regional level**. At the European level initiatives were launched to promote increased access to finance through the financial instruments of the **Competitiveness and Innovation Framework Programme**, financial support available under the **Structural Funds** and the schemes supported by the **European Investment Bank (EIB)** and the **European Investment Fund**.

In the Danube Region, the **EIB is the most active multilateral financing institution**. Its various programmes and initiatives have effectively contributed to the easing of SMEs' financing conditions. Through their diversity, they can cover a wide spectrum of financing instruments demanded by SMEs. Once the European debt crisis will be left behind, the focus of the initiatives is likely to shift from emergency support in illiquid markets to structural support and the implementation of necessary reforms to foster development of the financial infrastructure available to SMEs.

Although the access to finance is seen as a crucial problem, managers in the Danube Region state in surveys that it has improved in 2013 compared to 2009 and 2011. Generally speaking, **bank loans are the main source of external SME finance** and very often they are the only available corporate financing option for SME in contrast to large firms which have many further external sources of finance. Significantly **less SME in the Danube Region used internal funds and more SME used bank loans as well as grants or subsidised bank loans** in 2013 compared to 2009. The increase of the usage of bank loans and grants in the E-28 in 2013 was much weaker. The development in the Danube Region provides additional evidence for the improvement of the access to finance as excessive reliance on internal funds is a sign of potentially inefficient financial intermediation or a limited access of firms to capital. Although SMEs' financing constraints such as access to public finance and willingness of banks to provide a loan are still among the major challenges facing SMEs' managers, these indicators showed **gradual improvement** since the worst crisis year 2009.

Clustering and cluster development

The importance of cluster activities is growing in the Danube Region as more and more countries have adopted active cluster development policies and inter-cluster cooperation has started to move up on the economic agenda at regional level. Clusters are defined as geographically co-located firms and other institutions engaged in economic activities in a set of related industries, connected through externalities and other types of linkages. The fact that the companies are clustered together in one region and that the on-going exchanges among them foster good communication and mutual trust produces advantages in terms of production efficiency and flexibility in drawing up competitive strategies.

The report provides first a quantitative benchmarking of economic clusters based on industry sector, regional classification, size, specialization and focus of clusters and economic data, such as number of employees and of enterprises, based on factual data from the European Cluster Observatory platform. A number of 278 clusters that pass a relevance threshold were identified in the 41 industry sectors that were analysed country by country within the Danube

Region. Germany is leading with 63 clusters identified, out of which 18 of top ranking.

Next, the report is providing both a quantitative and a qualitative identification of potential sectors of cross-cluster cooperation within the Danube Region. Two leading sectors can be identified in terms of overall employment at the region level - **automotive** and **metal manufacturing**. In addition, there are four runner-ups - **production technology, construction, processed food** and **transportation and logistics**. There are also clusters in niche sectors such as **biotech, sporting, recreational and children's goods, leather products, lighting and electrical equipment, oil and gas** that may prove key to competitive growth and regional enhancement.

Sectoral cluster distribution is uneven across the region, as more advanced sectors, such as production technology, are clustering in more developed countries, and other sectors, such as processed food, are concentrated in less developed or agriculture-related countries.

The qualitative perspective taps on survey results on sectors and specialisations of cluster initiatives carried out within the Working Group for Cluster Excellence in PA 8 of the EUSDR. It suggests that **automotive, ICT, wood processing** and **food and textiles** as the most frequent common choices as sectors for cluster cooperation across the region. **ICT** and **renewable energy** are also ranking high in the survey, as these sectors reflect key technologies of the future, that every country and investor in the Danube Region should consider. Other sectors selected for potential cluster cooperation by survey respondents are **environmental technology, health care, micro-nano technology, aerospace** or **creative Industries**. Clusters have recently or will soon become widespread in most of these fields as a response to technological challenges. However, not all such new developments have a critical mass or sustainable development perspective without public support.

From a policy perspective, the findings of the **report suggest that only excellence-based cluster organisations are key to successful cross-cluster cooperation** and that the public push needs to be reciprocated by a market/business pull, with enough traction to create sustainability.

Cluster organizations are poorly registered in the region. Data generally highlight the high variation among countries of the region in terms of institutional-

ized cluster organizations. Austria and Germany have strong institutionalized clusters, whereas Ukraine, Moldova and Serbia have more than 75% of the natural clusters weakly institutionalized. In other words, there is much work to do in order to balance the quality and performance of cluster organisations across the regions. The presence of cluster initiatives and organisations is no guarantee for excellence and a pledge for cooperation – there is a need to support and know-how transfer to foster the emergence of stronger and more efficient cluster organisations.

Cooperation and Cooperation Potential in the Danube Region

The report provides an overview of about 30 existing organisations and networks related to economic cooperation in the Danube Region and offers conclusions and recommendations for future institutional cooperation.

Business and cluster networks in the Danube Region have emerged only recently while there is a long tradition to cooperate in the framework of EU programmes and the Southeast European cooperation process. **Cluster organisations** are first of all active to improve the capacities of clusters and their international networking. Among the business organizations the **chambers of commerce** and industry support start-up businesses, develop cross-border cooperation of businesses facilitate trade.

The targets of **cooperation to increase economic competitiveness** in the EUSDR are set in the Action Plan for the Priority Area 8. Projects are to be developed by cluster and business organisation. The Priority Area Coordinators together with the Steering Group established seven thematic Working Groups (WGs). Two of the working groups initiate the cooperation of clusters and of business networks respectively.

The WG Cluster of Excellence aims "to foster cooperation and exchange of knowledge between SMEs, academia and the public sector in areas of competence in the Danube Region." In the field of **cluster cooperation TGM Upper Austria is the main initiator**. DanuClus aims to link clusters, cluster managers, cluster experts and cluster policy-makers from the Danube Region, in order to prepare clusters in this geographic area for the new EU funding period of 2014-2020. One over-arching project, Danube-INCO.NET

delivers the most up-to-date information about activities in the field of research and innovation.

The **Danube Chambers of Commerce Association DCCA** has been the driving force to create the PA8 Working Group "Business Organisations". This aims "to improve business support to strengthen the capacities of SMEs for cooperation and trade". DCCA is an association of 20 regional and municipal chambers of commerce along the river Danube. There is no member from the more remote provinces of the Danube Region countries.

The new **transnational ETC programme DANUBE 2014-2020** set up for the Danube Region provides an operational programme as another instrument to implement the goals of the EUSDR. Besides contributing to the Strategy's thematic goals by realising relevant cooperation projects, the programme might also support the institutional cooperation of stakeholders and institutions of the Danube Strategy.

The **participation in cooperation initiatives is very uneven** in the Danube Region. German, Austrian and Hungarian organisations are the most active, those from Croatia, Serbia, Romania and Bulgaria are less so while other countries hardly show up. This has to do with variations concerning cooperation culture, financing opportunities and public governance, generally mirroring economic development and institutional gaps between the Danube Region countries and regions.

The analysis of the current cooperation networks and the results of a small questionnaire suggest that **clarification is needed** as to the role of various initiatives and programmes in the framework of the EUSDR in relation to other similar initiatives and programmes of the European Commission, Southeast Europe and the Eastern Neighbourhood. Financing opportunities for EUSDR activities must be clear for all (potential) participants in cooperation projects.

A further need is to **integrate the less developed regions** into the cooperation process. Organisations from less developed regions of South-East Europe and especially from Moldova and Ukraine need to be invited and integrated into the cooperation process of the EUSDR. These have poorer institutional, organisational and financial capacities than organisations in more developed countries. There are two ways ahead: (1) to enlarge existing

networks and initiatives to the less developed regions; (2) to support initiatives in less developed regions to set up networks where they have leading position.

At the same time with broadening, **cooperation should be also more professional and deeper** in order to foster the development of world-class clusters in line with the EU innovation strategy. A cross-sectoral approach for cluster projects is the new trend to foster innovation, which also allows for a transfer of knowledge to more traditional industries and for developing a smart specialisation strategy that transcends national borders.

1 Introduction

The EU Strategy for the Danube Region (EUSDR) is the second EU macro-regional strategy following the EU Strategy for the Baltic Sea Region (EUSBSR). The latter has been assisted by annual State-of-the-Region Reports which track various indicators of competitiveness, describe and evaluate collaboration activities across the Baltic Sea Region, cover entrepreneurship in the region and present the progress made in achieving the aims of the EU strategy. In 2014, the Centre for European Economic Research (ZEW) Mannheim together with the Institute for Applied Economic Research (IAW) Tübingen and the Vienna Institute for International Economic Studies (wiiw) published a report for the countries of the Danube Region with the analytical framework of the State-of-the-Region reports of the EUSBSR as model. The present report is an update of this exercise considering the most recent data available for the indicators and countries of interest.²

Alongside these two indicator reports the study team of ZEW, IAW and wiiw produced a further report based on qualitative interviews with expert from all Danube Region countries. The aim of this qualitative analysis has been to find out what, in the view of experts of the Region, are possible starting points for improving the competitiveness of the Danube Region and what kind of projects could be carried out as part of the EUSDR (Müller and Leo, 2015). Both types of reports, the quantitative as well as the qualitative one, involve the formulation of policy recommendations which can be regarded as complementary. While superordinate areas of activity are identified with the quantitative analysis, the qualitative analysis provides hints about what should be done in more detail. In order to make the difference clear a “based on data analysis” in the title of Chapter 2 is included, which summarises the result of the indicator analysis in the present report in form of a SWOT analysis.

² It should be noted that not all indicators could be updated because not for all indicators new data are available.

In the following, a brief characterisation of the Danube Region and a description of the country aggregates is given before the presentation of the results of the indicator analysis is presented.

A brief characterisation of the Danube Region

The socio-economic situation in the Danube Region is not only determined by the fact that people and countries share the same river, but also by historical, economic, political, and cultural interdependencies. The Danube connects and to a large extent defines regions of Central Europe and the Balkans. It has also been the scene of cycles of integrations and disintegrations in the recent history as well as in the more distant past. The legacy of those cycles and conflicts is manifested in widely different levels of development between the north-western and south-eastern parts of the Danube Region. The current level of integration and comprehensive interdependence of the region as a whole is quite unprecedented. This opens up prospects for sustainable development and faster convergence based on a closer cooperation and well-designed regional policies. This report aims at providing a pool of knowledge and insights for setting and attaining viable policy goals for increasing competitiveness in and of the region.

The Danube Region is characterised by wide differences in a range of socio-economic indicators such as economic development and income levels, labour market situation, foreign trade openness and specialisation. Economic and income gaps have even widened during the recent crisis and the labour market situation deteriorated.

Another distinct feature of the region is its relatively high (yet again varying) degree of trade integration: the shares of intra-regional exports in total ranges from 12%-13% in Germany and Ukraine to more than 50% in Hungary, Slovenia, Croatia and Bosnia and Herzegovina. In most Danube Region countries, the share of Germany in exports is overwhelming. On the other hand, Bulgaria, Romania, Serbia, Bosnia and Herzegovina, Montenegro as well as Ukraine and Moldova display divergent trade specialization patterns which reflect either their less advanced transition, legacies of the past and less pronounced geographic and economic proximity to the region (Ukraine).

These and other socio-economic characteristics and features of the Danube countries pose a number of challenges to the formulation of a coherent regional development strategy. At the same time, the regional economic and cultural diversity offers many opportunities which may be exploited for fostering regional development and competitiveness. A careful analysis of all these features, the identification of existing regional challenges and potential development strategies, as well as the recommendation of appropriate policies which would foster sustainable development and competitiveness of the Danube Region represents the ultimate task of the report.

Country composition of the Danube Region

The Danube Region largely consists of member states of the European Union most of which are former communist countries which joined during the last ten years. Further countries in South-East Europe are on the way to access the EU while those in the Eastern Neighbourhood also strive for closer institutional links.

The EUSDR encompasses the following countries and regions: Germany (Baden-Wuerttemberg and Bavaria), Austria, the Slovak Republic, the Czech Republic, Hungary, Slovenia, Romania, Bulgaria and (since July 2013) Croatia within the EU, and Serbia, Bosnia and Herzegovina, Montenegro, the Republic of Moldova and Ukraine.

This report compares the Danube Region with other regional aggregates, namely the OECD and the EU-28, in order to assess the Danube Region's competitiveness and benchmark its economic performance.

Since the Danube Region exhibits wide disparities with respect to most indicators, we divide the Danube Strategy Region countries into five subgroups, primary taking into account the chronology of the EU integration process as well as the current economic performance.

The *Member State Area 1* consists of Bavaria, Baden-Wuerttemberg and Austria. Bavaria and Baden-Wuerttemberg are among the most powerful economic regions of Germany, founding members of the European Economic Community (EEG), while Austria only joined in 1995.

The *Member State Area 2* is made up of Hungary, the Czech Republic, the Slovak Republic and Slovenia. All these countries became members of the EU in 2004.

Member State Area 3 contains Romania, Bulgaria and Croatia. Whereas Romania and Bulgaria joined in 2007, Croatia is the most recent member of the EU, since it only joined in July 2013.

The group of *Accession Countries* comprises Serbia, Bosnia and Herzegovina, as well as Montenegro. The status of a candidate for accession has been given to Montenegro in 2010 and to Serbia in 2012, while Bosnia and Herzegovina remains a potential candidate for accession.

The group of *Neighbouring Countries* consists of Ukraine and Moldova. The term “Neighbouring Countries” relates to the European Neighbourhood Policy.

2 Competitiveness of the Danube Region: Potentials, Needs, Challenges, and Recommendations based on Data Analysis

2.1 Macroeconomic Performance and Competitiveness

Potential Opportunities: Even though the Danube Region's GDP per capita is still much lower than in the benchmark regions EU-28 and OECD, this can also be seen as an opportunity for these countries, as with a lower initial level, it is easier to achieve growth rates above average.

As the Danube Region's labour costs are sufficiently low to compensate its still comparatively low labour productivity, the resulting unit labour costs currently give the region a small competitive edge internationally. This is one prerequisite among others for an export-driven economic growth.

Compared to the EU-28, the Danube Region's public debt to GDP ratio is relatively low. If one neglects possible borrowing restrictions and other factors the Danube Region will have a higher fiscal financing capacity and therefore can devote more public expenditures to growth generating projects, e.g. for infrastructure. This holds at least for those Danube countries with the highest need for action.

Needs: To achieve a higher GDP per capita, the Danube Region needs a higher labour productivity, which can be reached by the following: improving labour force qualifications, enhancing technological performance, and above all, enlarging physical capital endowment. The latter, however, requires that the necessary investments are undertaken. In the past few years the Danube Region's gross investments relative to GDP has been higher than in the benchmark regions. This investment path has to continue in the future. Only then the Danube Region will reach a higher physical capital stock, which will lead to higher labour productivity and in turn to higher GDP per capita.

High investment activity requires a good investment climate. However, according to the 'Global Competitiveness Report 2014-2015', the Danube Region countries have become less investor friendly and less competitive, as they decreased in rank with regard to several indicators. Specifically, they lost

ground in the areas 'Burden of government regulation', 'Protection of property rights', 'Flexibility of wage determination' and 'Trade barriers'. Therefore, the Danube Region has to work on these issues.

A better investment climate would not only increase domestic investments but also attract more inward Foreign Direct Investments of private investors from abroad. In addition, better economic frame conditions in the Danube Region set the ground for support from international institutions such as the EU or the World Bank, which again facilitates physical capital formation.

Challenges: The main challenge for the Danube Region is to raise GDP per capita, an indicator which is commonly used to measure welfare. In 2013, the Danube Region's GDP per capita reached 18,034 US\$ (2005, PPP). This amounts to only 62.3% of the EU-28 and 56.6% of the OECD level. Among the different EU Member States subgroups within the Danube Region, the problem only applies to Member States Area 2 (Hungary, Czech Republic, Slovakia, and Slovenia) and especially Member States Area 3 (Bulgaria, Romania, Croatia), where average GDP per capita adds up to only 21,600 US\$ and 12,950 US\$, respectively. Therefore, one challenge for these countries is to catch up faster than they did in the past years.

One important measure to increase GDP per capita is to raise labour productivity, which, in 2013, was only 40,900 US\$ (2005, PPP) in the Danube Region, well below the EU-28 (68,050 US\$) and the OECD (72,150 US\$). Again, the countries of Member States Area 2 and, in particular, the group of countries in Member States Area 3 are in need of action, as their labour productivity reached only 49,900 US\$ and 31,350 US\$, respectively. For these countries it will be a challenge to achieve a faster catch-up path than in the past years.

Preliminary recommendations and suggestions for further action: Unions and management should aspire that wages only rise according to the increase in labour productivity in order to avoid increasing unit labour costs, as they are a main indicator for the cost competitiveness of an economy. This is especially important in countries which exhibit a low technological competitiveness.

Especially in the countries of Member States Area 2 and 3 within the Danube Region, political players should focus on the following aspects:

- Through educational and technology policy the respective states can contribute to a better qualified labour force and an improved technological capacity. In the Danube Regions, this would lead to an increase in labour productivity and competitiveness, which in turn would favour a higher GDP per capita.
- Countries should dedicate a sufficient share of their total expenditures to public investments, especially in infrastructure projects, as they increase firms' productivity and lower their costs.
- However, a state-supported increase in physical capital formation does not necessarily require higher public expenditures. Particularly, governments can enhance the investment climate by improving the economic conditions for firms and investors. More specifically, the Danube Region should work on the areas 'Burden of government regulation', 'Protection of property rights', 'Flexibility of wage determination' and 'Trade barriers', as its ranking decreased with regard to these indicators.

2.2 Labour market and migration

Potential opportunities: Lower overall and youth unemployment rates in the Member States Area 1 than the other country groups of the Danube Region are partly the result of specific policies which could be adapted in regions with high unemployment. One of the major factors contributing to favourable labour market position of the young is the dual apprenticeship system securing a smooth transition from school to work for most young people.

In the Member States Area 3, the Accession and the Neighbourhood Countries the high share of agricultural employment combined with low wage levels allows for a specialisation in labour intensive production (e.g. environmental friendly production of vegetables etc). Most of the countries have areas with good soil quality and climatic conditions which are promising in terms of high-quality farm output, but sizeable investment in agriculture as well as in upstream and downstream sectors and infrastructure is needed.

Needs: To stimulate economic growth and consequently generate employment, the less developed Danube Region countries are first of all in need of investments and of a favourable business environment. There is also a need to reform the

existing vocational and educational training (VET) systems in the less developed Danube Region countries in order to meet the requirements of the labour market, i.e. in addressing the problem of skill mismatch. In addition it will be needed to strengthen labour market institutions such as wage setting mechanisms, employment protection legislation and active labour market policies, etc. Also modernising public employment services and expanding their instruments will be needed. In this respect transnational cooperation, e.g. in sharing experiences, acceding new approaches and learning new skills, can help. Last but not least it needs the political will to give employment creation highest priority.

Challenges: From the labour market and migration perspective large differences in the labour market performance across the Danube Region countries represent the major challenge. The gap is particularly wide between the most developed Member States Area 1 and the least developed countries in the Accession Countries Area as well as in the Neighbourhood Countries. In most of the less developed countries activity rates (particularly of females) are lower than in the prospering regions, agriculture is still an important employer, while the services sector (generally considered as the generator of future employment) is underdeveloped in many of these countries. Unemployment rates are very high by European standards, particularly among the young population and informal sector employment is pretty large and widespread. Vocational education and training systems in the less developed countries are inadequate in terms of curricula and skills provided and the capacities and effectiveness of public employment services are limited. Less developed Danube Region countries have been traditionally migrant sending countries and remittances are an important source of their income. By contrast, Austria and particularly Germany are among the most favoured destination countries in the EU for potential migrants from the Accession and neighbourhood countries; the Czech Republic is a receiving country of migrant labour from Ukraine. Given the poor economic growth prospects, gaps between the Danube Region countries with respect to activity and unemployment rates are likely to persist and consequently poverty will be on the rise in the less developed regions. Thus, the outflow of (young and highly educated) workers to the more prosperous countries will continue.

Preliminary recommendations and suggestions for further action:

- Given the different levels of development of the Danube Region countries' labour market, tailor-made responses are needed, with policies that may vary considerably from one country to another.
- Considering high and unprecedented youth unemployment in some of the less developed Danube Region countries, it would be conducive supporting them in setting up dual training systems of their own. This would require first of all enterprises which are ready to train people. In addition representatives of the social partners e.g. from Austria and Germany may also help to develop institutional settings and a legislative basis for the involvement of all social partners in the decisions on vocational education and training, but also in establishing efficient public employment services to ensure successful work placements.
- Enhancing/institutionalising cooperation between the poor and best performers with respect to labour market initiatives, e.g. through the exchange of best practises and training of people in administration.
- Gradual lifting of labour market restrictions, e.g. in the Accession Countries³ and creation of conditions for return migration.

2.3 Regional Development

Potential opportunities: From a regional perspective, potential opportunities for economic development, especially those that can be strengthened by transnational or interregional cooperation, are likely to be a) heavily localised and b) confined to specific areas in the less developed countries in the Danube Region. Given the large differences in terms of economic development across the regions in the countries, opportunities are best for those regions in the less developed countries that already have established at least a nucleus of economic, especially industrial, activity. Strengthening the linkages of such regions to the highly developed and highly industrialised regions in Member States Area 1 may generate mutual advantages, in terms of increasing the potential market, inclusion in the production chain, thus generating techno-

³ See also, SEE 2020 Strategy, Jobs and Prosperity in an European Perspective, p. 29

logical spillovers and more efficient or technologically advanced production processes.

By contrast, finding opportunities for the heavily agricultural regions is much more difficult. One way to bring some development to the agricultural regions in Member States Area 3 and the Accession Countries is by raising the status of agriculture itself. Some form of knowledge exchange, especially with Austrian agricultural organisations (as Austrian agriculture tends to be at the smaller scale as well), might result in some new ideas on how to modernise and organise existing agricultural structures in the less developed countries, especially also with respect to finding solutions for financing the investments needed in this respect.

Needs: The most important need that the less developed countries and regions in the Danube Region have is capital accumulation and investment, as they are the main ingredients to build up economic core areas (around smaller or bigger cities) that are the backbone of any local economy.

The question however is, in how far transnational and interregional cooperation projects can help in this respect. Establishing links between more and less developed countries and regions, both in the public, administrative as well as in the private, company level sphere may certainly help to foster foreign direct investment (FDI). Such links may firstly create knowledge about the potential of the 'other side', it may also create personal contacts, reduce administrative barriers etc. For the less developed countries and regions in the Danube Region FDI certainly constitutes, at least in the short run, an interesting way to foster economic development.

Challenges: The main challenge, from a regional perspective, is the enormous heterogeneity of regions in the Danube Region. This not only refers to the differences between the Member States Area 1 and the rest of the Danube Region, but also to the differences between and also within the latter countries. Economically strong regions, either capital cities or industrialised regions, are opposed by weak agricultural regions. Without any action the gap between these regions is likely to increase in the future, given some fundamental differences in attractiveness and economic potential these regions possess. Moreover, these increasing economic gaps will have repercussions on the so-

cial and also environmental sphere, given that the improvement of both of them depends to a large extent on the available income.

Preliminary recommendations and suggestions for further action: From a regional perspective it is recommended to not regard the countries of the Danube Region as homogenous entities. Rather they should be viewed of being the sum of quite differentiated regions, in terms of income, industrial structure etc., which all have their own needs to develop and prosper. Thus, policies may focus on certain types of regions, like highly urbanised regions, industrial and agricultural regions. Cooperation and knowledge exchange between regions of the same types in the various countries may be strengthened.

Thereby, especially the experiences of the prosperous regions may be valuable for the less developed regions, especially in the Member States Area 3. Even in Austria, the more agricultural regions, e.g. in Burgenland or Lower Austria, have much more difficulties in generating employment and income for their population than more industrialised regions. Over time structures (political, administrative, economic, etc.) have evolved to deal with such problems, and they might bear interesting starting points for similar regions elsewhere in the Danube Region. Similar holds for industrial and urban regions.

2.4 Infrastructure and Environment

Potential Opportunities: The Danube Region has the potential to become a more competitive economic zone by improving transport network connectivity, accessibility, and resource efficiency. Infrastructure improvements and increases in efficiency reduce the unit costs of transport and production, increase the capacity for passenger and freight traffic, and make the business environment in general more attractive. Currently, infrastructure quality and environmental standards are significantly declining towards the east of the Danube Region. Therefore, there are large opportunities for the less developed countries in the east for sustainable development and growth. In particular, inter- and intra-regional trade opportunities can be improved by increasing the quality of their transport infrastructure, mostly ports and railroad systems but also road systems. A centrepiece of the development of the region is the Danube River itself. It has high potential of handling additional transport needs cost efficiently and environment friendly. Intermodal transport from the

ports to the hinterland can increase the potential transport opportunities of the Danube River. Moreover, enhancing the Danube River infrastructure improves the competitiveness, market integration, and potential trade opportunities for the whole region.

The energy sector is rather well developed with high quality of energy supply and a high share of renewable electricity. Nonetheless, there is still a high potential of reducing transmission and distribution losses in the electricity grid and thus improving energy efficiency, in particular in the eastern countries of the Danube Region. Also, in many eastern countries, renewable electricity is almost exclusively produced from hydro power. Solar and wind energy seem to have the potential to further diversify the electricity mix and help to reduce energy import dependency.

Needs: In order to increase competitiveness the provision of an efficient and effective transportation network is crucial. For this, in particular in the eastern Danube countries, it is needed to modernize and expand the existing transportation systems, but also to increase their utilization rate. Given that sustainability becomes more important on the political and social agenda, improving further the safety of transport and shifting transport volumes from road to more climate-friendly modes of transportation (i.e. railroad and waterborne transport) are further needs.

The Danube River might play an important role in this regard. Today, the Danube ports are in rather bad shape. They need to be improved and new ports have to be built to meet higher transport volumes. Damages from the Yugoslav Wars such as debris in the river bed and destroyed bridges have to be removed. Also, a deepening of the riverbed is needed for greater vessels from the Rhine River and the Sea. The fleet of the Danube River needs to be modernized in order to meet common standards of the Rhine River and the Rhine-Main-Danube-Canal.

Challenges: Economic growth and future prosperity of society rely on adequate energy supply. Taking into account the threats of global warming and climate change, most likely caused by the burning of fossil fuels, it is a major challenge to meet increasing future energy demand and, at the same time, reduce carbon emissions. This also holds true for the Danube Region.

The rise of the sea level and more frequent extreme weather events are predicted consequences of global warming. Such long-term changes do not only entail economic costs but also represent a significant challenge on transport and energy infrastructure. The countries of the Danube Region need to adapt their infrastructure in order to ensure stable economic conditions for industry and trade.

As regards the improvement of the Danube River, which was identified as key for the further development of the region's transportation networks, there is a consensus to be found across all concerned countries. This is a challenge by its own. Moreover, enhancing the use of the Danube River as a waterway and, at the same time, preserving its natural habitat and not causing severe environmental damage is also a challenging task.

Preliminary recommendations:

- Strengthening intermodal transport and integrating infrastructure across modes and countries (removing cross-border barriers).
- Removing debris and destroyed bridges and deepening the riverbed of the Danube in order to be compatible with the Rhine River and river-sea ships from the Black Sea.
- Improving environmental waste management of industrial areas alongside the Danube River, in particular in eastern European countries. This would help to fully exploit the economic potential of the Danube River as transport route, while keeping its ecological balance intact.
- Integrating electricity markets to stabilize supply and prices across countries.
- Reducing transmission and distribution losses in the electricity grid.
- Increasing the share of renewable energy (where economically justified) to reduce energy import dependency and further diversify energy mix.

Improving CO₂ efficiency of production (i.e. reducing CO₂ emissions per PPP \$ of GDP), in particular in those countries that fail the international benchmarks considerably.

2.5 Entrepreneurship

Potential Opportunities: Entrepreneurship and start-ups have the potential of playing a major role for increasing the competitiveness of the Danube Region. The most important aspect here is that true entrepreneurs can be regarded as “agents of chance”. Entrepreneurs try to bring new methods, processes, products and services to the market thereby challenging existing firms and their business models. This can lead to a stream of innovations initiated not only by the new firms but also by existing firms in response to increased competition due to the entry of new firms. Furthermore, new firms can cause existing firms to exit. This can have positive effects on the competitiveness of the Danube Region if outdated processes and products disappear together with the closed firms. As the results in this report show there is a lot of firm dynamics going on in a number of countries of the Danube Region. Thus, the stock of firms is renewed to a substantial degree. Whether this is a development towards the better is a still open question which remains to be addressed in the second part of the project. But in principle, the high firm dynamics can be interpreted as a sign that the Danube Region is on the way to increased competitiveness.

Challenges: As our analyses in this report show, one of the main issues in the Danube Region is the still high level of corruption. This seriously impedes the activities of existing business but also has strong negative effects for the establishment of new firms because potential founders may be discouraged from actually setting up their firm. In addition, it might be the case that firms that are started are not those with the highest social value but whose founders are most able to deal with the rules of corruption. There have been various attempts to reduce corruption in the Danube Region. However, they were only moderately successful. Finding measures in order to confine corruption remains the main challenge for improving the conditions for entrepreneurship.

Another issue concerns the administrative burden for setting up a firm. According to the Doing Business-Reports of the World Bank there have been major improvements in the administrative conditions for starting a firm in the Danube Region since 2003. However, the Danube Region still ranks below the EU and the OECD in this respect. Thus, there is still room for improvement.

What is also not easy is finding the right target group for measures of entrepreneurship policy. When thinking about start-ups, policy makers often as-

sume that they simply need to increase the number of start-ups in order to stimulate the development of a region or a country. The reason is that start-ups are in general associated with innovation and job creation. However, as the scientific literature has shown, this is not the case. The average start-up is not innovative at all, it employs nobody except the founder, does not create much jobs and has a high likelihood of closing in the first years after establishment. Yet, this does not mean that entrepreneurship policy is completely useless. There are, of course, start-ups which have the potential to exert a large positive influence on the (regional) economic development. And they face problems in unfolding their full potential so that they need support. The challenge here is to identify just these high-potential firms because at the beginning they can look like the average business. In addition, it can be demanding to develop support programmes because high-potential firms can have almost idiosyncratic needs.

Needs: Concerning entrepreneurship, the needs for the Danube Region follow directly from the challenges listed above. There is a need for working measures to reduce corruption, for further efforts to cut administrative burdens and for a good eye for identifying high-potential start-ups. In addition, there is also a need for more data and information about firms in the Danube Region. This applies especially to the non-EU countries of the Danube Region. While there is at least some information on firm dynamics available at Eurostat for the EU countries, the project team was not able to find any information on firms in the non-EU countries of the Danube Region.

Preliminary recommendations: As mentioned above, the average start-up does not contribute much to the development of a region or a country. It is therefore likely that generic start-up support will not have much impact in terms of innovation and (job) growth. Instead, it seems to make more sense to develop policies targeted towards start-ups which have the potential to become so called high-growth firms (HGFs). Although it is an extremely difficult task to identify HGFs there are some hints in the entrepreneurship literature on the characteristics of HGFs. 1) HGFs have strong ambitions to not only serve domestic markets but also to expand internationally; 2) The products of HGFs and improvements of them emerge in strong collaboration with costumers; 3) HGFs place a strong emphasis on sales and marketing, and 4) The managers of HGFs have strong leadership skills. These characteristics offer starting

points to develop policy measures in order to support high-impact firms. Sensible measures may include support programmes for internationalisation as well as the development of specialist sales and marketing skills, but also programmes that initiate or reinforce collaboration between firms and their customers as well as programmes that initiate networks between entrepreneurs so that leadership skills can be exchanged between firm owners. Because of their focus on internationalisation, collaboration and networks these approaches also incorporate the potential to serve the overall goal of the EUSDR of increasing cooperation between the countries of the Danube Region. However, these recommendations are based on evidence gained from Western countries.⁴ It might be the case that some subregions of the Danube Region struggle with special challenges so that special actions are required with respect to the support of entrepreneurship. This might be especially relevant for the Eastern countries of the Danube Region which are still in the process of transformation from communist countries to market economies. Identifying these special challenges will be part of the second part of the project.

2.6 SME Financing

Potential opportunities: SMEs have the strength to adapt to opportunities and changes, and to innovate, developing and offering new goods and services. In times of crisis the SMEs are more vulnerable than large firms. However, after the crises due to the capacity to adapt to changes in the economic and business environment, the recovery process for SMEs is often faster. The capital inflows, bolstered by more stable FDI inflows, that are returning to the Danube Region since 2010 and the EU funding for the Region led to more favourable development of the financial situation of SMEs in the Danube Region than in the EU. These results are reported by SMEs' managers in the Danube Region and are presented in the "SMEs' Access to Finance – Survey 2013 by the EU Commission".

Indicators representing a positive development in the Danube Region which was better than in the EU regard the firms' growth, firm's own capital, firms'

⁴ These recommendations draw heavily on Mason, Colin and Ross Brown (2013).

confidence in obtaining future financing from banks but also the overall faster improvement of the financial environment compared to the EU. Further indicators addressing the question on how firms finance their operations show improvements as well. These indicators compare the relative use of various sources to finance investment such as internal funds, bank loans and grants. As excessive reliance on internal funds is a sign of potentially inefficient financial intermediation or a limited access of firms to capital, the steadily falling values for the use of internal funds indicate an improved access to capital in the Danube Region in 2013 compared to 2009 and 2011.

Challenges: SMEs face different challenges with regard to financing compared to large businesses. While large companies have access to equity capital markets, the equity markets are not accessible to the vast majority of SMEs. The lack of equity capital invested in SMEs makes them more reliant on other sources such as bank lending, entrepreneur's own savings, retained earnings or funds resulting from the sale of assets.

The severe crisis of 2008/2009 has brought additional challenges for SME as the credit supply conditions significantly tightened arising from the reduced ability and willingness of banks to provide the financing on which this sector is particularly reliant. However, in the last 2-3 years the financing conditions stabilized. Indicators as willingness of banks to provide a loan or access to public finance are still among the major challenges facing SMEs' managers, nevertheless, these indicators showed a gradual improvement in the last 3 years. Further core challenges from the financing perspective can be derived from the limiting factors to get external financing in order to realise the firm's growth ambitions. According to the managers insufficient collaterals and interest rates being too high are the two largest obstacles to external funding.

Needs: The challenge for the SMEs is often not primarily the lack of financial sources but the barriers to apply for funding. According to SMEs' managers especially the application for EU funding comprises high bureaucratic barriers and time consuming procedures. In 2013, managers across the EU rated "making existing public measures easier to obtain" (for example through the reduction of administrative burdens) and "tax incentives" as the two most important measures, when asked to rate the importance of a number of different mechanisms to help their company's financing in the future. They were

followed by “guarantees for loans” and “business support services”. Although there is a reduction in the level of importance of all factors since 2009, SMEs’ managers of the Danube Region rate all the factors (except for “guarantees for loans”) at above EU levels for both years.

Furthermore, evaluation reports also highlight the need for more technical assistance through the application process. Additionally, more information tools for potential applicants are needed. According to SMEs’ managers, knowledge about funding opportunities, key dates of calls for proposals and application processes need to be spread to the business community.

Preliminary recommendations: To a large extent recommendations concern the national and especially the operational level as well as the institutions and bodies responsible for the implementation of the specific financial support programmes.

- Better information for beneficiaries: Establishing of well-targeted information channels which consider the needs of recipient groups; exchange of best practices to allow for wider learning.
- Simplifications: Cleaning of application procedures from confusing and overwhelming documentation requirements that can differ widely from one funding scheme to another; simplified costs (flat rates).
- Desirability of financial engineering instruments being implemented as an alternative to limited grant resources.
- Further major restriction arises from the lack of pre-finance resulting from the real-cost principle shifting from the programme level to the beneficiaries. Therefore, the need of provision of (or support in looking for) co-financing is crucial.⁵

2.7 Cluster development

Potential opportunities: The importance of cluster-based activity is growing in the Danube Region as more and more countries have adopted active cluster

⁵ These recommendations are mainly based on the analysis of Tödtling-Schönhofer, H. et al. (2011), Barriers for applicants to Structural Funding, European Parliament, DG Internal Policies, 2012.

development policies and inter-cluster cooperation has started to move up on the economic agenda at regional level. There is factual evidence related to robust concentration of firms across the Danube Region in several industry sectors, such as automotive, metal manufacturing, production technology, construction, processed food, transportation and logistics etc.

The experience of countries with more developed clusters and mature cluster organisations can be used for know-how transfer towards emergent clusters and cluster organisations. Both advanced and less advanced countries in the Danube Region may cooperate in pushing for cluster development in new industries or key technologies, such as ITC, renewable energy, environment, healthcare or micro/nano-technology.

Challenges: Cross-cluster cooperation needs proper facilitation - economic concentrations of cluster will not cooperate extensively without the existence of cluster initiatives and organisations. However, the mere creation of cluster organisations will not be a universal panacea to provide competitiveness and cooperation. The road to excellence is a long winding one, and the learning/capacity building process is critical.

In addition to this, the public push for cluster development and cross-cluster cooperation needs to be reciprocated by a market/business pull, with enough traction to create sustainability. The balance is difficult to achieve - too much public support will prevent true ownership by the private sector, too little public support may not overcome possible market failures and information asymmetry.

Needs: The first critical barrier in assessing the capacity of cluster organisations to engage in cross-cluster cooperation activities is related to availability and quality of data and information. Data is scarce and unreliable, regardless its origin at EU, government or private sector level. Data on clusters and on cluster organisation should be crosschecked and gathered from multiple sources in an organised and transparent way. Using Government, cluster organisation and independent research data at the same time can be critical for having a proper design of cluster development and cooperation initiatives and for evidence-based policy.

Also policy evaluation is a key issue, especially given the new generation of criticism suggesting that building an entrepreneurial ecosystem is more about

facilitating talent and individual entrepreneurs rather than about building support structures. All public stakeholders promoting cluster development initiatives or programmes need to properly invest in evaluation and monitoring.

Preliminary recommendations: Labelling clusters at EU level may prove difficult and costly to implement. Voluntary labelling should be preserved, as compulsory labelling may lead to administrative cost and market distortion. As an alternative, simple and transparent benchmarking, coupled with rigorous self-assessment may be a solution.

Supporting the creation of National Cluster Associations⁶ in all countries of the Danube Region as an unique contact point of info and reporting would be advisable, provided that it will not become an administrative monopoly of some sort regarding cluster development.

Differentiating between robust/mature cluster and emergent clusters can be useful in terms of cluster-cooperation goals and know-how sharing agenda within the Danube Region.

⁶ Several countries of the Danube region already have National Cluster Associations, so best practices are available;

3 Prosperity and Competitiveness in the Danube Region

3.1 Macroeconomic Performance

3.1.1 Gross Domestic Product

The market value of final goods and services produced in an economy during one year is measured by the Gross Domestic Product (GDP). Therefore, the respective value of GDP is traditionally regarded as a measure of economic strength of a country or a region.

To get an impression of the economic performance of the Danube region, its subgroups as well as some benchmark regions, the respective values of GDP are displayed in Table 1a. It becomes obvious that GDP in the Danube Region is significantly lower than both in the EU-28 and in the OECD countries. In the following, GDP will be scaled by number of persons employed in order to control for the different sizes of the economies. Irrespective of this Table 1 shows

Table 1: GDP and real GDP growth for the OECD, the EU-28, the Danube Region and its subgroups

GDP in billion, constant 2005€			
	2003	2014	Real growth 2003-2014
EU-28	10,999.1	12,346.3	12.2%
OECD	28,049.6	33,159.9	18.2%
Danube	1,414.2	1,726.2	22.1%
Member States Area 1	956.1	1,143.4	19.6%
Member States Area 2	242.4	305.9	26,2%
Member States Area 3	125.6	164.6	31.1%
Accession Countries	27.9	37.3	33.9%
Neighbouring Countries	62.2	74.9	20.4%

Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, EO, HR; Accession Countries: RS, BA, ME; Neighboring Countries: MD, UA.

Source: Eurostat, wiiw Annual Database, World Bank, national statistics. Calculation and illustration: IAW.

that in the years between 2003 and 2014 the GDP (measured in €) of the Danube region increased by 22.1% in real terms, while GDP growth for the EU-28 and OECD was smaller, reaching 12.2% and 18.2%, respectively. Thus, a catch-up effect of the Danube region is apparent. The same holds for the average annual real GDP growth rate from 2004 to 2014 which for the Danube Region amounts to 1.8%, while for the OECD and EU-28 it is equal to 1.5% and 1%, respectively. Within the Danube region, Member States Area 2 displays an above average growth rate of 2.14%, which is even surpassed by Member States Area 3 and the Accession Countries with growth rates of more than 30%.

In 2003, the countries of Member States Area 1 (Austria, Baden- Wuerttemberg and Bavaria) accounted for 68% of GDP of the whole Danube Region (Annex Figure 122), by 2014 this share has slightly decreased by two percentage points and amounted to 66% (Figure 2). Hungary, the Czech Republic, Slovenia and Slovakia together (Member States Area 2) amount to 18% of the Danube Region's GDP in 2014, which implies an increase by one percentage point compared to 2003.

Table 2: Average annual real GDP growth rates for the OECD, the EU-28, the Danube Region and its subgroups

	Average annual real GDP growth from 2004-2014
EU-28	1.06%
OECD	1.51%
Danube	1.83%
Member States Area 1	1.64%
Member States Area 2	2.14%
Member States Area 3	2.49%
Accession Countries	2.69%
Neighbouring Countries	1.70%

Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, EO, HR; Accession Countries: RS, BA, ME; Neighboring Countries: MD, UA.

Source: Eurostat , wiiw Annual Database, World Bank, national statistics. Calculation and illustration: IAW.

Box 1: Methodological explanation

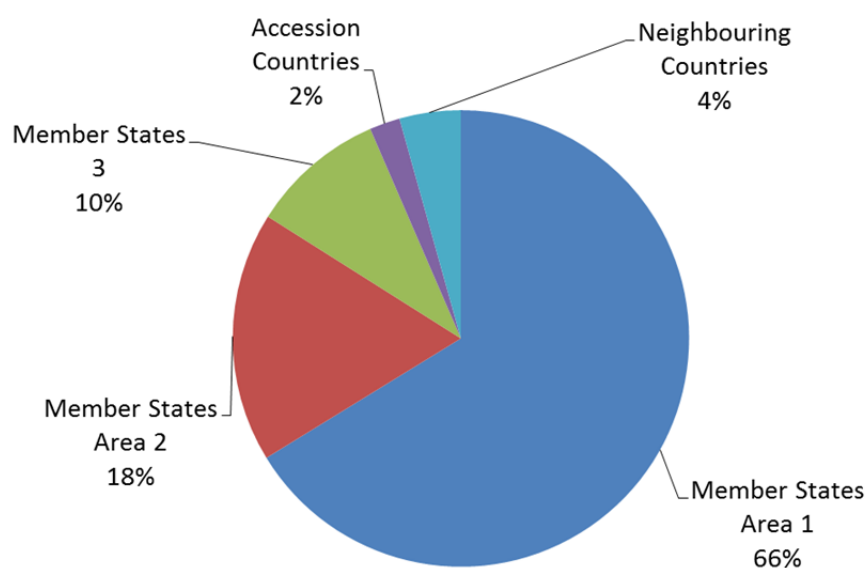
We use real GDP data, i.e. we use prices of a base year (here: 2005) to adjust the changes in GDP for inflation.

The third group formed by Croatia, Bulgaria and Romania (Member States Area 3) exhibits a share of 10% of GDP of the whole Danube Region in 2014, which also exceeds the group's share in 2003 by one percentage point.

The shares of GDP of the Accession Countries and the Neighbouring Countries of the whole Danube Region amount to 2% and 4% respectively, both in 2014 and 2003.

From Figure 3 we can draw the following developments: Real GDP growth evolution for the OECD, the EU-15 and the EU-28 countries was relatively constant at 3% between 2004 and 2007. Between 2007 and 2009, coinciding with the financial crisis, the series shows a sharp decrease reaching its lowest value

Figure 2: Share of GDP of the subregions of the Danube Region in total GDP of the Danube Region in 2014 (in %)

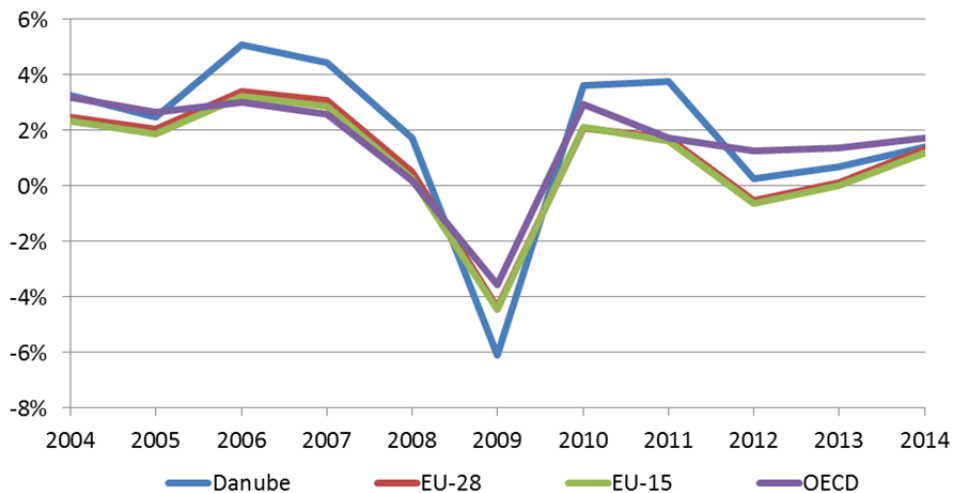


Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: Eurostat, wiiw Annual Database, World Bank, national statistics. Calculation and illustration: IAW.

in 2009 with a negative growth of -4%. In 2010, real GDP growth showed signs of an incipient recovery at a rate of approximately 2%. In 2011, the series again exhibited a slight drop, however not comparable with the sharp downturn experienced in 2009. From 2012 onwards, all country groups show signs of a slight recovery, with increasing real GDP growth rates. The Danube Region experienced higher real GDP growth rates than the OECD, the EU-15 and the EU-28 countries over the period 2004 to 2008 as well as during the period after the financial crisis. More specifically, growth rates amounted to 6% for the Danube Region compared to the around 3% growth rate for the OECD, EU-15 and EU-28 countries in the years preceding the financial crises. During the hot phase of the financial crisis in 2009, the decrease in real GDP growth in the Danube Region was stronger than in the EU-28 and OECD countries, dropping to -8%. Yet, the Danube Region experienced a quick recovery and in 2010 real GDP growth had surpassed the EU-28 and the OECD countries. In 2012, during the culminating Euro crisis, the Danube Region was close to stagnation, while real GDP growth was negative in the EU-28 and EU-15. Since then real GDP growth has been on a rising trend in the Danube Region. All in all, real GDP growth has been more volatile in the Danube Region than in the OECD, EU-15 and EU-28 countries during the observed period.

Figure 3: Annual real GDP growth 2004-2014 (in %)



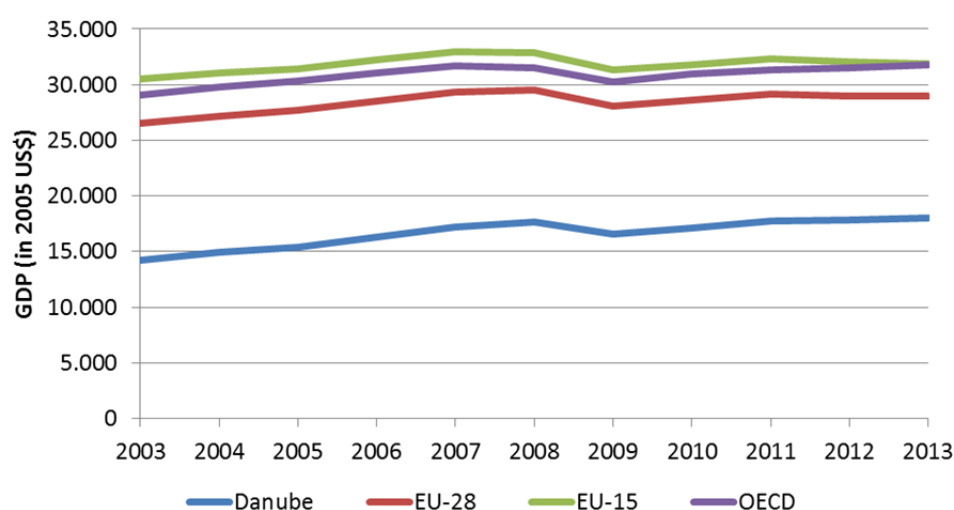
Source: Eurostat, UNdata, World Bank, national statistics.
 Calculation and illustration: IAW.

Regarding the development of real GDP growth from 2004 to 2014 in the different subgroups of the Danube Region, the EU Member States have experienced a negative real GDP growth rate of about -6% in 2009, while the Accession Countries exhibit a negative growth rate of “only” -3%. The Neighbouring Countries have suffered more intensely from the consequences of the financial crisis, resulting in a negative growth rate of -14% in 2009. Another exceptional drop was experienced by the Neighbouring Countries in 2014, coinciding with the Ukrainian crisis, when real GDP growth fell to -6% (Annex Figure 123).

3.1.2 Prosperity and Distribution Indicators

Figure 4 shows GDP per capita (PPP adjusted) of the Danube Region in comparison with the OECD, the EU-15 and the EU-28 countries. GDP per capita is commonly used as a proxy to measure welfare. For all country aggregates we see a steady increase, which is only interrupted by the economic crisis in 2009. In the observed period, the EU-15 has the highest level of GDP per capita reaching a value of 31,900 US\$ (PPP, in 2005\$) in 2013, closely followed by the OECD countries (31,800 US\$) and the EU-28 (28,950 US\$). The Danube Region’s GDP per capita reached 18,050 US\$ in 2013 which is the lowest value of all economic areas under consideration. The Danube countries’ average annu-

Figure 4: GDP per capita 2003-2013, PPP adjusted



Source: Eurostat, UNdata, World Bank, national statistics. Calculation and illustration: IAW.

al growth between 2005 and 2013, however, was approximately 2.4% - that indicates a catch-up effect because the EU-28, OECD and EU-15 grew by only 0.8%, 0.9% and 0.4%, respectively.

With respect to the levels of GDP per capita of the subgroups of the Danube Region, the countries forming the Member States Area 1 enjoy the highest prosperity level, with GDP per capita of about 40,700 US\$ (Annex Figure 124). A wide margin separates them from the Member States 2, which reach a GDP per capita of around 21,600 US\$, followed by Member States 3 with approximately 12,950 US\$. The Accession Countries have a GDP level of 9,700 US\$ per capita and the Neighbouring countries reach 6,600 US\$. Therefore, GDP per capita follows an upward trend for all subgroups excluding EU-15.

Above, it was mentioned that GDP per capita is only a proxy for the overall economic well-being of the population of a country. This is due to the fact that it only measures the level of income in a country, but not its distribution among the population. Therefore, in the following, we will analyse the income distribution in the Danube Region and in the benchmark regions in detail. In doing so, we use the Gini coefficient as an indicator for inequality.

The Gini coefficient measures the extent to which the distribution of a continuous variable (in most cases case but also consumption expenditures) among economic units (e.g. individuals or households) within an economy deviates from the theoretical case of an equal distribution. High values of the Gini coef-

Box 2: Note from the World Bank's Metadata for Gini-Index

“The underlying household surveys differ in method and type of the collected data. Therefore, data on the distribution of income or consumption are not strictly comparable across countries. In particular, two sources of non-comparability should be noted. First, surveys can differ with respect to the indicator for living standard (whether income or consumption expenditure is used). The distribution of income is typically more unequal than the distribution of consumption. In addition, definitions of income often differ among surveys. Second, households differ in size (number of members) and in the extent to which income is shared among members. Moreover individuals differ in age and consumption needs. Differences among countries in this respect may lead to bias when comparing income distributions.”

Source: World Bank's Metadata for Gini-Index.

ficient indicate high inequality, while low values of the Gini coefficient represent low inequality.

As explained in the Box 2, one has to be careful when comparing the results of the individual countries and therefore also the country groups as comparability could be limited due to differences in the underlying concepts. Therefore, this has to be taken into account, meaning that one should not read too much into the results.

Table 3 shows that the income-based Gini coefficients of Member States Area 3 countries, especially those of Bulgaria and Romania, exhibit the highest values, which indicates the highest income inequality among the compared countries. This group is followed by Member States Area 1, where a convergence between Germany and Austria can be observed in the past few years. Member States Area 2 overall displays the lowest level of inequality, with only small deviations between the countries. Slovakia even shows the lowest level of inequality of all Member States.

Comparing the values of the Member State subgroups of the Danube Region with the EU-15 and the EU-27 resp. EU-28, it can be seen that the countries of Member States Area 1 and 2 exhibit a below average income inequality, whereas in the countries of the Member States Area 3 income inequality is above average.

The most notable decrease of inequality over time for the period considered has taken place in Romania, while Hungary experienced the largest increase of inequality, followed by Croatia. Slight increases in the level of inequality can

Table 3: Income-based Gini Coefficient (based on disposable income)

Countries	2007	2008	2009	2010	2011	2012
Serbia	29.4	28.2	27.8	29.6		
Bosnia and Herzegovina	36.2					
Moldova	35.3	35.3	34.0	33.0		
Ukraine			25.6	25.3	24.3	23.3

Source: Worldbank WDI and Statistical office Ukraine. Calculation and illustration: IAW.

also be observed for Austria and Slovenia.

Concerning the Accession Countries, comparability is more difficult due to different calculations of the Gini-coefficient (as mentioned in the methodological box). Table 4 indicates that heterogeneity is higher in the Accession and Neighbouring Countries. As data for the income-based Gini coefficient were not available, we use the consumption-based Gini coefficient. Based on the given data, one can conclude that the level of inequality in the Accession Countries remained rather constant over the past years, while a slight decrease can be observed for the Neighbouring Countries.

3.1.3 GDP components and sectors

There are different approaches to determine the Gross Domestic Product of a country (which all lead to the same value of GDP). In the following, we rely on the expenditure and the output approach. These two approaches are shortly described in Box 3. Here we focus on the last two methods, i.e. the expenditure and the output approach.

Table 4: Consumption-based Gini coefficient (based on the level of consumption)

Countries	2007	2008	2009	2010	2011	2012	2013
Germany	30.4	30.2	29.1	29.3	29.0	28.3	29.7
Austria	26.2	27.7	27.5	28.3	27.4	27.6	27.0
Hungary	25.6	25.2	24.7	24.1	26.8	26.9	28.0
Czech Republic	25.3	24.7	25.1	24.9	25.2	24.9	24.6
Slovenia	23.2	23.4	22.7	23.8	23.8	23.7	24.4
Slovakia	24.5	23.7	24.8	25.9	25.7	25.3	24.2
Bulgaria	35.3	35.9	33.4	33.2	35.0	33.6	35.4
Romania	37.8	36.0	34.9	33.3	33.2	33.2	34.0
Croatia	29	28	27	31.6	31.2	30.9	30.9

EU-27	30.6	30.9	30.5	30.4	30.7	30.4	30.5
EU-28				30.4	30.8	30.4	30.5
EU-15	30.3	30.8	30.5	30.5	30.8	30.4	30.4

Source: Eurostat. Calculation and illustration: IAW.

Box 3: Methodological explanation: Approaches to determine GDP

The expenditure approach is based on the idea that most goods and services produced in an economy are produced to be sold. Therefore, Gross Domestic Product can be calculated using the expenditures to buy these goods and services. The expenditures include the following components: private consumption, public consumption, investment, and net exports (exports minus imports).

With the output approach, also called Value Added Method, the GDP is calculated as the sum of total gross value added plus taxes minus subsidies for products. Gross value added is the net result of the gross value of output at basic prices minus intermediate goods valued at purchaser's prices.

Gross value added can be broken down by economic activities, the most common classification being the division into Agriculture, Industry and Services sector.

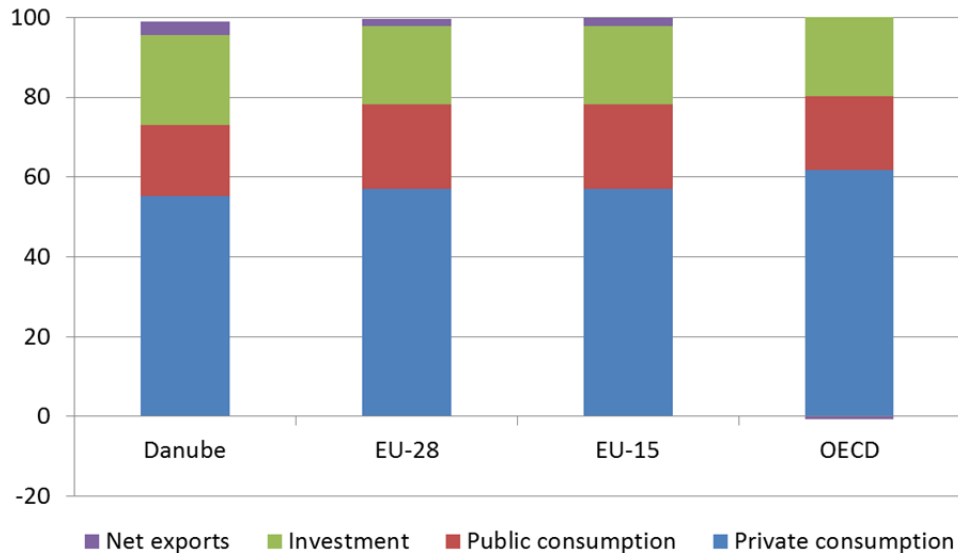
Components of GDP (Expenditure side)

Figure 5 shows the fraction of the single components of GDP according to the expenditure approach (private and public consumption, investment and net exports) in the Danube Region, OECD, EU-15 and EU-28 in 2012. The share of private consumption in GDP in the Danube Region was 55.3%, the public consumption share was 17.6%, the investment share was 22.7%, and the net exports 3.4%. The private and public consumption shares in the Danube Region were slightly lower than in the EU-15, the EU-28 and the OECD countries. In contrast, the shares of investment and net exports of GDP were higher in the Danube Region than in the other country groups.

Comparing the shares of the GDP components in the Danube Region between 2004 and 2012, it can be observed that the shares of net exports and public consumption increased by 2.3 and 0.1 percentage points, respectively, while the shares of investment and private consumption decreased by 0.6 and 1 percentage point, respectively (Annex Figure 125).

Figure 6 shows the shares of the different GDP components for the subgroups of the Danube Region in 2012. In Member States Area 1 and 2, private consumption had a share of approximately 50% of GDP, public consumption and investment about 20% each and the net exports share is positive, reaching

Figure 5: GDP components in 2012 (in %)



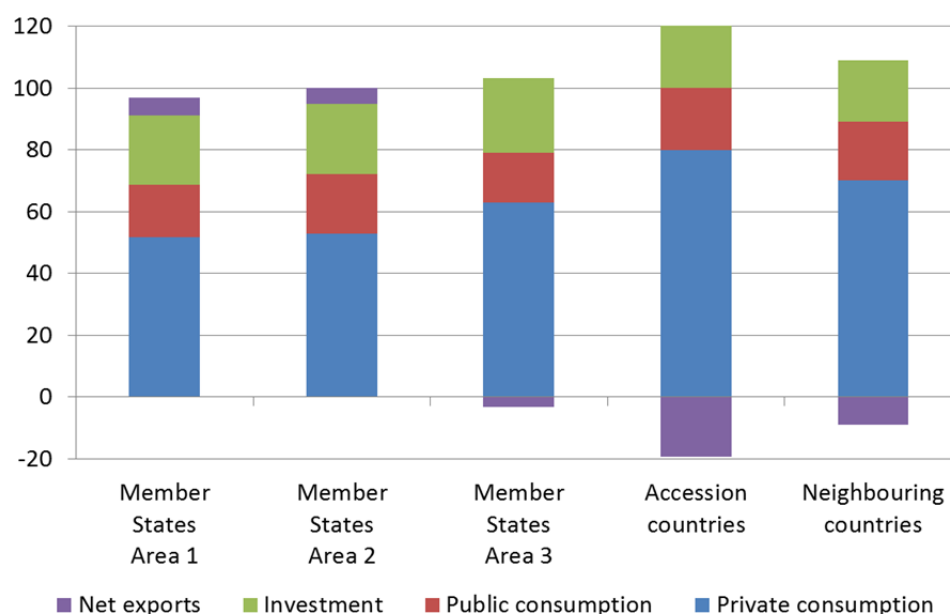
Source: Eurostat, wiiw Annual Database, World Bank, national statistics. The shares of the GDP components in the Danube Region do not amount to 100 % because at the regional (Bundesland) level in Germany - and therefore, for Bavaria and Baden-Wuerttemberg – there is a “residual GDP component” that does not solely consists of the net exports. Calculation and illustration: IAW.

more than 3%, meaning that in these country groups the exports are higher than the imports.

In contrast, the countries of Member States Area 3 and the Neighbouring Countries had negative net exports shares of around -3% and -9%, respectively, which means that imports exceed exports. Private consumption amounts to approximately 62% and 74% of GDP, respectively. Group 3 exhibits an investment share of GDP of 24% while for the Neighbouring countries it is at approximately 19%. Public consumption represents 17% and 20% of GDP, respectively.

The composition of the GDP of the Accession Countries deviates significantly from the pattern observed for the other country groups. While public consumption and investment shares of GDP are similar to other subgroups, the private consumption share of GDP in 2012 is equal to 78.4% and net exports exhibit a GDP share of -19%. This implies that GDP is widely driven by private consumption and that there is a large deficit in foreign trade.

Figure 6: GDP components in 2012, by subregions of the Danube Region (in %)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: Eurostat, wiiw Annual Database, World Bank, national statistics. The shares of the GDP components in the Member States Area 1 do not amount to 100 % because at the regional (Bundesland) level in Germany - and therefore, for Bavaria and Baden-Wuerttemberg - there is a "residual GDP component" that does not solely consists of the net exports. Calculation and illustration: IAW.

Comparing the shares of the GDP components in 2012 with the values for 2004, we can observe the following (Annex Figure 126): In Member States Area 2, the investment share of GDP has decreased; furthermore, this group has turned around its trade balance. In 2004 the net export share was negative while it was positive in 2012. The Neighbouring countries have increased their private consumption share mainly at the expense of deteriorating their trade position, since the net export share has turned negative.

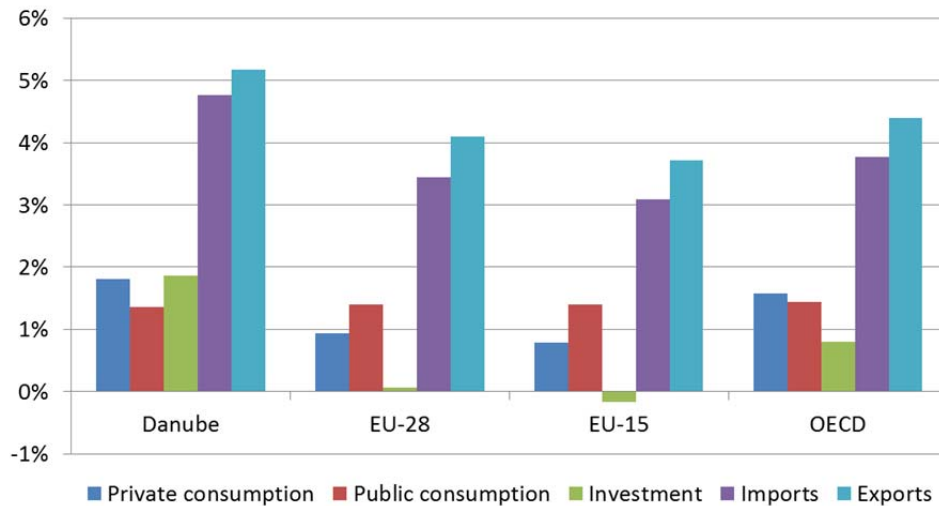
In contrast to this, the group formed by Croatia, Bulgaria and Romania (Member States 3) has improved its trade balance, even if the net export share of GDP remains negative. This occurred mainly by reducing the private consumption share of GDP. The Accession Countries have carried out a big effort to

diminish their trade imbalances, however at the cost of a reduced investment share. In spite of this effort, the net export share is still negative. The expenditure structure in the group formed by Bavaria, Baden-Wuerttemberg and Austria (Member States 1) has not changed much between 2004 and 2012.

Figure 7 shows the average annual real growth rate of GDP components between 2004 and 2012 in the Danube Region, the OECD, the EU-15 and the EU-28. In this period, the exports of the Danube Region exhibited the highest average annual real growth rate with an approximate rate of 5.2%, closely followed by imports at about 4.8%. The average real growth rates of private consumption and investment amount to approximately 1.8%. Public consumption had the lowest real average annual growth rate of approximately 1.4% over the considered period.

Comparing these results with the GDP component growth rates over the analysed period for the OECD, EU-15 and EU-28, we can observe that with the exception of public consumption all GDP components grew at a higher rate in the Danube Region than in the OECD, EU-15 or EU-28.

Figure 7: Average annual real growth rates of GDP components from 2004 to 2012 (in %)



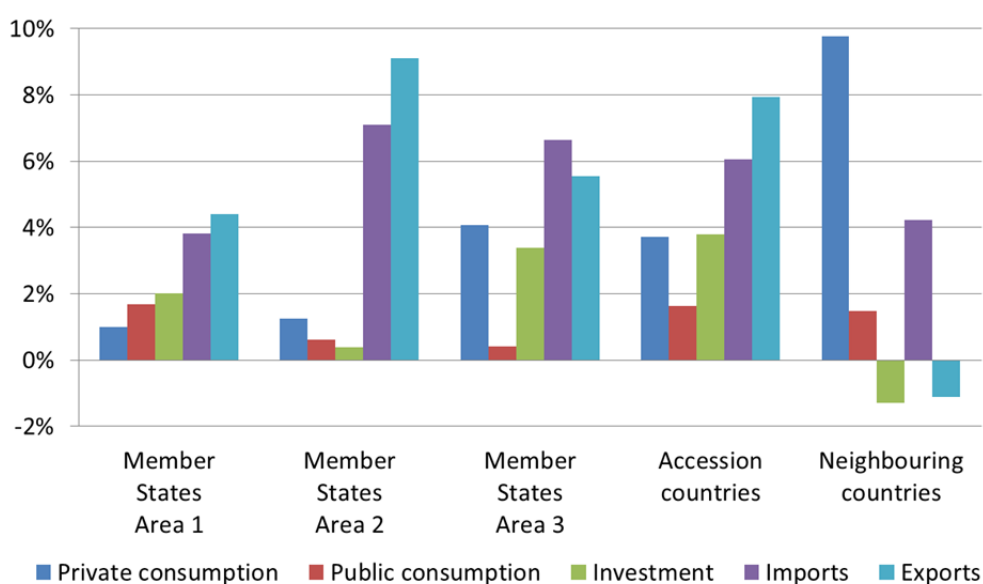
Source: Eurostat, wiiw Annual Database, World Bank, national statistics. Calculation and illustration: IAW.

As Figure 8 shows there have been substantial differences between the subregions of the Danube Region with respect to the growth rates of the GDP components: Private consumption and to a lower extent also public consumption and investment exhibited low growth rates under 2% between 2004 and 2012 in the group formed by Baden-Wuerttemberg, Bavaria and Austria (Member States Area 1). Export and import growth rates amounted to around 4%, with export growth slightly exceeding import growth.

In the countries of Member States Area 2 private consumption, public consumption and investment also exhibited low growth rates, well below 2%. In contrast, imports and exports in the countries of Member States Area 2 grew at the highest pace over this period compared to the other country groups, at approximately 7% and 9%, respectively..

The group formed by Croatia, Bulgaria and Romania (Member States Area 3) exhibited growth rates of its GDP components of above 4%, with the excep-

Figure 8: Average annual real growth rates of GDP components from 2004 to 2012, by subregions of the Danube Region (in %)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: Eurostat, wiiw Annual Database, World Bank, national statistics. Calculation and illustration: IAW.

tion of public consumption and investment. The growth rate of imports has been higher than the growth rate of exports (about 6.6 and 5.5%, respectively). In that respect, the countries of Member States Area 3 deviate from the pattern observed for the Danube region as a whole. The growth rate of private consumption at around 4% has been considerably higher than in the Member States Areas 1 and 2.

In the Accession Countries, investment grew at an average of almost 4%, which is the largest increase of all country groups. Private consumption, exhibited an average annual real growth rate of almost 4%, comparable to Member States Area 3. Import and export growth amounted to approximately 6% and 8%, respectively.

The Neighbouring Countries' private consumption growth amounts to nearly 10% between 2004 and 2012, which is the highest growth rate of any GDP component in the whole Danube region. Investment declined over the period considered at a negative growth rate of -1.3%. While imports grew by approximately 4%, export growth was negative at -1.1%. The decline in investments and the worsening of the trade position, coinciding with the sharp increase in private consumption have to be seen negatively.

Several observations can be made with respect to the annual growth rates, i.e. the percentage change from the previous year to the current year, of the different GDP components (private and public consumption, investment, exports and imports) in the Danube Region, the OECD and the EU-28 countries (Annex Figure 127 to Figure 131).

In the analysed period, from 2004 to 2012, investment, as well as exports and imports are the most volatile GDP components. The annual growth rates of these components vary between +15% and -15% in 2009 coinciding with the outbreak of the financial crisis.

One striking fact is that, with the exception of public consumption, the remaining GDP components grow more strongly in the Danube Region than in the EU-28 and the OECD countries in periods of economic booms, while they exhibit weaker growth rates in periods of economic downturns. Thus, the development of the GDP components in the Danube Region seems to have a stronger link with the economic cycle than in the EU-28 and the OECD countries.

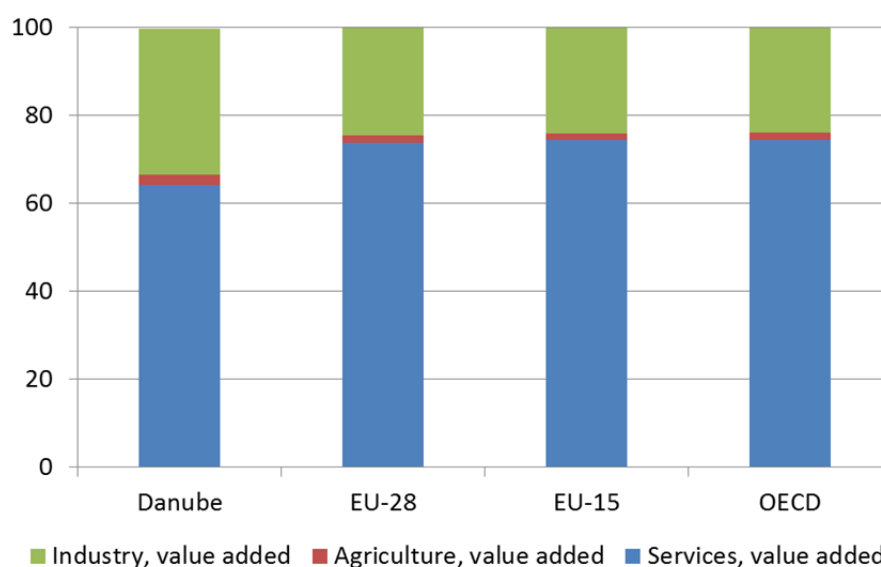
All GDP components except public consumption had positive growth rates before and after the outbreak of the financial crisis, which points to a rapid recovery. On the contrary, in 2009 all mentioned GDP components had negative growth rates.

In contrast, public consumption, increased in 2009. This is probably due to the expansionary fiscal policies carried out in most economies around the world at the outbreak of the financial crisis.

Sectoral structure of GDP (Output approach)

Concerning the decomposition of the GDP, it is also interesting to know to what extent the different economic sectors – i.e. agriculture, industry and services - contribute to the regions' GDP. Figure 9 shows the sectoral composition of GDP for the year 2013. It is quite obvious that the service sector exhibits the highest GDP share in all country groups considered. While for the OECD, the EU-15 and the EU-28 countries the services shares of GDP are above 70% (about 74%) and have increased by approximately 3 percentage points from 2003 (Annex Figure 132) to 2013, the respective share of the Danube Region remained below 70% (about 64%). The already relatively small

Figure 9: Contribution of sectors to GDP in 2013 (in %)



Source: Eurostat, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

share of agriculture (around 1.6% for the OECD, the EU-15 and the EU-28 countries and 2.4% for the countries of the Danube region) decreased for all four country groups over the considered period. For the OECD, the EU-15 and the EU-28, the share of the secondary sector, the industry (including the construction sector), also decreased over time (by about 2 percentage points), while it increased for the Danube Region (by almost 1 percentage point). In the year 2013 it contributes a third (33.2%) of total value added, and therefore, more than in the OECD, the EU-15 and the EU-28 (with 24.2%, 24.6% and 25.2%, respectively).

A more detailed view is given Figure 10 which shows the GDP shares of the main economic activities (services, industry and agriculture) for the subgroups of the Danube Region.

In 2013, the countries of the Member States Area 1 had GDP shares of the service, industry and agriculture sector of 64.9%, 34% and 0.8%, respectively. In comparison with 2003 (Annex Figure 133), the share of the service and agricultural sector has decreased while the share of the industry sector has increased.

Figure 10: GDP sectors in 2013, by subregions of the Danube Region in (%)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.
Source: Eurostat, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

The countries of the Member States Area 2 have a similar economic structure as the countries of Member States Area 1. The main difference is a larger agricultural sector (3.4% of GDP), which is compensated by a smaller service sector. In comparison with 2003, this country group experienced an increase in the GDP share of the service sector and a decrease in the agricultural sector, while the GDP share of the industry sector remained constant.

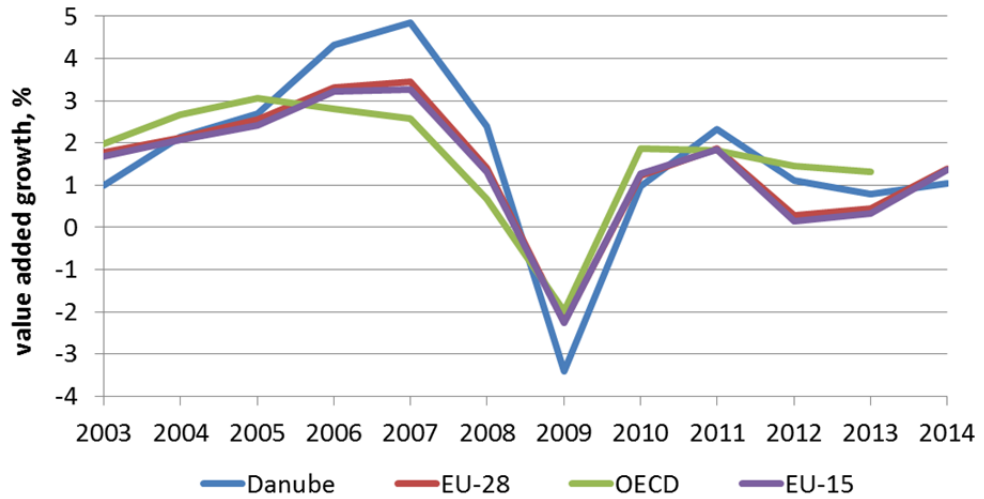
In contrast, the Accession Countries and the Neighbouring Countries have a large agricultural sector, which contributes around 10% to GDP. For the Accession Countries this translates into a smaller industry sector, while for the Neighbouring Countries this implies a smaller service sector.

In comparison with 2003, both country groups have succeeded in reducing the size of their agricultural sector.

The countries of the Member States Area 3 have GDP shares of the service, industry and agricultural sector of 62.8%, 31.5% and 5.7%, respectively. Thus, these countries are positioned between the more advanced economies of the Danube Region (Member States Area 1 and Member States Area 2) and those who are still catching up (Accession Countries and Neighbouring Countries). In comparison with 2003, the agricultural sector has strongly diminished in size, while the industry sector has gained in importance.

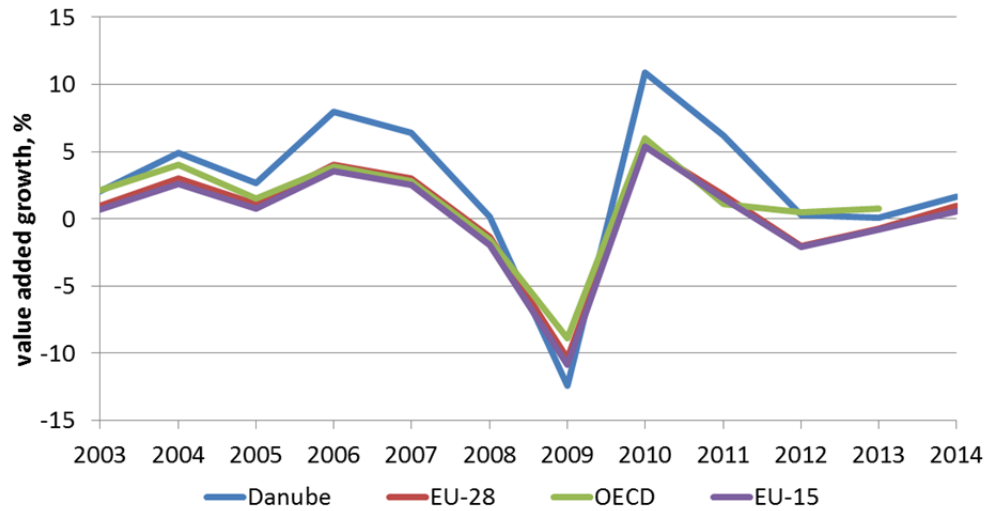
In the last century, there has been a shift in the composition of GDP in industrialised countries from the primary and secondary sector towards the tertiary sector, the latter being meanwhile the most important sector in advanced economies. Figure 11 shows that, between 2003 and 2012, the annual growth rate of value added of the service sector was, on average, higher in the Danube Region than in the benchmark regions. While the growth of value added before the economic crisis was much higher in the Danube Region than in the OECD, the EU-15 or the EU-28 countries, it only decreased slightly more during the hot phase of the crisis in 2009 than in the benchmark regions. By now, all regions are back to positive growth rates.

Figure 11: Annual growth rates of value added, 2003-2014 – Services

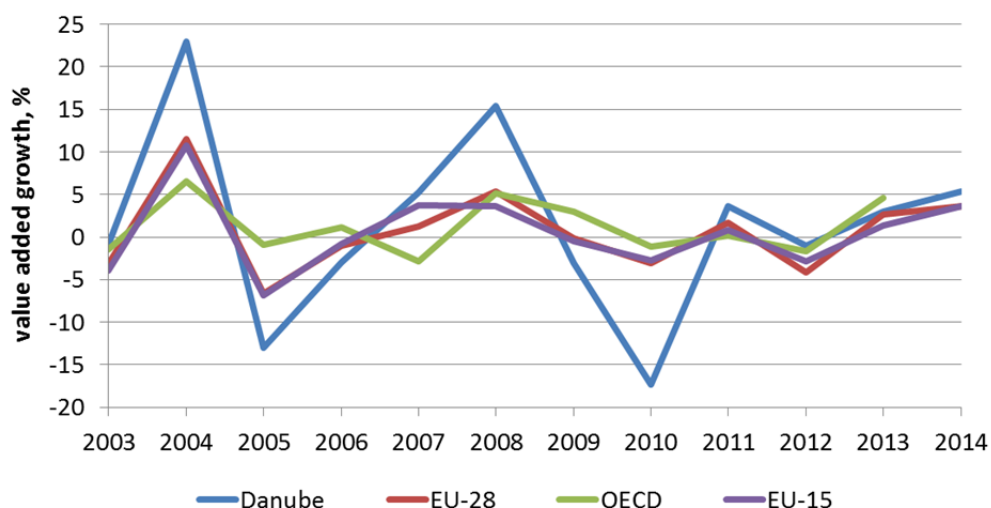


Source: Eurostat, World Bank, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

Figure 12: Annual growth rates of value added, 2003-2014 – Industry



Source: Eurostat, World Bank, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

Figure 13: Annual growth rates of value added, 2003-2014 – Agriculture

Source: Eurostat, World Bank, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

As for the Danube Region's industrial sector, value added growth between 2003 and 2012 has been higher than in the benchmark regions (Figure 12). We can clearly observe that cyclical changes in growth rates move in the same direction in all regions considered. In almost every year, the Danube Region outperforms the benchmark regions. In all regions, the positive development between 2003 and 2007 was followed by a downturn in 2008 at the beginning of the economic crisis, which reached its hot phase in 2009, resulting in negative growth rates between -10% and -13%. After a steep recovery in 2010 with growth rates above 10% in the Danube Region and around 5% for the benchmark regions, 2011 marks yet another downturn experienced by all country groups. Nevertheless, growth rates in all three sectors indicate a quick recovery, as they show an increasing trend from 2012 onwards.

Agriculture, the so-called primary sector, contributes only a small part to GDP in the industrialised world. Figure 13 shows that the Danube Region exhibits the highest fluctuations in this economic sector. While the growth rates of the OECD, the EU-15 and the EU-28 countries mostly lie between +/- 5%, the Danube Region reaches positive growth rates of up to 23% (2004) and negative rates up to -17% (2010). These fluctuations in the agricultural sector, however, have no great influence on total value added of the economy because the sector's contribution to GDP is comparatively small.

3.1.4 Public Financing and Indebtness

The economic performance of a region is strongly influenced by government finance, such as the system of taxation and domestic and foreign government debt, because this may provide limits to future finance policy. In this context, the tax and social security contribution ratios of the Danube Region and their reference country groups will be analysed.

Figure 14 and Figure 15 show three different sources of public revenue:

- Taxes on income, profits, and capital gains are impositions levied on the actual or presumptive net income of individuals, on the profits of corporations and enterprises, and on capital gains – whether realised or not – on land, securities, and other assets.
- Taxes on goods and services including taxation on general sales and turnover or value added, selective goods and services, the taxation of the use of goods or property, on extraction and production of minerals, and on profits of fiscal monopolies.
- Social contributions include social security contributions by employees, their employers, and by self-employed individuals as well as other contributions whose source cannot be exactly determined. They also comprise actual or imputed contributions to social insurance schemes operated by governments.

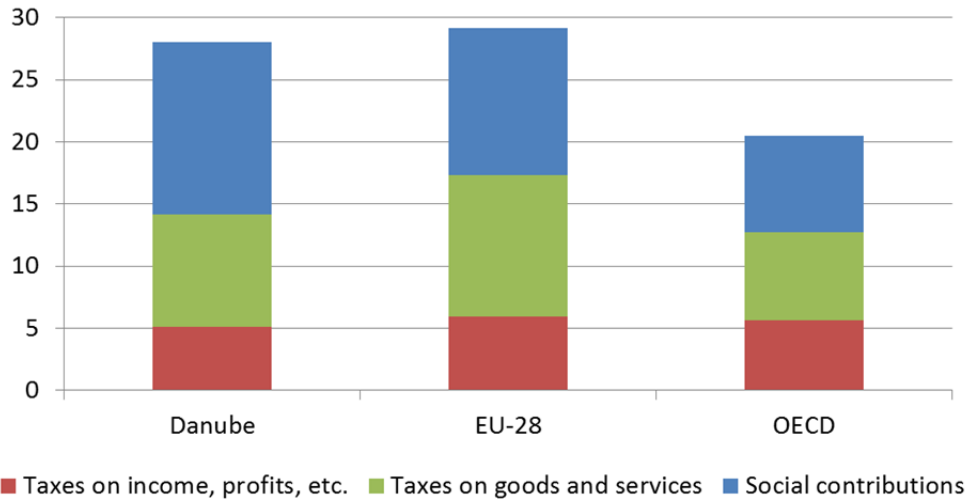
We first focus on the Danube Region. The most important source of public revenue are social contributions, which amount to about 14% of the GDP of the region, followed by taxes on goods and services (9% of GDP) and taxes on income, profit and capital gains with about 5% of GDP (see Figure 14).

This same rank of importance can be found in the EU-28, which also exhibits tax shares similar to those of the Danube Region. However, the countries of the EU-28 rely less on social contributions and more on taxes on goods and services than the countries of the Danube Region.

In the OECD, on the contrary, there is no big difference between the different sources of public revenue, i.e. all three aggregates exhibit similar shares of GDP, which lie between 6 and 8%. Furthermore, the sum of the three shares is

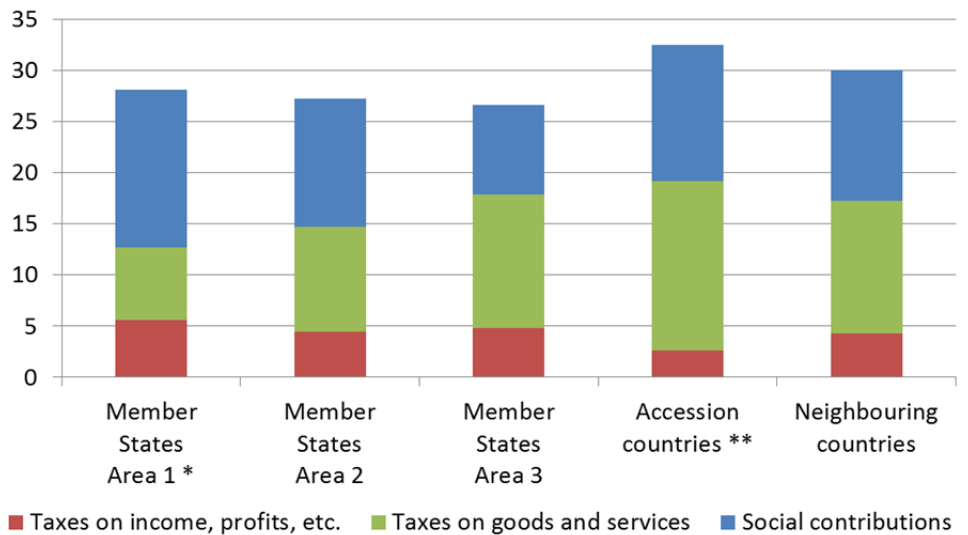
markedly lower than in the Danube Region and EU-28, indicating other public debt and/or expenditure levels.

Figure 14: Tax aggregates in year 2012 (in % of GDP)



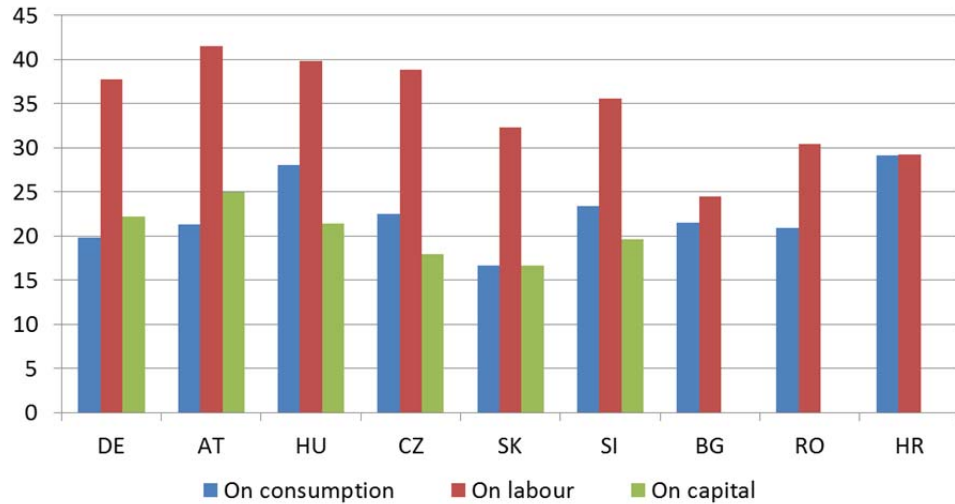
Notes: For Baden-Wuerttemberg and Bavaria, Germany has been used as a proxy
 Source: World Bank, WDI. Calculation and illustration: IAW.

Figure 15: Tax aggregates in year 2012, by subregions of the Danube Region (in % of GDP)



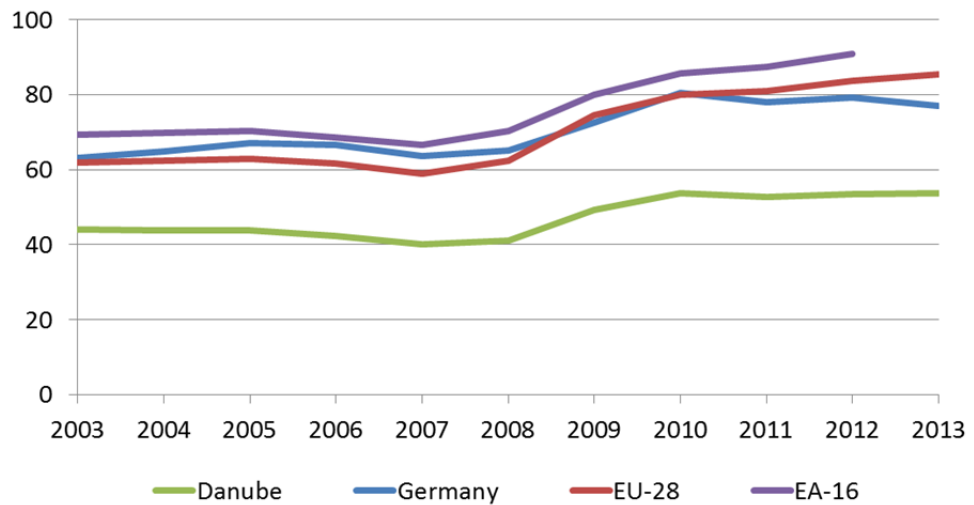
Notes: *For Baden-Wuerttemberg and Bavaria, Germany has been used as a proxy. **without ME
 Source: World Bank, WDI. Calculation and illustration: IAW.

Figure 16: Implicit tax rates 2012



Source: Eurostat. Calculation and illustration: IAW.

Figure 17: General government consolidated gross debt 2003-2013 (in % of GDP)



Notes: EA-16 instead of EU-15 is used because no data was available for the latter. Data for EU-28 only available from 2011 onwards, until 2011 EU-27 has been used as a proxy.

Source: Eurostat, national statistics. Calculation and illustration: IAW.

Regarding the Danube Region's subgroups, the Member States 1 and Member States 2 show a similar pattern as the Danube Region concerning the ranking of the sources of public revenue (Figure 15). The Member States 3, Accession Countries and Neighbouring Countries, in contrast, have higher shares of public revenues proceeding from taxes on goods and services. It is also worth mentioning that the overall public revenue emanating from these three sources amounts to a higher share of GDP in Accession Countries and Neighbouring Countries than in the Member States.

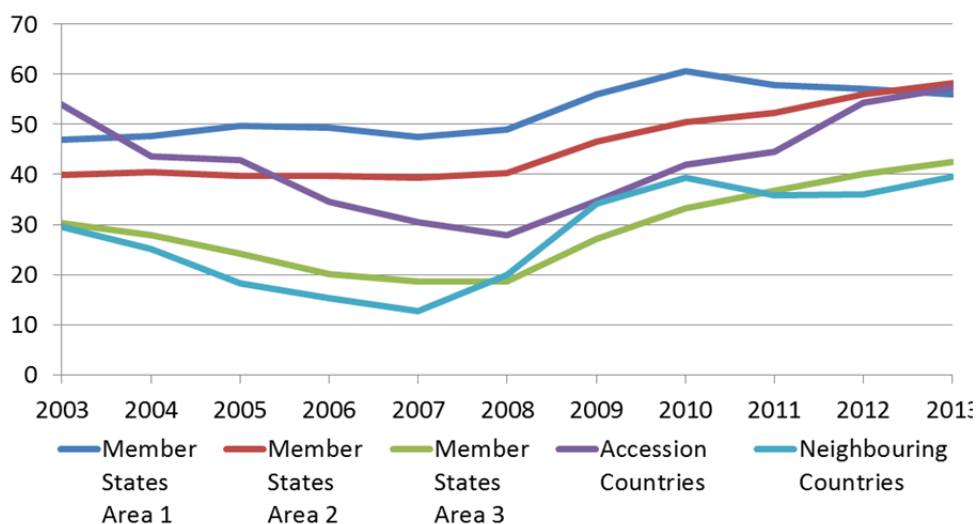
Figure 16 shows the implicit tax rates on consumption, labor and capital in the Member States in 2012. For all countries, tax burden on labour income is highest of these three subjects. The maximum tax rates on labour can be found in Austria and Hungary with rates above 40%. With regard to the taxation of consumption, Hungary and Croatia exhibit the highest tax rates of above 25%. Finally, based on incomplete information on capital tax rates, it has to be pointed out that the highest tax rates on capital can be found in Germany, Austria and Hungary, where these tax rates lie above 20%.

The scope of future public expenditures is determined by current sovereign debt. Therefore, Figure 17 depicts the public debt rates (sovereign debt relative to GDP) of the single country groups, a measure which is also used as a European convergence criterion. It shows similar developments of general government consolidated gross debt across all four regional aggregates, although the Danube Region's level is significantly below those of EA-16, EU-28 and Germany.⁷ In 2009 and over the following years, we can see an increase due to the economic crisis and its aftermath.

Taking into account the heterogeneity within the Danube Region, we can see similar developments for Member States of Areas 1 and 2 on the one hand and for Member State of Area 3 and Neighbouring Countries on the other hand. All subgroups had decreasing or at least constant government debt rates before the start of economic crisis in 2008 and increasing debt during the crisis that partly continues afterwards. The Accession and the Neighbouring Countries display the highest volatility over the depicted period. While the

⁷ Here we use EA-16 instead of EU-15 (because no data was available for the latter).

Figure 18: General government consolidated gross debt 2003-2013, by subregions of the Danube Region (in % of GDP)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: Eurostat, national statistics. Illustration and calculation: IAW.

Neighbouring Countries reached the lowest level of debt, falling back to around 12% of GDP in 2007, the Member States of Area 1 had the highest level, peaking in 2010 at about 60% of GDP. Meanwhile debt-to-GDP-ratios have been decreasing for the Member States of Area 1, as they have been increasing for Member States of Area 2 and the Accession Countries, which have both overtaken Area 1.

3.1.5 Trade, FDI and exchange rates

Foreign Direct Investment (FDI) constitutes an important mean of international economic integration. It interlaces the world more closely and encourages the transfer of technological know-how. Furthermore, it might help developing countries to develop faster, as it is an additional source of investment funding. FDI can take on many forms: a firm might enter a foreign market by using an existing business facility (brownfield investment), e.g. through Mergers and Acquisitions (M&A) or a joint venture with a local enterprise, or it might found a new plant abroad (Greenfield investment). Generally, one talks about FDI when an investor can influence management decisions and pursues

long-term interests in a foreign affiliate. This criterion is said to be fulfilled if an investor holds firm shares or voting rights exceeding the widely accepted OECD benchmark of 10%.⁸

We can further distinguish between vertical and horizontal forms of FDI. The acquisition of (intermediate) inputs via vertical FDI, on the one hand, is foremost a mean to reduce production costs by exploiting factor cost differences across countries. Horizontal FDI, on the other hand, involves the production of final goods directed to the foreign market in the destination country and serves to avoid transport costs or trade barriers. The line between these two types of FDI is not always clear-cut, as some firms may simultaneously pursue both motives. This information, however, is typically internal to the firm and hence it is not possible to distinguish both forms only by looking at data on investment flows or stocks. Given the motive of these investments, one might conjecture that FDI flows between developed economies are more likely to reflect horizontal investments, while FDI flows from a developed to a developing economy are more likely to be vertical in nature.⁹

Inward FDI stocks refer to all direct investments in an economy by non-residents, while outward FDI stocks capture the investments by residents made in foreign countries.¹⁰ Besides FDI, there are also portfolio investments. This form of investment aims at short term gains and does not entail control of the firm; therefore, portfolio investment is more volatile than FDI.¹¹

Figure 19 compares the inward and outward FDI stocks relative to the GDP of the Danube Region, the EU-28, and NAFTA for the period 2005-2013.

For all observed regions, we notice that in 2008, both, the inward and outward FDI ratio decreased. Only one year later, however, FDI stocks were back at their previous levels or even above. Even though the changes that followed

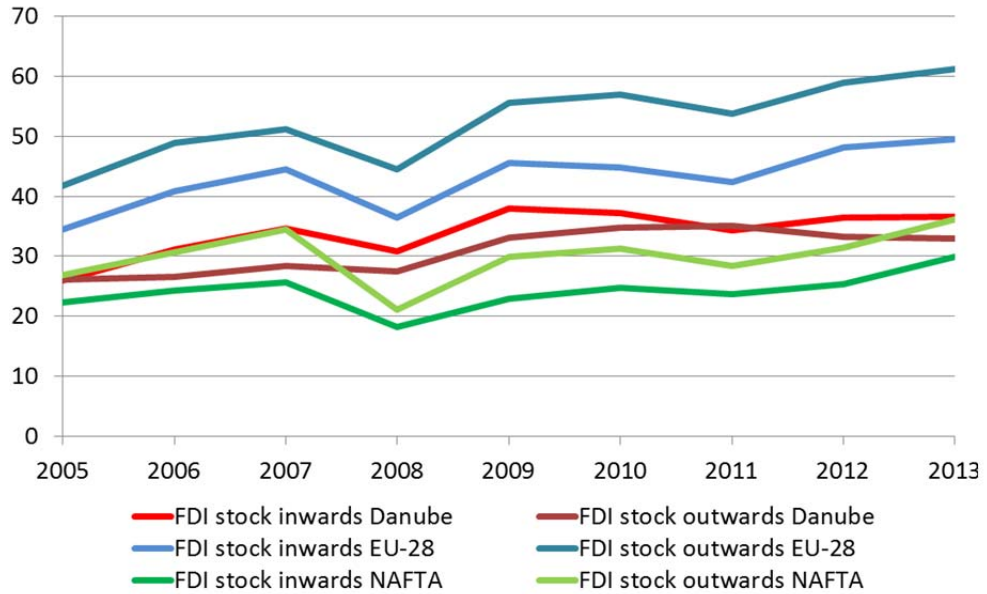
⁸ See OECD (2008)

⁹ See Navaretti, Venables (2006)

¹⁰ Compare OECD library: FDI and Eurostat pocketbook (2007)

¹¹ Compare Investopedia: Portfolio Investments.

Figure 19: FDI stocks over time (in % of GDP)



Source: UNCTAD, national statistics. Calculation and illustration: IAW

differed across regions, in 2013, all regions had higher FDI ratios than during the economic crisis in 2008.

The EU-28 has the highest (relative) outward FDI stock, which amounts to 45% of GDP in 2008 and around 57% of GDP in the following years. The inward FDI ratio is also higher than in the other country groups, rising from around 35% in 2005 to 49% in the following years. The inward FDI stock for the Danube Region varies between 26% and 37% of GDP during the observed period, while the outward stock starts with 25% in 2005 and surpasses the inward rate in 2011 (35%), but shortly after declines and falls back under the inward stock. Compared to NAFTA, the Danube Region both receives and sends more FDI in relative terms neglecting the first years of the observed period.

For the EU-28, the outward FDI stock exceeds the inward stock (expressed in % of GDP) over the entire period, so these regions conduct more investments abroad compared to the respective external funds they receive. The same holds for the NAFTA. A convergence can be observed for the Danube Region: after inward FDI dominated outward FDI for many years the outward rate

caught up with the inward rate in 2011. Still, outward FDI stocks declined directly after having surpassed the inward stock and fell back behind.

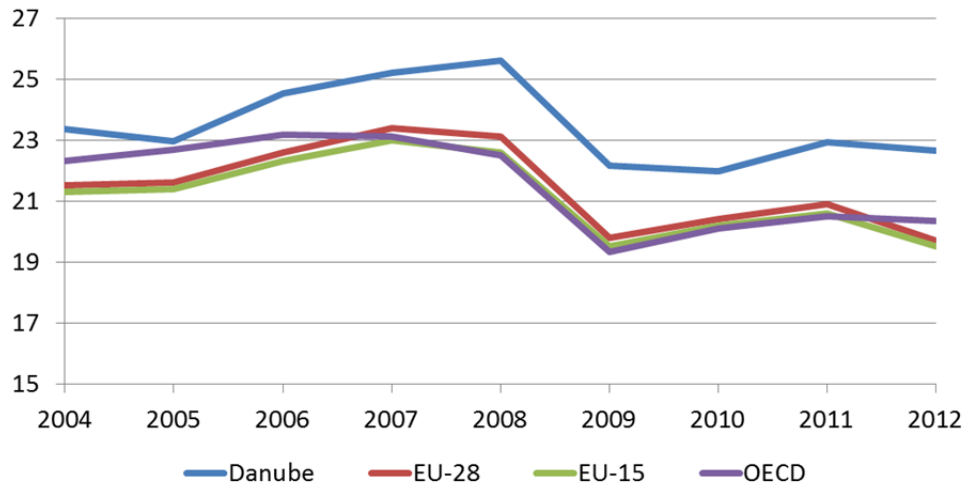
Concerning all subgroups, inward FDI stocks clearly follow a rising trend, even though they decreased in all Member State groups during the economic crisis (Annex Figure 134) and again to a smaller extent during the Euro crisis in 2011. Especially noteworthy is the steady increase of inward FDI stocks in the Accession Countries, which makes them second after the Member States 2 countries. Both groups reach inward FDI ratios between 60% and 70%. They are followed by Member States Area 3 and the Neighbouring Countries. Member States Area 1 is far behind the other subgroups, never reaching inward FDI ratios higher than 25%.

Regarding outward FDI stocks, Member States Area 1 displays the greatest variation over time, spanning from 32% of GDP in 2003 to 52% in 2011. The Member States Area 2 ranks second, with an outward FDI stock starting from around 4% of GDP in 2003, which has been rising steadily since then to 15% in 2013. For the Member States Area 3, the Neighbouring Countries, and the Accession Countries, the outward FDI stock has been increasing, too, but ranges from less than 1% to only 5% of GDP for the entire period (Annex Figure 135).

Domestic investment is an important driver of economic growth. Here, investment is defined as gross capital formation. When analysing this variable, one has to bear in mind that net values might differ due to differences in depreciation rates.

Figure 20 shows that the domestic investment rate, defined as gross capital formation in % of GDP, in the Danube Region is above the OECD and EU-28 averages for the entire period observed. It starts in 2004 at 23.3% and peaks in 2008 at 25.6% of GDP. These numbers for the Danube Region exceed the domestic investment rate of the EU-28, which reaches its peak in 2007 at around 23.4% of GDP, while the OECD average alternates around 22 and 23% from 2004 to 2008. After 2008, the domestic investment rate decreases dramatically and slowly starts to recover after 2009 for all three regional aggregates. Another decrease can be observed in 2011 coinciding with the outbreak of the Euro crisis and therefore mainly for the solely European country groups, while the OECD average remains constant. IN general, the above average size of the

Figure 20: Domestic investment (in % of GDP)



Source: Eurostat, wiiw Annual Database, national statistics. Calculation and illustration: IAW

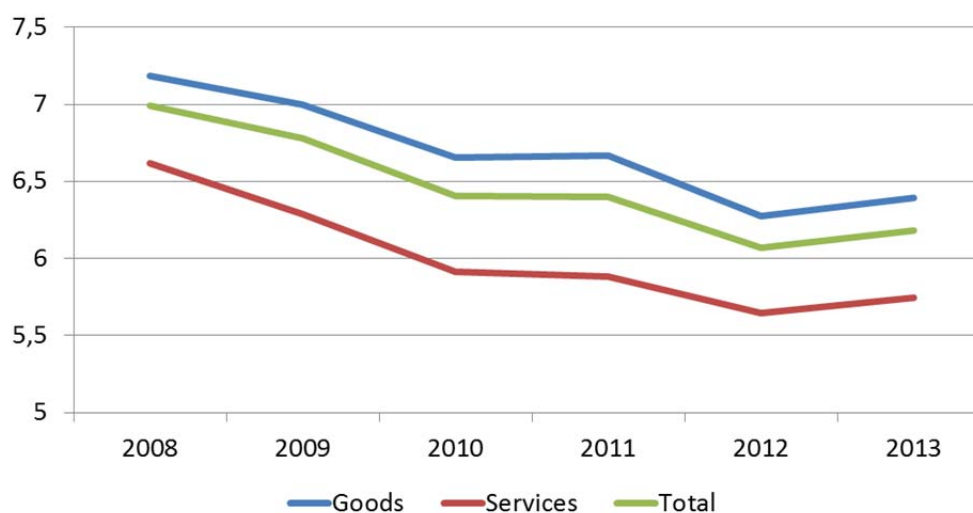
investment rate of the Danube Region shows a catch-up process referring to capital endowment.

Within the Danube Region, Member States Area 1 has one of the lowest investment rates, which is relatively constant at about 22% of GDP. In contrast, Member States Area 3 has one of the highest investment rates over the depicted period, with a peak of around 34% of GDP in 2008. The other subgroups develop rather parallel with peaks in 2007/2008 and steep declines thereafter. Mostly, they move within a bound of 18% to 30%.

The fact that the newer members and the Accession and Neighbouring countries have higher investment rates is probably due to the circumstance that they still have a greater need and potential for capital accumulation (catching-up), whereas the Member States Area 1 comprises highly advanced economies (Annex Figure 136).

Trade

The international interdependence of national economies is reflected not only by FDI in- and outflows but also by their participation in foreign trade which is measured in the following as a country's or region's share in the global export volume.

Figure 21: World Export Market Shares of the Danube Region

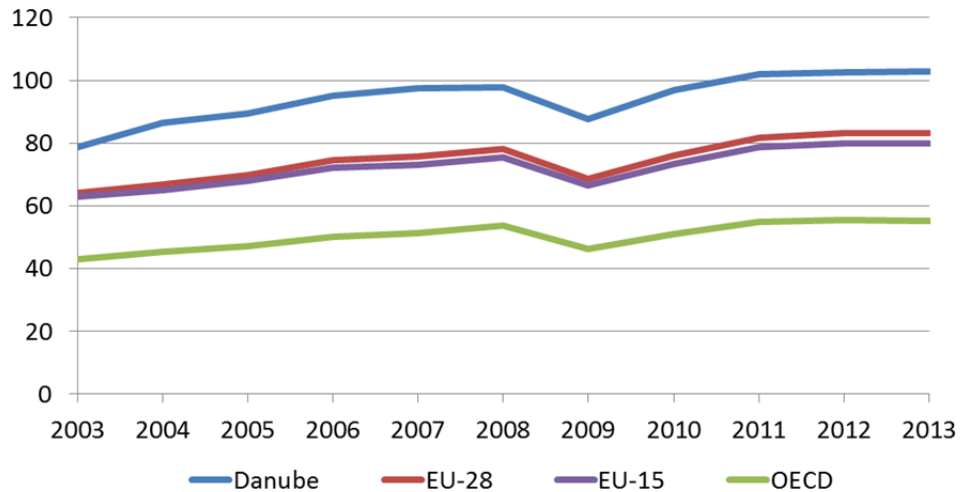
Notes: For Baden-Wuerttemberg and Bavaria, only data for goods exports are available. Therefore, the world export share for services of these two regions is approximated. The approximation method tends to overestimate the world export share for services.

Source: UNCTAD, national statistics. Calculation and illustration: IAW.

The illustration of the share of the Danube Region in world exports in Figure 21 yields one striking result: over the past five years, the weight of the Danube Region in world exports of goods and services has declined continuously. Its share in total world exports has dropped from its level in 2008 by almost one percentage point to approximately 6.1% in 2012. Although there is the sign of a slight recovery in 2013, the Danube region is well behind the respective shares of the EU-28 or the NAFTA. For example, in 2013, the world export shares of the EU-28 and the NAFTA were 33.5% and 13.8%, respectively.

We also observe a persistent structural pattern in exports from the Danube Region, which captures a larger share of world trade in commodities than in services. For example, the Danube Region accounted for 6.4% of total world exports of commodities in 2013, whereas its share in world services exports was only 5.7%. In contrast, the shares in world exports of services of the EU-28 and the NAFTA exceed their shares in goods trade (Annex Figure 137 and Figure 138).

Figure 22: Trade Intensity 2003-2013 (in % of GDP)



Source: UNCTAD, national statistics. Calculation and illustration: IAW.

Next, we focus on the different subgroups within the Danube Region. The Member States Area 1, formed by Austria, Baden-Wuerttemberg and Bavaria, exhibits the highest export share in the Danube Region, which amounts to approximately 3.3% of world exports of goods and services in 2013. However, it is also the region that suffers the greatest drop in its share over the period from 2008 to 2012.

Member States Areas 2 and 3, the Accession Countries and Neighbouring Countries have shares in world exports of goods and services in 2013 of approximately 1.8%, 0.6%, 0.1%, and 0.4%, respectively. For these regions, the world export shares remain approximately constant over the analysed period.

We next compare goods and services exports for each of the subgroups. On the one hand, the Member States Area 1 and Member States Area 2 have a higher share in world exports of goods than for services trade. On the other hand, the Member States Area 3, Accession Countries, and Neighbouring Countries export relatively more services than goods compared to the rest of the world (Annex Figure 139 and Figure 140).

Figure 22 shows that trade intensity, measured as the sum of imports and exports over GDP, is higher in the Danube Region than in the EU-28 and the OECD average. This implies that on average the Danube Region is more en-

gaged in international trade than the OECD and EU-28 countries. In 2013, trade volume (imports + exports) in the Danube Region was approximately 103% of GDP, while for the EU-28 and the OECD, trade volumes in the same year reached only 83% and 55% of GDP, respectively. It is important to note that part of this difference in trade intensities can be explained by the fact that the single countries of the Danube Region are smaller in terms of GDP, and therefore inherently more open to international trade, than those that are composing the EU-28 and the OECD.

Regarding the development of trade intensities over the depicted period, an important observation can be made: all three regions, i.e. the Danube Region, the EU-28, and the OECD show a parallel development of trade intensities from 2003 to 2013. Overall, trade volumes show an increasing trend over the entire period, which is only interrupted by the crisis in 2009, but seem to have slowed down from 2011 onwards and now remain mostly constant in their trade intensities.

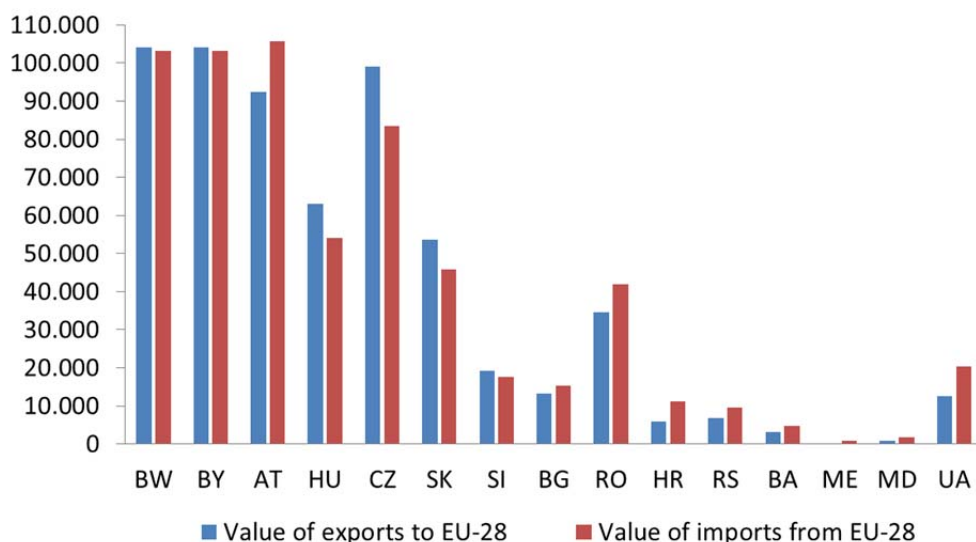
Regarding the subgroups within the Danube Region, it is worth mentioning that trade intensity in the Member States Area 2, formed by Czech Republic, Hungary, Slovenia, and Slovakia, lies well above the other groups (Annex Figure 141).

Trade with the EU-28 in the year 2013 is shown in Figure 23 and varies strongly between the 15 states and countries of the Danube Region. It can be seen that Bavaria, Baden-Wuerttemberg and the Czech Republic have the highest value of exports with the EU-28, followed by Austria, Hungary and Slovakia. The biggest importers are Austria, Bavaria and Baden-Wuerttemberg, followed by the Czech Republic and Hungary. Only six out of 15 regions within the Danube Region have a positive trade balance, while the other nine countries import more than they export.

Finally, we examine the intensity of trade in the Danube Region with the EU-28. The EU-28-share of total trade (exports and imports) for all the Danube countries can be described as follows¹²: The Czech Republic and Slovakia trade

¹² For detailed information see Annex Figure 142.

Figure 23: Trade with EU-28 in 2013 (in Mio. €)



Notes: For Bavaria and Baden-Wuerttemberg only the value of exports and imports for goods is available, due to difficulties in the assignment of imports to the different regions. Therefore, exports and imports of services have been approximated, this method tends to overestimate especially the services exports for Bavaria and Baden-Wuerttemberg.
 Source: Eurostat, national statistics. Calculation and Illustration: IAW

most intensively with the EU-28, which receives more than 80% of their exports, followed by Hungary, Slovenia, Bosnia-Herzegovina and Austria. On the lower end, Ukraine ships only 26% of its exports to the EU-28. Looking at the imports, we see that the Czech Republic, Austria, Romania, Slovakia, Hungary and Slovenia import the highest shares (around 70% of their imports) from the EU-28. Ukraine again features the lowest value with only 35%. The comparably low values for Ukraine are not very surprising due to its geographic location and intensive economic relation with Russia.

The development of imports and exports with the EU-28 was very heterogeneous between different countries from 2003 to 2014. While the share of trade with the EU-28 members stayed relatively constant in Slovakia and the Czech Republic, there have been slight decreases in trade volume with the EU-28 for Croatia and Ukraine. Germany, Austria and Slovenia decreased their trade intensity with the EU-28 by around 5% of their total trade volume in the period considered. In contrast, Moldova increased its trade intensity with the

EU-28 by almost 7%, while Bulgaria, Romania and Hungary had more modest increases of around 2 to 3%. For the Accession Countries, complete data is only available from 2008 onwards. Especially notable is Serbia, which increased its trade with the EU-28 since 2008 by more than 10%. Meanwhile, Montenegro and Bosnia and Herzegovina recorded decreases of 1% and 3%, respectively (see AnnexTable 20).

3.2 Indicators of Competitiveness

3.2.1 Investment Climate

If we want to assess the long run economic development of a region, the investment climate is a very important indicator to consider. Information on this can be found in the 'Global Competitiveness Report 2014-2015', which is a comprehensive survey of 13,000 business leaders in 148 countries published each year by the World Economic Forum. They use several indicators that are combined with other characteristics to yield a general competitiveness index. In the following, we want to present selected indicators that inform about crucial determinants for the investment climate of the Danube Region.

Based on the results of that survey (and in comparison to a previous survey from the years 2007/08), Table 5 shows the ranks of the subgroups of the Danube Region with respect to a selection of the competitiveness indicators included in the report.¹³ Ranks are arranged in ascending order, that is, the region which is awarded position 1 is the best performing one with respect to the analysed indicator. The selected competitiveness indicators are defined as following:

- **Domestic market size.** Sum of gross domestic product plus value of imports of goods and services, minus value of exports of goods and services, normalized on a 1–7 scale
- **Cost of crime and violence.** In your country, to what extent does the

INFO BOX: Methodological explanation

Most questions in the survey ask respondents to evaluate on a scale of 1 to 7 with 1 being the worst possible situation and 7 representing the best. Partner Institutes are asked to follow detailed sampling guidelines to ensure that the samples are as representative and comparable as possible. The sampling guidelines are based on best practices in the field of survey administration and on discussion with survey experts.¹

incidence of crime and violence impose costs on businesses? [1 = to a great extent; 7 = not at all]

- **Burden of government regulation.** In your country, how burdensome is it for businesses to comply with governmental administrative requirements (e.g., permits, regulations, reporting)? [1 = extremely burdensome; 7 = not burdensome at all]
- **Protection of property rights.** In your country, how strong is the protection of property rights, including financial assets? [1 = extremely weak; 7 = extremely strong]

Table 5: Global Competitiveness Report Rank, selected variables 2014-2015

Indicator/Area	Member States Area 1	Member States Area 2	Member States Area 3	Acc. Countries	Neighb. Countries
Global Competitiveness Index	10 (-)	61 (-)	63 (+)	83 (+)	79 (+)
Domestic Market Size	16 (-)	64 (-)	62 (-)	101 (-)	82 (+)
Cost of Crime & Violence	27 (-)	48 (-)	63 (+)	51 (+)	72 (+)
Burden of govern. Regulation	64 (-)	133 (-)	112 (-)	86 (-)	113 (-)
Protection of property rights	18 (-)	82 (-)	94 (-)	101 (-)	131 (-)
Prot. Of intellectual property rights	19 (-)	59 (-)	90 (-)	107 (+)	124 (-)
Trade tariffs, % duty	5 (+)	5 (+)	18 (+)	60 (-)	52 (-)
Trade barriers	74 (-)	45 (-)	84 (-)	92 (-)	98 (-)
Flexibility of wage determination	138 (-)	84 (-)	49	79 (-)	54 (+)

Notes: **Red (-)**: Decrease in rank since 2007-2008, **Green (+)**: Improvement of Rank since 2007-2008
Ranks are arranged in an ascending order. Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: Global Competitiveness Report 2014-2015, Calculation and illustration: IAW.

- **Protection of intellectual property rights.** In your country, how strong is the protection of intellectual property, including anti-counterfeiting measures? [1 = extremely weak; 7 = extremely strong]
- **Trade tariffs, % duty.** Trade-weighted average tariff rate
- **Trade barriers.** In your country, to what extent do non-tariff barriers (e.g., health and product standards, technical and labeling requirements, etc.) limit the ability of imported goods to compete in the domestic market? [1 = strongly limit; 7 = do not limit at all]
- **Flexibility of wage determination.** In your country, how are wages generally set? [1 = by a centralized bargaining process; 7 = by each individual company]

Finally, the indicator “Global competitiveness index” aggregates the results of all competitiveness indicators taken into account in the survey.

- The **Global Competitiveness Index** (GCI) is a comprehensive tool that measures the microeconomic and macroeconomic foundations of national competitiveness. Competitiveness is defined as a set of institutions, factors and policies that determine the level of productivity of a country taking into account its level of development.

If we want to compare the EU Member States within the Danube Region with other countries or other economic areas, we have to consider their change in rank compared to the survey in 2007.

In Table 5 we can see that they have become less competitive/investor friendly. Specifically, they lost ground in the areas ‘Burden of government regulation’, ‘Protection of property rights’ (including intellectual property rights), ‘Flexibility of wage determination’ and ‘Trade barriers’. Only concerning ‘Trade tariffs duty’, the situation has clearly improved. For all these indicators, the three Member State subgroups moved in the same direction. Combining all indicators, the WEF calculates the ‘Global Competitiveness Index’, which shows a mixed picture for the different Member States Areas. The countries of Member States Area 3 could improve their rank, whereas the countries of Member States Area 1 and 2 decreased in rank. This also applies to the two indicators “Domestic Market Size” and “Cost of Crime and Violence”.

INFO BOX: Methodological explanation

The Global Competiveness Index certainly is an important indicator for the development of competitiveness in an economy, but it should not be overestimated as the index is based on the subjective opinion of experts. As there is no clear consensus about the roots of growth in the economic theory, the choice of these criteria is linked to some specific visions and opinions of its author than to a solid scientific approach. Composite indexes are sometimes based on unreliable statistical methods and on the principle of aggregation which always generalises.

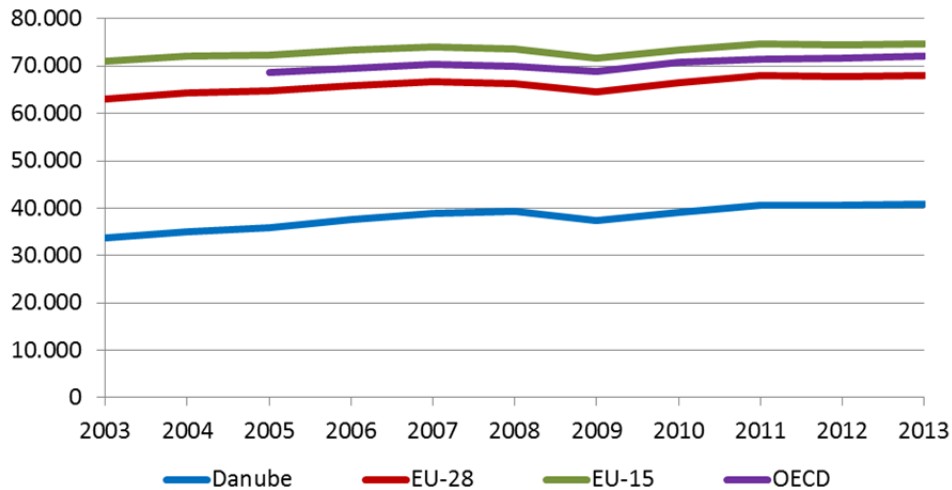
For composite indexes it is often the case that the criteria used in the surveys are changed. This is understandable as they try to follow the latest developments in economic theory or management research. But it means that there is no continuity in the statistical series they use and that it is therefore risky to use their yearly ratings as strong benchmarks.¹⁴

3.2.2 Labour productivity

If we want to assess the economic performance of a region, we commonly use labour productivity as a main indicator, which depends among other factors on its physical capital stock. As physical capital formation is determined by firms' investment activities, a country's investment climate also indirectly influences labour productivity.

Labour productivity can be measured as value added per employee. Figure 26 shows labour productivity calculated as real GDP, PPP adjusted per person engaged in the Danube Region compared with OECD, EU-15 and EU-28. The Danube Region lies well below the EU-15, OECD and the EU-28 level. For EU-15, OECD and EU-28 the labour productivity shows a co-movement with a relatively constant productivity difference between these country groups. Moreover, before and after the economic crisis the productivity of the Danube Region displays a slightly steeper slope than the other three aggregates.

¹⁴ Walter "Draft: Competiveness - a general approach"

Figure 24: Labour productivity (GDP (in 2005US\$) per person employed)

Source: Eurostat, UNdata, Worldbank, UNECE, wiiw Annual Database, national statistics.

The Benchmark for the OECD countries could not be calculated due to missing data on persons engaged for 2003 and 2004. Calculation and illustration: IAW.

This outcome can also be observed when taking a closer look at labour productivity growth. It turns out that before the crisis labour productivity growth rates in the Danube indeed were on average approximately 2 percentage points higher in the Danube Region than in the benchmark regions (Annex Figure 143). During the crisis, labour productivity growth rates turned negative in all country groups considered, the Danube region even fell to -4%, while the EU-28, EU-15 and OECD countries' growth decreased to around -2%. In 2010 labour productivity growth showed signs of a quick recovery, reaching its pre-crisis level for all country groups. With the beginning of the Euro crisis, another decrease in growth was suffered and in 2013 labour productivity growth for all country groups was below 1%.

Within the Danube Region, Member States Area 1 has unambiguously the highest level of GDP per person employed, at about 75,350 US\$ (2005, PPP), although the level diminished during the economic crisis (Annex Figure 144). The labour productivity of Member States Area 2 also displays a rising trend, which might be connected with the countries' accession to the EU in 2004. It moved from around 41,600 US\$ (2005, PPP) in 2003 to nearly 50.000 US\$ (2005, PPP) in 2013.

Member States Area 3 and the Accession Countries have nearly identical levels and movements until 2008. Since then, the Accession countries have overtaken the countries of Member States Area 3, in 2013 the GDP per person employed amounted to 35,100 US\$ (2005, PPP) and 31,350 US\$ (2005, PPP), respectively. The Neighbouring Countries have the lowest labour productivity. However, it has been rising significantly from 11,350 US\$, (2005, PPP) to nearly 15,000 US\$ in 2013 (2005, PPP).

For the Member States of the Danube Region we can not only consider the labour productivity based on persons employed, but also the labour productivity defined as output per hour worked. But then we get the same ranking between the subgroups of the Danube Region as in the case before (Annex Figure 145).

3.2.3 Unit Labour Costs

A main indicator of competitiveness is unit labour costs. They are defined as the labour costs per unit of value added, which equals average gross wage divided by average productivity. This yields the value GDP per person employed. So unit labour costs depend directly on labour productivity, which was discussed in the previous paragraph.

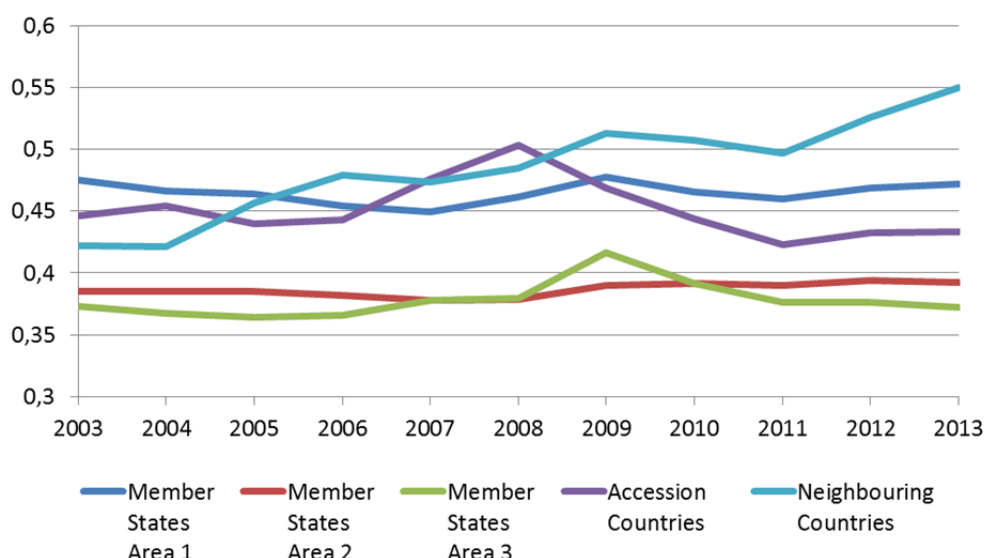
Labour costs usually differ greatly in international comparison due to low mobility of workers and also due to the different burdens imposed by taxes and (social) contributions. This does not apply to factor costs for capital.

If we analyse competitiveness, we are interested in costs that differ from one country to another. Therefore, in the following we only look at labour costs.

In Figure 27 we can see that back in 2003 the countries of Member States Area 1 had the highest unit labour cost. Although, by 2013 the Neighbouring Countries have reached higher unit labour costs than the countries of Member States Area 1, which makes them the frontrunner for the least competitive country group (ignoring exchange rate developments). In contrast, Member States Area 2 and especially Member States Area 3 have the lowest unit labour costs, which (all other things equal) gives them a competitive edge over the other regions considered. The Accession countries are in between those two extremes in 2013, slightly below their initial level from 2003. In all regions unit

labour costs increased during the economic crisis in 2008 and 2009, probably caused by temporarily lower labour productivity and not by rising wages.

Figure 25: Unit labour cost, current national currency¹⁵



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: Eurostat, UNdata, UNECE, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

¹⁵ Country Specific Notes: **Bosnia and Herzegovina**, The wages include remuneration in cash only, not in kind, and the total wages are divided by the number of all employees including both full-time and part-time workers.

Croatia, the total wages are divided by the number of all employees including both full-time and part-time workers. Free lancers and craft workers are not included. 1994 denomination of the Croat dinar: 1 new Croatian Kuna = 1000 dinars.

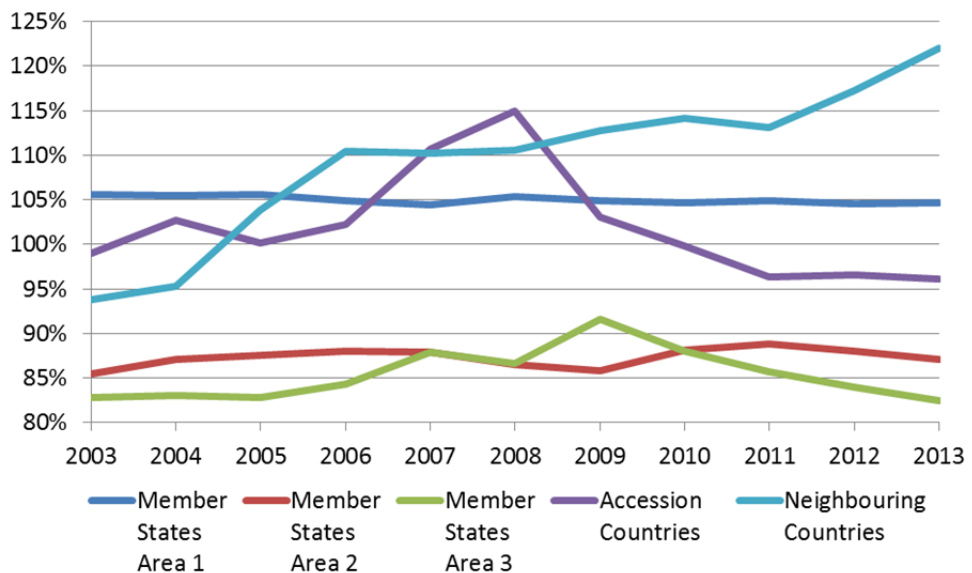
Moldova, Republic of, the total wages are divided by the number of all employees including both full-time and part-time workers. 1993 denomination of the coupon: 1 new leu = 1000 old coupon.

Montenegro, the total wages are divided by the number of all employees including both full-time and part-time workers.

Serbia, the total wages are divided by the number of all employees including both full-time and part-time workers. Wages in services provided by households are not included, covers economic activities A-O (ISIC Rev.3).

In Figure 26 the unit labour costs of the subgroups relative to the level of the Danube Region (Index=100) are depicted. We see that the Neighbouring Countries and the countries of Member States Area 1 have higher unit labour costs than the Danube Region as a whole. Even though the Accession Countries temporarily had higher levels than the Danube Region, its unit labour costs decreased again towards the end of the considered period (2013). The countries of Member States Area 2 and 3 are clearly more competitive, given that their unit labour costs lie well below the 100% line over the entire period considered.

Figure 26: Unit labour cost, Index (Danube=100%)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

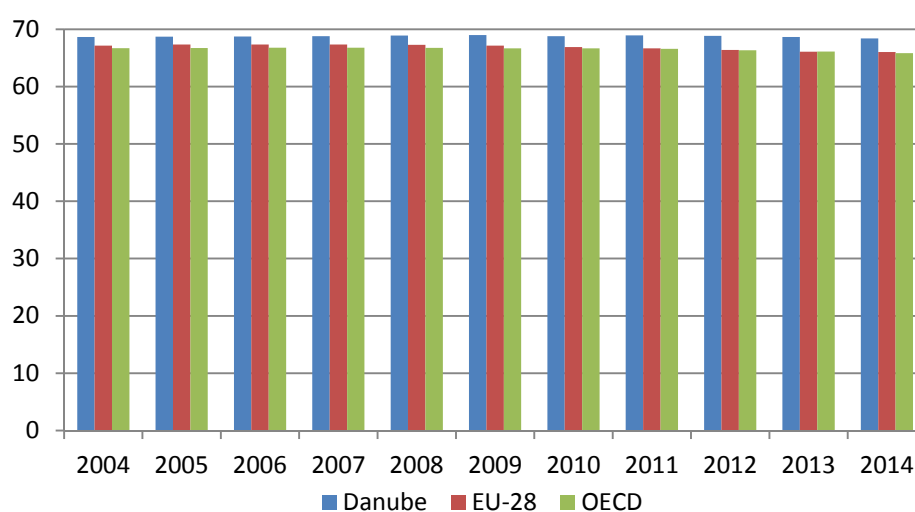
Source: Eurostat, UNdata, UNECE, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

3.3 Labour market and migration¹⁶

3.3.1 Population by age groups

Population ageing has become a common feature that started several decades ago in the EU countries, the Danube Region and the OECD countries as well. Ageing is reflected in the development of the age structure of the population and visible in a rising proportion of older persons and a declining proportion of both the young and – in most countries – in the working age population in the total population. Ageing of the population is expected to accelerate in the coming decades in the EU-28 and probably so in the OECD area and the Danube Region, as a greater proportion of the post-war baby-boom generation reaches retirement. This will, in turn, pose a serious risk on the welfare system of these countries.

Figure 27: Population 15-64 years (in % of total population)



Note: OECD from 2012 projections.

Source: Eurostat, OECD and national statistics. Calculation and illustration: wiiw.

¹⁶ Prior to 2008 labour market data on the Danube region have to be treated with caution due to different methodologies used in data collection in Serbia and Montenegro compared to other countries of the region.

As illustrated in Figure 27 the prime-age population (15-64 years) remained almost unchanged over recent years in the Danube Region and was higher than in the EU-28 and in the OECD countries. By contrast, in the two latter regions the working age population shrank continuously in the 2004-2014 period. The share of young people between 0 and 14 years has been steadily on the decline both in the EU-28 and in the Danube Region in the period 2004-2014 and represented roughly 15% of the total population (Annex Figure 146). There are, however, huge variations among regions and individual countries.

Population ageing has been slightly more advanced in the EU-28 than both in the Danube Region and OECD (Annex Figure 147). However in all groups of countries the share of the population above 65 years has been on a steady increase between 2004 and 2014.

3.3.2 Activity rates

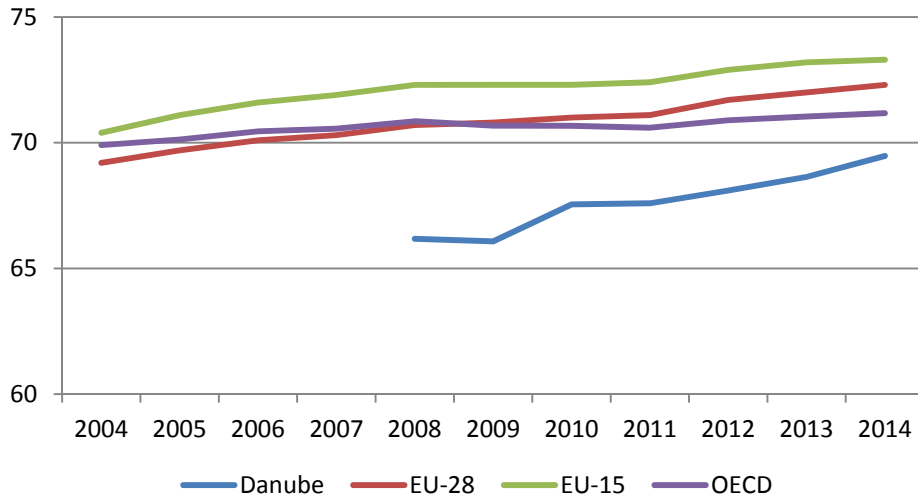
As illustrated in Figure 28 overall activity rates in the Danube Region have been traditionally lower (at about 68%) than either in the OECD or the EU-28 and EU-15 countries (over 70%). In general, participation rates were more resilient than expected on the basis of historical regularities in the aftermath of the recession.¹⁷ The gap between activity rates of the Danube Region and the three groups of benchmark countries narrowed in the period 2008-2014, from 6 to 4% pp (EU-15) and 5 to 2 pp (OECD).

With respect to gender, activity rates differ across all regions (Annex Figure 148). During the period 2006-2014 male rates have been very similar in the OECD and EU countries reaching 80% and 78% respectively. At the same time male participation rates in the Danube Region reached 75%. Concerning females, the highest and most growing female activity rates were reported in the EU-15 and EU-28 accounting for 67-68%. Similarly in the OECD activity of females was on the increase but remained below EU levels during the whole period (in 2014 the gap vis-a-vis the EU-15 was 5 percentage points). By contrast, in the Danube Region the participation of females on the labour market

¹⁷ European Commission (2012), Labour market developments in Europe 2012, European Economy 5/2012, p. 21.

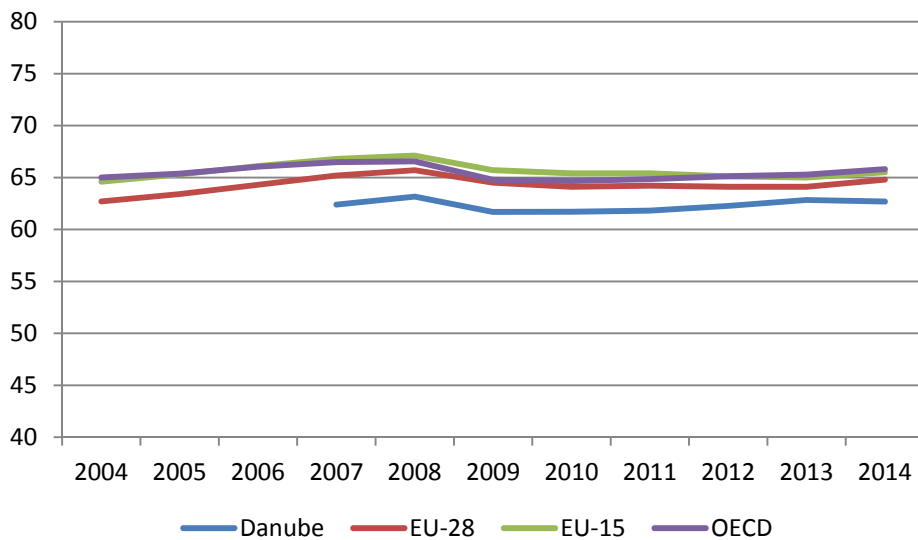
was growing less dynamically, hovering slightly over 60% between 2006 and 2014.

Figure 28: Activity rates 2004-2014 (in % of working age population population (15-64 years))



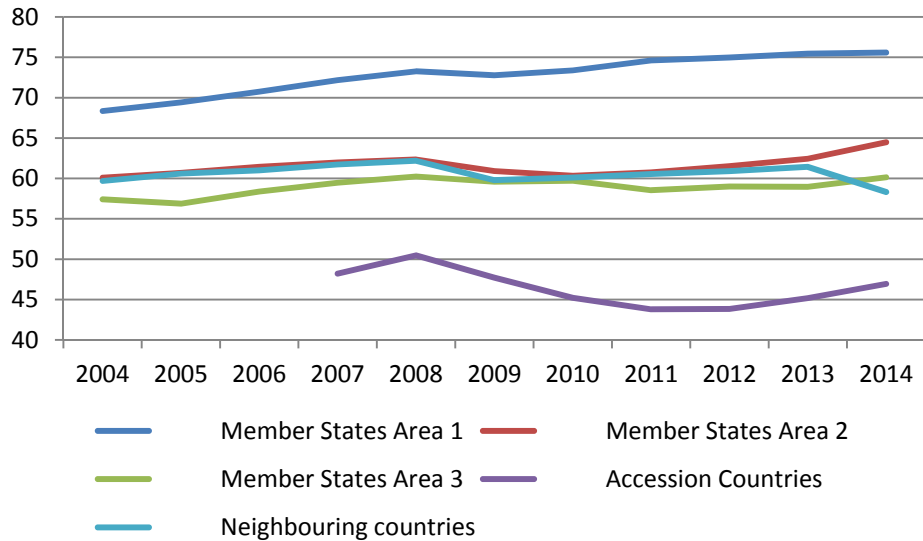
Source: Eurostat, OECD and national statistics. Calculation and illustration: wiiw.

Figure 29: Employment rates (employed persons in % of the working age population (15-64 years))



Source: Eurostat, OECD and national statistics. Calculation and illustration: wiiw.

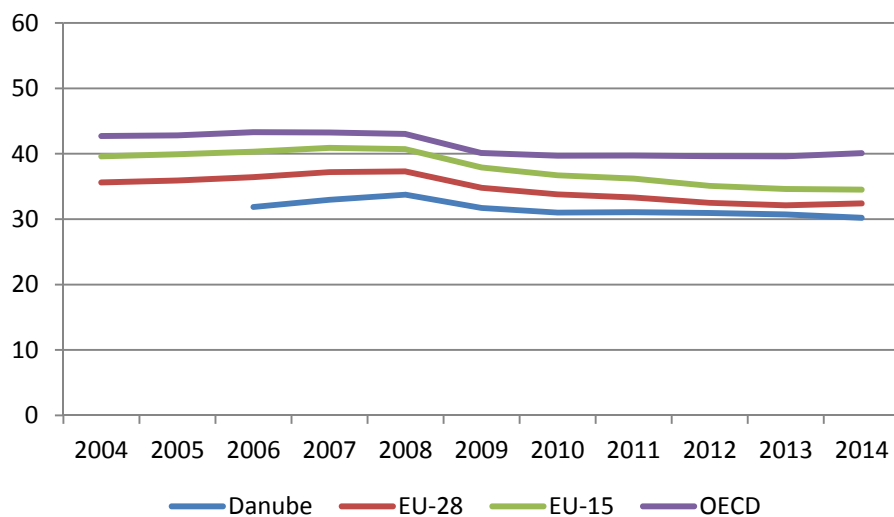
Figure 30: Employment rates (employed persons in % of the working age population (15-64 years)), by subgroups of the Danube Region



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA. 2014 data for UA are excluding Crimea and Sevastopol.

Source: Eurostat and national statistics. Calculation and illustration: wiiw.

Figure 31: Youth employment rates (15-24 years, in %)



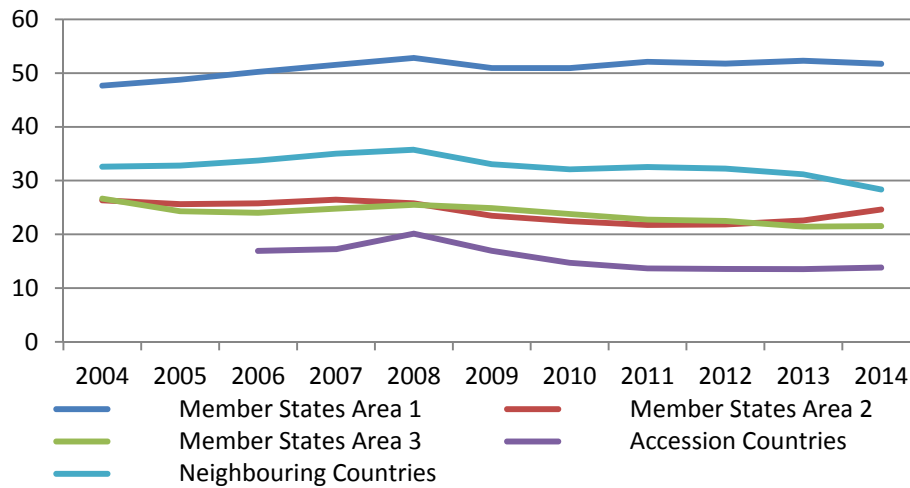
Source: Eurostat, OECD and national statistics. Calculation and illustration: wiiw.

As indicated in Figure 29, total employment rates – defined as the share of employment in the working age population (15-64 years) – increased up to 2008 in all major regions, the trend reversed with the crisis and grew slightly from 2012 onwards.. Employment rates in the OECD exceeded the EU-28 average over the whole period under consideration, fell below EU-15 in the period 2008-2011, but converged thereafter. The employment rate of the Danube Region has been traditionally lower than both the EU and OECD averages. However, there are strong variations among the Danube Region sub-groups as shown in Figure 30. Employment rates are remarkably lower in the Accession Countries than in the Danube Region on average and differ even more strongly if compared with the group of the best performers (Member States Area 1), with the gap continuously widening over the past decade.

As depicted in Figure 31 the employment rates of young people (15-24 years) show remarkable variations as well. In the entire period under consideration youth employment rates were the highest in the OECD area and lowest in the Danube Region, with an almost constant gap of close to 9 percentage points between the two. During the economic and financial crisis youth employment rates decreased in all four regions, of which most pronouncedly in the EU-15 – none of them had reached the pre-crisis level in 2014. Within the Danube Region sub-groups youth employment rates fell most significantly in the Neighbouring Countries (by 7 percentage points between 2008-2014) which was most pronounced in 2014 as a consequence of the armed conflict in parts of Ukraine. Also the Accession Countries suffered from sharp contractions of the employment rate of the young over that period (by 6pp).

Differences in youth employment rates are even greater if comparing the sub-groups of the Danube Region. As illustrated in Figure 32 the gap between the lowest youth employment rate reported for Accession Countries and the highest in the Member States Area 1 accounted for almost 38 percentage points in 2014 (52% versus 14%).

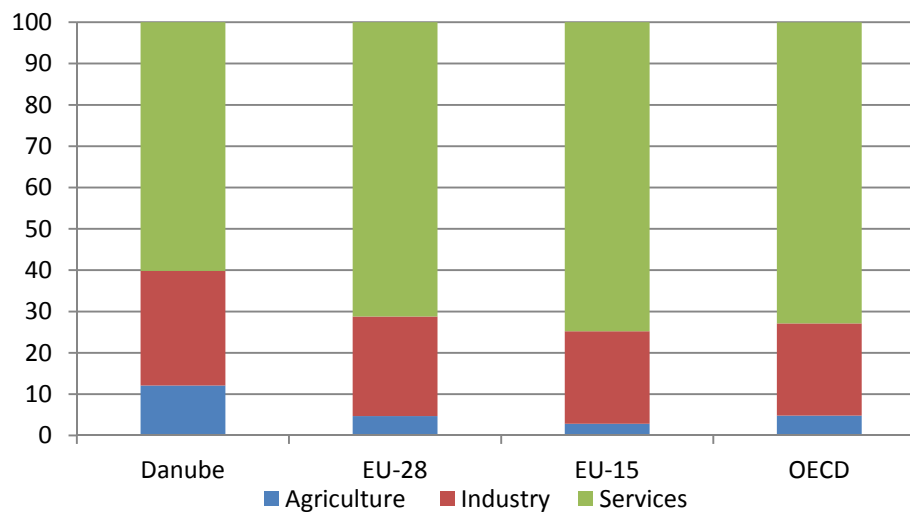
Figure 32: Youth employment rates (15-24 years, in %), by subgroups of the Danube Region



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA. 2014 data for UA are excluding Crimea and Sevastopol.

Source: Eurostat and national statistics. Calculation and illustration: wiiw.

Figure 33: Employment 2014, by main economic sectors (in %)

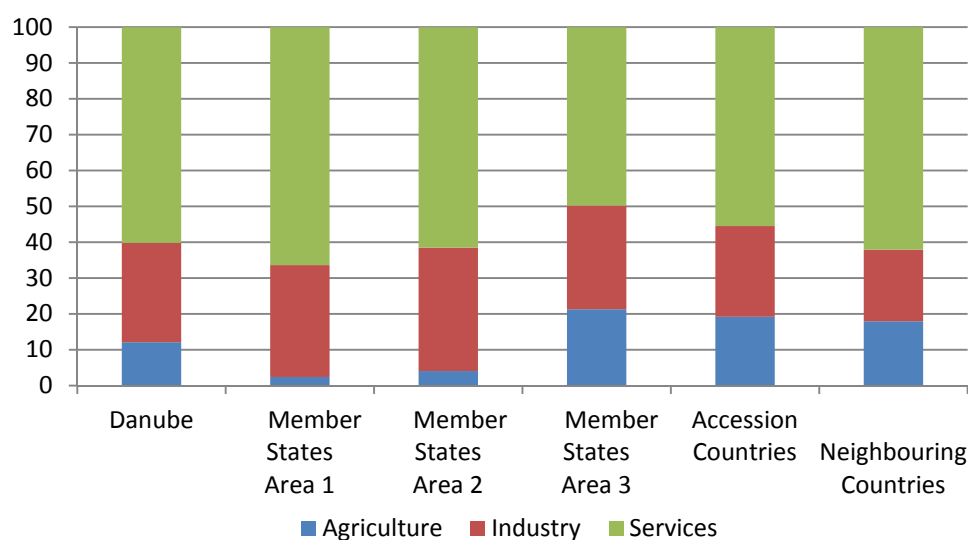


Source: Eurostat, OECD and national statistics. Calculation and illustration: wiiw.

Figure 33 shows the sectoral distribution of employment by main economic activities – agriculture, industry and services. In all four major country groups services sector employment plays the dominant role, reaching 70% of total employment in EU-28 and exceeding that mark by 3-4 percentage points in EU-15 and OECD. In 2014 services sector employment in the Danube Region was far below these levels accounting for 60% of total employment. Here agriculture is still an important employer, absorbing about 12% of the total workforce, while the respective shares in EU-28 and OECD stood at slightly below 5%; in the EU-15 at a mere 3%. Also industrial employment is more pronounced in the Danube Region than in the three other regions.

Figure 34 presents the employment shares by main economic sectors in the Danube Region subgroups. In 2014 the countries of Member States Area 1 had the lowest share of agricultural employment (2.4%) among the Danube countries, while it accounted for 21% in the countries of Member States Area 3 mainly as a result of the still high proportion of agriculture in Romania. Also in

Figure 34: Employment 2014, by main economic sectors and subgroups of the Danube Region (in %)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

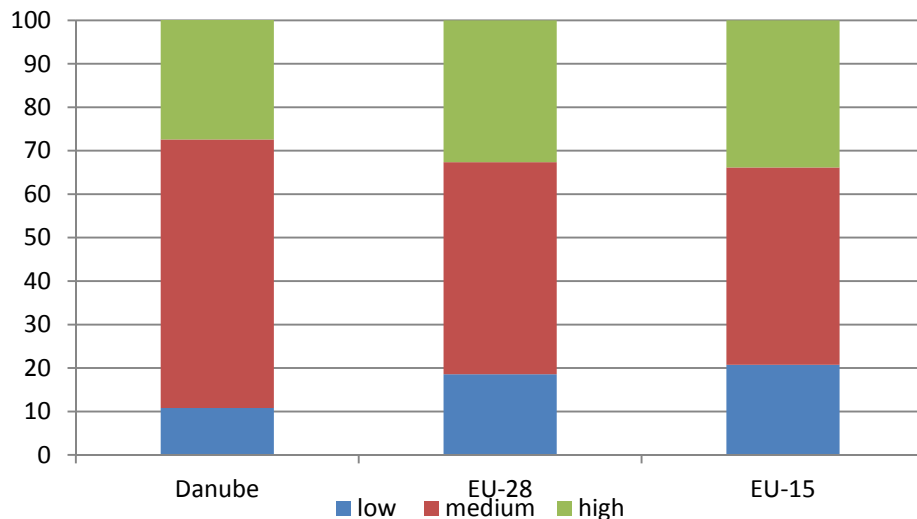
Source: Eurostat and national statistics. Calculation and illustration: wiiw.

the Accession and Neighbouring Countries 18-19% of the workforce is employed in agriculture. The services sector absorbs two thirds of total employment in the countries of Member States Area 1, about half in the countries of Member States Area 3 and 56% in the Accession Countries.

Industrial employment exhibits a higher share in total employment in the EU Member States belonging to the Danube Region, above all in the countries of Member States Area 2 with a well-developed car industry. Conversely, in the Accession Countries and particularly in the Neighbouring Countries, industry accounts for 25% and 20% of total employment respectively.

Since 2008 the share of agricultural employment decreased in all major country groups, most of which in the Danube Region (in particular in the Accession Countries). The industrial employment share has been declining as well with the strongest contractions in the EU-15 and EU-28. Within the Danube Region, industrial employment shares fell the most in the countries of the Member States Areas 2 and 3 and in the Accession Countries. By contrast, services sector employment gained importance in all groups of countries with highest increases in EU-28, of which particularly in the countries of Member States

Figure 35: Employment 2014, (15-64 years), by educational attainment (in %)



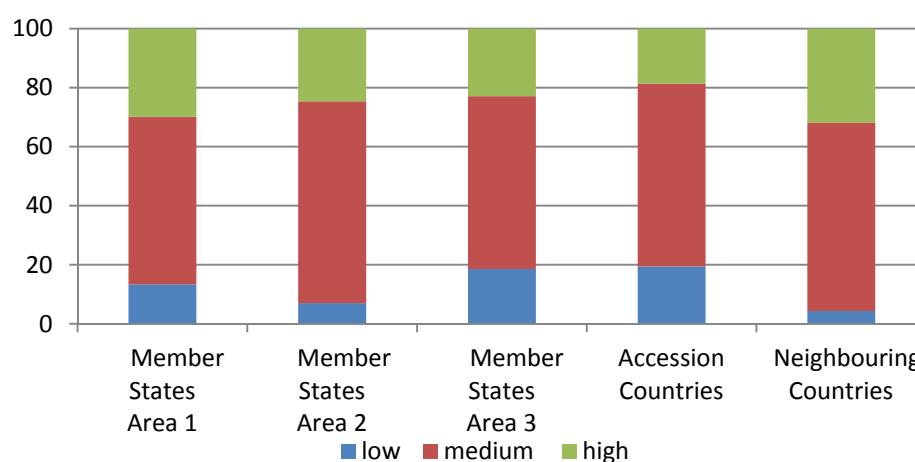
Source: Eurostat and national statistics. Calculation and illustration: wiw.

Area 3, and in the Accession Countries (for further details on the sectoral shift from agriculture and industry towards the services sector see Chapter on GDP components and sectors above).

Moving on to the patterns of educational qualification of the employed we can see from Figure 35, that the Danube Region has a significantly lower share of low educated (people with less than completed secondary degree attainment levels) than either the EU-15 or the EU-28 (data for the OECD countries are not available). Only 8% of the employed in the Danube Region belong to this group, 20% in the EU-28 and 23% in the EU-15. Over the period 2004 to 2014, the share of the low educated has been falling in all economies under consideration.

On the other hand the shares of the highly educated (employed with completed tertiary educational attainment level) are also lower in the Danube Region than either in the EU-15 or in the EU-28, by about 5-6 percentage points. Hence, compared with the EU-15 and EU-28 economies, the Danube Region has a very strong representation of the medium educated skill groups (group

Figure 36: Employment 2014 (15-64 years), by educational attainment and subregions of the Danube Region (in %)



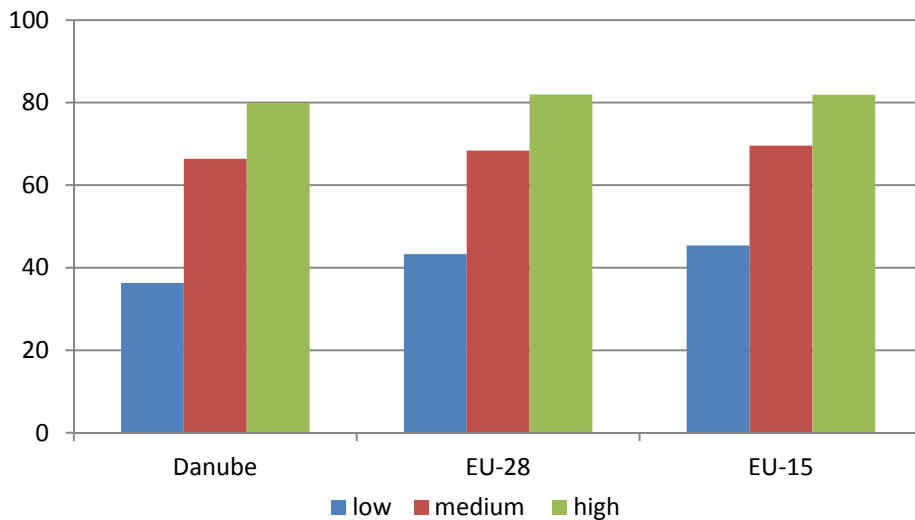
Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA. 2014 data for UA are excluding Crimea and Sevastopol.

Source: Eurostat and national statistics. Calculation and illustration: wiiw.

with some secondary completed educational attainment level) in which we find over 60% of the employed, as against just 49% in the EU-28 and 45% in the EU-15. The share of this group has been slightly decreasing in the Danube Region and EU-28, while it is stagnant in EU-15. As shown in Figure 36 there are significant differences in the educational attainment levels of the employed in the Danube Region subgroups. With the exception of the Member States Areas 1 and 3 the share of the medium educated in total employment is exceeding the 60% mark in all other subgroups of the Danube Region and reaches even 68% in the Member States Area 2. In the latter, together with the Neighbouring Countries, also the share of the low educated is lowest. The Neighbouring countries exhibit the highest shares of highly educated in the Danube Region.

If looking at employment rates we see an increase with the level of education, however to different extent in the individual regions. When it comes to tertiary education (high skilled) employment rates are highest in the EU-28, and EU-15, showing an almost identical picture in both groups of countries and only slightly lower rates in the Danube Region with over 80% on average. Differences as compared with the EU-15 and EU-28 occur particularly in the low-

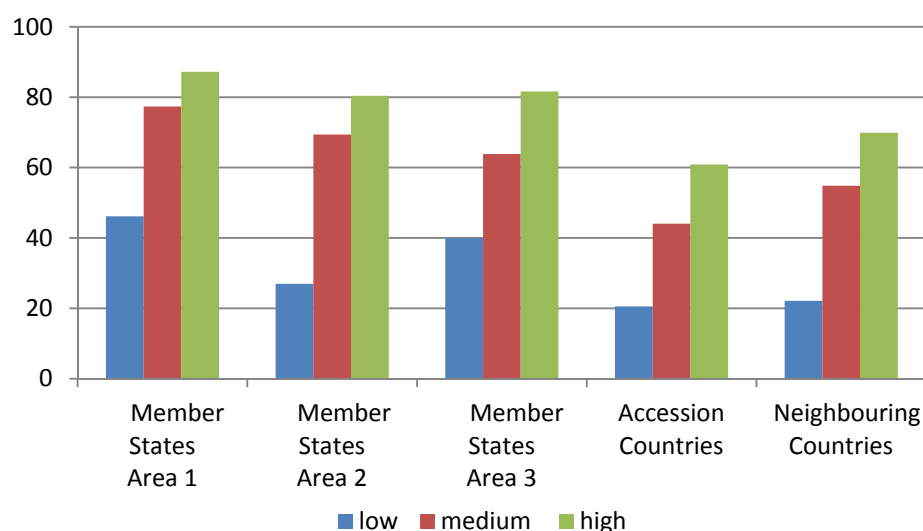
Figure 37: Employment rates 2014, by educational attainment (in %)



Source: Eurostat and national statistics. Calculation and illustration: wiw.

est educational group, with the employment rates being constantly below 40%. As shown in Figure 37, in 2014 the gaps in the employment rates of the low skilled between the Danube Region and the EU-15 and EU-28 accounted for 9pp and 7pp respectively. The employment rate of the medium-educated (about 66% on average in the Danube Region) is below the EU-15 and EU-28 levels, but the disparities narrowed since the outbreak of the crisis. Again, as illustrated in Figure 38 there are large differences between the subgroups of the Danube Region with respect to the educational attainment of the workforce.

Figure 38: Employment rates 2014, by educational attainment and subgroups of the Danube Region (in %)

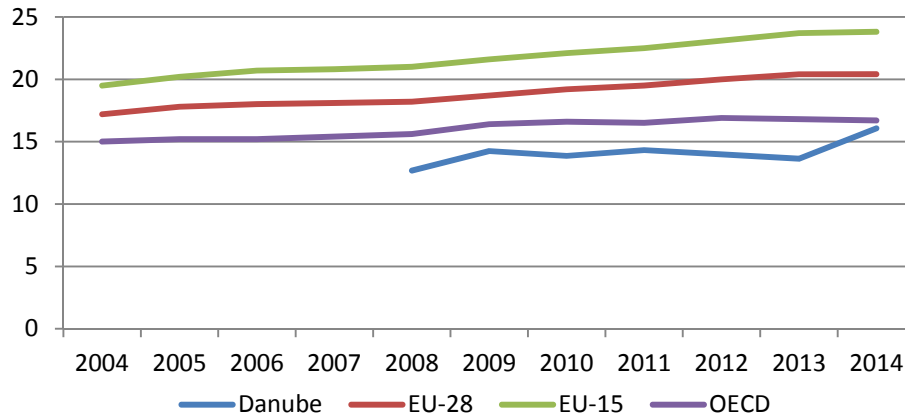


Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA. 2014 data for UA are excluding Crimea and Sevastopol.

Source: Eurostat, OECD and national statistics. Calculation and illustration: wiiw.

Non-standard forms of employment (part-time, temporary work, self-employment) have been increasingly used in the EU-15 since the early 1990s. As illustrated in Figure 39 part time employment accounted for 24% of total employment in 2014, in the EU-28 the respective share was 20% and in the OECD area 17%.

Figure 39: Part-time employment (in % of total employment)

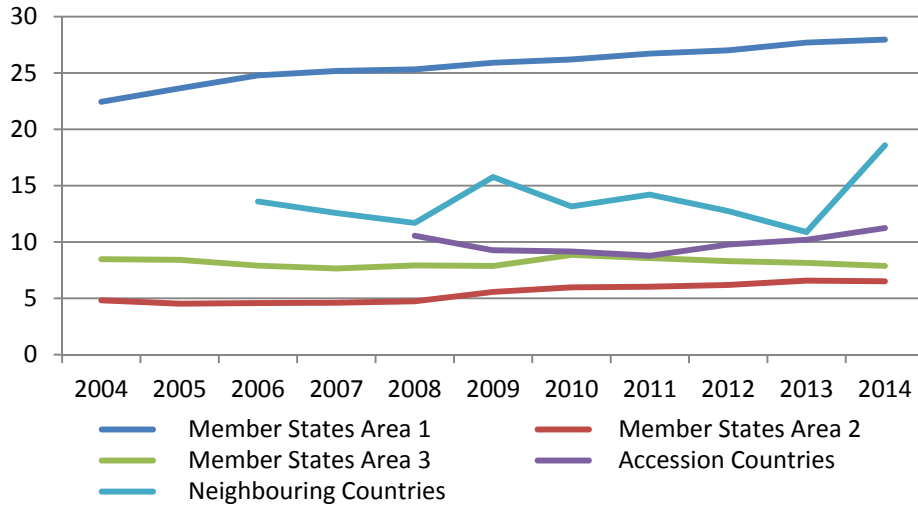


Source: Eurostat, OECD and national statistics. Calculation and illustration: wiw.

Data available for the Danube Region (Member States) show huge variations among the sub-groups. As shown in Figure 40 part-time employment is most pronounced in the countries of Member States Area 1 accounting for 28% of total employment in 2014, while only for 6% in the countries of Member States Area 2 and for 8% in the Member States Area 3. Part-time employment in the Accession Countries accounted for 11% of total workforce. The sharp rise of part time work in the Neighbouring Countries has to be treated with caution due to the data reported for Ukraine (excluding Crimea and Sevastopol).

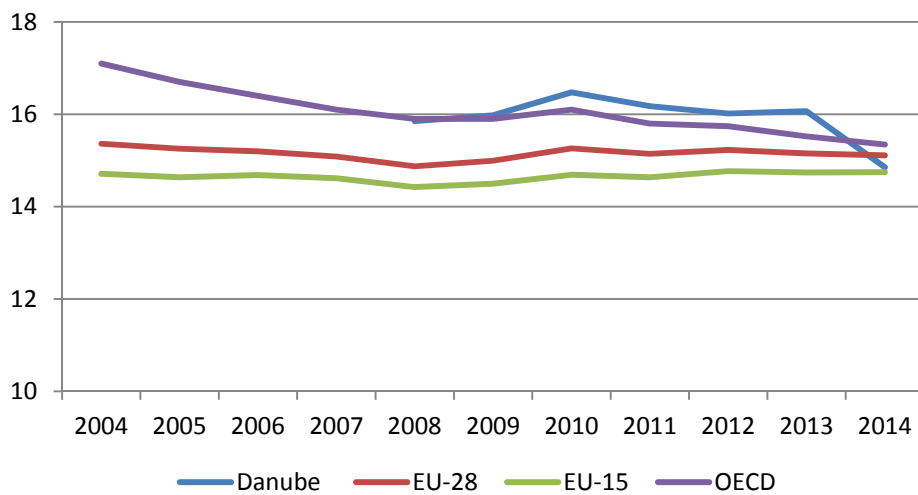
Self-employment often used as a proxy for informal sector employment has been highest in the Danube region in the period between 2008 and 2014. As depicted in Figure 41 its share in total employment accounted for about 15%. In the OECD self-employment was at a similar level reported for the EU-28, but higher than the EU-15 average.

Figure 40: Part time employment, by subgroups of the Danube Region



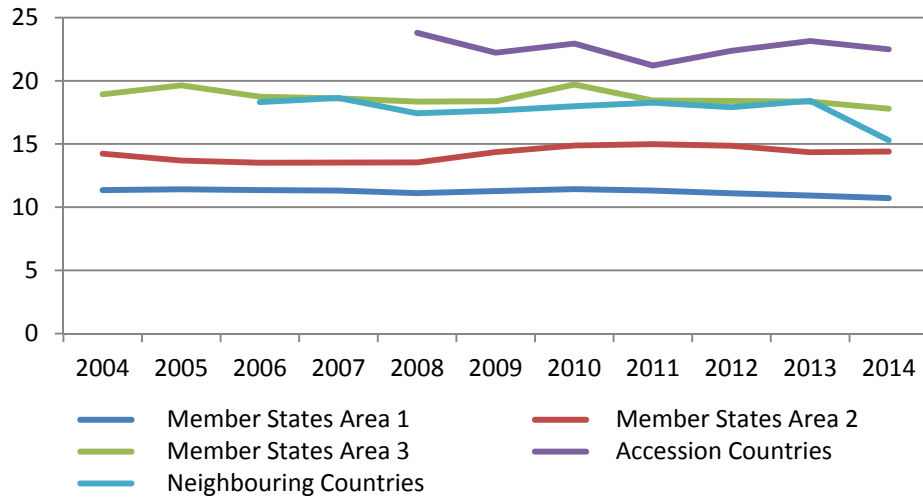
Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA. 2014 data for UA are excluding Crimea and Sevastopol.
Source: Eurostat and national statistics. Calculation and illustration: wiiw.

Figure 41: Self-employment rates (in % of total employment)



Source: Eurostat, OECD and national statistics. Calculation and illustration: wiiw.

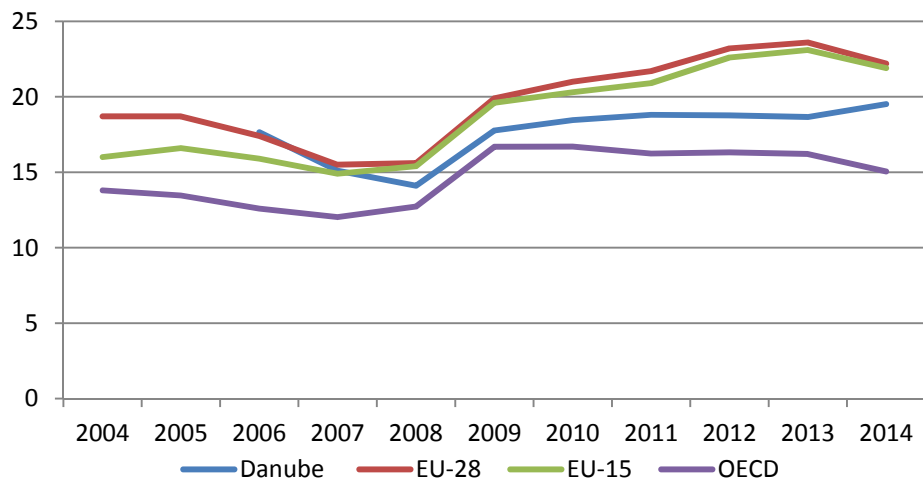
Figure 42: Self-employment rates (in % of total employment), by subgroups of the Danube Region



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA. 2014 data for UA are excluding Crimea and Sevastopol.

Source: Eurostat and national statistics. Calculation and illustration: wiw.

Figure 43: Youth unemployment rates (15-24 years, in %)



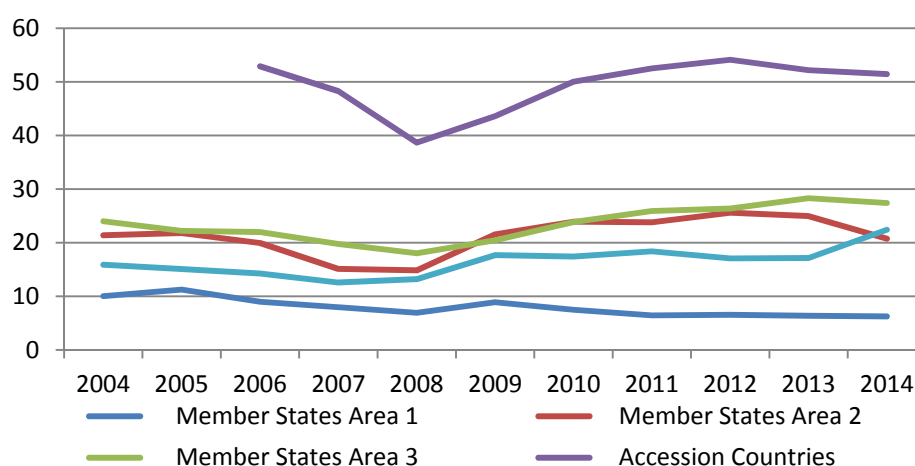
Source: Eurostat, OECD and national statistics. Calculation and illustration: wiw.

There are, however, significant differences within the Danube region: as shown in Figure 42 self-employment is exceptionally high - but slightly declining - in the Accession Countries (23% of total employment) and is accounting for close to 18% in the Neighbouring Countries and in the Member States Area 3. In these three groups of countries agriculture is an important economic activity for self-employed.

As illustrated in Figure 43 youth unemployment in the Danube region – defined as the share of unemployed aged 15-24 years in the respective labour force - declined similar to other main regions prior to the economic and financial crisis and jumped from 14% in 2008 to 19.5% in 2014. This was less severe than in the EU-28 and EU-15, but much stronger than in the OECD.

Looking at the Danube region sub-groups we observe, however, strong variations in youth unemployment. Overall, Member States Area 1 is the only exception, reporting youth unemployment rates below the Danube region average, while all other subgroups are exceeding this value. As shown in Figure 44 the incidence of youth unemployment has been traditionally much more se-

Figure 44: Youth unemployment rates (15-24 years, in %), by subregions of the Danube Region



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA. 2014 data for UA are excluding Crimea and Sevastopol.

Source: Eurostat and national statistics. Calculation and illustration: wiiw.

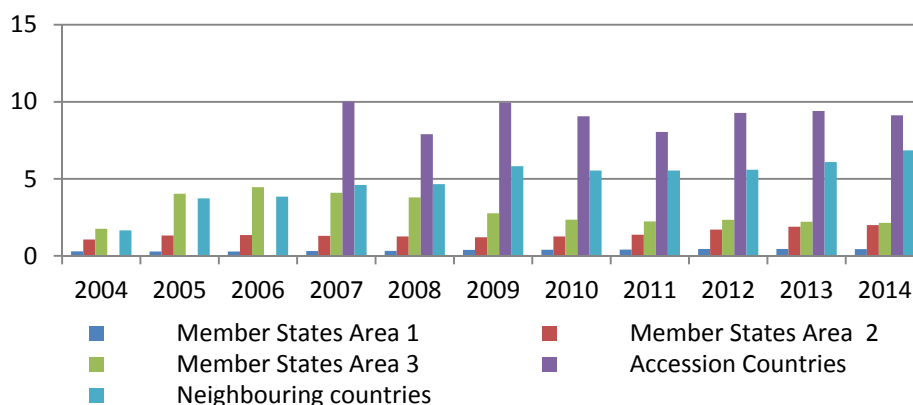
vere in the Accession Countries than in the Danube region on average and unemployment varies extremely if compared with the best performing Danube region sub-group (Member States Area 1). The gap in youth unemployment between these two sub-groups widened significantly from 32 percentage points in 2008 to 48 percentage points in 2012 and narrowed only slightly thereafter (to 45pp in 2014).

3.3.3 Migration and Remittances

International migration has a long tradition in the countries of the Danube Region. In the Accession Countries (then part of the former Yugoslavia) guest worker emigration started already in the 1960s in order to alleviate labour market imbalances and over the past decades also the breakup of Yugoslavia and the subsequent war have led to large migration flows from the region. Bosnia and Herzegovina is the main sending country from this area; half of its migrants have chosen EU countries as their destination, in particular Germany, Austria and Slovenia.¹⁸ Migration from the neighbourhood countries which is mainly driven by economic and job related reasons is directed both to the CIS (majority) and to the EU countries. In 2014 about 860,000 migrants from Ukraine lived in the EU (Poland, Italy and Germany) and about 210,000 from Moldova (Italy, Romania, Spain). The inflow to the EU rose significantly from 2003 onwards but dropped remarkably during the crisis. In the countries of Member States Area 3 (Bulgaria and Romania in particular) emigration started after 1989 and intensified in the wake of EU accession due to economic reasons, adding substantially to declining demographics. At the end of 2013, about 2.4 million Romanian and 425,000 Bulgarian citizens resided in the EU. It is expected that their number will further increase due to the full liberalization of the labour markets in Germany and Austria for citizens from those two countries as of January 2014.¹⁹ Migration plays also an important role in the Member States Area 2, particularly in the Slovak Republic and in Hungary. Mi-

¹⁸ Havlik et al. (2012), European Neighbourhood – Challenges and Opportunities for EU Competitiveness, wiiw Research Report no. 382, p. 112.

¹⁹ Migration from Romania and Bulgaria is mainly directed towards Italy, Spain and Germany.

Figure 45: Remittances (in % of GDP)

Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: World Bank, Eurostat national statistics and wiiw calculations. Calculation and illustration: wiiw.

gration from Hungary grew rapidly in the past couple of years, with close to 300,000 of its citizens residing in other EU countries by the end of 2013. In most of the sending countries migration helped to cushion the problem of unemployment and generate remittances that can be spent on the local economy.

Remittances are an important source of income in a number of countries of the Danube Region. This holds true in particular for the Accession and Neighbouring Countries. Here in 2014 the share of remittances in the GDP varied between 11% in Bosnia and Herzegovina and 24.5% in Moldova.²⁰ Remittances coupled with increased migration have shown a rising trend in these countries up to the crisis, generating welfare gains either for the sending country of the

²⁰ In Moldova remittances are among the main contributors to developments on the labour market, because first a high number of emigrants are recorded as inactive in the national statistics and second, because the remittances discourage the recipients from taking low-wage jobs as long as they can rely on financial support from family members working and living abroad (see Mara: in Havlik et al. (2012), European Neighbourhood – Challenges and Opportunities for EU Competitiveness, wiiw Research Reports 382, pp 117.)

migrants or for the migrants themselves. As shown in Figure 45 the share of remittances in the GDP fell in the aftermath of the crisis in the Accession Countries from 10% in 2009 to 8% in 2010 and remained stagnant at about 9% thereafter. The countries of Member State Area 3 experienced a steady fall of remittances as a share of the GDP from over 4% in 2006 to 2%. By contrast, in the Neighbouring Countries this has been steadily on the increase, reaching close to 7% in 2014.

The amount of remittances sent to the Neighbouring Countries increased from USD 1.1 billion in 2004 to USD 11.7 billion in 2013, but fell to USD 9.6 billion in 2014. This was mainly due to a drop of remittances received by Ukraine in 2014, the country with the highest inflow in the Danube Region. Moldova has been characterised by a steady rise in remittances except for a decline in 2009 due to the financial and economic crisis. In the Accession Countries, the volume of remittances rose from USD 5.9 million in 2007 (there are no earlier data available for Serbia and Montenegro) to some USD 6.1 billion in 2014, again showing a decline in 2009 and 2014. In Bosnia and Herzegovina, the volume of remittances has increased but is still below the level of 2008. In terms of volume Serbia and Bosnia and Herzegovina are the largest receivers in the Accession Countries.

3.3.4 Labour market institutions and labour market policies

The impact of labour market institutions on labour market results has been subject of vast research over the past decades and there have been very controversial debates among economists on whether or not labour market liberalization (flexibility) leads to higher employment and better overall economic performance. Also, measuring flexibility or rigidity of labour markets has been subject to numerous studies and different outcomes. Thus, results presented below should be taken with caution. Research on labour market institutions is mainly focusing on employment protection legislation (EPL), unionization, wage setting and minimum wages.

In the following, we investigate survey results regarding 'hiring and firing practices', 'cooperation in labour-employer relations' and the 'flexibility of wage

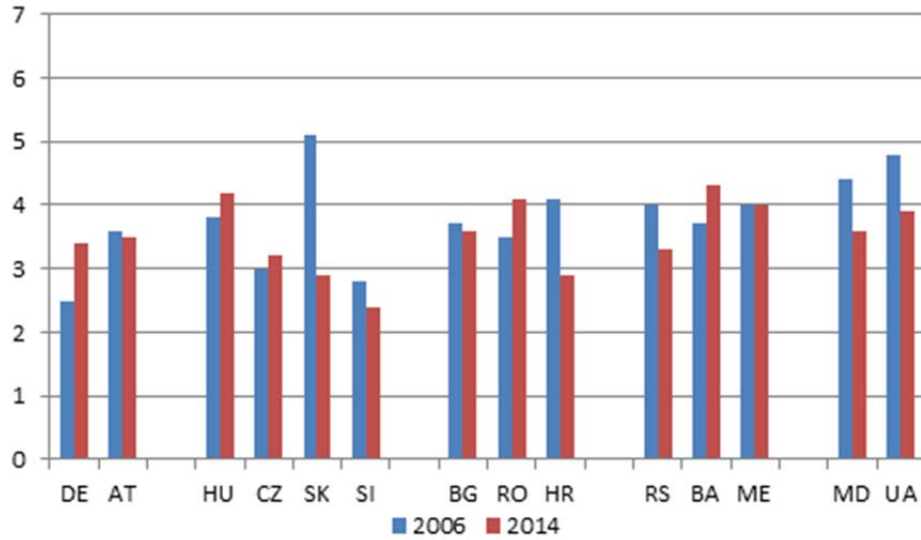
determination' obtained from the World Economic Forum (WEF) Reports and compare them where available with the OECD employment protection legislation index (EPL).²¹ With respect to hiring and firing practices surveys among managers in the Danube Region reveal substantial differences across the individual countries. As Figure 46 shows with a few exceptions hiring and firing practices were relaxed in all subgroups of the Danube Region between 2006 and 2014. They are most flexible in Member States Area 2, while remaining relatively restrictive in the Accession Countries (except Serbia) and the Neighbouring Countries (Ukraine in particular). The Member States Area 1 ranks somewhere in between, whereas Member States Area 3 shows a very uneven picture. These results are partly confirmed by Employment Protection Legislation (EPL) data – e.g. in the Accession Countries and Croatia legislation on collective dismissals is very restrictive.²² However, regarding the countries of Member States Area 1 and one country of Member States Area 2 (Czech Republic) the EPL indicates that the protection of permanent workers against collective and individual dismissals is relatively rigid i.e. above OECD average while more flexible (below OECD average) in Slovakia, Slovenia and in Hungary.

As illustrated in Figure 47 cooperative relations between workers' and employers' organizations are much more developed in the best performing Danube Region countries (Member States Area 1) than in all other subgroups with a particularly low degree of cooperation in the Member States Area 3 and in Serbia.

²¹ For the purpose of comparison we use data available from the Global Competitiveness Report WEF 2006-2007 and 2014-2015 based on surveys among managers, including all Danube Region countries. The OECD Employment Protection Legislation (EPL), on the other hand, is described along 21 basic items which can be classified in three main areas: (i) protection of regular workers against individual dismissal; (ii) regulation of temporary forms of employment; and (iii) additional, specific requirements for collective dismissals. With respect to the Danube Region the EPL index is available only for Austria, Germany, the Czech Republic, Hungary, Slovakia and Slovenia.

²² Gligorov, V. et al. Western Balkan Countries: Adjustment Capacity to External Shocks, with a Focus on Labour Markets, wiiw Research Reports no. 352, December 2008.

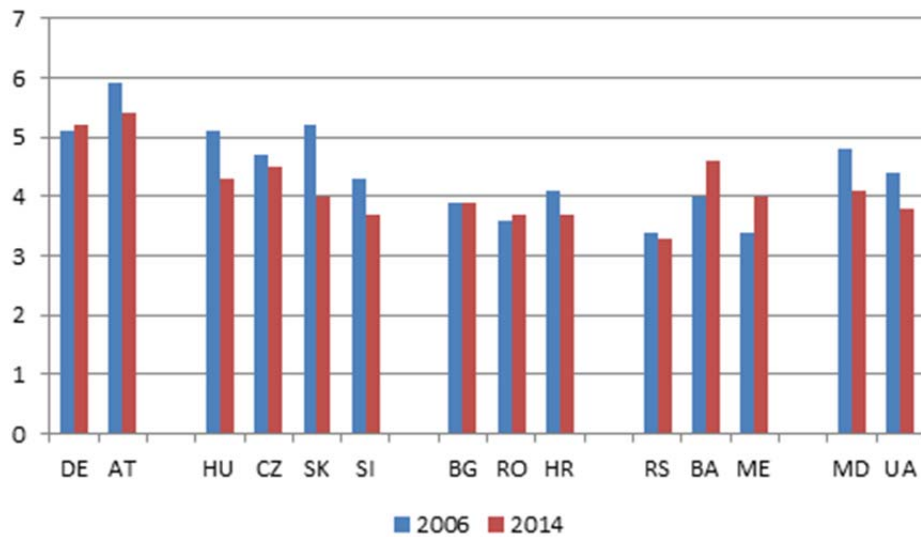
Figure 46: Hiring and firing practices



Notes: Question posed: "In your country, how would you characterize the hiring and firing of workers (1=heavily impeded by regulations; 7=extremely flexible)"

Source: The Global Competitiveness Report WEF 2006-2007 and 2014-2015. Calculation and illustration: wiiw.

Figure 47: Cooperation in labour-employer relations



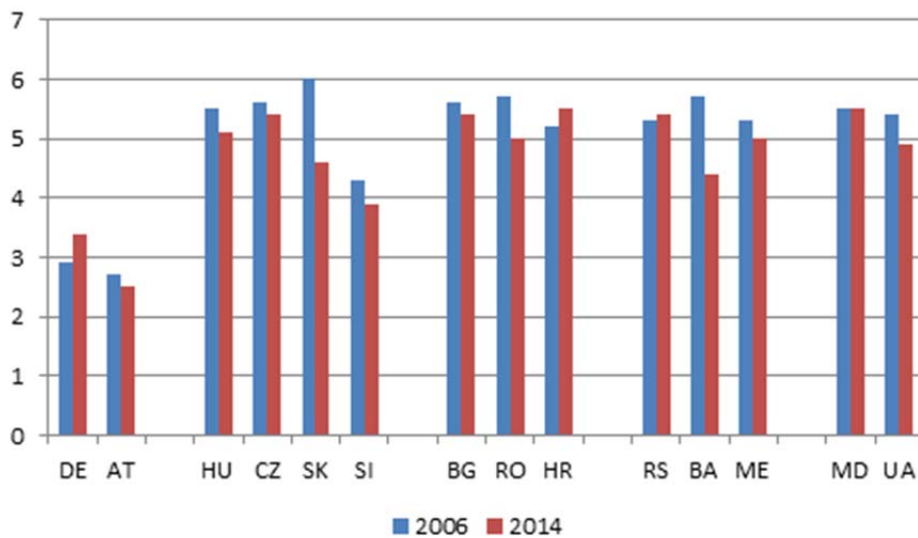
Notes: Question posed: "In your country, how would you characterize labour-employer relations (1=generally confrontational; 7= generally cooperative)"

Source: The Global Competitiveness Report WEF 2006-2007 and 2014-2015. Calculation and illustration: wiiw.

Figure 48 shows that good performers also have a fair degree of bargaining centralization. Except the countries of Member States Area 1 where wage bargaining is centralized on industry level, in most other subgroups of the Danube Region company level wage bargaining is dominant.

Regarding labour market policies spending on active labour market policy measures (ALMP) varies significantly across the Danube Region. As illustrated in Figure 49 expenditures as a share of the GDP were in all groups of countries, excepting Member States Area 1 and Hungary lower than both EU-28 (0.5%) and OECD (0.7%) levels in 2012/2013. Expenditures are highest in the countries of Member States Area 1 having a long tradition in active labour market policies while spending in the Accession Countries (except Montenegro) and in the Neighbouring Countries is extremely low; in the latter expenditures on active labour market policies account for around 0.1% of GDP. Most EU Member States within the Danube Region experienced an increased spending on active labour market policies after the outbreak of the crisis; exceptions being

Figure 48: Flexibility of wage determination

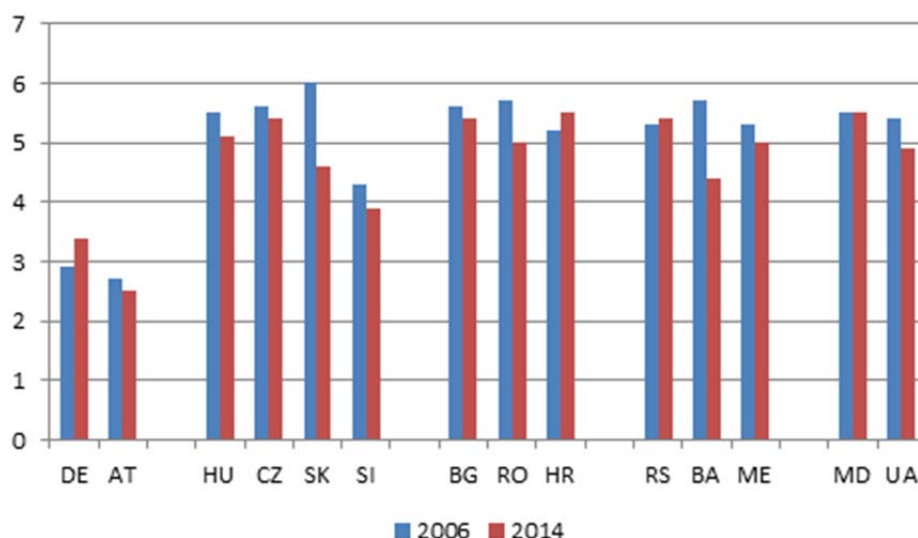


Notes: Question posed: “In your country, how are wages generally set (1=by a centralized bargaining process; 7=by each individual company)”

Source: The Global Competitiveness Report WEF 2006-2007 and 2014-2015. Calculation and illustration: wiiw.

Romania and Croatia out of Member States Area 3 where spending on active measures was cut considerably. With the exception of Serbia also in the Accession Countries the share of expenditures for ALMPs in the GDP fell significantly during the crisis.

Figure 49: Expenditures on active labour market policy (in % of GDP)



Note: Data for 2013 refer for HU, RO, HR and OECD to 2012, for EU-28 to 2011 and for MD and ME to 2010.

Source: Eurostat, OECD, CPESSEC Statistical Bulletin, various issues, Council of Europe Jan. 2013 for Moldova and Black Sea Country Report for Ukraine. Calculation and illustration: wiiw.

Conclusions

Differences also occur with regard to labour market institutions across the Danube Region: The countries of Member States Area 1 have well-functioning industrial relation systems, wage bargaining is very centralized (vs company wage bargaining) and spending on active labour market policies is significantly higher than in the other groups of countries. Information on hiring and firing practices is controversial in particular for countries of Member States Area 1 depending on the source used. As for the others, it appears that regulations are still very rigid in the Accession and in the Neighbouring Countries and more flexible in the countries of Member States Area 2.

3.4 Regional development, infrastructure and environment

3.4.1 Regional development, urbanisation, and rural areas

From a geographical perspective, the economic development of the Danube Region countries is not a homogenous process. Splitting each country into regions immediately reveals that the economic processes, which seem to be clear at the country level, are in fact the sum of quite heterogeneous patterns at the regional level. Consequently, acquiring a deeper understanding of the development potential of the Danube Region and its countries requires, besides all the information this report already contains, also some reflection on the regional dimension.

Overall, the Danube Region can be split into 65 regions, corresponding to the EU NUTS-2 classification²³ (or equivalents for the non-EU countries). The choice of NUTS-2 level of regions is motivated by the circumstance that this level is also the reference point for EU regional policy, and thus links the analysis, at least data-wise, with broader aspects of regional development. Additionally, the use of the NUTS classification, at least in principal, should ensure a certain comparability of regions in terms of population size²⁴. In practice, there are large population differences across NUTS-2 regions in the EU, and also in the Danube Region. Referring to the latter, the largest region is Oberbayern with more than 4.4m inhabitants, while the smallest region, District Brčko in Bosnia-Herzegovina, has a population of slightly more than 71 thousand people (in the year 2014)²⁵. This raises some comparability issues, which will be dealt with in the data section.

²³ NUTS: Nomenclature des unités territoriales statistiques

²⁴ EU Regulation (EC) No 1059/2003 states that NUTS-2 regions are supposed to have between 800 thousand and 3m inhabitants. However it also states that “existing administrative units within the Member States shall constitute the first criterion used for the definition of territorial units”.

²⁵ A complete list of regions and population size is provided in the annex.

Although each of the 65 regions in the Danube Region is in one way or another special, and thus would deserve an individual treatment, a concise analysis of the regions clearly requires some form of organisation in order to keep the analysis and the results manageable. A fruitful way to do this is to group the 65 regions firstly according to the country groups defined at the beginning of this report (Member States Area 1, Member States Area 2, Member States Area 2, Accession Countries).²⁶ Neighbouring countries' regions are not analysed.

Secondly, in each subregion of the Danube Region the regions are again split into three groups according to their population density (population by km²), thus resulting in groups of urban, intermediate and rural regions. Using population density as selection criterion is, by experience, a sensible measure, as it tends to condense a number of characteristics important for regional development into one indicator. Most prominently, it is an indicator of agglomeration forces and externalities that, not only since Krugman²⁷, are known to be key for regional development.

The definition of which region is being regarded as urban, intermediate or rural was subject to expert's opinion. The exact choice was motivated firstly by the need to find meaningful values of population density to identify the three groups of regions. Secondly, the choice was also influenced by distributional aspects, so that all groups are non-empty. From this the regions' definition is:

- Urban regions: population density higher than 200 inhabitants/km²
- Intermediate regions: population density between 88 and 200 inhabitants/km²
- Rural regions: population density below 88 inhabitants/km²

²⁶ Due to its small size Montenegro is not split into regions.

²⁷ Already in 1890 Alfred Marshall mentioned in his „Principles of Economics“ the advantages of producing in an industrial district.

Table 6 provides an overview of regions per subregion of the Danube Region and type of region. Overall, the subregions of the Danube Region tend to have a similar number of regions, except for the Balkan countries that due to their smaller size have less regions.

From an analytical point of view, already the distribution of regions across country groups and regional types provides some valuable information regarding differences in the development potential of the Danube Region countries. Thus, the main difference in terms of settlement structure between the more prosperous country groups, i.e. Member States Areas 1 and 2, and the two less developed groups, i.e. Member States Area 3 and the Accession Countries, is that in the first two subregions of the Danube Region the degree of urbanisation is considerably higher than in the latter subregions.

Accordingly, the number (and share) of urban or intermediate regions is much higher in Member States Area 1 and 2 compared to Member States Area 3 and the Accession Countries, which instead are characterised by a relatively large number of rural regions.

These differences in the degree of urbanisation give rise to the assumption that the Danube Region countries also face differences in the ability to benefit from agglomeration externalities. To illustrate, such externalities are (following Alfred Marshall): a) labour market pooling, i.e. the larger the population in the region, the higher is the available labour for firms. At the same token, the higher the number of firms is, the higher are the chance for workers to find employment; b) information or knowledge sharing and c) the sharing of specialised inputs. Other externalities refer often to trade costs, which are lower

Table 6: Number of regions, by country group and type of region

	urban	intermediate	rural	Sum
AT, DE	6	8	6	20
CZ, HU, SI, SK	4	10	7	21
BG, RO, HR	1	4	11	16
RS, BA, ME	1	3	4	8
Total	12	25	28	65

Source: Eurostat, national statistics. Calculation and illustration: wiiw.

the larger an agglomeration is (as more of the demanded goods can be produced within the region), giving rise to a strong home market effect and also to cumulative growth processes. Generally, agglomeration externalities are seen to be connected to increasing returns (at firm or economy level), and thus are an important source of economic growth and development. And, referring back to the Danube Region, as the size of these externalities depends inter-alia on population density, it is expected that the growth potential in the Danube Region countries and their regions tend to differ widely, with the least prosperous regions also having the worst perspectives.

Table 7 adds some information on the (population weighted) average population density in the regional groups. Notably, especially the numbers for urban regions have to be taken with caution. Firstly, as in each of the last two groups there is only one urban region, the numbers reflect essentially the population density in Bucharest and Belgrade, respectively. Secondly, the population density depends also on the geographic definition of regions. Hence, e.g. in cases like Vienna or Prague, both cities are defined as a region on their own, while in cases like Munich or Budapest, the cities are embedded in a wider region, thus lowering the average population density. For intermediate and rural regions this is less of a problem, so that the results are safer to compare across country groups.

The results indicate that beyond differences in the distribution of regions across the three types, there are additional differences across the intermediate and rural type of regions. Hence, on average population density for both,

Table 7: Average population density 2014, by subregions of the Danube Region and type of region

	urban	Intermediate	rural	Average
AT, DE	721.1	151.3	73.3	440.6
CZ, HU, SI, SK	801.5	115.9	78.1	253.3
BG, RO, HR	1253.6	92.1	64.8	161.0
RS, BA, ME	516.2	89.9	63.4	138.3
Total	771.9	115.2	68.8	269.9

Note: Numbers are population weighted averages. Data for Serbia: 2013

Source: Eurostat, national statistics. Calculation and illustration: wiiw.

intermediate and rural regions, tends to be higher in the countries of Member States Area 1 and 2 than in the countries of Member States Area 3 and the Accession Countries. These differences add to the point, that population and agglomeration-wise, large differences in the development potentials across the regions and the countries in the Danube Region can be assumed.

Certainly, population density is not the only indicator one may look at when analysing the development potential of the regions in the Danube Region countries. A full assessment requires many more indicators and ideally covers all the aspects, which are analysed in this report at the country level, at the level of regions. For a concise overview however it suffices to pick out a small number of indicators, that alone as well as in sum cover directly or indirectly the most important factors regarding the regions' economic potential. That is, besides population density four other indicators are chosen for the analysis:

1. *Sectoral structure of employment*: Besides providing information on the regions' pattern of specialisation, this indicator also allows to draw conclusions on likely future paths of development. In general, the regions' sectoral structures are not likely to change overnight, rather they are the result of long run developments based on the regions' characteristics. That is, the present structure of a region, i.e. whether it is industrial, agricultural or services oriented, is indicative of its future pattern of specialisation. For example industrial regions, having a labour force with skills adjusted to the needs of industries and a relatively large number of firms, are certainly a more attractive location for new manufacturing firms than e.g. purely agricultural region. Additionally, there is also some correlation between the pattern of specialisation and the level of regional GDP, which allows drawing conclusions on the path of general economic development.
2. *Unemployment rate*: It provides immediate information on the situation on the labour market. Moreover, in combination with the sectoral structure, it also gives some information on the ability of existing production structures to provide jobs for the regions' population. It thus may provide some indication of potential structural weaknesses of the region or the firms operating therein.

3. *Educational structure of the labour force*: The availability of a skilled workforce is essential for the development of a region's and country's development. Establishing new and possibly technologically more advanced firms or industries demands, besides other factors, an adequately skilled labour supply.
4. *GDP per head of the regions*: As GDP is the main (summary) indicator of an economy's economic performance, it is the best individual indicator to describe the level of development. Moreover, it is correlated with the (non-agricultural) employment rate, as well as with productivity and wage levels, thus integrating several important aspects at the same time.

The data for the analysis are taken from Eurostat for the EU member states of the Danube Region. Data for the Balkan countries come from national statistical sources, such as the statistical yearbooks and labour force survey. Additional data on Montenegro was supplied by wiiw. The analysis focuses on one year per indicator for data availability issues. Though in most cases data were available for more than one year, it was not sufficient to construct longer time series, which would have allowed analysing longer run development paths.

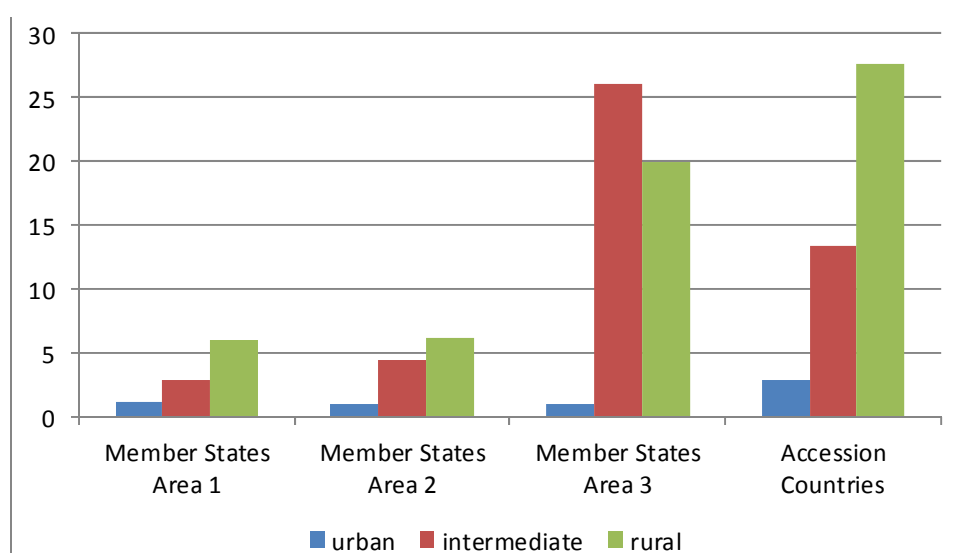
Because of the regions' differences in population, all group results are population weighted, thus attaching more weights to larger regions.

Starting with the sectoral employment structure, Figure 50 to Figure 52 show the share of agriculture, industry and services by subregion and type of regions.

The most striking difference between the regions is the difference in the share of agricultural employment. On average both, the regions of the countries of Member States Area 1 and 2 tend to have a relatively low agricultural share, just as the urban regions in the other two subregions of the Danube Region. Moreover in the first two subregions, the share of agricultural employment is as expected negatively correlated with population density.

By contrast, in the intermediate and rural regions in the countries of Member States Area 3 and the Accession Countries, agriculture is still an important source for employment, as it covers in both, the intermediate regions in Bulgaria, Croatia and Romania, as well as in the rural regions in Bosnia and Herzegovina, Montenegro and Serbia, around one quarter of total employment. Given that a large share of this agricultural employment is either due to subsistence farming or of otherwise low productivity, this has immediate consequences for the general level of GDP and incomes in those regions. It also can constitute a problem for longer run development of these regions, not only because the high share of agriculture might be accompanied by a general lack of employment opportunities in other sectors and also an unfavourable skill structure, but also by a lack of capital accumulation - due to low income levels – inhibiting the development of own industries or services. In addition, given the experience from other countries, such regions are usually not the preferred location for foreign investors, which in sum leaves a quite pessimistic picture of the development potential of these intermediate and rural regions.

Figure 50: Share of agriculture in total employment 2014, by subregion of the Danube Region and type of region



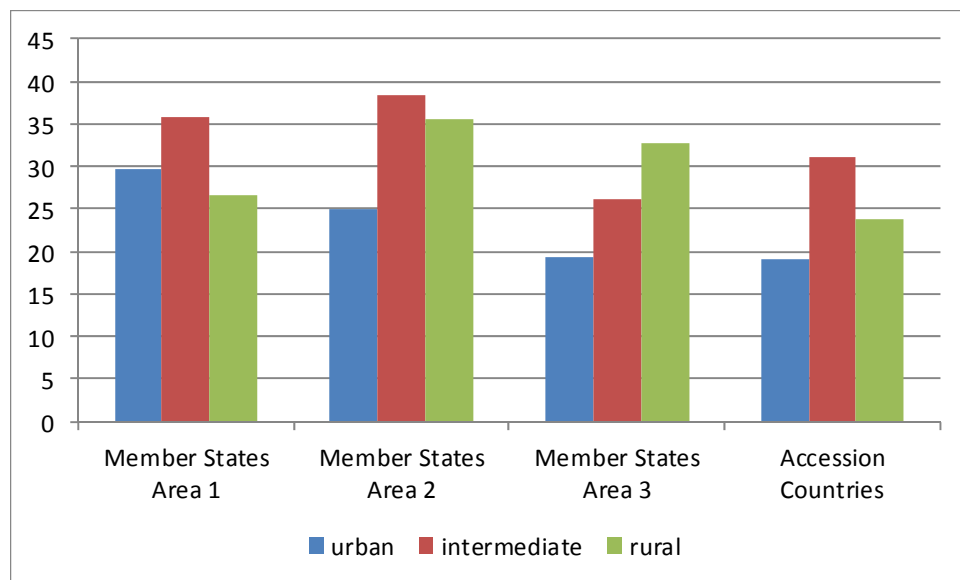
Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME

Source: Eurostat, national statistics. Calculation and illustration: wiiw.

The flip side of the medal is that due to the large agricultural share, the employment shares of industry and services are as a tendency lower in the intermediate and rural regions in the countries of Member States Area 3 and the Accession Countries.

Referring to industry, it has to be noted that, because of data availability, the data include construction, which partly explains the high share of industry in the urban regions. On the other hand, especially the German urban regions are highly industrialised, so that their industry employment share is relatively high. In general, a comparison of Member States Area 1 and 2 with Member States Area 3 and the Accession Countries in terms of industrial employment, is to some extent unfair, as the intermediate and rural regions in the first two subregions of the Danube Region are amongst the strongest industrial regions in the whole EU. Accounting for this, the share of industries in the regions of the latter two groups is approximately equal or even above European standards. Partly this also shines through in the data, as the employment share of rural regions in the countries of Member States Area 3 is higher than in Austri-

Figure 51: Share of industry in total employment 2014, by subregion of the Danube Region and type of region



Source: Eurostat, national statistics. Calculation and illustration: wiiw.

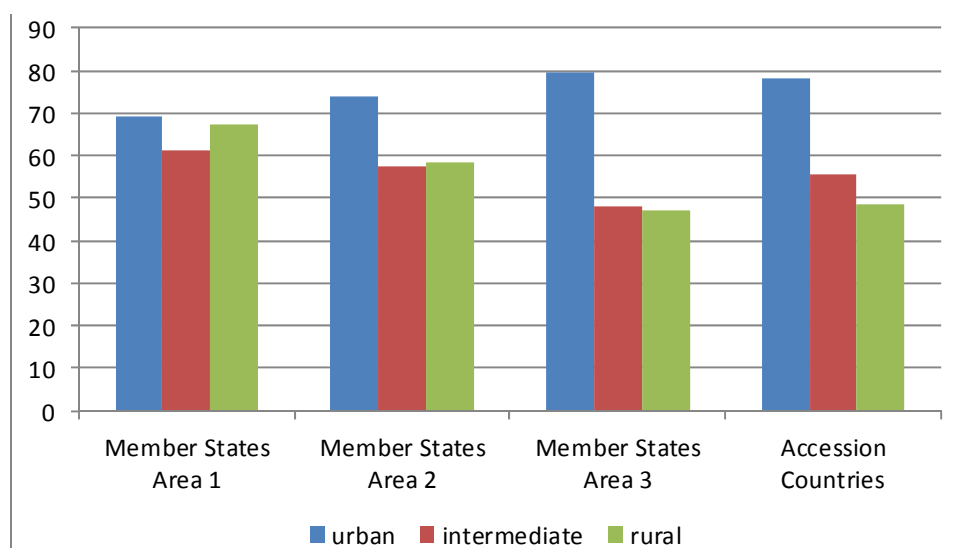
an and German rural regions. In the Accession Countries rural regions the share is approximately equal (Figure 51).

A drawback of the data is that it does not allow differentiating manufacturing industries by detailed sectors. Thus, even if the industries have a quite normal share in employment in the intermediate and rural regions in Member States Area 3 and the Accession Countries, nothing can be said about whether these are high or low tech industries, whether they are competitive on domestic and international markets etc. For this, inferences from the country data have to be made.

The largest differences in employment shares between countries and regions are found in services employment (Figure 52). In Germany and Austria, services employment tends to be high (above 60% of total employment) and relatively equally distributed across the three types of regions.

In the other subregions of the Danube Region, service employment is strong only in the capital cities, i.e. the urban regions, while the intermediate and

Figure 52: Share of services in total employment 2014, by subregion of the Danube Region and type of region



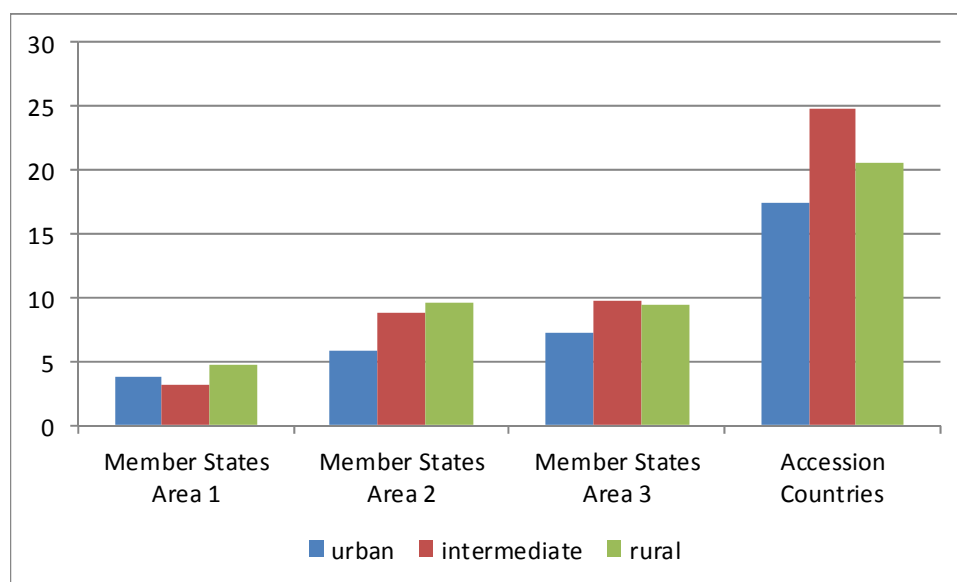
Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME.

Source: Eurostat, national statistics. Calculation and illustration: wiiw.

rural regions have a low share on employment in services. Still, there is some differentiation between the countries of Member States Area 2 and 3 and the Accession Countries in this respect. Services in the former group of countries are better developed than in the latter two groups. One reason for this might be differences in the settlement structure, if the countries of Member States Area 2 have a higher number of larger cities, which, in general, support the development of the services sector. Another reason may be the existence of differences in income levels, as most services activities depend on income generated in other sectors of the economy.

The unemployment rates by country groups and types of regions are shown in Figure 53. Besides the large differences in unemployment between the regions in Bosnia and Herzegovina, Montenegro and Serbia and the regions in the other three subregions of the Danube Region, three facts are important to note.

Figure 53: Unemployment rates 2014 (in % of population aged 15 and older), by subregions of the Danube Region and type of region



Notes: Member States Area 1: DE, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME.

Source: Eurostat, national statistics. Calculation and illustration: wiiw.

Firstly, referring to the employment structure, it has been mentioned that in the regions of Group 3 and 4 countries this structure, especially regarding the share of manufacturing industries is comparable to the European average. Taking this into account and looking at the unemployment rates, gives an indication of the extent to which industries in the regions of the Accession Countries are unable to create jobs and employment. The underdeveloped services sector adds to the unemployment problem.

Secondly, unemployment rates in the intermediate regions are considerably higher than in the rural regions of Bosnia and Herzegovina, Montenegro and Serbia. This is not an unusual pattern, as it can be observed e.g. in Poland as well. There, agricultural rural regions tend to have lower unemployment than more industrialised regions. The reason for this is that agriculture, especially subsistence farming, has a dampening effect on unemployment rates. At the same time it can be assumed that because of this hidden unemployment is high. Given the high share of agricultural employment in the rural regions of the Accession Countries, similar mechanisms can be expected to operate there.

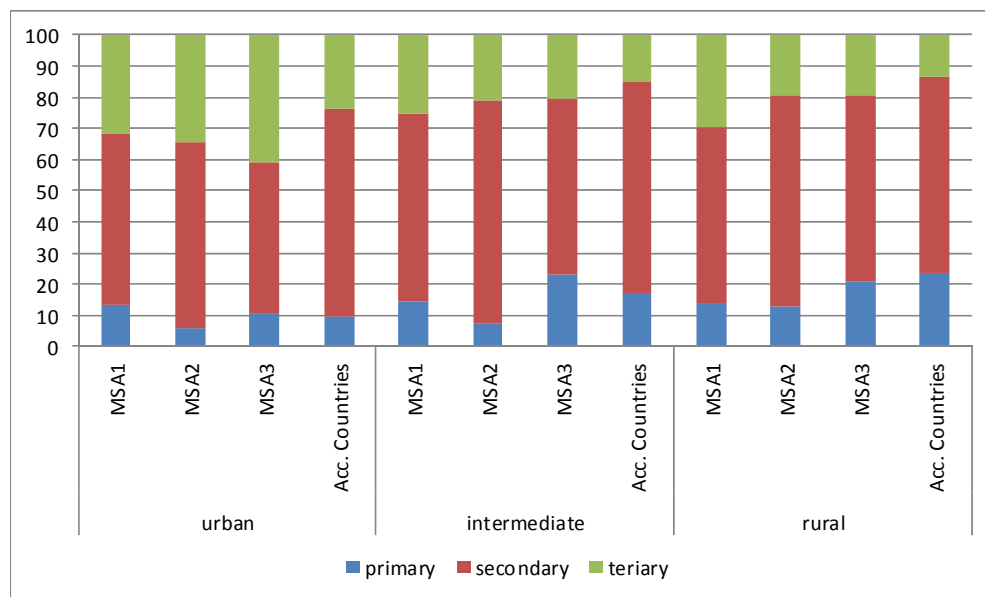
Thirdly, unemployment rates in urban regions are always lower than in intermediate or rural regions. This is a very general pattern across many countries and basically show the economic advantages cities – not only capital cities – have in this respect over less densely populated areas. Main explanatory variables in this respect are agglomeration externalities again, but also the central role cities play in local economies, e.g. as centres of administration, education, health etc.

Regarding the educational structure of the labour force, Figure 54 suggests that the differences between the subregions of the Danube Region are not particularly strong. Splitting the labour force into three educational groups (people with a) completed tertiary education, b) completed secondary education and c) primary education), indicates that in any subregion of the Danube Region urban regions have the highest share persons with completed tertiary education. This is a typical pattern regarding the skill distribution across regions and is mainly related to the higher demand for highly skilled workers in urban regions. Accordingly, in intermediate and rural regions, the share of people with primary and secondary education is higher than in urban regions.

Those differences that exist refer especially to the non-urban regions in Member States Area 3 and the Accession Countries, which have a relatively large share of primary educated in the labour force. Partly this can be related to the importance of agriculture in those regions. Regarding the development potential of these regions, the share of primary educated is considered to be not too much of a problem. This is because the share of people with secondary education, which form the main labour supply for industries, is comparably high, especially if these regions are compared with other regions in Europe, like e.g. in Italy, Portugal, Spain and Greece.

Notably, the available data do not allow analysing the skill structure in more detail. Hence issues of whether the skills offered do correspond to the skills demanded, or of the quality of education (as education is not the same as qualification) cannot be treated. But still, the data show that, at least in principle, the educational systems in those countries and regions are conducive to

Figure 54: Shares of labour force by education 2014 by subregions of the Danube Region and type of region



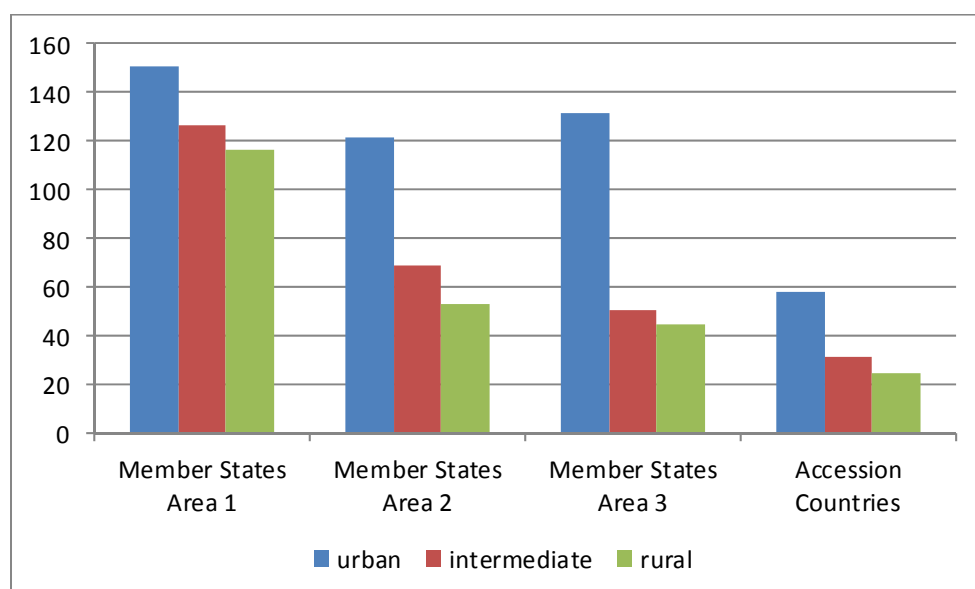
Notes: MSA 1 (Member States Area 1): BW, BY, AT; MSA 2(Member States Area 2): HU, CZ, SK, SI; MSA 3 (Member States Area 3): BG, RO, HR; Accession Countries: RS, BA, ME
 Source: Eurostat, national statistics. Calculation and illustration: wiiw.

economic development, as a large share of the population has the possibility to acquire secondary education or more.

Concluding with GDP per head (Figure 55 shows GDP per head at PPS in percent of the EU-27 average), the differences between the regions are not surprising, in the light of the differences in population density, employment structure and unemployment. Two points are remarkable, though.

The first point refers to the size of the differences. While the richest regions in the Danube Region are well above the EU-27 average in terms of GDP per head, the income levels in the poorest regions is only at around one quarter of the EU average. Notably, most of these regions are found in the Accession Countries, but there are also a considerable number of Bulgarian and Romanian regions falling in this category. Hence, the gap these regions have to bridge to come anywhere near the European average is enormous, and the time necessary to do so could well span over a couple of decades.

Figure 55: GDP per head at PPS 2013 (in % of EU-27 average), by subregions of the Danube Region and type of region



Note: Member States Area 1: DE, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME. Data for Serbia and Germany refer to 2012.

Source: Eurostat, national statistics. Calculation and illustration: wiiw.

The second point of interest is the high income levels of the urban regions – even Bucharest has surpassed the EU-27 average in 2013. Already the unemployment rates indicated an economic advantage of regions with larger agglomerations, and the data for the regions' GDP is an even stronger indicator in this direction. Both results suggest the importance of agglomeration externalities and the importance to have a critical mass of economic activity around which new, additional activities can be established and linked up to existing ones, thus creating a virtuous cycle of economic development. Notably, this does not only hold for big cities or agglomerations but also for smaller, local ones. By this, the results of the regional analysis directly link up with the section on cluster development in this report.

3.4.2 Transportation

The Danube Region has the potential to become a more competitive economic zone by improving transport network connectivity, accessibility, and resource efficiency. In the following, several selected indicators are presented in order to illustrate the present situation in terms of transport, energy use and supply, as well as aspects relevant to climate change. This chapter thereby reveals existing infrastructural bottlenecks and – once more – the marked heterogeneity between the Danube Region countries.

3.4.2.1 General Overview

Figure 56 shows an overview of the analysed scores of the WEF Global Competitiveness Report (Schwab & Sala-i-Martin, 2005-2013)²⁸. In the WEF report, countries were rated in terms of road, railroad, port, airport, electricity and more. In addition, a general infrastructure score was generated by averaging the other related scores. This helps to analyse the deviations of the single transportation and electricity scores from the country average. Overall, one

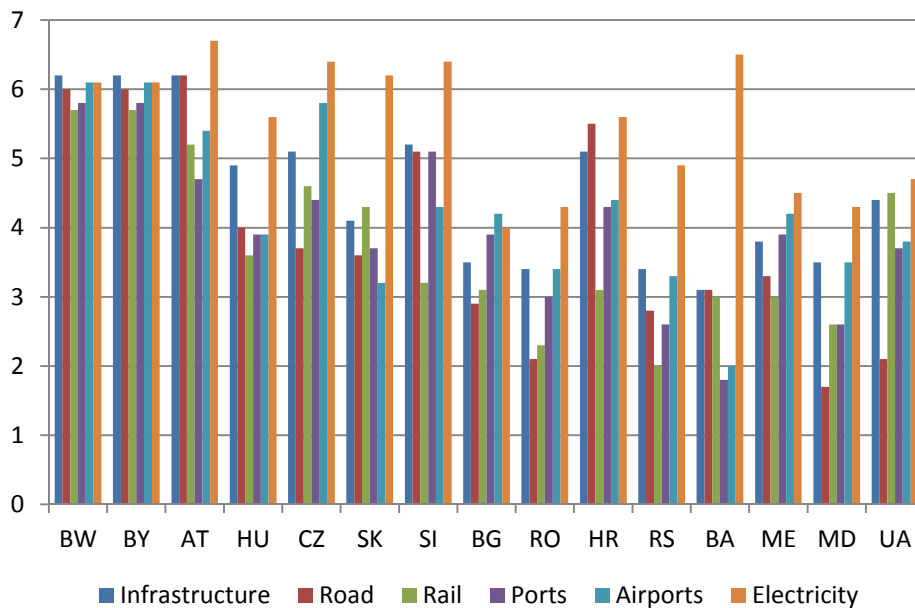
²⁸ The WEF's Global Competitiveness Report is a particular important source for this chapter. The WEF report is a subjective analysis of different sectors of a country. It is based on a survey conducted by WEF where managers and high-level people from the field value the quality of e.g. infrastructure for the countries they do business with on a scale from 1 to 7, 1 being "worse than in most countries" and 7 being "equivalent to highest world standards".

can observe that the scores decline towards the eastern countries of the Danube Region. Exceptions of this trend are Croatia and Slovenia, which overperform compared to their region’s neighbours and Hungary which underperforms a little compared to its direct neighbours. In general, the railroad and port sectors are underperforming in average and the electricity, the road and the airport sectors are overperforming compared to the infrastructure average.

Figure 57 shows the infrastructure scores of the Danube countries of 2005 and 2013. The horizontal lines indicate the scores of different benchmark regions, such as EU-27, the OECD and the Danube Region. Note that there was no data available for Baden-Wurttemberg and Bavaria, so German data was used as an approximation. The figure shows the same trend as Figure 56, i.e. the scores decline towards the east. Slovenia and Croatia are overperforming in the total

Figure 56: WEF Global Competitiveness Report Scores 2013 (Summary)

Score: 1 - worse than in most countries 7 - meets highest world standards



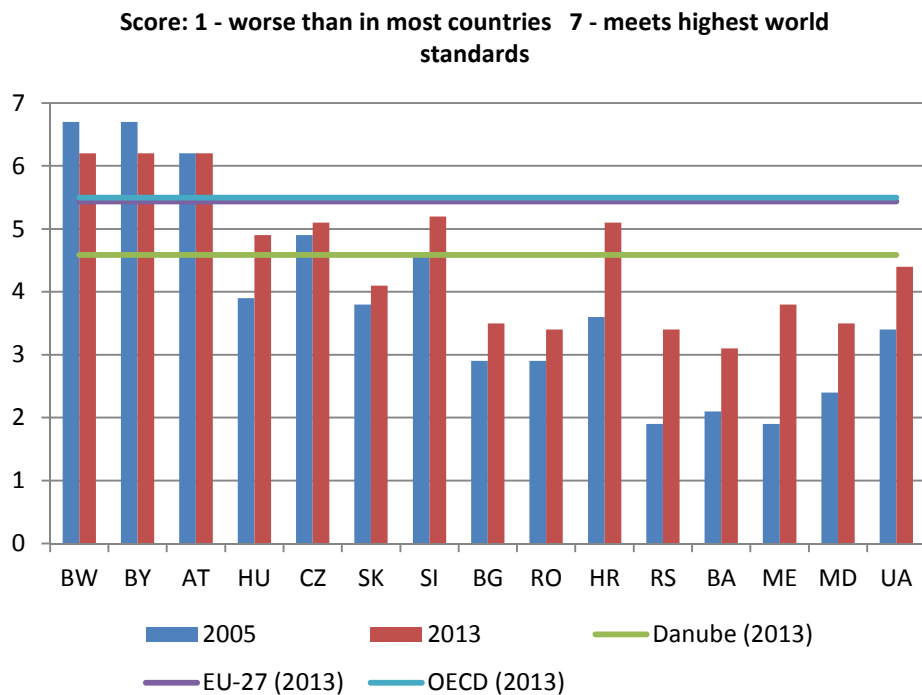
Source: Schwab, K. (2005-2013), Global Competitiveness Report, World Economic Forum, Geneva, Switzerland, Database of the World Bank (Code: SP.POP.TOTL), Statistical Office of Germany. Calculation and illustration: ZEW.

picture and under the assumption that the scores decline towards the east. In total the Danube Region underperforms the benchmarks of EU-27 and OECD, which are about the same. The eastern countries of the Danube Region have about half the score than the EU-27 or OECD benchmarks. However, comparing the scores of 2005 and 2013, it is that every single country of the Danube Region has improved its score and the eastern countries have improved most. But still their infrastructure cannot compete with western standards of today.

The Annex provides more detailed figures on the road, railroad and electricity scores based on the WEF report (see Figure 152 to Figure 154).

Figure 58 gives an overview of the border management scores. This includes all regularities concerning the procedure to do business across borders, customs, etc. Overall, the scores are closer together and therefore, the deviations from the benchmarks are not as large as in terms of other infrastructure (e.g.

Figure 57: WEF Infrastructure Score 2013

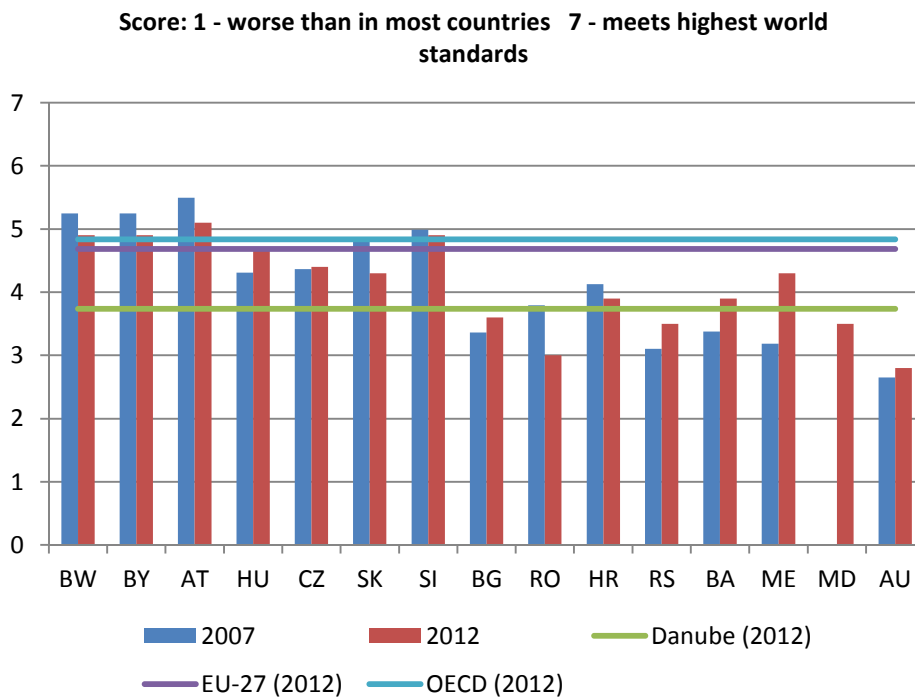


Source: Schwab, K. (2005-2013), Global Competitiveness Report, World Economic Forum, Geneva, Switzerland, Database of the World Bank (Code: SP.POP.TOTL), Statistical Office of Germany. Calculation and illustration: ZEW.

Figure 57). There is no general trend to observe, but the most western countries of the Danube Region are still performing best. Only few countries are performing worse than the Danube average, namely Bulgaria, Romania, Serbia, Moldova and Ukraine. Compared to other infrastructure scores, the average of the Border Management is almost one point below. This means, border management is a topic of concern in perspective. However, as the comparison to the benchmark regions shows, this is not a Danube-specific problem.

The comparison between 2007 and 2012 shows a divided picture. On the one hand some countries improved their border management, most of them in the east, and on the other hand some countries' border management is worse than before. However the deviations are small and therefore do not have to state a trend or a change in the quality of border management.

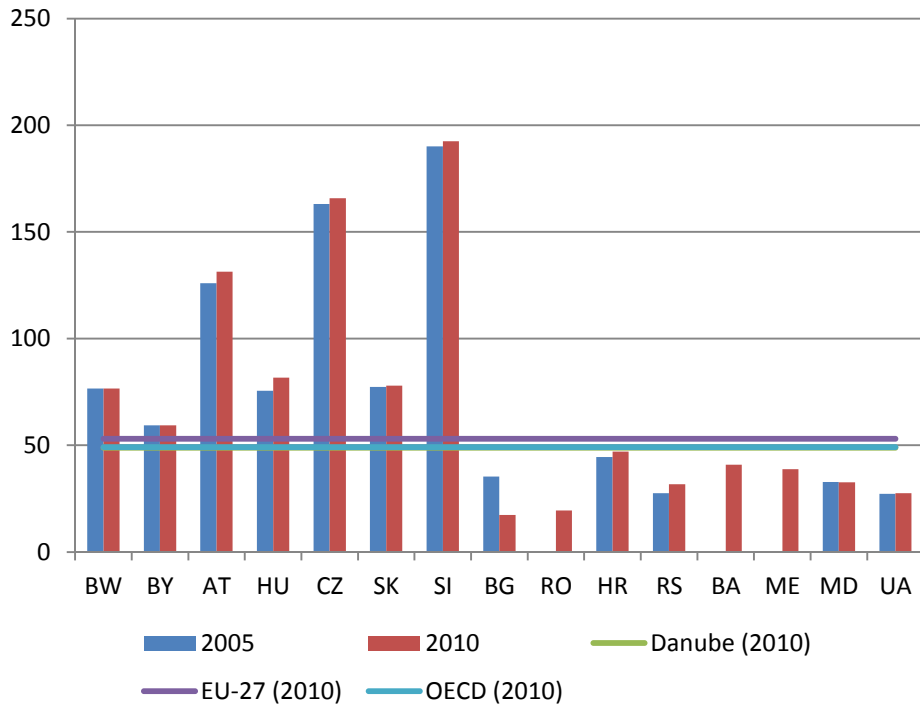
Figure 58: WEF Border Management Score 2012



Source: Database of the World Bank (Code: IQ.WEF.CUST.XQ, SP.POP.TOTL), Statistical Office of Germany. Calculation and illustration: ZEW.

3.4.2.2 Roads

Figure 59: Density of paved roads 2010 (in km road per 100 km² area)

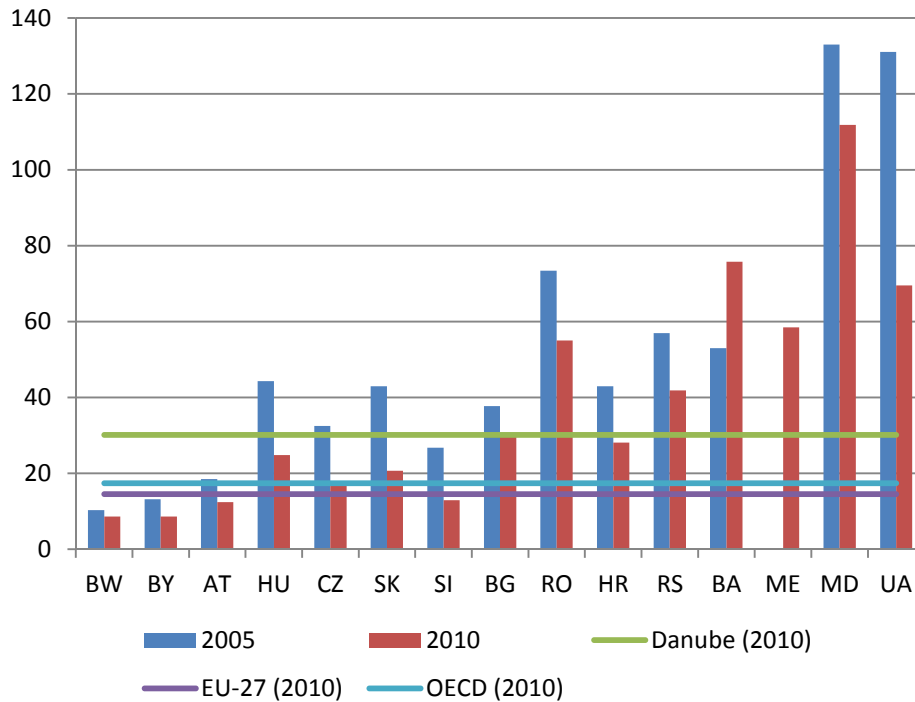


Source: Eurostat, Database of the World Bank (Code: IS.ROD.PAVE.ZS, IS.ROD.DNST.K2, IS.ROD.TOTL.KM). Calculation and illustration: ZEW.

Figure 59 shows the density of paved roads (in road kilometre per 100 square kilometres area). This figure is created by data showing the length of all roads of one country. The problem with this data is that it does not show whether the road has one or more lanes, therefore countries with many small roads are overvalued and countries with many large roads are undervalued. Also, countries have different population densities and therefore different network structures (many small roads vs. a few big roads). Hence this data is biased and conclusions should only be drawn taking also into account population densities. But overall it can be stated that the eastern countries of the Danube Region have a worse road network than the western ones. All of them are underperforming the Danube benchmark and hence need improvement in order to improve competitiveness.

An alternative indicator for road performance is the Road score of the Global Competitiveness Report (see Annex Figure 152)

Figure 60: Road fatalities per 100.000 registered cars per year



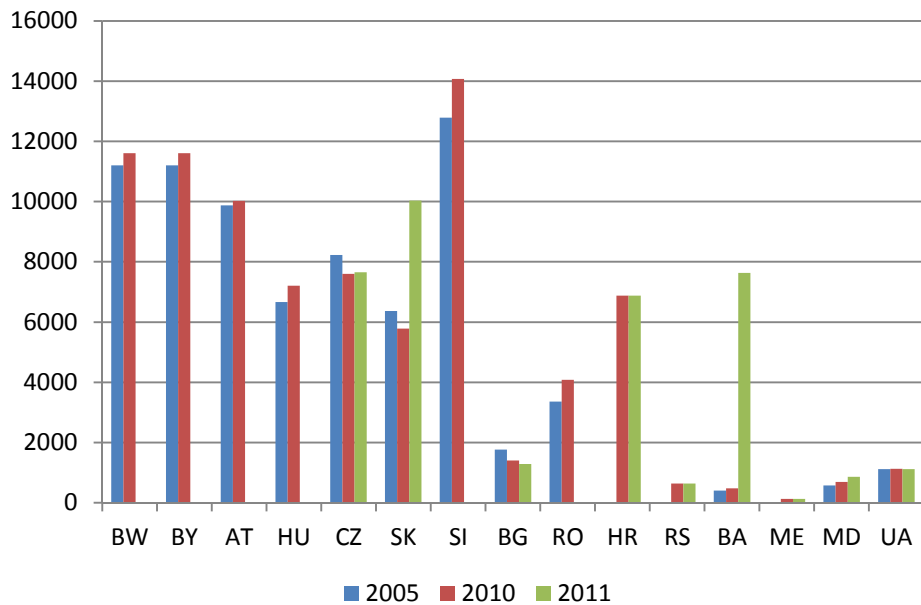
Source: Database of the World Bank (Code: IS.VEH.PCAR.P3), Statistische Berichte Baden-Württemberg Artikel-Nr. 3568 12001, UNECE (2010, 2011) Main transport indicators in the UNECE region 2009, 2010, UNECE Transport Division Database (Matrix: c0000920), Eurostat, OECD Factbook 2012. Calculation and illustration: ZEW.

Figure 60 shows the indicator “road fatalities per 100.000 registered cars per year”. This indicator states how safe each country’s roads are. The deviations between countries are very large for this indicator. By 2005 the worst country had about 13 times the road fatalities than the best performing country. Again, there is an observable trend from west to east. The western countries have by far the fewest road fatalities. The countries in between have about three times the road fatalities and most eastern countries still have up to ten times the road fatalities than most western countries.

But the overall trend is very positive: Since 2005 most of the Danube countries were able to cut their road fatalities by half. However, there are also a few

exceptions where the road fatalities increased. Nevertheless, using the road for transport has become a lot safer over the last years.

Figure 61: Road passenger-km per inhabitant per year

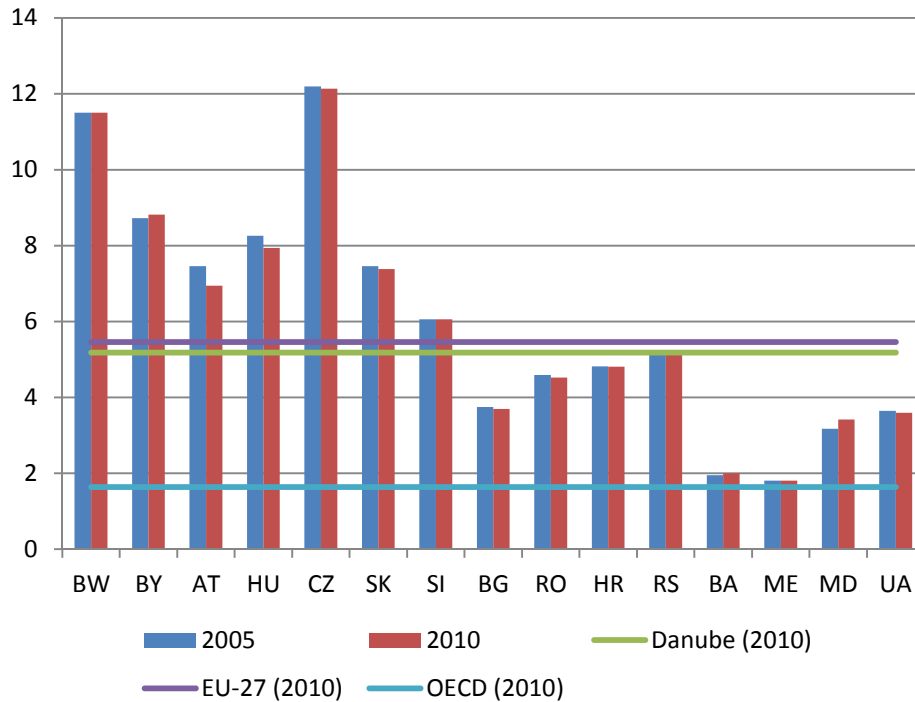


Source: World Bank Data (Code: IS.ROD.PSGR.K6, SP.POP.TOTL); Agency for statistics of Bosnia and Herzegovina, State Statistics Service of Ukraine, Statistical Office of Germany. Calculation and illustration: ZEW.

Figure 61 shows the average number of kilometres each inhabitant of a country drove in the respective year on the road. It shows that, on average, people from the western Danube countries are using roads more intensively than people from the eastern countries (with Slovenia as an exception). Taking into account also the statistics on road fatalities (Figure 60), it turns out that the most used roads are the safest. This indicates the higher quality of the road infrastructure in those regions. It should be noted, however, that for some countries, in particular Bosnia and Herzegovina, the available data seems to be not reliable as it includes extreme and unusual differences between the years 2010 and 2011.

3.4.2.3 Railroads

Figure 62: Railroad density 2010 (in km railroad per 100 km² area)



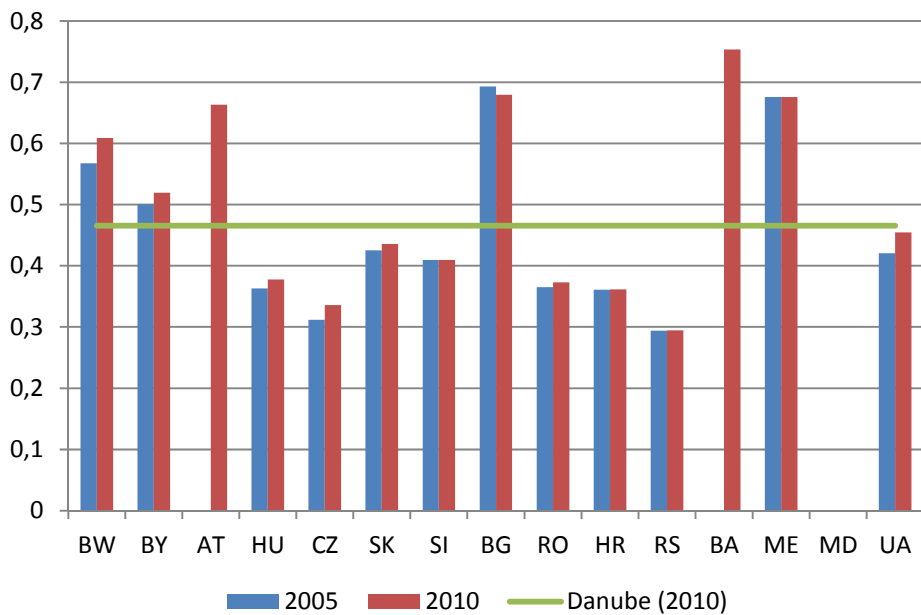
Source: Eurostat, Bayerns Wirtschaft in Zahlen 2011, 2012, CIA World Fact Book, Database of the World Bank (Code: IS.RRS.TOTL.KM). Calculation and illustration: ZEW.

Figure 62 shows the railroad density 2005 and 2010. It should be noted that the data available for railroads suffers from the same problem as the data for roads (Figure 59). This means that only data for railroad lines is available, but not for the length of each track of a line. Therefore, countries with many one-track railroad lines are overvalued and countries with many multi-track railroad lines are undervalued.

The deviations between the countries are large. The best country has a six times denser railroad network than the worst. Railroad networks are the densest in the western parts of the Danube Region and decline towards the east. However, at the same time the western countries have higher population densities. Thus, some of the deviation seems natural and can be explained by different population densities, but not all of it.

An alternative indicator for railroad performance is the Railroad score of the Global Competitiveness Report (see Annex Figure 153).

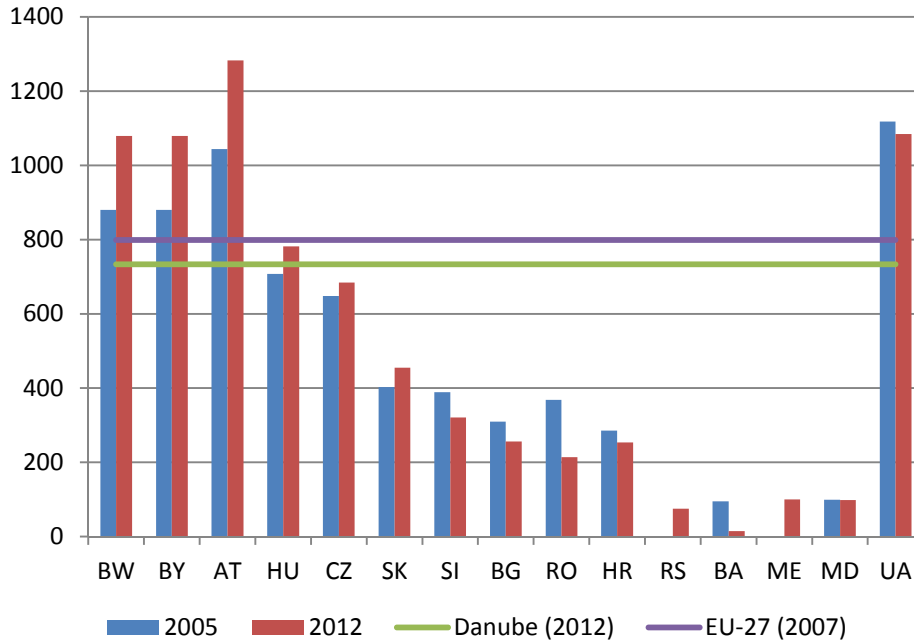
Figure 63: Share of electrified railroads



Source: Eurostat, CIA World Fact Book. Calculation and illustration: ZEW.

The electrification of the railroad network is a prerequisite for environmental friendly transportation, but it does not conclude it. Another prerequisite are modern, efficient electrical trains. Overall there is railroad electrification of 35% to 65%. Just Moldova does not have any electrified railroad line at all. Also, there is no increasing trend in electrification between 2005 and 2010 observable. Towards a modern railroad network, all countries need to improve their electrification.

Figure 64: Railroad passenger-km per inhabitant

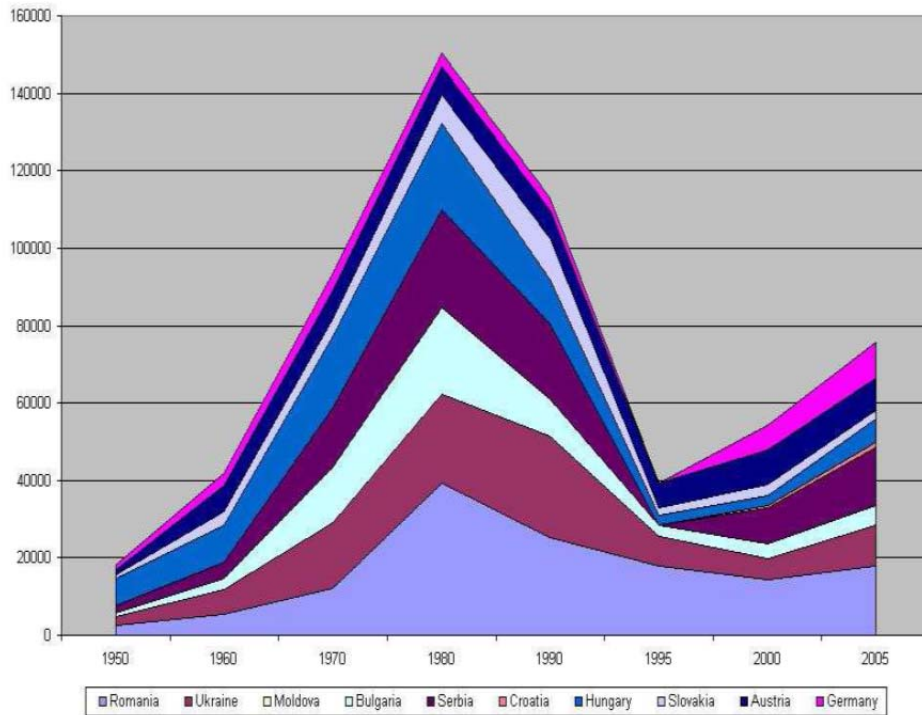


Source: Eurostat, Database of the World Bank (Code: IS.RRS.PASG.KM, SP.POP.TOTL), Montenegro Statistical Office, Agency of statistics of Bosnia and Herzegovina, Statistical Office of the Republic of Serbia, National Bureau of Statistics of the Republic of Moldova, State Statistics Service of Ukraine, Statistical Office of Germany. Calculation and illustration: ZEW.

Figure 64 shows the average number of kilometres each inhabitant of a country drove by railroad in the respective year. The use of trains is highest in the west with a sharp decline towards the east, with the Ukraine as an exception. In the western part of the Danube Region, the distance travelled by a person is up to twelve times higher than in the eastern part. To some extent these differences can be explained by different amounts of wealth between the countries. Another important factor that drives this result is the quality of rail infrastructure. Ukraine though is an exception of the general trend. It seems that people in this country deeply rely on traveling by train. This is observable by comparing the use of road travel to the use of railroad travel. In order to be more competitive, eastern countries of the Danube Region have to improve their railroad networks and interconnectivity between different modes of transport.

3.4.2.4 Ports and the Danube River

Figure 65: The traffic in harbours on Danube (by country) for the period from 1950-2005 (thousands of tons)



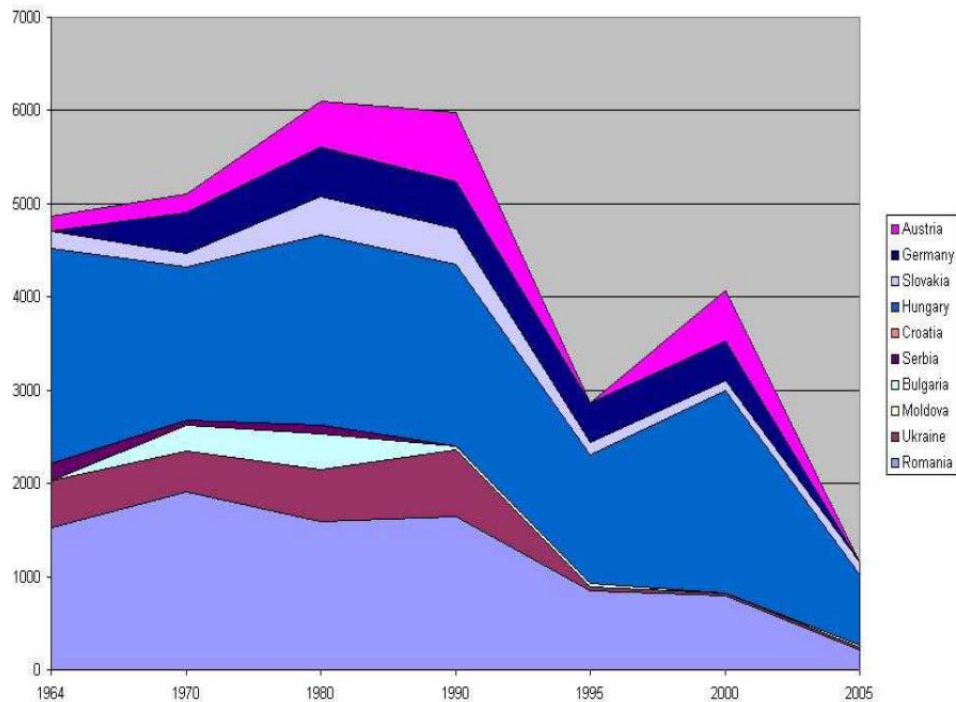
Source: (Mihic & Andrejevic, 2012). Calculation and illustration: ZEW.

In Europe, the total water transport is decreasing since 1970, while the overall transport is increasing (Mihic & Andrejevic, 2012). In the case of the Danube River, transport volume was the highest around 1987 (150m tons). After that it rapidly decreased due to the fall of the Iron Curtain and the Yugoslav wars. Political instabilities caused the transport volume to drop to less than a quarter of what it was before. The lowest point was reached in 1994 (35m tons). Since then transport volumes are recovering, but are still far away from pre-1990 levels (Nedea, Milea, & Pascu, 2012).

Figure 65 gives the traffic volumes of the Danube river harbours. Since the mid-1980s transport was rapidly declining on the Danube River. In countries that were directly involved in the Yugoslav wars, Danube traffic almost came to a standstill until the mid-1990s (Nedea, Milea, & Pascu, 2012). Other eastern European countries' transport volumes also decreased, but not as much. A

reason for that might be the general economic downturn in the former Soviet Union after the fall of the Iron Curtain. The two western European countries, Germany and Austria, were less severely affected. Interestingly, their transport volumes increased rapidly some years after the fall of the Iron Curtain. Where the eastern European countries slowly recover the transport volumes they had before, Germany and Austria exceeded their volumes by far. A reason might be the relatively good economic starting position and infrastructure of Germany and Austria that allowed them to exploit the potentials of the new arising markets more quickly.

Figure 66: Passenger transport on Danube from 1964 to 2005 (expressed in thousands)



Source: (Mihic & Andrejevic, 2012). Calculation and illustration: ZEW.

The passenger transport on the Danube River follows a similar pattern as the freight transport, at least until the year 2000 (Figure 66). There is also an observable decline, starting around 1990, and recovering of passenger transport volumes from the mid-1990s onwards. However, at the turn of the millenni-

um, transport volumes started to drop significantly again. The reason for that is the development of faster transport modes (Mihic & Andrejevic, 2012).

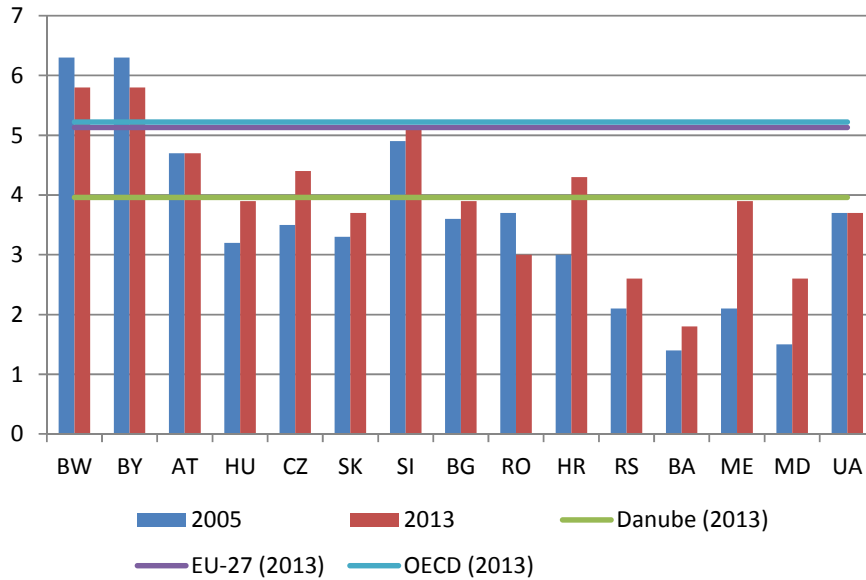
Port Infrastructure

In general, the port infrastructure is an important factor in governing the performance of waterborne transport. Compared to the Rhine River, the Danube river ports are on average of lower quality. Within the Danube Region, Germany has the highest quality ports. Interestingly, Slovenia (5.1) is the only other country of the Danube Region which received a higher score than a country of the Rhine region, namely Switzerland (5.0) (which is, however, located at the beginning of the Rhine and therefore not directly on a main route).

The quality of ports directly influences the competitiveness of waterborne transport in that region (Bešković, 2006). Because of monopolistic or at best oligopolistic markets for port operation in the Danube Region, ports are in bad shape and work inefficiently (Bešković, 2006). This raises costs of shipment and therefore makes waterborne transport less competitive compared to other modes of transport. Therefore, studies suggest that the port infrastructure in the Danube Region needs to be enhanced, new ports need to be built and monopolies need to be broken up towards a more competitive market. In addition, intermodal transport from and to ports needs to be increased. This would also help the hinterland away from the river (Nedea, Milea, & Pascu, 2012). In order to provide an efficient and sustainable intermodal transport using waterborne transport on the Danube River, the land connections have to be significantly improved in most countries of South East Europe. In particular, railway connections are crucial in this regard. However, a comprehensive analysis of single ports or regions was not possible within the framework of this study.

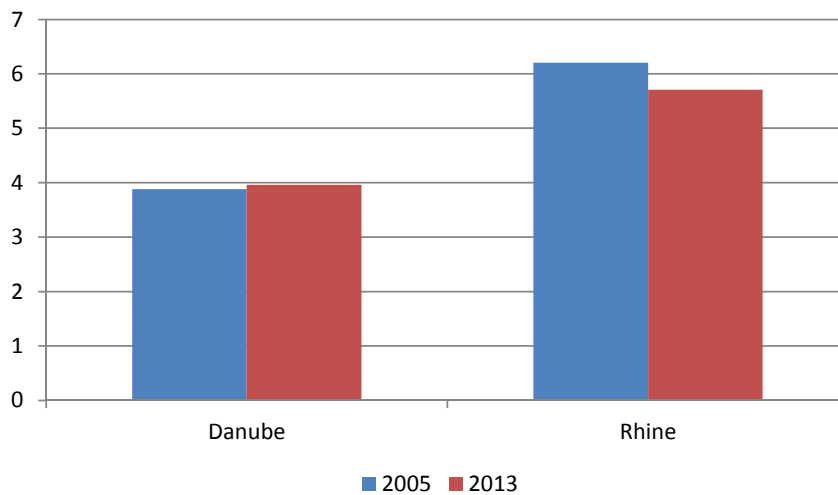
Figure 67: WEF Port score (incl. benchmarks)

Score: 1 - worse than in most countries 7 - meets highest world standards



Source: Schwab, K. (2005-2013), Global Competitiveness Report, World Economic Forum, Geneva, Switzerland, Database of the World Bank (Code: SP.POP.TOTL), Statistical Office of Germany. Calculation and illustration: ZEW.

Figure 68: Average WEF Global Competitiveness Report Score (weighted by population)



Source: Schwab, K. (2005-2013), Global Competitiveness Report, World Economic Forum, Geneva, Switzerland, Database of the World Bank (Code: SP.POP.TOTL), Statistical Office of Germany. Calculation and illustration: ZEW.

Navigability

The navigability of the Danube is not as highly developed as that of other important inland waterways in Europe, such as the Rhine. There are two main reasons for this. First, the Danube River is relatively flat. While the Rhine River has a navigable depth of 3.70 meter, the Danube only reaches 2.50 meter. Therefore, it is not yet possible to operate ships of the same size on the Danube as they are used by inland shipping companies on the Rhine. Likewise, combined sea-river shipping needs a further deepening of the riverbed of the Danube (Tempera, 2010). The deepening and maintenance of the Danube riverbed is, however, a long-term and cost-intensive project (Nedea, Milea, & Pascu, 2012). Second, waterway infrastructure was severely damaged in the course of the political instabilities in the 1990s, especially through the Yugoslav wars. Bridges were destroyed and the Danube was filled up with debris. This lowered the navigable water levels of the Danube River even further (Nedea, Milea, & Pascu, 2012). Therefore, restoration works should be done to clean up the Danube (Nedea, Milea, & Pascu, 2012). At the construction of new bridges, it is of course important to take into account the clearance. Today, some existing Danube bridges cause problems for larger ships (Nedea, Milea, & Pascu, 2012). Moreover, by building canals, distances and bends created naturally could be reduced and, hence, the navigability could be improved. Some parts of the Danube, mostly far downstream, do not have a single canal yet and therefore cause some issues for waterborne transportation (Tempera, 2010).

Fleet and Ship Infrastructure

In a nutshell, the Danube fleet is comparatively old and in a rather bad shape, the ships are small and the crews are not well-trained. These facts explain, for example, why the Danube fleet cannot completely use the Main-Danube Canal and, therefore, one ship cannot easily travel from the Danube via the Main-Danube Canal to the Rhine and farther (Nedea, Milea, & Pascu, 2012). The size of the Danube fleet has constantly increased since 1962, but this increase was not accompanied by a proportional increase in transport volumes. Romania and Ukraine, for example, have the biggest fleets but yet not the highest traffic. This indicates that a lot of inland waterborne traffic is passing by those countries without stopping and suggests that there are too few ports, while

existing ports are in a bad shape (Mihic & Andrejevic, 2012). The worst fleets are, as expected, from the least developed countries of the Danube Region (Mihic & Andrejevic, 2012). Nonetheless, the potential growth of a low carbon fleet is high, because all Danube countries have high potential of biodiesel production (Mihic & Andrejevic, 2012).

Possible growth

From an economic perspective, the Danube River is underutilized and has a large potential to create sustainable transportation in the future (Mihic & Andrejevic, 2012; Tempera, 2010). It is expected that the Danube economies will grow strongly – up to 4% – over the next years (Nedea, Milea, & Pascu, 2012). This means that transport in the Danube Region will also increase over the next years. Transport policy is required to channel the growing demand into a sustainable mode of transportation, for example inland navigation. However, estimates of growth rates of Danube transport are scarce and vary in the literature. One study argues that with proper enhancements in waterborne transportation, waterborne traffic can increase between 3.5% and 6% per year in the long-run, instead of only 1.4% as without those improvements (Nedea, Milea, & Pascu, 2012). Another study states that compared to the 2006 levels an overall growth of up to 170% of inland waterway transport is possible on the Danube River (Beškovnik, 2006).

But what is sure is that by appropriate policies the Danube infrastructure could be sustainably improved. This not only gives the possibility of a sustainable transport growth but can itself enhance economic growth further (Mihic & Andrejevic, 2012).

Ecological Impacts

The water quality of the Danube River is relatively bad. Even though transport intensity was low over the last 20 years, the water quality has been consistently harmed, in particular by industrial effluent. After Vienna downstream, the water quality worsens fast (Mihic & Andrejevic, 2012). An intensification of the inland navigation on the Danube River might aggravate the situation. Of course, replacing road transport by water transport reduces carbon emissions and thus helps tackling global climate change. But increasing ship traffic will increase the local ecological problems of the Danube River and its surround-

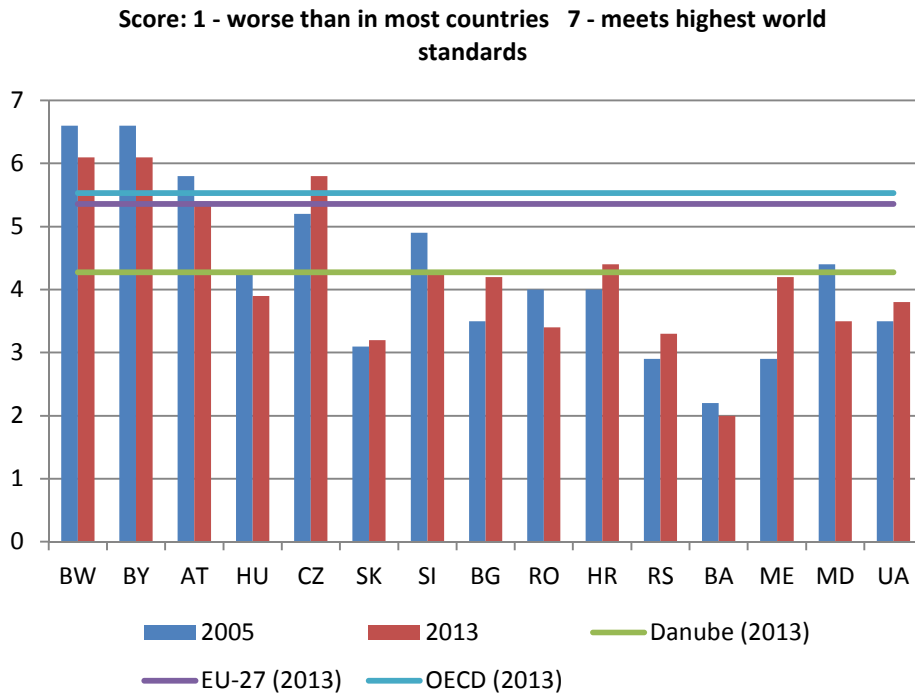
ings (Tempera, 2010; Mihic & Andrejevic, 2012). Therefore, finding the right amount of waterborne transport will be difficult, because on the one hand the overall environmental status will get better but on the other hand the ecosystem of the Danube River can get harmed (Tempera, 2010). In order to fully exploit the economic potential of the Danube River as transport route and at the same time keep its ecological balance intact, it is essential to improve environmental waste management of industrial areas alongside the river, in particular in eastern European countries.

Conclusion Danube River

In summary, it can be stated that the quality of the river and ports need vast improvements. But in principle waterborne transport on the Danube has the potential to manage the growing transport volumes that are expected in that region. For this purpose, however, the river needs to be cleaned up and deepened. This means debris and destroyed bridges have to be removed and the riverbed has to be deepened to be compatible with the Rhine River and river-sea ships from the Black Sea. These would be important steps to enhance economic competitiveness of the Danube Region.

3.4.2.5 Airports

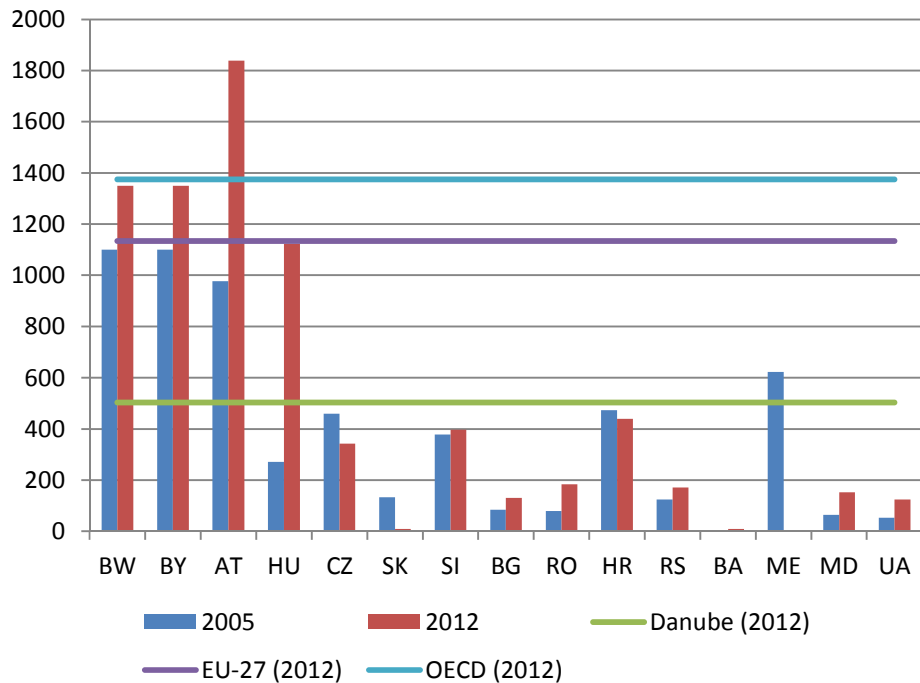
Figure 69: WEF Airport Score 2013



Source: Schwab, K. (2005-2013), Global Competitiveness Report, World Economic Forum, Geneva, Switzerland, Database of the World Bank (Code: SP.POP.TOTL), Statistical Office of Germany. Calculation and illustration: ZEW.

Figure 69 shows the Airport score 2005 and 2013 of the WEF Global Competitiveness Report. This figure does not show a clear trend as was observable in the other sectors of infrastructure. Basically, it seems that countries can be categorized into three groups: The high-performing group of Baden-Württemberg, Bavaria, Austria and the Czech Republic; the standard-performing group, namely Slovenia, Bulgaria, Croatia and Montenegro; and the low-performing group of Hungary, Slovakia, Romania, Serbia, Bosnia and Herzegovina, Moldova and Ukraine. Between the last two groups though, frontiers are not always clear and well-defined. In 2013, only three countries are underperforming the Danube benchmark by far, namely Slovakia, Serbia and Bosnia and Herzegovina.

Figure 70: People travelling by plane per 1000 inhabitants per year

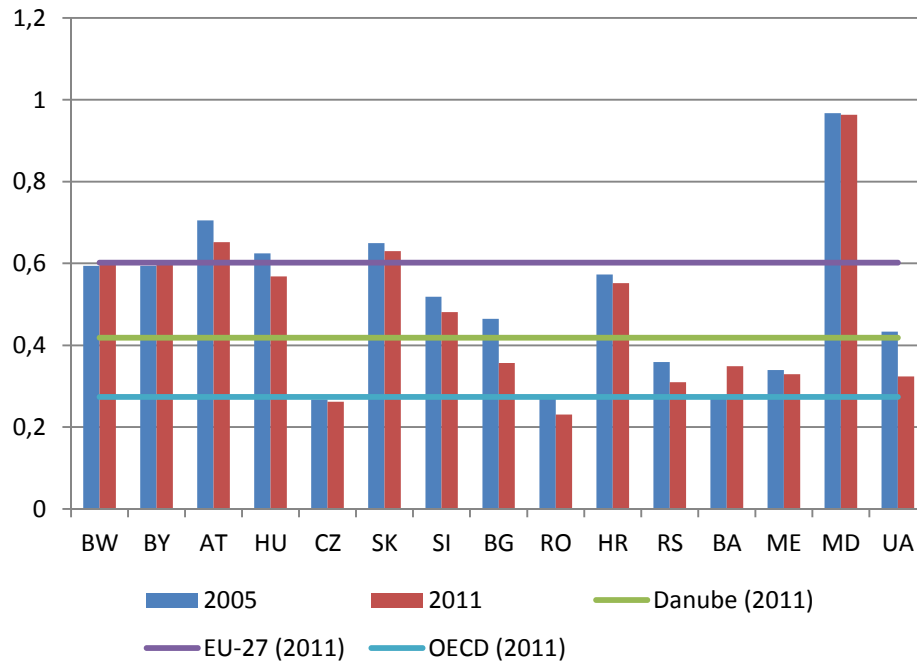


Source: Database of the World Bank (Code: IS.AIR.PSGR, SP.POP.TOTL), Statistical Office of Germany. Calculation and illustration: ZEW.

Figure 70 shows how many flights a group of 1000 people flew in one year. Even though airport infrastructure is good overall, as shown in Figure 69, Figure 70 shows a totally different picture. The four most western countries have an excessive amount of airplane travellers while about half of the other countries have significantly low amounts of people traveling by plane. Those countries with low amounts of airplane passengers are rather poor, and since traveling by plane is more costly than other modes of transport this could explain the deviation. Even though airport infrastructure seems to be good, people just cannot afford to fly by plane. However companies looking for good airport infrastructure will find it in most of the Danube countries.

3.4.3 Energy and Electricity

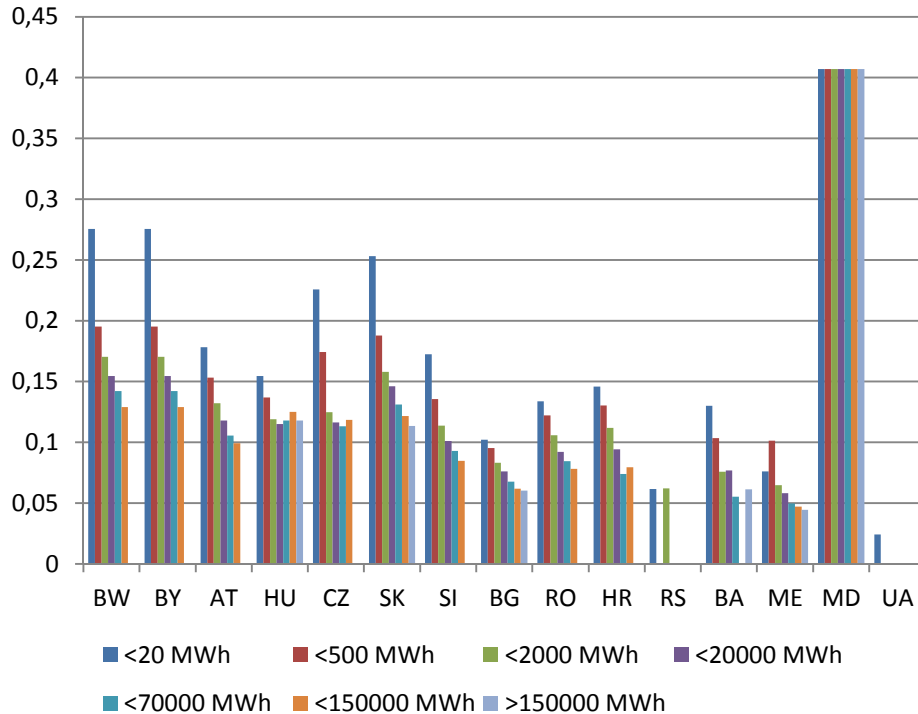
Figure 71: Net energy imports (% of energy use)



Source: Database of the World Bank (Code: EG.IMP.CON.S.ZS). Calculation and illustration: ZEW.

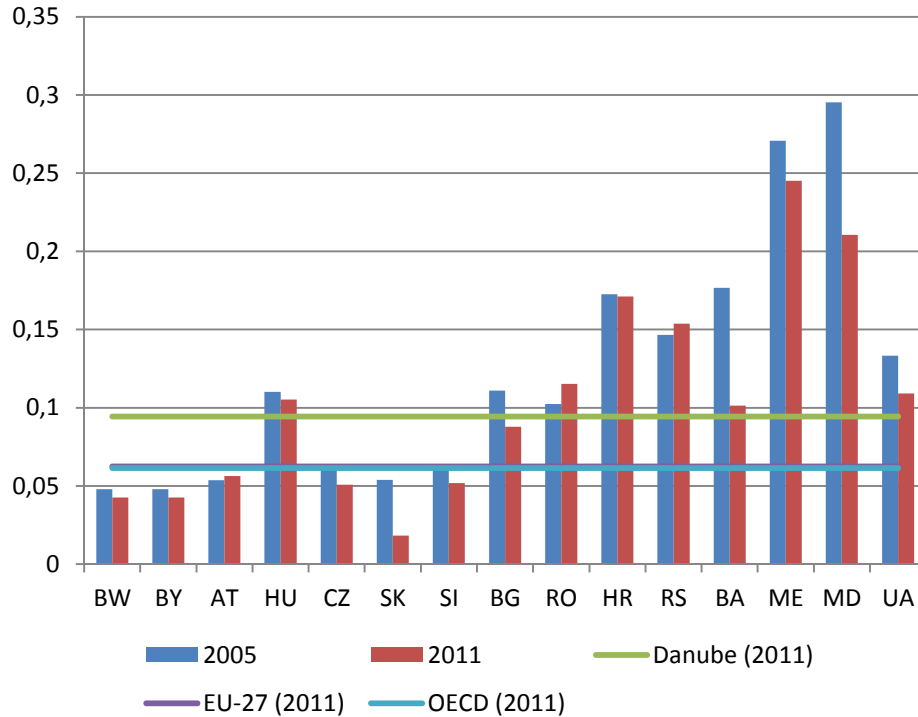
The Danube Region is relatively dependent on energy imports as Figure 71 shows. It does not have many natural energy resources, with one exception: Brown coal is still available in most Danube countries. On the electricity market, the Danube Region can be divided between net importers and exporters. But considering that the renewable energies are just on their rise, electricity production still depends on fossil fuels, which have to be imported.

Figure 72: Electricity prices (cent per kWh), all taxes included, in 2012



Source: Eurostat, Energy Agency of Serbia, Energy Agency of Moldova, State Statistics Office of Ukraine. Calculation and illustration: ZEW.

Electricity prices are high in the western parts of the Danube Region. Even though there are more monopoly electricity suppliers in the eastern countries, their prices are significantly lower than those of the western countries. Germany has the highest electricity prices in all categories, but taxes and fees make up a high share of those prices (Annex Figure 155). The Czech Republic and Slovakia also have high electricity prices, even though their taxes and fees on electricity are not as high as in Germany. For the other countries, prices are lower, with an average decline of 5 cents from west to east. Moldova is the only exception. Their high electricity prices are regulated by government. Moldova imports most of their electricity from the Ukraine and is therefore very import dependent.

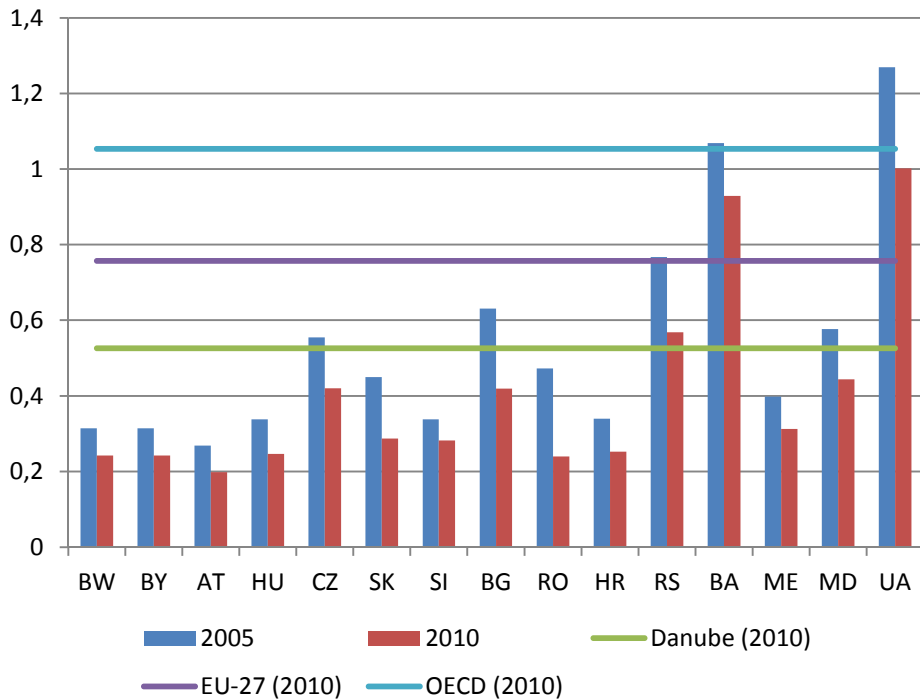
Figure 73: Electric power transmission and distribution losses (% of output)

Source: Database of the World Bank (Code: EG.ELC.LOSS.ZS). Calculation and illustration: ZEW.

Figure 73 shows the transmission and distribution losses of the electricity production. This means the percentage of electricity lost on the way to the consumer. Transmission and distribution losses are up to six times higher in the eastern than in the western parts. In the most developed countries of the Danube Region the losses are around 5%. Interestingly, transmission and distribution losses are the highest where the electricity prices are the lowest. The eastern countries of the Danube Region cannot match the OECD benchmark and most of them are also not able to match the Danube benchmark. This is due to the large deviation between the countries. Over the time span 2005-2011, transmission and distribution losses have decreased a little, but in most countries with high transmission and distribution losses it has not changed much. Therefore, transmission and distribution losses in the eastern part of the Danube Region are still high and electricity transmission and distribution is inefficient.

3.4.4 Environmental issues

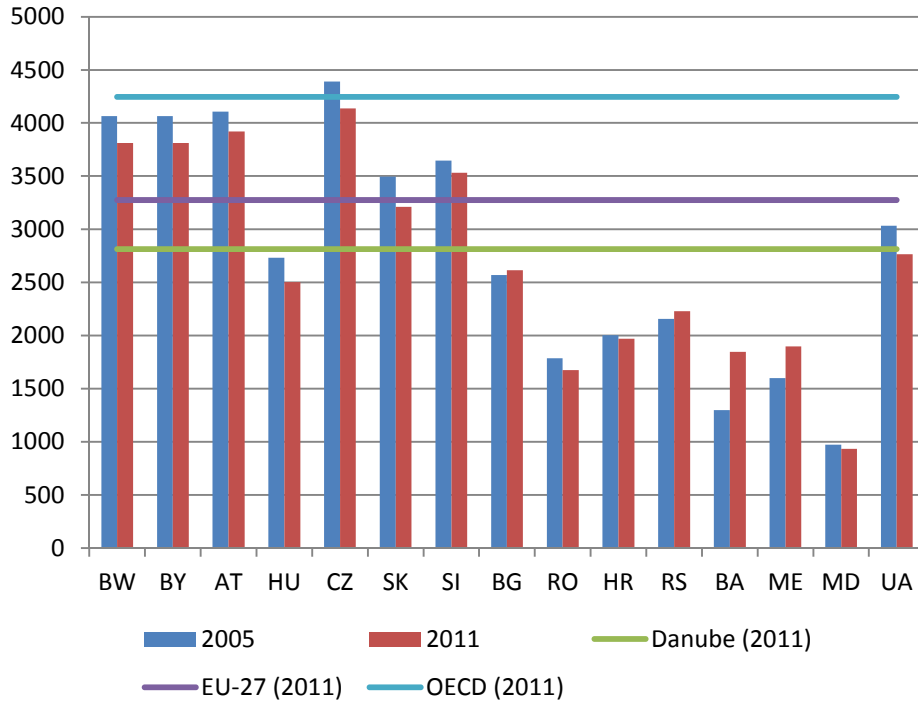
Figure 74: CO2 emissions (kg per PPP \$ of GDP)



Source: Database of the World Bank (Code: EN.ATM.CO2E.PP.GD). Calculation and illustration: ZEW.

Figure 74 shows CO2 emissions in terms of kilogram per PPP \$ of GDP; that is the CO2 efficiency of the production of GDP, hence an important sustainability indicator. The efficiency levels differ between the most and least CO2-efficient countries by a factor of four to five times. The most efficient countries are in the west of the Danube Region. But there is no general trend towards the east. Some countries such as Slovenia, Romania and Croatia even match the EU-27 benchmark. At the same time, however, countries such as Serbia, Bosnia and Herzegovina and the Ukraine are way above the Danube average for CO2 efficiency. It is important to note in this regard that the significance of this indicator also has its limits. Because the differences in CO2 intensity of production cannot be fully explained by differences in efficiency but also by differences in structure of a country's industry. The more important CO2-intensive sectors are (e.g. metallurgical industry, chemical industry), the higher the CO2 emissions per PPP \$ of GDP.

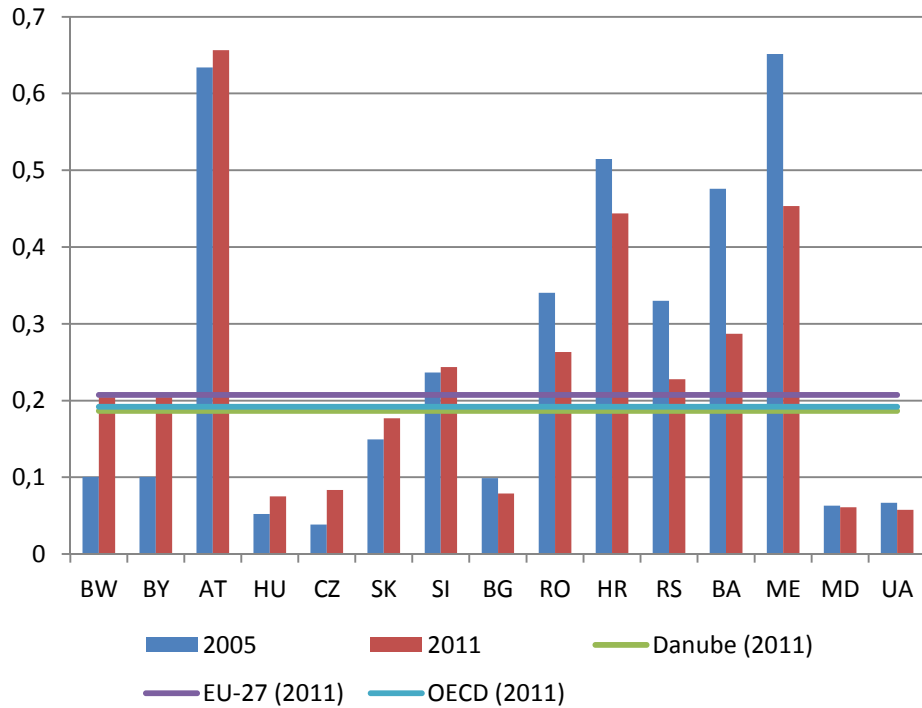
Figure 75: Energy use (kg of oil equivalent per capita)



Source: Database of the World Bank (Code: EG.USE.PCAP.KG.OE). Calculation and illustration: ZEW.

Figure 75 shows the energy use per capita. As expected, the energy use is much higher in the western Danube countries than in the eastern ones. Interestingly, in the high-consuming countries the energy use decreased in 2011 compared to 2005, while in most lower-consuming countries an increase took place. The development of the overall economy, the efficiency of production, and the general living standard are influencing the energy use. Note that, to a greater or lesser extent, these observations also hold for CO₂ emissions per capita and electricity use per capita (Annex Figure 158 and Figure 159).

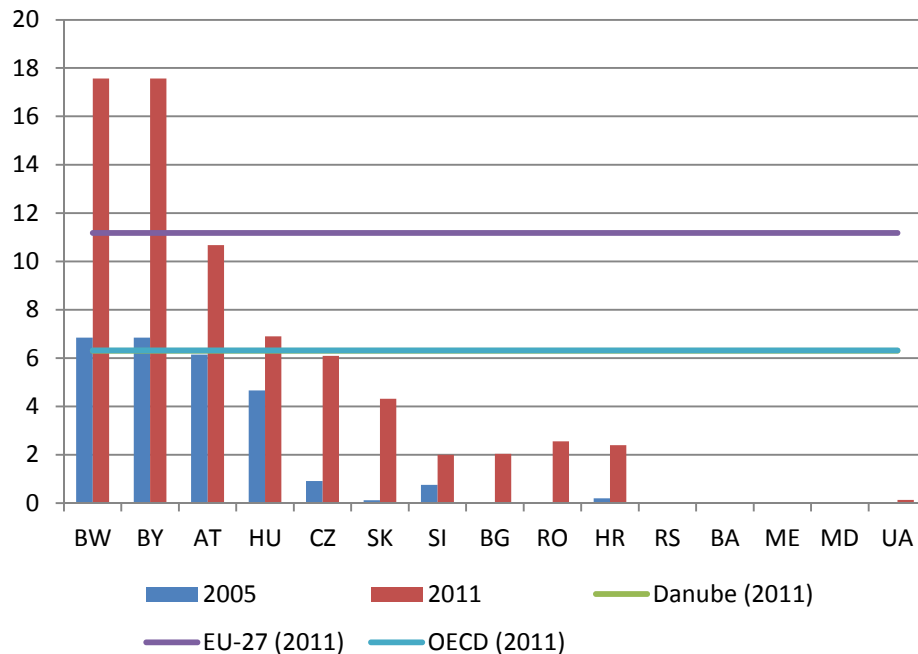
Figure 76: Percentage of renewable electricity production



Source: Database of the World Bank (Code: EG.ELC.PROD.KH, EG.ELC.RNEW.KH). Calculation and illustration: ZEW.

Figure 76 shows the percentage of renewable electricity production in the countries of the Danube Region. About half of the countries already have considerable shares of renewable energy in the electricity production. Only about a third of the countries produce less than 10% of their electricity with renewables. Therefore, with an average of about 20% of renewable energy, electricity supply is already rather climate friendly in the Danube Region.

Figure 77: Percentage of renewable electricity production without hydroelectricity



Source: Database of the World Bank (Code: EG.ELC.RNWX.ZS). Calculation and illustration: ZEW.

Figure 77 shows a somewhat different picture. It shows the shares of renewable electricity production without hydroelectric production. Excluding hydroelectric power production gives a clearer picture of the recent efforts and investments in renewable electricity of each country. Only the five most western Danube countries are equal or above the Danube average. Towards the east it falls below 3% of the total electricity production and some countries even have almost 0% of renewable electricity production when excluding hydroelectric power.

In general, the more developed economies of the Danube Region have higher energy and electricity use but also higher shares of renewable electricity production (excluding hydroelectric power). The lower energy and electricity use of the eastern countries is basically linked to their less-developed economies. When these economies will develop further they have to increase their environmental efforts, namely the production of renewable electricity, in order to meet at least today's environmental levels.

4 Entrepreneurship and SMEs in the Danube Region

In this part of the report entrepreneurship and the situation of SMEs in the Danube Region will be assessed. We will analyse business creation, business closure, financing conditions, the regulatory and institutional environment under which SMEs operate and conduct a stock-taking on cluster development. The analysis will make use of various complementary data sets and fully draws on information from on-going projects and activities such as the European Innovation Scoreboard or the European Cluster Excellence Initiative.

4.1 Entrepreneurship and SMEs

Small and medium enterprises (SMEs) take on a central role with respect to innovation, competition and – ultimately – economic growth in an economy. An assessment of the state of SMEs is thus essential for the development of an adequate strategy for the Danube Region. As innovative activity, which is a key driver of economic growth, is sensitive to the general conditions in which SMEs operate, we analyse these conditions in the following.

Besides entrepreneurship activity in terms of the numbers of start-ups, the regulatory framework for small firms and the attitudes of the population regarding entrepreneurship in the countries of the Danube Region is analysed. These aspects are important to assess the conditions under which entrepreneurship in the different countries takes place.

4.1.1 Firm dynamics

In scientific literature and political discussion firm births and the development of start-ups are regarded as important for an economy's competitiveness, innovativeness, its capability for dynamic structural change and its potential to create employment. Especially start-ups in the so called research- and knowledge-intensive sectors (such as R&D-intensive manufacturing and knowledge-intensive business services) implement new technological knowledge and bring it to the market by introducing new products and new services. Additionally, new firms can push existing companies to enhance their own products and services and accelerate the technological change in the economy and its competitiveness in general.

However, as shown below, the fraction of all newly founded firms that are established in the research- and knowledge-intensive sectors is rather small. This does not only hold for the Danube Region but is a more general phenomenon. Though start-ups in the research- and knowledge-intensive sectors are important to stimulate the innovation efforts in an economy, all other start-ups are also essential for economic development and employment creation – simply because of their large number. To assess the state of start-up activities in the Danube Region it is necessary to take both categories of start-ups – start-ups in the research- and knowledge-intensive sectors and start-ups in the other sectors – into account.

Start-up activities represent only one part of firm dynamics. Firm growth and market exits are the other important parts. To assess the dynamics of the enterprise sector it is necessary to also take these aspects into account. However, data for international comparisons of firm growth are more than insufficient. For this reason the analysis will be limited to start-ups and firm closures.

4.1.2 Data sets used

Before starting with the presentation of the results some remarks on the data used should be made. The reason is that unlike data on macroeconomic indicators such as gross domestic product, exports and imports, or labour costs, which are all components of the national accounts, international comparable information on firms is not as readily available. There are some data sources which can be used for an analysis of the firm dynamics in the Danube Region. However, these data sources come along with some limitations which are described below alongside with their features.

For the analysis in this subsection we use the Structural Business Statistics (SBS) of Eurostat and the Mannheim Firm Panel (MUP).

The SBS is the database on firm dynamics maintained by Eurostat. Among other items of interest it covers the number of firm births, the number of firm closures and the number of active enterprises in the EU member states. The data are available for the EU-28 countries since their respective entry into the EU. As with all other statistics from Eurostat, the data for the SBS are assembled by statistical agencies of member states and originate in the national business registers. The national statistical offices collect the data based on

internationally harmonised rules for data collection and preparation. The data are available at the sector level. Based on this information firms can be classified into different subgroups according to their sector affiliation.

The SBS provides data at the country level, i.e. information on regions below the country level such as for the German federal states is not available. In order to be able to offer information on Baden-Württemberg and Bavaria instead of Germany as a whole we rely on the Mannheim Firm Panel (MUP) of the Centre for European Economic Research (ZEW). The MUP is an extensive micro database of enterprises in Germany. It is based on a cooperation between ZEW and Creditreform, Germany's largest credit agency. As well as in the SBS also in this dataset information on the sector of activity of the firms is available. This information can be used to classify firms according to their sector affiliation as in the SBS. Further information on the MUP is given in the annex.

The analysis in the following focuses on subsectors of the economy in order to say something about the structure of the population of firms and not only about the number of firms as a whole. In particular, we are interested in firms that are started in research and knowledge intensive sectors because it can be expected that these firms are especially innovative. The applied sector classification is given in Table 8.

Table 8: Sector classification for the analysis of firm dynamics

	NACE Rev. 2
Research and knowledge intensive sectors	
High-tech manufacturing	C20, C21, C26-C30
Knowledge intensive services	J, M71, M72, M74, M69, M702, M73
Other sectors	
Mining, other manufacturing, energy	B, C10-C19, C22-C25, C31-C33, D, E
Transportation	H
Construction	F
Other business oriented services	K_X_K642, L, N77, N78, N80-N82
Consumer oriented services	I, M75, N79
Retail	G

The classification has been made according to the intensity of research and development (R&D) and the knowledge intensity which is necessary to produce the products and service supplied. The rationale for using these criteria is that R&D and knowledge are closely related to innovation. This does, of course, not mean that firms in the sectors we label with “other sectors” are not innovative at all or that firms in the “research and knowledge intensive sectors” are innovative in any case. However, the likelihood that a firm is innovative is higher in the sectors we call “research- and knowledge-intensive” than in the other sectors.

As can be seen from Table 8 we do not consider all the sectors of the economy. The firms in the sectors A (agriculture, fishery), P (education), Q (public health), R (Arts, entertainment and recreation), and S (other service activities) are missing. On the one hand, this has to do with data availability. Data on firms in the sector A are not provided at all by Eurostat and information on the sectors P to S are provided only for selected countries. On the other hand, production conditions in the agricultural and the public sector (which makes up most of the sectors P to S) are fundamentally different from the rest of the economy so that it is also advisable for reasons of content to exclude these sectors from the analysis.

Eurostat only provides information for countries that are members of the EU. This in turn means that for countries which are not in the EU no data on firm dynamics is available. To the best of our knowledge there are no data sources that can fill in the gaps with respect to the non-EU countries of the Danube Region.²⁹ Therefore, the analysis on firm dynamics can only be performed on

²⁹ We first thought about using data from the Global Entrepreneurship Monitor (GEM). However, the GEM proved to deliver too unreliable results on the number of start-ups in another project because of too low numbers of observations. The low number of observations also prevents an analysis by sector. And lastly, regardless of the mentioned problems we would not be able to fill the gaps completely by using the GEM because either the non-EU countries of the Danube region also did not participate in the GEM or they participated for a too short period of time. In effect, we would only be able to include one more country (Croatia). Therefore, we refrained from using the GEM.

part of the Danube Region. The included countries and regions cover Baden-Württemberg, Bavaria, the Czech Republic, Slovakia, Hungary, Slovenia, Romania, and Bulgaria. Although EU country since July 2013, Croatia is also excluded from the sample of Danube Region countries considered in this section because the analysis below require the availability of information of several years and the SBS contains only information of one year for Croatia. For simplicity, we will refer to the above specified group of countries as 'Danube Region' in this subsection, i.e. in subsection 4.1.

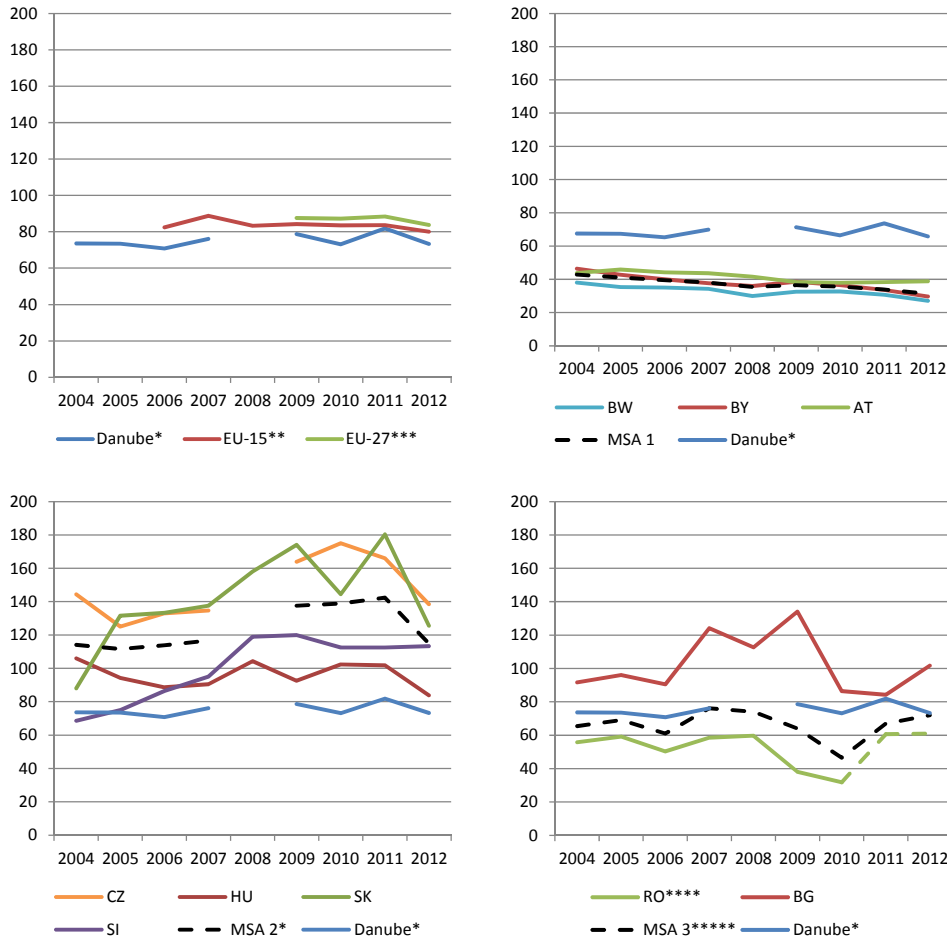
It also needs be mentioned that there is some time lag in the provision of data by Eurostat because the data preparation is rather complex and by now not as routinised as the preparation of, for example, the gross domestic product. In addition, in 2004 a new sector classification (NACE Rev. 2) has been applied to the data which makes it difficult to use data before this year. The time span in the analysis therefore covers the period 2004-2012.

And finally: Although the Structural Business Statistics is probably the best source of data we have with respect to international data on firm dynamics, it is still in the construction phase. This results in that not for all EU-countries all data on all variables are available for all years. Amongst others, this impacts on the possibility of constructing an aggregate against which the Danube Region is benchmarked. It is even impossible to use the full EU-15 as benchmark as there are data gaps for some countries. In order to be able to benchmark the Danube Region at all we take the normal groups of countries which make up the usual EU aggregates (EU-15 and EU-27 in particular) and exclude the countries for which no or only limited data is available.

Another data set we took into consideration was the Entrepreneurship Indicators Programme by Eurostat and the OECD. However, also this data set does not deliver information on firm dynamics of the non-EU members of the Danube region.

4.1.3 Start-ups in the Danube Region

Figure 78: Development of the start-up intensities in the Danube Region 2004-2012 – all start-ups



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO. Considered countries/regions of the Danube Region: BW, BY, HU, CZ, SK, SI, RO, and BG. *Value for 2008 is missing because of implausible value for CZ. **Values for EU-15 without Greece and Denmark because data are either completely missing (Greece) or have considerable gaps (Denmark). ***Values for EU-27 without Greece, Denmark, and Malta because data are either completely missing (Greece) or have considerable gaps (Denmark, Malta). ****Break in the time series for Romania because of new possibilities to record sole proprietors. *****Member States Area 3 without HR because HR joined the EU only in July 2013 so that there is data only for 2012 available at Eurostat.

Source: Structural Business Statistics (Eurostat), Mannheim Enterprise Panel (ZEW). Calculation and illustration: ZEW.

In order to present start-up data for different regions or countries in a meaningful way it is necessary to normalise the numbers. Otherwise differences in start-up numbers can arise simply because the considered regions vary in size. One way to normalise start-up numbers is to calculate start-up intensities, which are defined as the number of start-ups in relation to the working age-population, i.e. in relation to the number of persons between 18 and 64 years, in a certain region. As the working age-population in a certain region can be regarded as the potential of firm founders, start-up intensities can be seen as a measure to what degree this potential is exploited.

In Figure 78 the development of the start-up intensities in the Danube Region between 2004 and 2012 is shown.^{30,31} As can be seen from the Figure, start-up intensities in the Danube Region have been below the ones in the EU-15 and the EU-27 countries for the whole period considered.³² On average, 75 firms per 10.000 working-aged persons have been set up in the Danube Region while it was 84 in the EU-15 and 87 in the EU-27 countries.

Figure 78 also displays considerable variation in the start-up intensities between the different regions and countries of the Danube Region. The start-up intensities in the countries/regions of Member States Area 1 lay clearly below the average of the start-up intensities in the Danube Region and have slightly but steadily decreased over the period of observation. In contrast, the start-up intensities in the countries of Member States Area 2 all lay above the average of the Danube Region (the only exception is Slovenia in 2004) and they tended to rise between 2004 and 2011. In 2012 there has been a slump in the start-up

³⁰ The time series for the Danube Region as a whole and the countries of Member States Area 2 have a missing value in 2008 because the recorded values for the Czech Republic provided by Eurostat seem to be implausible for this year.

³¹ The appearance of the graphs in this Figure differs from the corresponding graphs in the 2014 report because the graphs in the previous reports did not all have the same scaling of the vertical axis. However, for a meaningful comparison of the different subregions of the Danube Region the scaling of the axes should be equal.

³² The differences to the results of the analysis for the 2014 report can be explained by the fact that we could include Ireland in the EU-15 aggregate in the updated analysis. However, this also shows how sensible the results are depending on what countries can be considered.

intensities which, however, did not lead to that the start-up intensities fell below average. The countries of Member States Area 3 experienced a mix between the development of the start-up intensities in the Member States Area 1 and that in the Member States Area 2. Until 2007 the start-up intensities increased and since then decreased. There seems to be a recovery of start-up intensities after 2010, mostly driven by increased start-up intensities in Romania. However, according to Eurostat this increase is due to increased possibilities of recording sole proprietors from 2011 onwards. This means that there is a break in the time series (indicated by a dashed line in the Figure). In total, the start-up intensities in Member States Area 3 lay below the start-up intensities in the Danube Region as a whole. However, the start-up intensities in Bulgaria are above average over the whole period of observation.

Another way to present start-up data are start-up rates, which are defined as the number of start-ups divided by the number of active firms in a given year. They can be regarded as an indicator for the renewal of the stock of firms through start-ups. Figure 79 shows the start-up rates for the countries of the Danube Region for the time periods 2008-2010 (the considered period of the 2014 report) and 2010-2012. Because there is no information on the stock of firms available in the Eurostat data before 2008 for most of the countries, this measure can only be calculated from 2008 onwards.

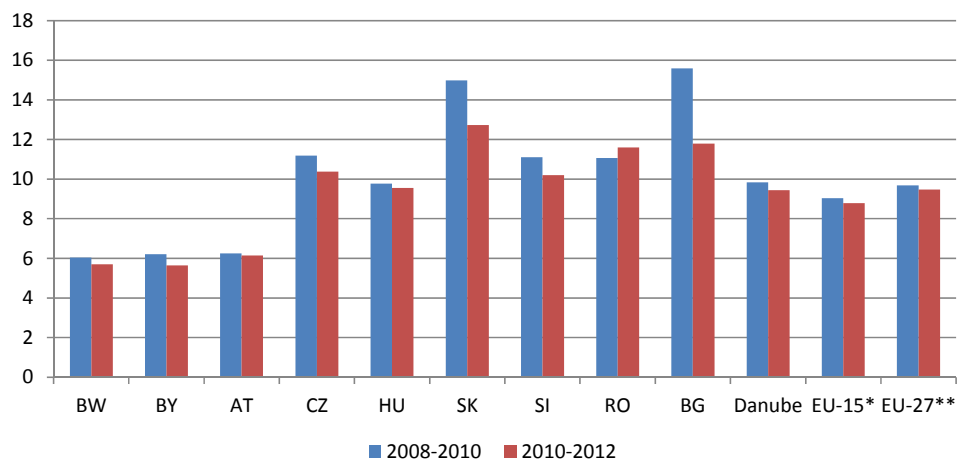
In the 2014 report we worried about showing the start-up rates year by year because at that time only data until 2010 were available and we considered the period between 2008 and 2010 as not “normal” due to the financial and subsequent economic crisis that hit all countries of the world. In order to take account of this fact, we calculated one start-up rate for the whole period assuming that we could take out at least some of the crisis effects by averaging and thereby reaching at a more normal start-up rate.³³ These considerations also apply to the period 2010 to 2012 as the crisis is not yet over. We therefore decided to retain with the approach and to show only one start-up rate for the whole period.

³³ These considerations of course also apply to the start-up intensities. However, for the start-up intensities information for a longer period of time is available which makes it easier to assess the start-up numbers in the crisis years.

As can be seen in Figure 79, the start-up rates do not differ much for most of the countries of the Danube Region between 2008-2010 and 2010-2012. The exceptions are Slovakia and Bulgaria where the start-up rates decreased by 2 and 3 points respectively. This suggests that we succeeded at least to some extent to identify a reasonable start-up rate for the Danube Region countries in the 2008-2010 period. What is interesting, though, is that if there is a noticeable difference between the start-up rates between the two periods the start-up rates are lower in the later period than in the earlier period, i.e. the renewal of the stock of firms has been higher in the period where the crisis were at its peak than in the period where the crisis already slowed down a bit.

The general picture across the countries does not vary between the two periods. The overall start-up rate of the countries of the Danube Region resembles that of the EU-15 and EU-27 countries. In all three country aggregates it amounts to around 9%. There are again noticeable differences between the

Figure 79: Start-up rates in the Danube Region 2008-2010 and 2010-2012 – all start-ups (in %)



Note: Considered countries/regions of the Danube Region: BW, BY, HU, CZ, SK, SI, RO, and BG.

*Values for EU-15 without Greece and Denmark because data are either completely missing (Greece) or have considerable gaps (Denmark). **Values for EU-27 without Greece, Denmark, and Malta because data are either completely missing (Greece) or have considerable gaps (Denmark, Malta).

Source: Structural Business Statistics (Eurostat), Mannheim Enterprise Panel (ZEW). Calculation and illustration: ZEW.

different regions of the Danube Region detectable. The start-up rates in the countries/regions of Member States Area 1 did not vary very much. They were all around six percent in both periods. In the other countries considered they were much higher. In contrast to the start-up intensities, there does not appear a particular pattern which distinguishes the start-up rates in the countries of the Member States Area 2 from that of the countries of Member States Area 3. They all have at least the level of the Danube Region as a whole. In the 2008-2010 period, Bulgaria and Slovakia had particularly high start-up rates (both 15 percent). These rates adjusted to those of the other countries between the periods. Although the start-up rate in Slovakia is still the highest (13 percent), the start-up rate of Bulgaria decreased to the level of Romania (12 percent).

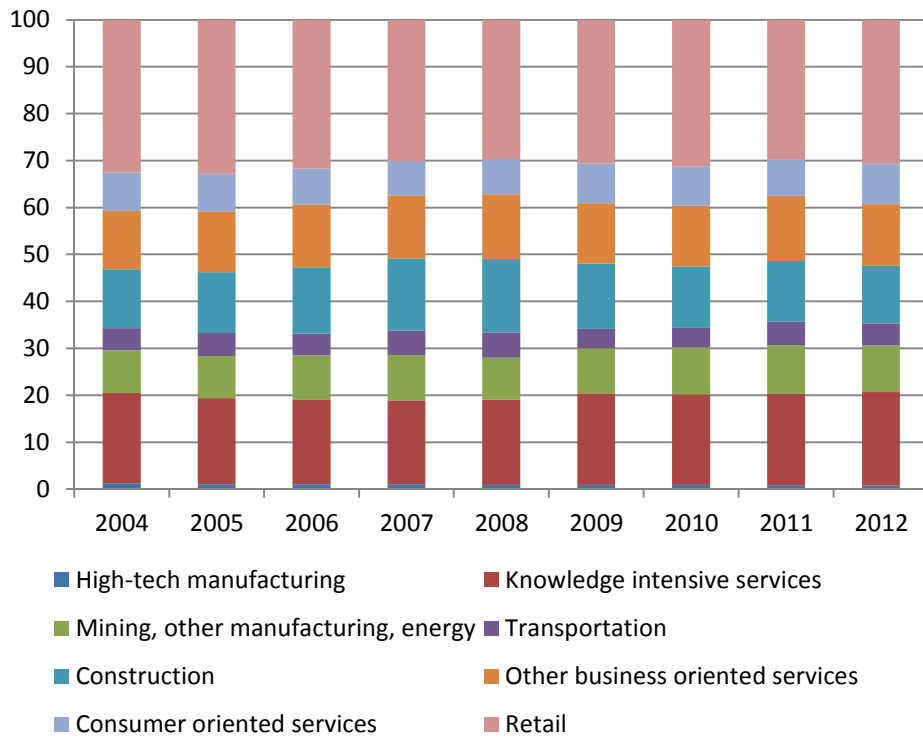
As to the sectorial composition of the start-ups, more than four fifth (between 79 und 81 percent) of the firms that are founded in the Danube Region are started in sectors that we call "other sectors" (Figure 80³⁴). Around 39% of the firms are founded in the sectors retail and consumer-oriented services (around 31 and 8 percent respectively). Another around 37% is set up in the sectors 'Mining, other manufacturing, energy', 'construction', 'transportation' and 'other business-oriented services'. Around 19% of the start-ups can be attributed to the knowledge-intensive services and only 1% of the firms is started in high-tech manufacturing. This sector composition of the start-ups does not change much, if at all, over time.³⁵

As can be seen from Figure 81, the sector composition of the start-ups in the Danube Regions is not that specific. Also in the countries of the EU-15 and of the EU-27 most of the start-ups are set up in non- research and knowledge intensive sectors and the highest proportion of the start-ups are firms in the retail sector. But still, the proportion of start-ups in the research and

³⁴ In this case values for 2008 can be presented because the implausibility in the 2008 values of the Czech Republic only refer to the height but not to the composition of the start-ups.

³⁵ The percentages in this paragraph differ slightly from those in the 2014 report even for the earlier years. The reason for this is that the SBS is updated continuously and also new information about past years is included in each update.

Figure 80: Sector composition of the start-ups in the Danube Region 2004-2012 (in %)



Note: Considered countries/regions of the Danube Region: BW, BY, HU, CZ, SK, SI, RO, and BG.
 Source: Structural Business Statistics (Eurostat), Mannheim Enterprise Panel (ZEW). Calculation and illustration: ZEW.

knowledge intensive sectors in the Danube Region seems to be a bit lower than in the EU-15 and the EU-27 countries. In 2012, the proportion of start-ups in high-tech manufacturing and the knowledge-intensive services amounted to 21% in the Danube Region while it was 26% in the EU-15 countries and 24% in the EU-27 countries.

What also becomes evident from Figure 81 is again the high variation between the countries of the Danube Region. However, while we could observe a correlation between the state of economic development and the proportion of start-ups that are founded in the research and knowledge intensive sectors with the 2010 data in the 2014 report this correlation does not seem to exist in 2012 anymore. The proportions research and knowledge intensive start-ups

have aligned between the different subregions of the Danube Region. They all fluctuate around 20% of all start-ups. The exceptions are Slovenia and Bulgaria. In Slovenia 29% of all start-ups are founded in the research and knowledge intensive sectors. This value is even higher than the respective proportions for the EU-15 and EU-27 countries. This exceptionally high value for Slovenia could also be observed in the 2014 report. The lowest research and knowledge intensive start-ups can be observed for Bulgaria, although there has been a two percentage point increase between 2010 and 2012 (from 12 to 14%).³⁶

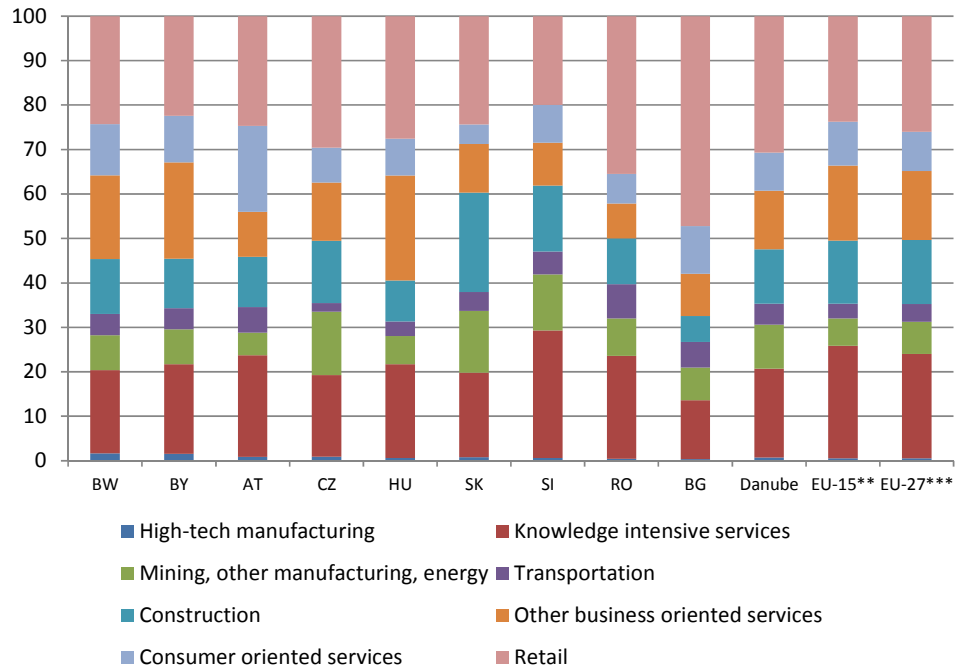
In the countries of Member States Area 3 most start-ups are retail firms or firms in the consumer-oriented services. In Romania 53% of the start-ups in 2010 could be attributed to these two sectors, in Bulgaria it was even 62 per cent.

There are also differences detectable with respect to the proportion of start-ups that are established in high-tech manufacturing. In Baden-Wurtemberg and Bavaria around 2% of the start-ups can attributed to high-tech manufacturing while in Hungary and Bulgaria the respective proportion is less than 0.5. In the other countries start-ups in high-tech manufacturing make up around 1% of all start-ups.

If one looks at the intensities of the start-ups in the research and knowledge intensive sectors it turns out that the countries of the Danube Region have lower numbers of start-ups in relation to its working age population than both the countries of the EU-15 and the EU-27 (Figure 82). Besides that, though, the same patterns as for all start-ups emerge. There is considerable variation in the start-up intensities between the different regions and countries of the Danube Region, the start-up intensities in the countries/regions of Member States Area 1 tended to lie below the average of the start-up intensities in the Danube Region (the exception here is Austria in the period 2005-2007) and steadily decreased over the period of observation. Start-up intensities in the

³⁶ The substantial increase in the proportion of start-ups in the research and knowledge intensive sectors between 2010 and 2012 in Romania (from 14 to 24%) is due to the already mentioned new possibilities of recording sole proprietors many of which obviously started in the research and knowledge intensive sectors.

Figure 81: Sector composition of the start-ups in the countries of the Danube Region in 2012 (in %)



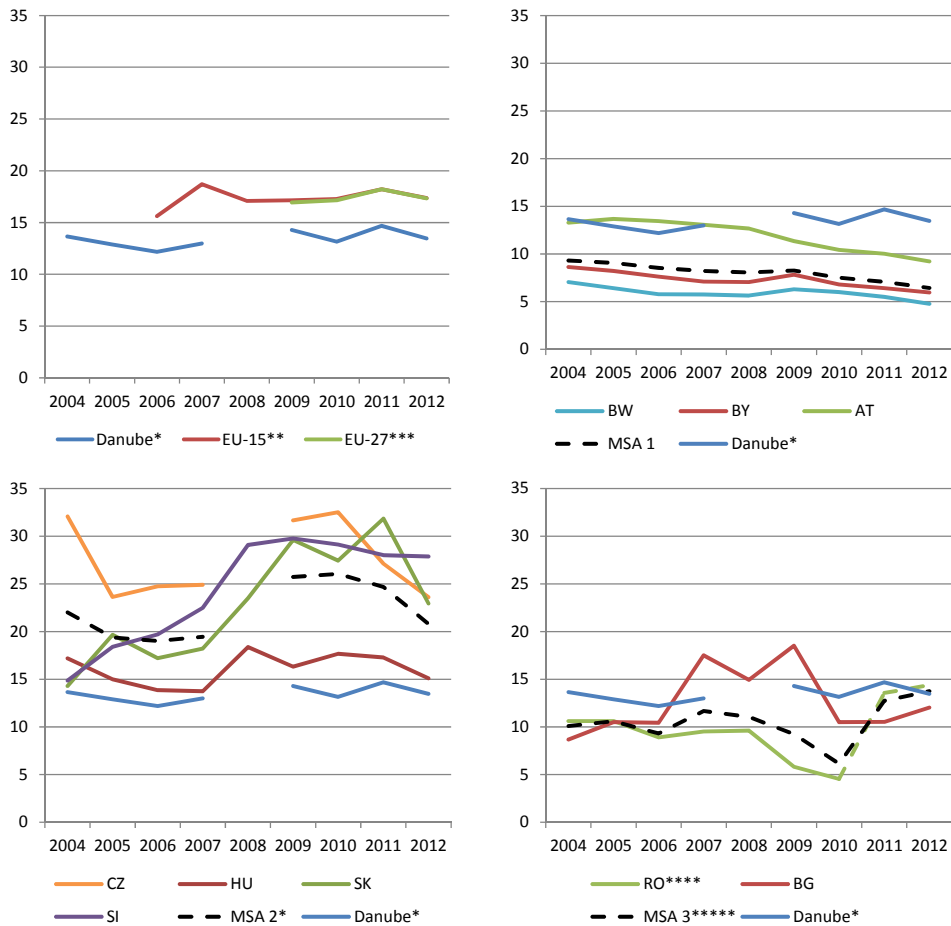
Note: Considered countries/regions of the Danube Region: BW, BY, HU, CZ, SK, SI, RO, and BG.

*Values for EU-15 without Greece and Denmark because data are either completely missing (Greece) or have considerable gaps (Denmark). **Values for EU-27 without Greece, Denmark, and Malta because data are either completely missing (Greece) or have considerable gaps (Denmark, Malta).

Source: Structural Business Statistics (Eurostat), Mannheim Enterprise Panel (ZEW). Calculation and illustration: ZEW.

countries of Member States Area 2 all lay above the average of the Danube Region and increased between 2004 and 2010. After 2010, the start-up intensities tended to go down again except that in Slovenia which stabilised at the 2010 level. The countries of Member States Area 3 experienced a mix between the development of the start-up intensities in the Member States Area 1 and that in the Member States Area 2.

Figure 82: Development of the start-up intensities in the Danube Region 2004-2012 – start-ups in research and knowledge intensive sectors (high-tech manufacturing and knowledge-intensive services)

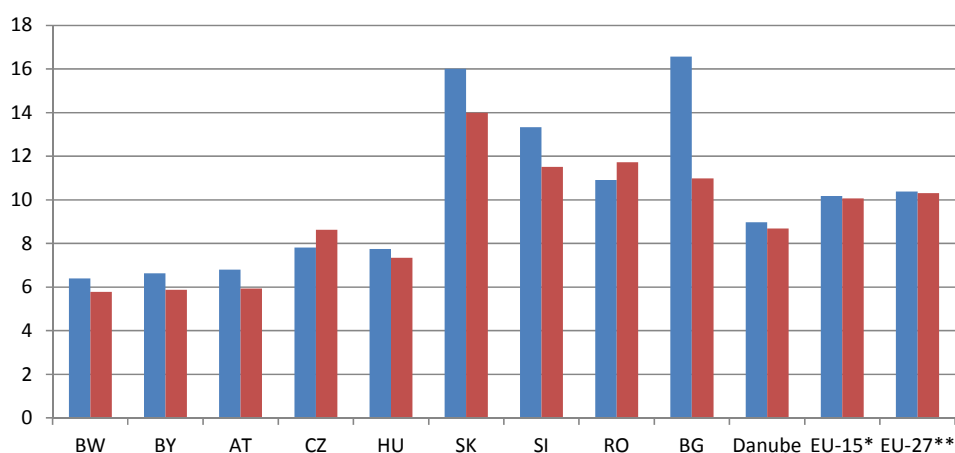


Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO. Considered countries/regions of the Danube Region: BW, BY, HU, CZ, SK, SI, RO, and BG. *Value for 2008 is missing because of implausible value for CZ. **Values for EU-15 without Greece and Denmark because data are either completely missing (Greece) or have considerable gaps (Denmark). ***Values for EU-27 without Greece, Denmark, and Malta because data are either completely missing (Greece) or have considerable gaps (Denmark, Malta). ****Break in the time series for Romania because of new possibilities to record sole proprietors. *****Member States Area 3 without HR because HR joined the EU only in July 2013 so that there is data only for 2012 available at Eurostat.

Source: Structural Business Statistics (Eurostat), Mannheim Enterprise Panel (ZEW). Calculation and illustration: ZEW.

Also the start-up rate in the research and knowledge intensive sectors is lower in the Danube Region than in the EU-15 and the EU-27 countries (9% compared to 10 percent). This holds both for the 2008-2010 period and the 2010-2012 period. Apart from this, the pattern of the start-up rates in the research and knowledge intensive sectors is similar to that of the start-up rates for all start-ups both between the two periods and across countries: The start-up rates remained more or less stable between the two periods; if they changed they tended to go down; Slovakia has the highest start-up rate both in the 2008-2010 period and the 2010-2012 period; the start-up rate in Bulgaria decreased significantly; the countries/regions of Member States Area 1 have the lowest start-up rates and except Hungary the start-up rate in the countries of both Member States Area 2 and 3 is at least at the same level as that for the Danube Region as a whole.

Figure 83: Start-up rates in the Danube Region 2008-2010 and 2010-2012 – start-ups in research and knowledge intensive sectors (high-tech manufacturing and knowledge-intensive services) (in %)



Note: Considered countries/regions of the Danube Region: BW, BY, HU, CZ, SK, SI, RO, and BG.

*Values for EU-15 without Greece and Denmark because data are either completely missing (Greece) or have considerable gaps (Denmark).

**Values for EU-27 without Greece, Denmark, and Malta because data are either completely missing (Greece) or have considerable gaps (Denmark, Malta).

Source: Structural Business Statistics (Eurostat), Mannheim Enterprise Panel (ZEW). Calculation and illustration: ZEW.

4.1.4 Firm closures in the Danube Region

Start-up activities are one side of the medal which is called firm dynamics. The other side consists of firm closures. Though it is already a difficult exercise to capture start-ups it is even more difficult to measure firm closures. The reason is that the most common way in which firms exit the market is by voluntary closure, i.e. by closing the business because of other reasons than insolvency. Whereas insolvency is an event that can be documented quite easily, voluntary closure often is a gradual process with no definite end point because in many countries business owners are not required to deregister their firm when it goes out of operation and they indeed often do not do this (because, for example, they hope they can re-enter the market). While start-ups numbers are available in the SBS from 2004 onwards for most of the countries, information on firm closure is only provided for the years 2008 onwards.³⁷ In addition, because of the uncertain nature of the information on firm closures the data are provisional for some of the countries for 2011 and for almost all countries for 2012. As the values for 2011 and 2012 seem to be partly still highly implausible we decided not to expand the period of time for which firm closures are described in this report. This concerns this Section and Section 4.1.5 because closure rates are relevant for firm dynamics as well. We do update the figures and the corresponding text in the sense that we use the latest information available at Eurostat.

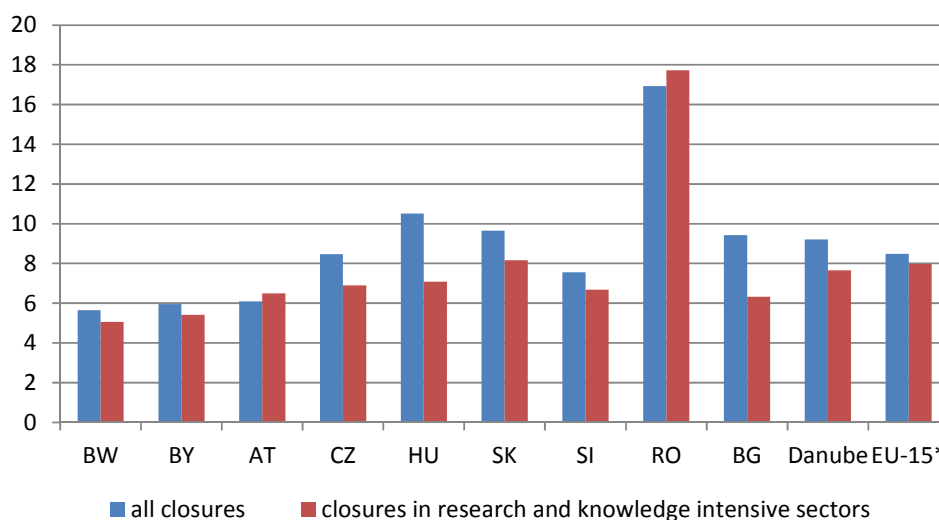
In Figure 84 the closure rates for the countries of the Danube Region are depicted. Similar to start-up rates, closure rates are defined as the number of closures in relation to the stock of firms. In the Danube Region these rates were similar to those for the EU-15 countries both for all closures and for closures in the research and knowledge intensive sectors in the period 2008-2010. In the Danube Region 9% of all firms were closed in that period while it was 8% in the EU-15 countries. The respective numbers for the closures in the research and knowledge intensive sectors are 8% both for the Danube Region and the EU-15 countries. Again, we can find noticeable variations between the

³⁷ This is also the reason why there is only information on the stock of firms for the years 2008-2010 because the stock of the firms in a given year depends on the numbers of start-ups and firm closures.

individual countries of the Danube Region. The lowest numbers of closures in relation to the stock of firms regarding all sectors can be found in the countries/regions of Member States Area 1. In these countries the closure rates amount to 6 percent. The country with the highest closure rate is Romania where around 17% of the firms closed.

Regarding closures in the research- and knowledge-intensive sectors the picture is similar. The lowest closure rates can again be observed the countries of Member States Area 1 (between 5 and 7%). But also Bulgaria has a rather low closure rate in the 2008-2010 period (6%). The highest closure rates can again be found in Romania (18%).

Figure 84: Closure rates in the Danube Region 2008-2010 (in %)



Note: Considered countries/regions of the Danube Region: BW, BY, HU, CZ, SK, SI, RO, and BG.

*Values for EU-15 without Greece and Denmark because data are either completely missing (Greece) or have considerable gaps (Denmark).

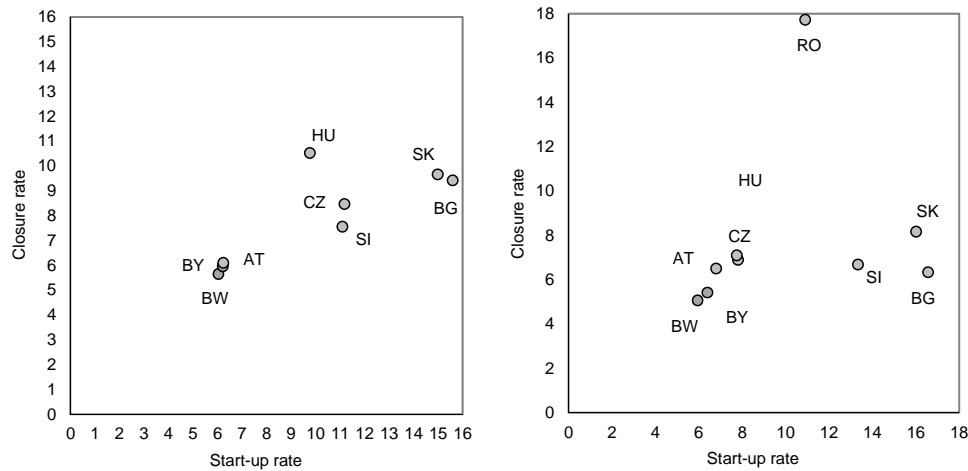
Source: Structural Business Statistics (Eurostat), Mannheim Enterprise Panel (ZEW). Calculation and illustration: ZEW.

4.1.5 Firm dynamics in the Danube Region

In general, high start-up rates tend to go along with high closure rates in the countries of the Danube Region (Figure 85). This is an observation that can also be made for other sets of countries and can therefore be regarded as a general phenomenon. Thus, if one is interested in the development of the

stock of firms it is not sufficient to look at start-ups. Firm closures also have to be taken into account. Indeed, as can be seen from Figure 86, the stock of active firms in the Danube Region as a whole has not changed much in the period 2008-2010. The closure rate has been almost as high as the start-up rate.

Figure 85: Relation of start-up rates and closure rates in the Danube Region 2008-2010 (in %)
 all sectors



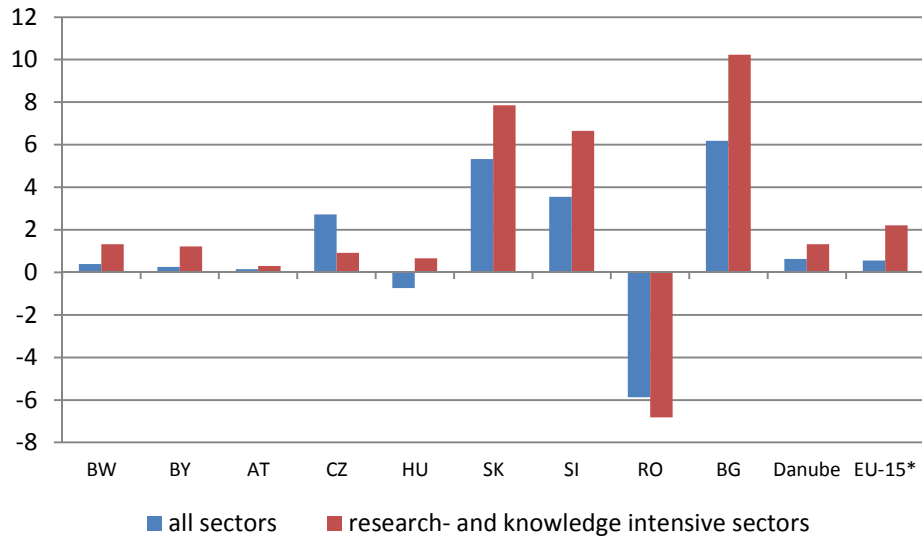
Note: Considered countries/regions of the Danube Region: BW, BY, HU, CZ, SK, SI, RO, and BG.
 Source: Structural Business Statistics (Eurostat), Mannheim Enterprise Panel (ZEW). Calculation and illustration: ZEW.

However, as with the results before, this does not hold for all subregions of the Danube Region. While the stock of firms seems to be in a kind of equilibrium in the countries/regions in Member States Area 1 (and also in Hungary) there have been stronger fluctuations in the other countries. With the exception of Romania the number of active firms has increased. The strongest increases can be observed for Slovakia and Bulgaria. The rise in the number of firms amounted to 5 and 6% of the stock of firms in the three years between 2008 and 2010 in these two countries respectively.

What can also be observed is that the research- and knowledge-intensive sectors gained in importance both in the Danube Region as a whole and in most of the individual countries of the Region as the increase in the stock of firms in the research- and knowledge-intensive sectors is higher than the increase in

the stock of firms in all sectors. The highest increase in importance of the research and knowledge intensive sectors has again taken place in Slovakia and Bulgaria. But the relative rise was also noticeable in Slovenia.

Figure 86: Difference between start-up and closure rates in the Danube Region 2008-2010 (in %-points)



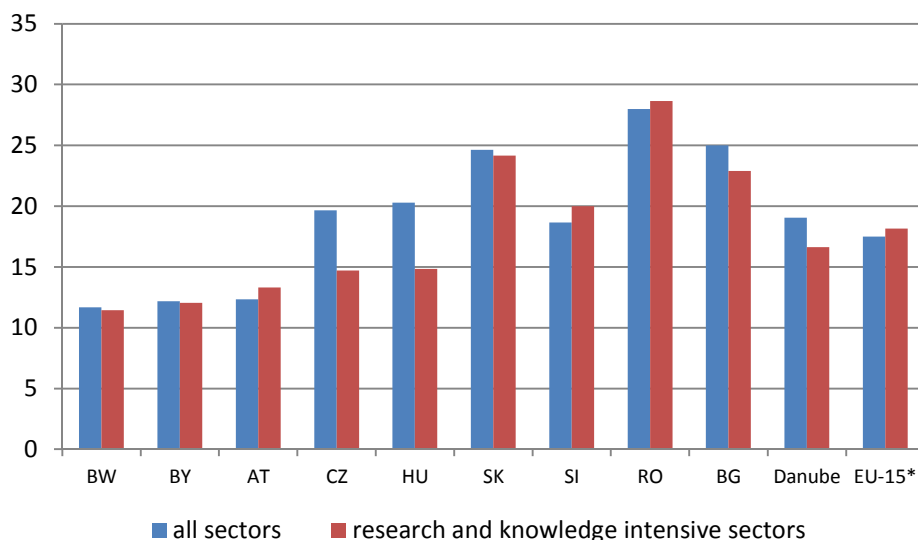
Note: Considered countries/regions of the Danube Region: BW, BY, HU, CZ, SK, SI, RO, and BG.

*Values for EU-15 without Greece and Denmark because data are either completely missing (Greece) or have considerable gaps (Denmark).

Source: Structural Business Statistics (Eurostat), Mannheim Enterprise Panel (ZEW). Calculation and illustration: ZEW.

Another measure of firm dynamics is the turbulence which is the number of firms which are started or closed in relation to the stock of firms (or in other words: the sum of the start-up and the closure rates). Figure 87 shows the turbulence in the Danube Region between 2008 and 2010. We again observe the by now familiar differences between the subregions of the Danube Region. In the countries of the Member States Area 1 the turbulence was rather low while there were more flows of firms in the other countries. The highest turbulence can be observed for Romania (28 percent), Bulgaria and Bulgaria (both 25 percent). The turbulence for the Danube Region as a whole is higher resembles that of the EU-15 countries. This holds both for all sectors and for the research and knowledge intensive sectors.

Figure 87: Turbulence rate in the Danube Region 2008-2010 (in %)



Note: The turbulence is the sum of the start-up and the closure rate. Considered countries/regions of the Danube Region: BW, BY, HU, CZ, SK, SI, RO, and BG. *Values for EU-15 without Greece and Denmark because data are either completely missing (Greece) or have considerable gaps (Denmark). Source: Structural Business Statistics (Eurostat), Mannheim Enterprise Panel (ZEW). Calculation and illustration: ZEW.

4.2 SME Financing³⁸

SMEs in all countries around the world face a wide range of challenges which are often not faced by large firms. Among these challenges, access to finance is crucial. It can be an issue at all stages of the SMEs’ developmental cycle: seed, start-up, growth and expansion. In contrast to large businesses, which have access to equity markets, the vast majority of SMEs does not have such access and is more reliant on other sources such as bank lending or internal funds.

The current economic environment with tightened credit conditions has brought SME needs into the focus of European policy. Taking into account the

³⁸ This Section is the same as in the 2014 report because no more recent data are available.

reduced ability and willingness of banks to provide financing for SMEs, the different financial characteristics of SMEs compared to larger companies and the importance of SMEs for the overall economy and the economic development in Europe, over the past two decades the European Commission (EC) has developed a comprehensive range of policies, measures and instruments to support financing of SMEs at the different stages of their life.

In this part of the project we start with a review of the existing EU programmes that address SME financing. We discuss the effectiveness of the programmes and show their relevance for the Danube Region. Furthermore, we present an overview of selected international and national programs, which have been implemented or are currently in the implementation process, with the purpose of facilitating SMEs' access to finance.

In the next step we analyse the use of different sources of financing, the financial situation and financial needs of SMEs in the region and compare it to the financial situation and needs of SMEs in the EU. We use information from a variety of published studies and different data sources which are presented in the respective part of the report.

4.2.1 Programs for financial support

A wide range of financial support institutions and instruments at international, national and regional level have been developed to support SMEs at the different stages of their development cycle. Financial support for SMEs has been provided at European level through the financial instruments of the Competitiveness and Innovation Framework Programme, financial support available under the Structural Funds and the schemes supported by the European Investment Bank (EIB) and the European Investment Fund. An overview of the international and national programs addressing financial support for SMEs in the Danube Region is presented in the Annex.

In the Danube Region, the EIB is the most active multilateral financing institution having lent a total of nearly EUR 50bn in the 14 countries of the region as a whole in the period 2007-2011. SMEs have received EIB funding through credit lines to local intermediaries that lend on the money for small-scale capital investment and working capital requirements. The European Investment Fund, the risk financing arm of the EIB Group, supports small businesses in the

Danube Region by means of equity instruments, SME guarantees and financial engineering products.³⁹

The following chapter shortly describes the main international and selected national programs addressing financial support for SMEs and presents key points from evaluation studies on these activities.

Entrepreneurship and Innovation Programme (EIP)

Scope in the Danube Region: Austria, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Montenegro, Romania, Serbia, Slovakia, and Slovenia.

The EIP's measures are mainly aimed at improving the availability of bank financing to SMEs and the conditions under which it can be obtained. The programme thereby directly addresses what has been identified as one of the major concerns of SMEs in various surveys⁴⁰ – the access to finance.⁴¹

Focusing on one of the core problems faced by SMEs is seen as an important source of the effectiveness of the EIP, the more so as its implementation is geared towards practicability.⁴² Thereby, the projected scale and scope of the programme has been achieved with its costs remaining within the originally budgeted amount.⁴³ Thus, when it comes to cost-effectiveness the EIP can be seen as a success.

Furthermore, other programmes supported under the EIP had a strongly beneficial effect on the business environment, too. For instance, it was estimated that the lowering of administrative burdens under the Community programme

³⁹ European Investment Bank.

⁴⁰ See for instance *SMEs' Access to Finance Survey 2013 – Analytical Report*

⁴¹ *Final Evaluation of the Entrepreneurship and Innovation Programme, p.112*

⁴² *ibid, p.105*

⁴³ *ibid, p.102*

for the reduction of administrative costs would provide a value of € 40bn to European businesses.⁴⁴

There was, however, room for improvement. While the EIP was successful in ensuring a broad availability of funding assistance, its communication was less effective. Not having readily accessible information about alternative ways of financing was identified as an important obstacle to exploiting these by managers of SMEs.⁴⁵ Thus, to reach more potential beneficiaries the EIP would have needed to engage in a “more co-ordinated and targeted promotion of the Programme’s instruments and results.”⁴⁶

Activities supporting SMEs by the European Investment Bank Group

Scope in the Danube Region: Austria, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Montenegro, Romania, Slovakia, and Slovenia.

The relatively wide range of Activities supporting SMEs by the EIB includes provision of equity financing, venture capital, and microfinance among others. Thus, even though it also provides loan guarantees, the programme is less geared towards utilising traditional intermediation through the bank channel to employ the EIB’s funds but rather emphasises the provision of risk capital.⁴⁷

The programmes for funding assistance by the EIB were highly cost effective in their support to SMEs. The EIB was able to provide allocations to SMEs that exceeded the projected amounts for the years 2008-2011. This allowed the bank to provide significant relief to SMEs by extending the scale of its support far beyond pre-crisis levels.⁴⁸ This was particularly important as the financial

⁴⁴ *ibid*, p.102

⁴⁵ *Studie zur Finanzierung im Mittelstand 2012*, p.15

⁴⁶ *Final Evaluation of the Entrepreneurship and Innovation Programme*, p.103

⁴⁷ *Fit 4 SMEs*, p.39

⁴⁸ *Report on Activities supporting SMEs 2011*, EIB Group, p.2

crisis depleted the capital base and increased risk aversion of traditional providers of outside finance to SMEs, i.e. commercial banks.

Furthermore, the EIB recognised the importance of dissemination of information about its activities supporting SMEs. A monitoring framework was devised which put particular emphasis on ensuring that SMEs had been “individually informed about EIB’s support and the benefit received through that support.”⁴⁹

Joint European Resources for Micro to Medium Enterprises Initiative (JEREMIE)

Scope in the Danube Region: Austria, Bulgaria, Czech Republic, Germany, Hungary, Romania, Slovakia, and Slovenia.

The initiative aims at providing structured financing solutions to foster SME growth across European regions that have a particular demand for additional funds, whether due to their innovativeness or liquidity dry-ups associated with the European debt crisis.⁵⁰

The initiative’s approach to provide risk sharing instruments and guarantee schemes as well as venture capital in order to increase SMEs’ access to finance can be deemed a success. For instance, JEREMIE was particularly helpful in revitalising the market for SME loan securitisation after its near shutdown during the financial crisis.⁵¹ Furthermore, due to increasing demand the EIF has repeatedly stepped up the resources it devotes to JEREMIE.⁵²

Joint Action to Support Microfinance Institutions (JASMINE)

Scope in the Danube Region: Bulgaria, Germany, and Romania

⁴⁹ *ibid*, p.2

⁵⁰ *ibid*, p.3

⁵¹ *ibid*, p.13

⁵² *ibid*, p.8

With its emphasis on microfinance to foster self-employment, as well as its additional focus on ethnic minorities and social groups that have been discriminated against, JASMINE is designed to fill the gaps left open by larger programmes such as the EIP and the EIB's Activities to support SMEs.

As a part of JASMINE the EIB and its partner banks – who match the EIB's contribution – devote € 50m to promote growth of the microfinance sector in Europe by allocating funding to non-bank Microfinance Institutions, thereby enhancing access to finance for the smallest of SMEs.⁵³ Furthermore, the EC has launched a Technical Assistance programme under JASMINE that supports beneficiaries of JASMINE funding by providing best practices regarding the institutions' business.

While JASMINE already provides essential services there is plenty of room to extend its scope. Particularly the countries of the Danube Region that have not yet converged to Central European levels of economic development could benefit from this.

Joint IFI Action Plan

Scope in the Danube Region: Bosnia Herzegovina, Bulgaria, Czech Republic, Croatia, Hungary, Montenegro, Romania, Serbia, Slovakia and Slovenia

Recognising that SMEs first source of outside finance are commercial banks, the Joint IFI Action Plan seeks to provide long term funding to the banking sector in Central and Eastern Europe so that the necessary balance sheet adjustments can take place without cutting SMEs access to finance.⁵⁴ Moreover, as part of the plan the IFIs assist SMEs with special financial services, for ex-

⁵³ *JASMINE Flysheet, EIF*

⁵⁴ *First Report on the Joint IFI Action Plan for Growth in Central and South Eastern Europe, p.5*

ample trade financing, thereby providing them with essential services geared towards their needs.⁵⁵

The IFIs therefore have committed € 30bn for the second round of the plan from 2012 to 2014 which are disbursed “mainly in the form of long-term loans to the private and public sectors.”⁵⁶ This presents a significant increase relative to the € 24.5bn that were committed for the first round of the plan in 2009 to 2011 and eventually exceeded by the actual provision of € 33bn.⁵⁷ Thus, if the second round will meet equally high demand it is likely to succeed in stabilising the availability of bank financing for SMEs.

Western Balkans Enterprise Development and Innovation Facility (WB EDIF)

Scope in the Danube Region: Bosnia and Herzegovina, Croatia, Montenegro, and Serbia.

Similar in spirit to the activities supporting SMEs by the EIB, the WB EDIF provides equity financing, venture capital and loan guarantees to entrepreneurs in the Western Balkans, but also offers technical assistance to governments in an effort to provide policy reforms. Looking at the bank lending channel, the facility is mostly limited to complementing the (previously discussed) larger programmes’ efforts to stabilise bank financing, mainly due to its structure.

However, the Western Balkans is a region of under-developed domestic capital markets where banking is dominated by large non-national Eurozone banks.⁵⁸ Unfortunately the afore-mentioned larger programmes such as the EIP and the EIB’s activities to support SMEs have not been successful in reviv-

⁵⁵ *ibid*, p.7

⁵⁶ *ibid*, p.6

⁵⁷ *Final Report on the Joint IFI Action Plan*, p.5

⁵⁸ SME Policy Index: Western Balkans and Turkey 2012, p.117

ing bank lending across the Western Balkans as private credit growth remained subdued.⁵⁹

Launched in December 2012 with € 140m in initial capital, the EDIF is supposed to leverage up to € 300m in direct allocations to SMEs in the Western Balkans.⁶⁰ To achieve this goal, the facility will have to overcome difficulties in disbursement caused by the insufficient development of the financial infrastructure.

Selected National Support Programmes

Support Activities by the Czech Export Bank (CEB) and the Export Guarantee and Insurance Company (EGIC)

In 2009 both entities were selected to receive a significant budget increase to finance new economic support measures aimed at forestalling the detrimental effects of the financial crisis on domestic businesses.⁶¹ As a result the CEB engaged in risk sharing measures such as guarantees to commercial banks financing SMEs and direct investment in factoring companies. The EGIC scaled up its insurance funds for export activities to meet increased demand while allowing for a substantial part of its funds to cover SMEs' selected export activities by differentiating between political and commercial risks, with a deductible of only 5% on the latter.⁶² These efforts combined have helped to cover the increased demand for public guarantees and support for financing the exports of SMEs facing an uncertain business environment.

⁵⁹ *Ibid*, p.116

⁶⁰ *WB EDIF Leaflet*

⁶¹ *Financing SMEs and Entrepreneurs 2013: An OECD Scoreboard*, p.88

⁶² *Ibid*, p.89

Hungarian Szechenyi Card Programme sponsored by the AVHGA

From 2002 on the Programme allowed banks to provide SMEs with standardised loans at subsidised interest rates where the standardisation has so far been a major factor driving the success of the Programme as it simplifies the handling of loans for both banks and businesses.⁶³ Furthermore, it provides borrowers with the often needed flexibility that comes with operating an SME: “The main facility in the Programme is an overdraft loan that requires no tangible collateral.”⁶⁴ By 2012 the volume of loans supported by the Programme exceeded € 500m.

4.2.2 Sources of financing, financial situation and financial needs of SMEs in the Danube Region

We analyse the sources of financing, the financial situation and financial needs of SMEs in the Danube Region based on a variety of studies such as the World Bank Enterprise Survey reports, the SMEs’ Access to Finance – Survey 2013 Analytical Report by the EC, the report on Financing SMEs and Entrepreneurs 2013: An OECD Scoreboard and the report of the FIT4SMEs (2011) project on financial facilities for SMEs. With the implementation of the European Small Business Act (SBA) respective annual country factsheets monitoring SMEs performance are published on the behalf of the DG Enterprise and Industry containing indicators on SMEs’ access to finance.

According to the considered studies, the financial aspect is seen as crucial by SMEs in the Danube Region. Missing or difficult access to capital has become the main obstacle preventing the growth and development of these firms. The problem sharpened with the surge of the financial crisis. For many Danube countries it has been mainly a demand crisis, with a drastic drop in demand, started by the end of 2008 and continued during 2009. Due to the decrease of

⁶³ Ibid, p.123

⁶⁴ Ibid, p.123

sales and capacity utilisation, SMEs draw on the already limited internal funds to finance their working capital and increase the level of debt.⁶⁵

When asked in 2009 for the most pressing problem currently facing their firm 17.6% of SMEs' managers in the Danube Region and 16.8% of SMEs' managers in the EU-27 cited access to finance (see Figure 88). According to the managers the access to finance worsened in the Danube Region and improved in the EU-27 in 2011. However, the access to finance seems to improve in the Danube Region in 2013. The percentage of SMEs' managers reporting access to finance as their firm's most pressing problem in 2013 was virtually the same for the Danube Region and EU-28⁶⁶ – about 15.4%. The financing problem is placed alongside two other important issues that companies face - competition and finding customers.⁶⁷ These results are in line with the Enterprise Surveys conducted by the World Bank which provide evidence that in 2009 about 23% of SMEs in the Danube Region (excluding Austria, Germany and Croatia) identified access to finance as a major constraint.⁶⁸

Generally speaking, loans are the main source of external SME finance and loan schemes, especially guarantees, tend to have a much larger impact in terms of the number of firms affected. Venture capital and similar schemes are much more restricted. Other sources of finance such as private placements, listings on the regulated exchanges or issuing of bonds are not usually available for by far the majority of SMEs. However, there is some research evidence that there is a lack of awareness among SMEs about opportunities in debt capital markets which could be a way to diversify funding sources.

According to the CEE Financial Market Survey conducted by ZEW and Erste Group Bank AG Vienna credit financing is very important for about 87% of the SMEs (see Figure 89). While credit financing is the only available corporate

⁶⁵ FIT4SMEs: Financial Facilities for SMEs

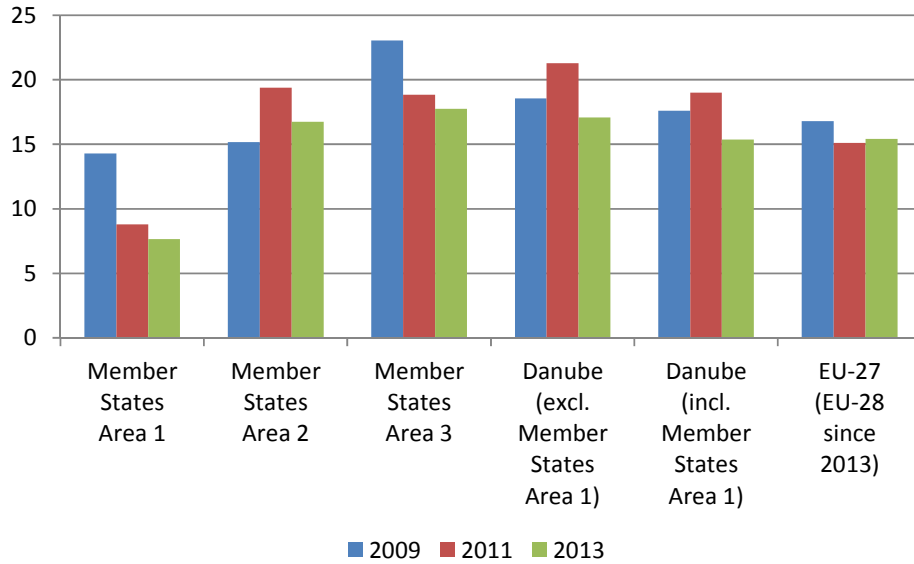
⁶⁶ EU refers to EU-27 before 01.07.2013 and to EU-28 (incl. Croatia) since 01.07.2013.

⁶⁷ EC (2011) SMEs' Access to Finance.

⁶⁸ Enterprise Surveys, The World Bank.

financing option for 66% of the small-caps, only 3.2% of the large-cap companies indicate bank loans as the only available capital source.

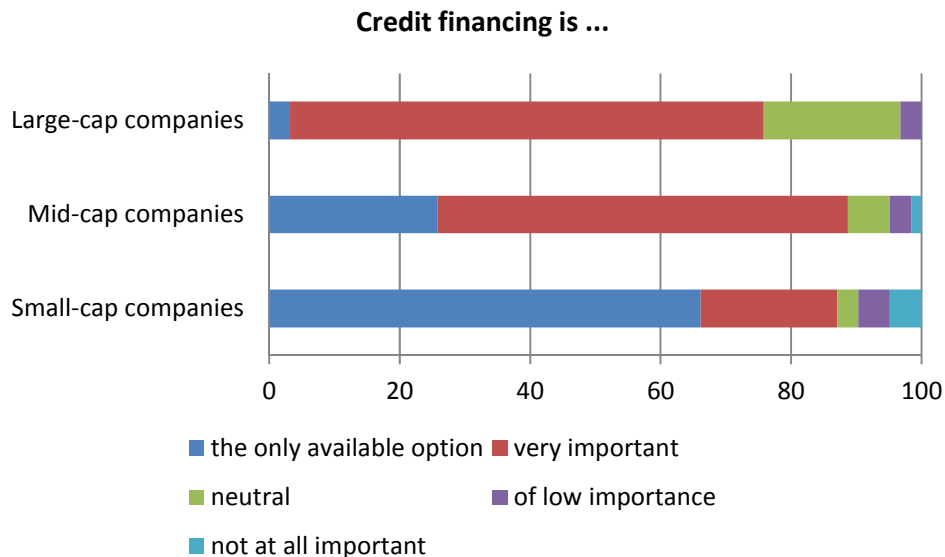
Figure 88: Most pressing problem – access to finance 2009-2013 (in %)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR.

Source: SMEs' Access to Finance-Survey 2013. Calculation and illustration: ZEW.

Figure 89: Importance of credit financing



Source: CEE Financial Market Survey, Special Question July 2011. Calculation and illustration: ZEW.

To address the question on how firms finance their operations, we use indicators similar to those presented in the Enterprise Surveys of the World Bank and the SMEs' Access to Finance – Survey 2013 Analytical Report by the EC. The first set of indicators compares the relative use of various sources to finance investment such as internal funds, bank loans and grants. Excessive reliance on internal funds is a sign of potentially inefficient financial intermediation or a limited access of firms to capital.

The second set of indicators measures the use of external financing by individual firms. It presents the percentage of working capital that is financed by external sources to the firm, and a measure of the burden imposed by loan requirements measured by collateral levels relative to the value of the loans. The third set of indicators focuses on the access to external financing as the willingness of banks to provide loans, the terms and conditions of bank financing or the access to public financial support.⁶⁹

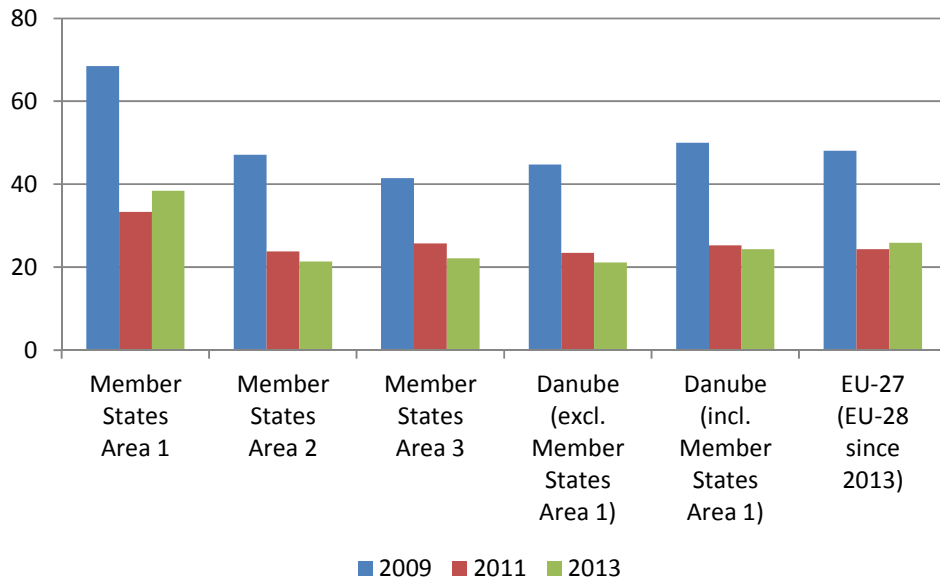
Where possible we compare the indicators for the Danube Region to the EU indicators. A set of selected indicators is presented below.

When looking at the recent sources of financing in the last six months (see Figure 90), SMEs most often used external financing. Only 24% of the SMEs in the Danube Region and 26% of the SMEs located in the EU used internal funds in 2013. Comparisons with the 2009 survey show that there had been a strong drop of the proportion of SMEs using internal funds especially for the Danube Region. In 2009, 50% of the SMEs located in the Danube Region and 48% of the SMEs located in the EU used internal financing.

When focusing on the usage of bank loans the percentage of firms in the Danube Region increased from 40% in 2009 through 55% in 2011 to 51% in 2013 (see Figure 91). The respective development in the EU was much slighter - from 47% in 2009 to 50% in 2011 and 2013. Between 2009 and 2013 the Member States Area 2 and Member States Area 3 experienced the strongest increase in loans – growth levels of 11 percentage points for both groups.

⁶⁹ *World Bank Enterprise Survey report (2013)*

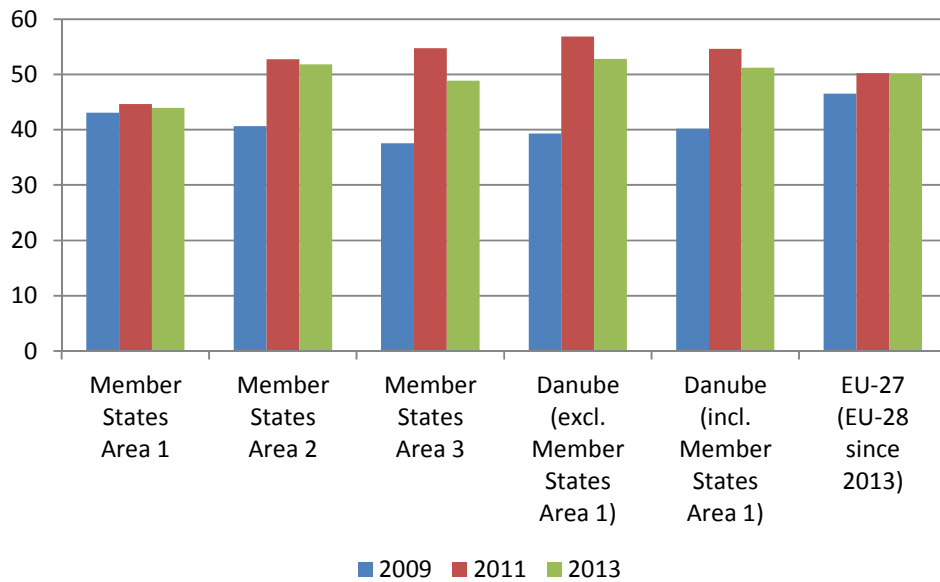
Figure 90: Usage of internal funds 2009-2013 (in %)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR.

Source: SMEs' Access to Finance-Survey 2013. Calculation and illustration: ZEW.

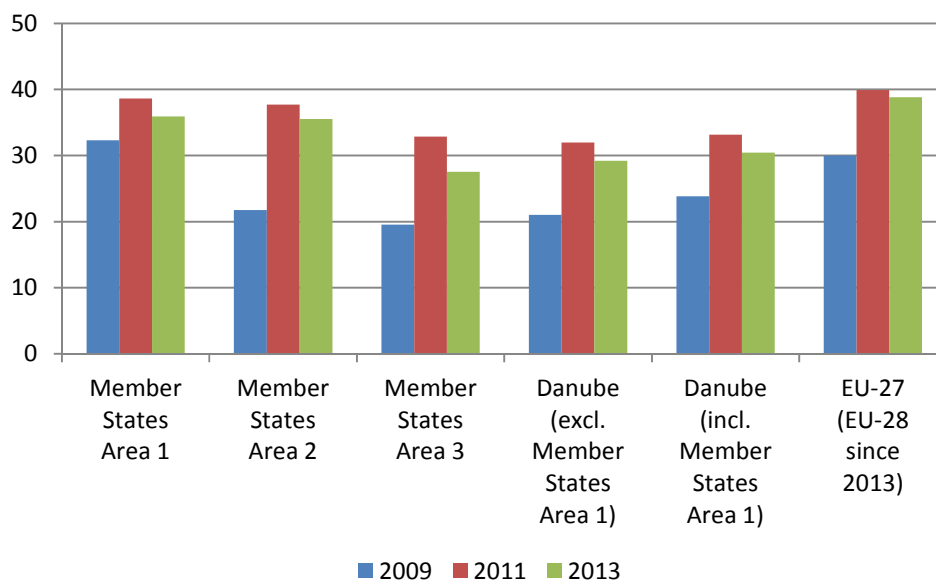
Figure 91: SMEs taking out a loan in last two years 2009-2013 (in %)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR.

Source: SMEs' Access to Finance-Survey 2013. Calculation and illustration: ZEW.

Figure 92: Use of bank overdraft, credit line or credit cards overdraft 2009-2013 (in %)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR.

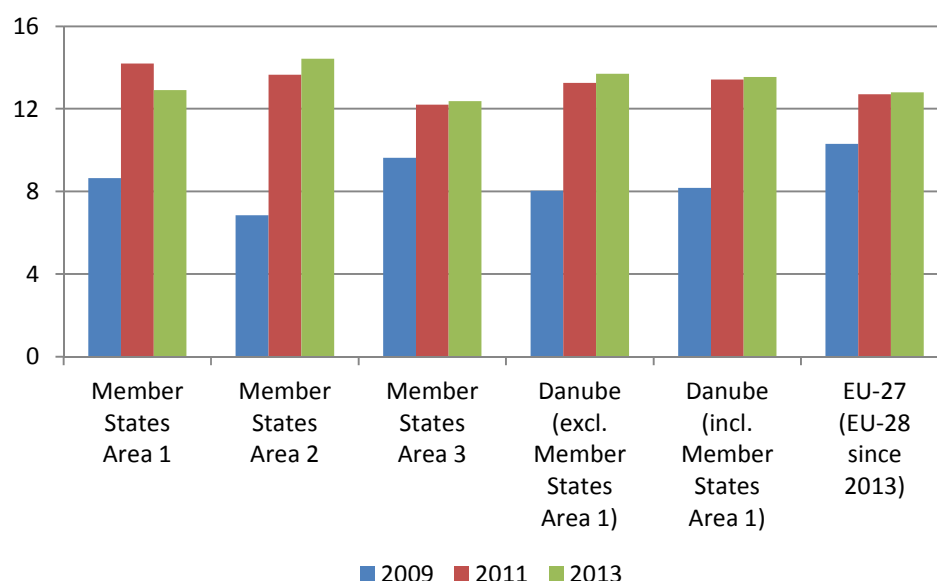
Source: SMEs' Access to Finance-Survey 2013. Calculation and illustration: ZEW.

The studies show that there has been an increase in the use of bank overdraft, credit line or credit cards overdraft in the Danube Region and in the EU since 2009 (see Figure 92). In 2013 30% of SMEs in the Danube Region and 39% of SMEs in the EU used bank overdraft, credit line or credit cards overdraft in the past six months which is a significant increase compared to the levels in 2009 (24% in the Danube Region and 30% in the EU).

The use of grants or subsidised bank loans increased from 8% in 2009 to 14% in 2013 in the Danube Region. The respective development in the EU was from 10% in 2009 to 13% in 2013. The countries of the Member States Area 2 achieved the largest increase of SMEs' managers reporting the usage of grants or subsidised bank loans (from 7% in 2009 to 14% in 2011 and 2013).

Although SMEs' financing constraints such as access to public finance and willingness of banks to provide a loan are still among the major challenges facing SMEs' managers, these indicators showed a strong gradual improvement since 2009.

Figure 93: Use of grants or subsidised bank loans 2009-2013 (in %)



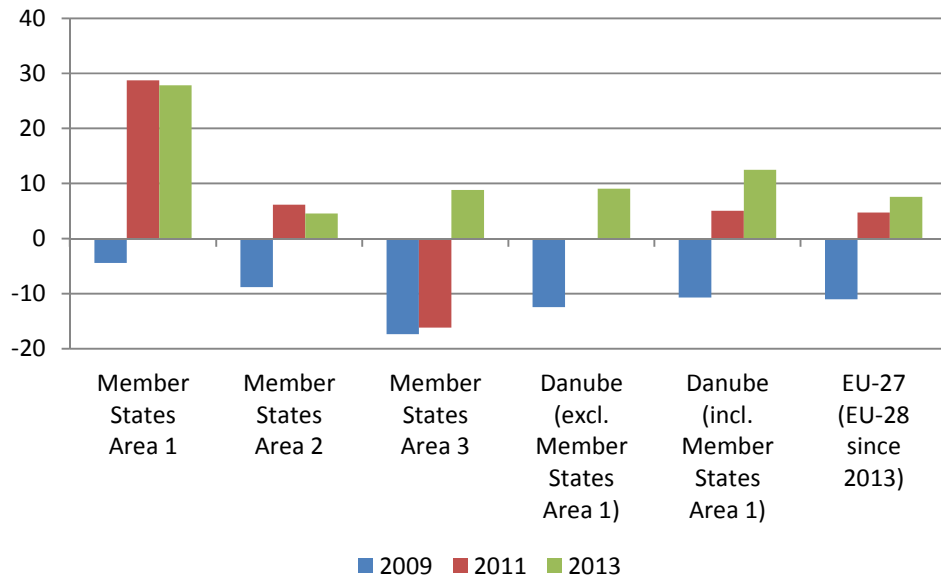
Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR;

Source: SMEs' Access to Finance- Survey 2013. Calculation and illustration: ZEW.

While the average size of firms' own capital in SMEs had decreased by 11% in both the Danube Region and the EU in 2009, it increased respectively by 12% and 8% in 2013 (see Figure 94). Based on the data, the growth of firms' own capital is significantly reviving from its negative 2009-values for all Member State groups. SMEs' managers from Member States Area 1 reported in 2013 the largest increase (28%) in firms' own capital.

When asked in 2013 to give an opinion as to whether access to public financial support including guarantees had changed in the past six months (see Figure 95), the overall net balance of opinion for the Danube Region and the EU was that the situation had worsened (-13%). However, there is an improvement compared to the much more negative values in 2009 (-24% for the Danube Region and -20% for the EU). The improvement for the Danube Region is mainly explained by improvements of the indicator in the countries of the Member States Area 3 from -38% in 2009 to -9% in 2013 – the largest increase among all Member States Areas.

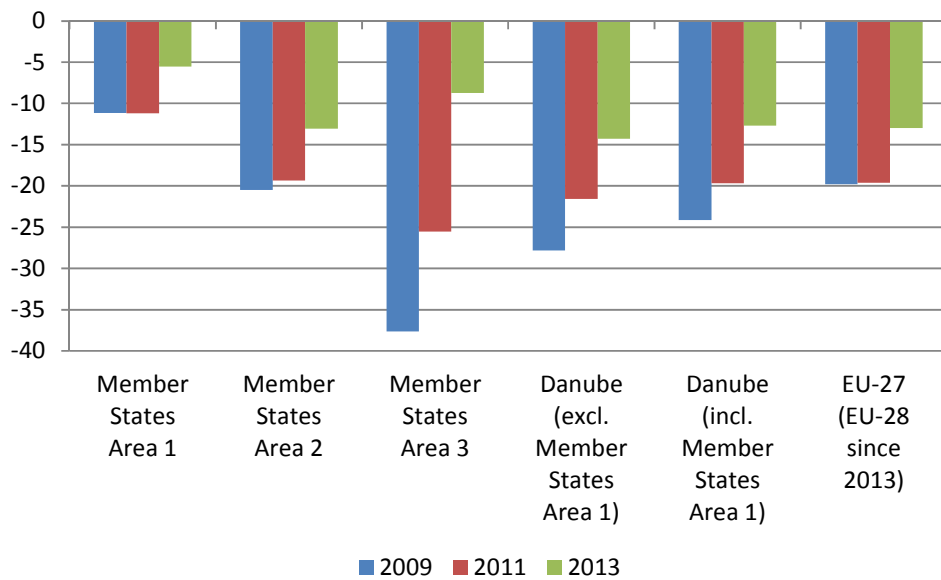
Figure 94: Change of firms' own capital 2009-2013 (in %)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR.

Source: SMEs' Access to Finance-Survey 2013. Calculation and illustration: ZEW.

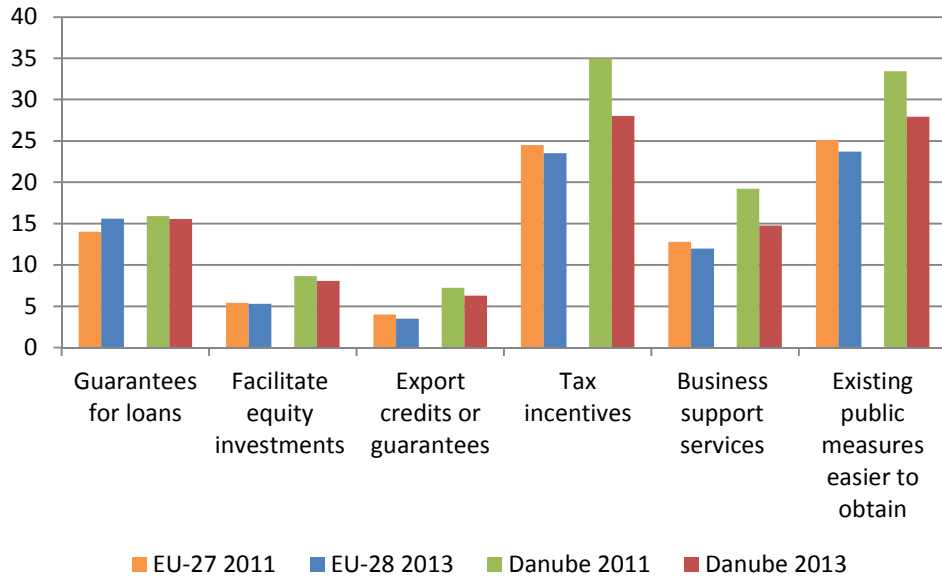
Figure 95: Net change of access to public financial support incl. guarantees 2009-2013 (in %)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR

Source: SMEs' Access to Finance-Survey 2013. Calculation and illustration: ZEW.

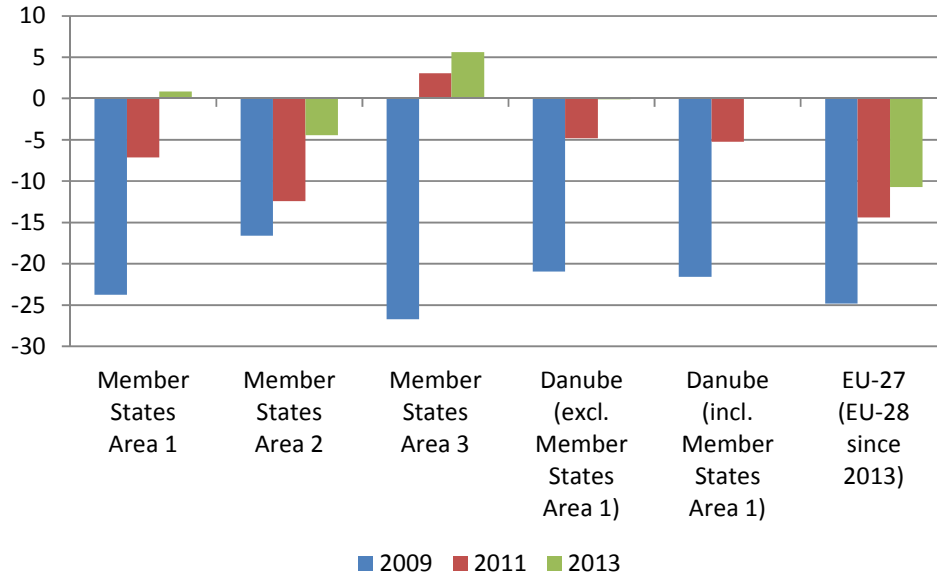
Figure 96: Most important factors for future company’s financing 2011 and 2013



Source: SMEs’ Access to Finance-Survey 2013. Calculation and illustration: ZEW.

In this context, in 2013 managers across the Danube Region and the EU rated “making existing public measures easier to obtain” (for example through the reduction of administrative burdens) and “tax incentives” as the two most important measures, when asked to rate the importance of a number of different mechanisms to help their company’s financing in the future (see Figure 96). They were followed by “guarantees for loans” and “business support services”. Although there is a reduction in the level of importance of all factors since 2009, more managers of SMEs in the Danube Region than of EU firms consider the factors to be important (except for “guarantees for loans”) for both years.

Figure 97: Change of the willingness of banks to provide a loan

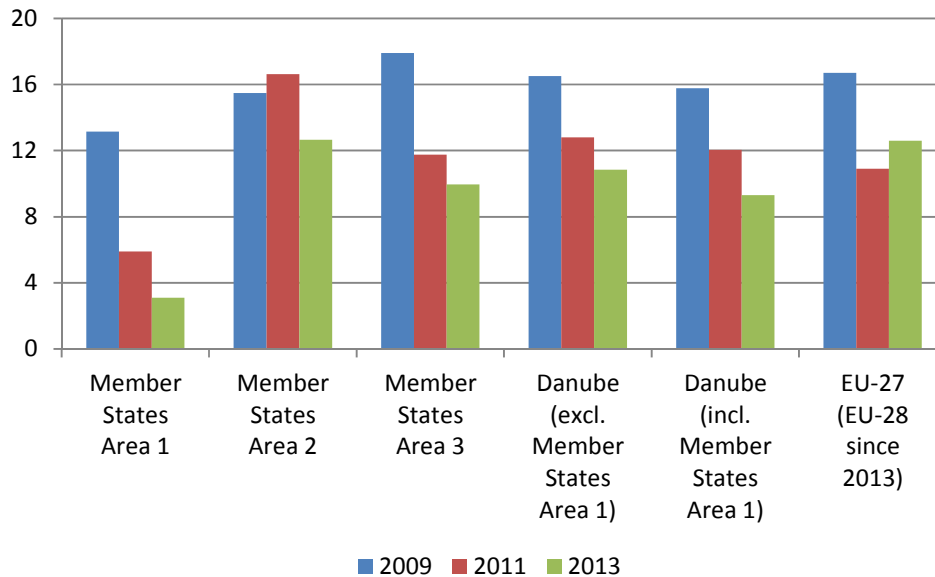


Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR.

Source: SMEs' Access to Finance-Survey 2013. Calculation and illustration: ZEW.

For the considered years, the change in banks' willingness to provide a loan was more positive for firms located in the Danube Region (-22% in 2009 and 0.1% in 2013) when compared to firms in the EU (-25% in 2009 and -11% in 2013, see Figure 97). The main contributor to the positive change in the Danube Region in 2013 was the Member States Area 3 with a positive change in the willingness of banks to provide a loan of 6% (a significant increase from its negative level of -27% in 2009).

Figure 98: Rejection on bank loan (new or renewal excluding overdraft and credit lines) 2009-2013 (in %)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR.

Source: SMEs' Access to Finance-Survey 2013. Calculation and illustration: ZEW.

In total, in both years SMEs' managers reported less bank loan rejections in the Danube Region (16% in 2009 and 9% in 2013) in comparison to the EU (17% in 2009 and 13% in 2013) (Figure 98). The largest change was presented by SMEs of the Member States Area 1, where only 3% of SMEs' managers reported their bank loan being rejected in 2013 compared to 13% in 2009.

For the indicators in the database, we used also further data from the above mentioned surveys and from other available studies. These studies provide specific data on the sources and structure of SME financing as well as their experiences with external financing and expectations on future financing. Additionally, regional expert interviews will be held in 2014. The interviews will cover questions regarding the financing needs of SMEs in the region and the perceived barriers to adequate finance.

4.3 Regulation and Institutions

4.3.1 Economic Freedom

Economic freedom is an essential precondition for an efficient and functional economy. Countries with a higher level of economic freedom tend to outperform others in terms of economic growth, per-capita income, poverty reduction and overall well-being.⁷⁰ Therefore, it is important to assess the current level of economic freedom in the Danube Region. We base our assessment on the “Index of Economic Freedom”, an index and ranking compiled by the Heritage Foundation, a conservative think tank, and The Wall Street Journal since 1995.⁷¹ These institutions define economic freedom as a situation in which “governments allow labour, capital and goods to move freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself”.⁷² The Index of Economic Freedom includes ten different sub-categories of economic freedom and thus provides a comprehensive perspective. Some aspects of economic freedom, such as property rights or trade freedom are especially important for the performance of SMEs. There are alternative indicators of economic freedom, like the “Economic Freedom of the World” annual report of the Fraser Institute. However, we prefer the Heritage Foundation’s measure for two reasons. First, it covers a wider range of countries. Second, it does not use data from the “Global Competitiveness Report”, which has been used in other chapters of this report, and thus constitutes an independent data source.

Table 9 gives an overview of the ten sub-categories of economic freedom and an overall score for the whole Danube Region. Regarding the total score, which is the average value of all single indicators, only countries of Member States Area 1 can be regarded as a “mostly free” area. The remainder of the

⁷⁰Doucouliagos and Ali (2012)

⁷¹ The use of economic freedom indexes has sometimes been criticized, on the grounds that the indexes include subjective judgments and inconsistencies. See, for instance, Hansons (2003)

⁷² The Heritage Foundation (2014), About the Index – Frequently Asked Questions.

Danube Region is only “moderately free”, and Neighbouring Countries are even rated as “mostly unfree”.

Table 9: Economic Freedom in the Danube Region 2015

Indicator/Category	Member States Area 1	Member States Area 2	Member States Area 3	Accession Countries	Neighb. Countries
Property Rights	90	60	37	35	30
Freedom from Corruption	75	52	44	43	30
Fiscal Freedom	57	75	84	86	82
Government Spending	33	30	58	30	40
Business Freedom	85	73	65	63	63
Labour Freedom	60	66	63	70	44
Monetary Freedom	81	79	80	79	77
Trade Freedom	88	88	88	83	83
Investment Freedom	90	76	75	70	33
Financial Freedom	70	68	57	53	40
Overall Score	72.9 (+2.2)	67 (-0.1)	65 (+4.0)	61.3 (+5.3)	52.2 (+0.3)
Overall Score whole Danube Region	64.6 (+2.3)				
Economic Freedom Score: 80-100 Free; 70-79.9: Mostly Free; 60-69.9: Moderately Free; 50-59.9: Mostly Unfree; 0-49.9: Repressed					

Notes: **Red (-)**: Decrease in Score since 2009; **Green (+)**: Improvement in Score since 2009. Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: Heritage Foundation (2015). Calculation and illustration: IAW.

Concerning the sub-categories, the protection of property rights varies strongly between the Danube states, with a high ranking for the countries of Member States Area 1 only. The level of government spending, which represents the share of GDP allocated by government and not by the market, differs among the Danube Region; a high index corresponding to a low share of gov-

ernment spending is obtained only for the countries within the Member States Area 3.⁷³ Regarding labour freedom, a measure of the regulatory burden on the labour market, the countries of Member States Area 2 and 3 and the Accession Countries have mostly free markets, while the three Member State Areas are all moderately free. The Neighbouring Countries have stringent regulation and are therefore rated as repressed. By contrast, trade freedom and monetary freedom are guaranteed in all countries of the Danube area.

The changes in the Economic Freedom Index since 2009, the earliest year for which data are available for all countries, suggest that economic freedom in the Danube Region has moderately increased; however, the development differs between countries. The Accession Countries have improved their overall score from “mostly unfree” to “moderately free”. The overall score also rose in the countries of Member States Area 1 and 3. By contrast, economic freedom stagnated in the other country groups. Member States Area 2 even showed a slight decrease of 0.1 index points from 2009 to 2015, while the Neighbouring Countries only accounted for a slight increase of 0.3 index points to a 52.2 overall score, which is still close to “repressed”. Thus, we observe a divergence in economic freedom in the EU and Accession Countries, on the one hand, and in the Neighbouring Countries, on the other.

4.3.2 Corruption

4.3.2.1 Data description

There is a variety of definitions of corruption. We follow the United Nations and define corruption as “*an abuse of (public) power for private gain that hampers the public interest*”.⁷⁴ Although no measurement of corruption is universally accepted, three are most commonly used: The “Corruption Perception Index” (CPI) by Transparency International, the “Control of Corruption” by the World Bank and “Irregular Pays and Bribes”, a part of the World Competi-

⁷³ For detailed information regarding the used data see Annex Figure 18.

⁷⁴ United Nations Manual on Anti-Corruption Policy (2001)

tiveness Report.⁷⁵ Among these data sources, we use the “Control of Corruption” Indicator by the World Bank as our main reference because it includes the broadest definition of corruption and uses the largest number of (methodologically) different sources.⁷⁶ In spite of the refined measurement, some caution is needed when interpreting the results. Most of the indicators measure “experienced corruption” as gathered in a survey; thus, the result is subjective and might deviate from the actual level of corruption. Therefore, the exact numbers should not be overstressed, but rather be used to identify patterns and broad differences.

4.3.2.2 Corruption in the Danube Region

Corruption is “one of the most widespread and insidious evils”.⁷⁷ According to the EC, around € 120bn each year are lost due to corruption in the EU.⁷⁸ While the Danube Region includes countries that are least affected by corruption worldwide, corruption poses a very serious concern for a large part of the region.

Figure 99 contains results from the “Worldwide Governance Indicators” of the World Bank. The values are given as percentile ranks; a percentile rank of 100 means that the country is the top performer worldwide while a percentile rank of 50 means that the country is at the median position (50% of countries are at least as good and 50% are below).

The percentile ranks of the Danube countries vary from just 18 to over 90. The Danube average is far below the OECD and EU-28 averages. The low overall performance is due to the weak position of the Accession countries and the countries of Member States Area 3 on the one hand; their performance is comparable to countries such as Ghana, Kuwait or Tunisia. On the other hand, the Neighbouring Countries are substantially lagging behind all other country

⁷⁵ The correlation between the measures is very strong. see “Global comparative trend analysis” p. 7

⁷⁶ United Nations Manual on Anti-Corruption Policy (2001)

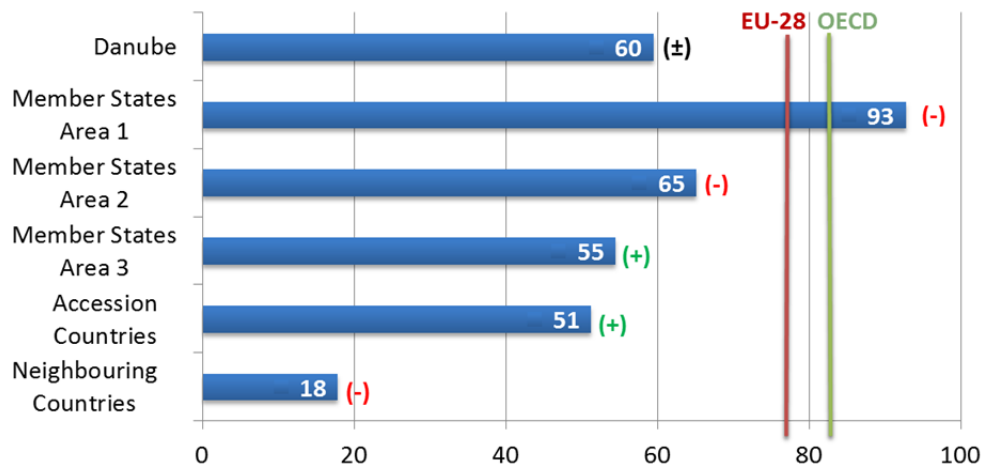
⁷⁷ GRECO (2014), The Fight against Corruption: A Priority for the Council of Europe.

⁷⁸ European Commission (2014), EU Anti-Corruption Report, p.3.

groups of the Danube Region and their performance is roughly comparable to countries like Pakistan and Honduras. Although, as mentioned before, the precision of the data should not be overestimated, it is evident that the large differences cannot be explained by bad measurement only.

Since 2002, only the countries of Member States Area 3 and the Accession Countries and have improved their ranking while the average ranking of the other groups has declined. Similar to economic freedom, there is some indication of a divergence between Accession Countries and Neighbouring Countries.

Figure 99: Control of Corruption for Danube Regions 2013 (percentile world rank)



Notes: Change in comparison with 2002 in brackets. (+) positive development, (-) negative development, (±) no change.

Source: World Governance Indicators (2014 and 2003, referring to the years 2013 and 2002). Calculation and illustration: IAW

4.3.2.3 Corruption and SMEs

While corruption is a business constraint for firms of all sizes, it poses particular problems for SMEs. Indeed, the smaller the size of the firm, the more likely is it affected by corruption. Small companies tend to be asked more often for a

bribe, spend a larger share of their annual revenues for bribes and consequently view corruption more frequently as a “major business obstacle”.⁷⁹

Reasons for the more adverse role of corruption for SMEs include the lack of bargaining power to oppose requests of irregular payments, the greater degree of informality in SME structure, a focus on the short as opposed to the long term, limited financial resources and less attention by the public. The most common form of corruption affecting SMEs is bribery, but there are others. Bribery can take place between the private sector or when dealing with the public sector, e.g. to obtain licenses or grants.

In this section, we use the Enterprise Survey (2013) by the World Bank, a survey conducted among manufacturing firms which are, to a large part, SMEs. Data for Germany and Austria is insufficient; hence, we exclude the countries of Member States Area 1 and do not report averages for the whole Danube Region.

Respondents’ perceptions (Table 10) vary greatly across the Danube Region. The extent of bribery varies from 2.6% of companies affected in the countries of Member States Area 2 to 40.7% in the Neighbouring Countries, with the Accession Countries and the countries of Member States Area 3 in between. A similar ranking is obtained with respect to bribing public officials. All in all, more than a third (37.8%) of the respondents from the Neighbouring Countries identify corruption as a major constraint, which is more than double the percentage obtained in countries of Member States Area 2 and the Accession Countries. It is noteworthy that the countries of Member States Area 3 are trailing well behind not only the countries of Member States Area 2, but also behind the Accession Countries with respect to all corruption measures except bribery incidence.

⁷⁹ The following results are taken from “Corruption prevention to foster small and medium-sized enterprise development. Volume I”, UNIDO, UNODC (2007).

Table 10: Impact of corruption on businesses 2013

Indicator/ Category	Member States Area 2	Member States Area 3	Acc. Countries	Neighb. Countries	World
% of firms identifying corruption as a major constraint	14.5 (-0.1)	30.9 (+0.6)	18.0	37.8 (+9.5)	35.2
% of firms expected to give gifts to public officials "to get things done"	19.7 (-18.6)	16.7 (-26.4)	11.8	44.75 (-10.7)	19.7
Bribery incidence (% of firms experiencing at least one bribe payment request)	2.6	7.5	11.9	40.7	18.1

Notes: **Red (-)**: Decrease in Score since 2002; **Green (+)**: Improvement in Score since 2002. Data were not available for Germany and Austria. Values in brackets indicate change compared to 2002; these are reported only if sufficient data was available. Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA. Source: Enterprise Survey (2013), World Bank. Calculation and illustration: IAW.

Not all of the indicators could be observed in earlier periods. Some improvements were made with respect to the percentage of firms expected to give a gift "to get things done", which has decreased strongly since 2002, in particular in the Member States Area 3. However, the share of companies viewing corruption as a major constraint slightly increased during the same period, suggesting that other forms of corruption than bribery are becoming more widespread.

An important conclusion from the literature is that improving the overall business environment of SMEs helps them to withstand corruption.⁸⁰ This includes, among others⁸¹, reducing red tape, liberalising trade, improving access to financing and better involvement in public procurement. These issues will be the focus of chapter 3.3.

⁸⁰ "Corruption prevention to foster small and medium-sized enterprise development. Volume I", UNIDO, UNODC (2007)

⁸¹ Mungiu-Pippidi, Alina (2013)

4.3.2.4 Anti-corruption policies

Good governance has become a focus not only in developing countries but all over the world and many countries have engaged in initiatives to combat corruption at the national and international level. At the international level, an important step was the “United Nations Convention against Corruption” (UNCAC)⁸² adopted in 2003 and signed by all Danube countries. Until now it has been ratified by all but the Czech Republic and Germany.⁸³ Additionally, the OECD members have signed the “OECD Recommendation for Further Combating Bribery of Foreign Public Officials in International Business Transactions” in 2009. These initiatives acknowledge that corruption is a multidimensional phenomenon that requires cooperative action and consultation.

At the European level, a major step was the setting up the “Group of States against Corruption” (GRECO) in 1999, which currently has 49 members including all Danube countries. The GRECO mainly works by setting European norms and standards, initiating technical co-operation programmes, monitoring the compliance with the standards and offering capacity building to individual countries and regions. Apart from that, GRECO has launched information campaigns and offers legal advice, implemented special anti-corruption projects, and strengthened institutional mechanisms as well as civil organisations. According to the GRECO evaluation report, the overall compliance was satisfactory. By 2012, 78% of member states had fully adopted the recommendations and 98% had at least partly adopted them.⁸⁴

In 2011, the EC launched an initiative to monitor the progress made on reducing corruption by means of an “EU Anti-Corruption Report”. The first report will be published later in 2013 and will give a reflection of the achievements, vulnerabilities, and commitments of all member states including their weaknesses that need to be addressed.

⁸² UN General Assembly resolution 58/4 (2003)

⁸³ UNODC (2013), United Nations Convention against Corruption.

⁸⁴ Greco: Thirteenth General Activity Report (2012)

Some countries take also part in regional initiatives like the “Regional Anti-corruption Initiative (RAI)”⁸⁵, a framework to tackle corruption in South-Eastern Europe. Seven out of the nine members are part of the Danube Region: Bosnia and Herzegovina, Bulgaria, Croatia, Moldova, Montenegro, Romania and Serbia. Additionally, Ukraine also takes part in the “OECD Anti-Corruption Network for Eastern Europe and Central Asia (ACN)”⁸⁶ which, with the “Istanbul Action Plan”, has set guidelines to coordinate action against corruption.

Still the feedback from these initiatives is mixed. While obviously plenty of actions have been taken, not all evaluations are positive and many stress the need to intensify policy effort. The EC stated that:

“The implementation of the anti-corruption legal framework remains uneven among EU Member States and unsatisfactory overall. The EU anti-corruption legislation is not transposed in all Member States. Some countries have not ratified the most important international anti-corruption instruments. More importantly, even where anti-corruption institutions and legislation are in place its enforcement is often insufficient in practice.”⁸⁷

Similarly the RAI Report states that *“despite considerable progress, the current situation is still challenging. In some cases, institutions/agencies are very recently established or under process of being established; in other cases, national systems still present several loopholes and weaknesses. Since the European Report on Corruption is not yet published, until now for most countries we are interested in there lacks a clear way to assess the effect of these policy efforts. This holds true especially since the guidelines in the various programmes do not formulate any quantifiable targets.”⁸⁸*

⁸⁵ Before 2007 named „Stability Pact Anti-Corruption Initiative (SPAI)“

⁸⁶ OECD (2013), Anti-corruption Reforms in Eastern Europe and Central Asia – Progress and Challenges, 2009-2013.

⁸⁷ Brussels, 6.6.2011 COM(2011) 308 final

⁸⁸ Rules and experiences on integrity issues (2012)

The evidence presented in this chapter does not point to noteworthy improvements in the control of corruption. However, considering that many initiatives have been started only recently, this negative finding may be due to the fact that the actions need more time to unleash their full effects.⁸⁹

4.3.2.5 Conclusion

Corruption is a serious issue for at least a part of the region. This has long been recognised and addressed by policymakers, but national policies have proved to be insufficient. Recently, the issue is also systematically addressed at a supranational level. Although much effort has been taken, there is no clear evidence of an improvement yet.

4.3.3 Regulation for SMEs

Due to their importance for the Danube economy, responsive regulation should address the most pressing issues for SMEs.

A central policy concern in this area is cutting “red tape”. A literature survey by the EC estimated that the regulatory burden in terms of cost and time for SMEs is 4 to 10 times higher than for large companies.⁹⁰ This can lead to competitive disadvantages, both in comparison with larger firms, which can bear the administrative burden more easily, and with foreign firms, producing in countries with less complex requirements. The aim of SME regulation should be to minimise this burden.

One major advance in this respect was “The European Charter for Small Enterprises” in 2000 which committed the member states to the implementation of ten principles⁹¹ easing the regulatory and legal environment for SMEs. This engagement was extended to the “Small Business Act for Europe”⁹² in 2008

⁸⁹ Corruption indicators, especially those based on perceptions, typically change very slowly over time. See „A Users’Guide to Measuring Corruption“ UNDP (2008).

⁹⁰ „Models to reduce the disproportionate regulatory burden on SMEs“ (2007).

⁹¹ European Charter for small enterprises.

⁹² Brussels, 25.6.2008COM(2008) 394 final.

and incorporated in the general “Europe 2020”⁹³ strategy. Croatia, Montenegro, Bosnia and Herzegovina and Serbia joined the Act in 2003.⁹⁴ With the “Eastern Partnership”⁹⁵ programme launched in 2009, Moldova and Ukraine, and thus the complete Danube Region, also take part in the programme.

Subsequently, all countries have developed own strategies for the implementation of these principles. The main question therefore is which effect the policies have had up to now and where there is still need for improvement.

In the final version of the study, we will analyse the regulatory efforts in the region with special regard to these supranational frameworks. As laid out in the tender report, we will analyse conditions for market entry and burden of bureaucracy, restrictions on foreign trade, strength of intellectual property rights (namely patents), labour regulation (e.g. employment protection), and participation in public procurement. While we have collected most of the data, we are still working on the research of legislative developments. In this report, we only present the first part regarding market entry.

4.3.3.1 Market Entry

The Danube Action Plan demanded “to prioritise the effective implementation of measures provided for under the Small Business Act for Europe.”⁹⁶ It refers specifically to “administrative simplification for starting a business, for obtaining business licenses or for filing for bankruptcy”⁹⁷, which is part of Principle IV “Responsive Administration”. A description of all policies realised goes beyond the aim of this report and has been done elsewhere.⁹⁸ The most important

⁹³ Brussels, 3.3.2010 COM(2010) 2020

⁹⁴ „SME Policy Index: Report on the Implementation of the European Charter for Small Enterprises in the Western Balkans“ (2007) p. 14

⁹⁵ Communication from the Commission to the European Parliament and the Council - Eastern Partnership {SEC(2008) 2974} /* COM/2008/0823 final */

⁹⁶ Brussels, 8.12.2010 SEC(2010) 1489 final, p.68.

⁹⁷ Brussels, 8.12.2010 SEC(2010) 1489 final, p.68.

⁹⁸ European Commission (2014), DG Enterprise and Industry or World bank (2014), Doing Business, Business Reform Summaries.

reforms are the implementation of one-stop shops,⁹⁹ reducing registration fees, promoting eGovernment to make information and registration accessible online, using single identification numbers or applying the silence-is-consent principle.¹⁰⁰ The aim is to make the process of registration less complex and require overall less time and money.

The following analysis is based on the progress reports by the EC.¹⁰¹ As for the licensing process, the EU set concrete aims "to reduce the start-up time for new enterprises to 3 days and the cost to €100 by 2012" as well as to introduce fully functional "one-stop shops".¹⁰² Table 11 shows the number of countries fulfilling these objectives in 2012.

Unfortunately, the exact and updated data is not yet available for all countries.¹⁰³ However, taking the data for what it is, we can see that in each category roughly half of the countries have completed their objectives (For individual country performances see Annex Table 24). Partial fulfilment is not counted in the table; for instance, all Danube countries have introduced some sort of one-stop shop. The requirement is still regarded as not met for some countries because the agency does not fulfil all functions or is limited in its geographic scope.

By 2012 only Slovenia and Romania had met all three objectives. As only three countries in the EU had met these ambitious aims, the Danube countries do

⁹⁹ One-stop-shops are special agencies where entrepreneurs can file all documents necessary for company registration in a single place.

¹⁰⁰ "SME Index Western Balkans"

¹⁰¹ "SBA Factsheets", "SME Policy Index" and European Commission (2011), Business Dynamics: Start-ups, Business Transfers and Bankruptcy.

¹⁰² DG Enterprise and Industry of the European Commission (2014), Simplification of start-up procedures.

¹⁰³ For Table 11 we use data by the European "SME Performance Review" as well as data from "SME Policy Index" which use different methodologies. For example, the „SME Policy Index“ uses only a scale of five levels for the cost variable, while the "SME Performance Review" uses values in Euro. Also the definition of a "fully functional one-stop-shop" appears to differ slightly. We have requested the data and for now indicated the values in doubt with the yellow circle.

not performs worse than countries from other regions. The number of completed targets in the region is roughly at the same level as in EU-27.¹⁰⁴

Table 11: Danube Completion of EU targets by 2012

Country	Time	Costs	One-stop Shop ¹⁰⁵
DE	✗	✗	✗
AT	✗	✗	✓
HU	✓	✓	✗
CZ	✗	✗	✗
SK	✗	✗	✗
SI	✓	✓	✓
BG	✗	✗	✓
RO	✓	✓	✓
HR	0	✓	0
RS	0	✓	0
BA	0	✗	✗
ME	0	✓	0
MD	0	✓	0
UA	✗	✗	0

Explanation of Symbols:

- ✓ : Criterion was fully met
- ✗ : Criterion was not fully met
- 0 : Unclear whether criteria was met¹⁰⁶

Source: SME Performance Review (2012), SME Policy Index (2012), Calculation and illustration: IAW

¹⁰⁴ For comparison see European Commission (2011), Business Dynamics: Start-ups, Business Transfers and Bankruptcy.

¹⁰⁵ „A fully functional one-stop-shop”.

¹⁰⁶ For time yellow means: between 1 to 5 days. For one-stop-shop it means „OSS for business registration operates on the basis of multiple windows in one location or with a limited geographic scope”

4.3.3.2 Obstacles for starting a business from the “Doing Business Report”

In the next section, we use the data of the “Doing Business Report” by the World Bank, which contains measures of the regulatory burden on SMEs and has a number of unique features. The indicators do not only cover the licensing process but the whole registration formalities and thus give a more complete picture. Additionally the data incorporates many years and a large set of countries.

Table 12 shows the average world rank for the Danube Region, OECD, EU-15, EU-28 and the USA in the category “Starting a Business”. Out of the 188 countries in the report, the region takes an average rank of 76, which is well behind the benchmark regions (see Annex Table 24 for country rankings).

Table 12: Average World Rank in 2014 in the category „Starting a Business“

Danube	OECD	EU-15	EU-28	USA
76 (+)	47 (+)	46 (+)	53 (+)	46 (-)

Notes: Green (+) means improvement, Red (-) means decline compared to 2013.

Source: Doing Business (2015). Calculation and illustration: IAW.

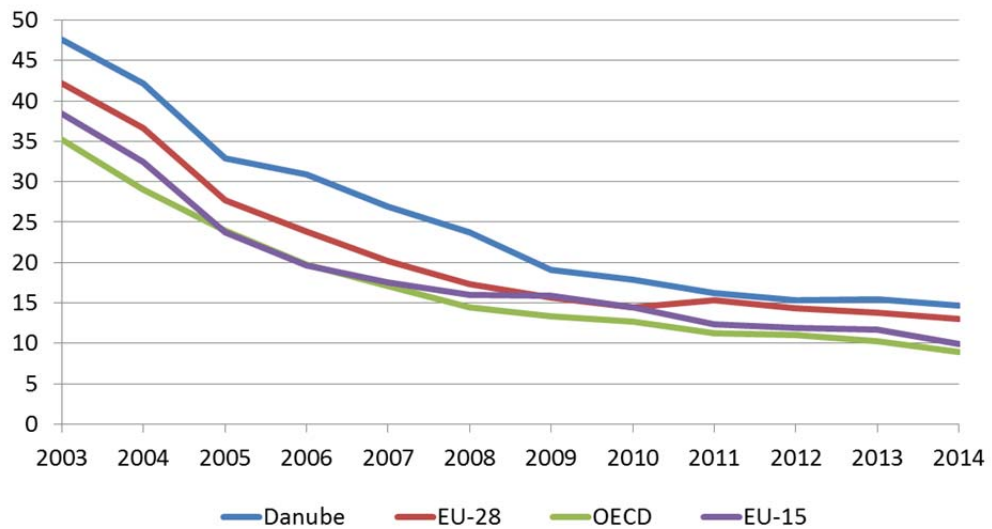
To obtain a more detailed picture, we look at two standard indicators to measure the ease of starting a business: the time and cost. As several studies¹⁰⁷ illustrate, reducing the time and the cost of these procedures is connected with a higher market entry rate as well as more employment, higher profits of existing firms and smaller size of the informal sector.

The objective of the Europe 2020 plan is to reduce the time required for the entire licensing process to one month, i.e. 30 days by 2015.¹⁰⁸ As can be seen from Figure 100, the procedures were still lengthy in 2003. It took on average 48 days which was 13 days above the OECD average. At the same time, the

¹⁰⁷ See for the literature study of Djankov (2009) or Motta, Oviedo, Santini (2010).

¹⁰⁸ Brussels, 9.1.2013 COM(2012) 795 final, “ENTREPRENEURSHIP 2020 ACTION PLAN” p. 21.

Figure 100: Time to complete business-registration procedures (in days)



Notes: Median time „necessary in practice to complete a procedure with minimum follow-up with government agencies and no extra payments“. The company form is a limited liability.

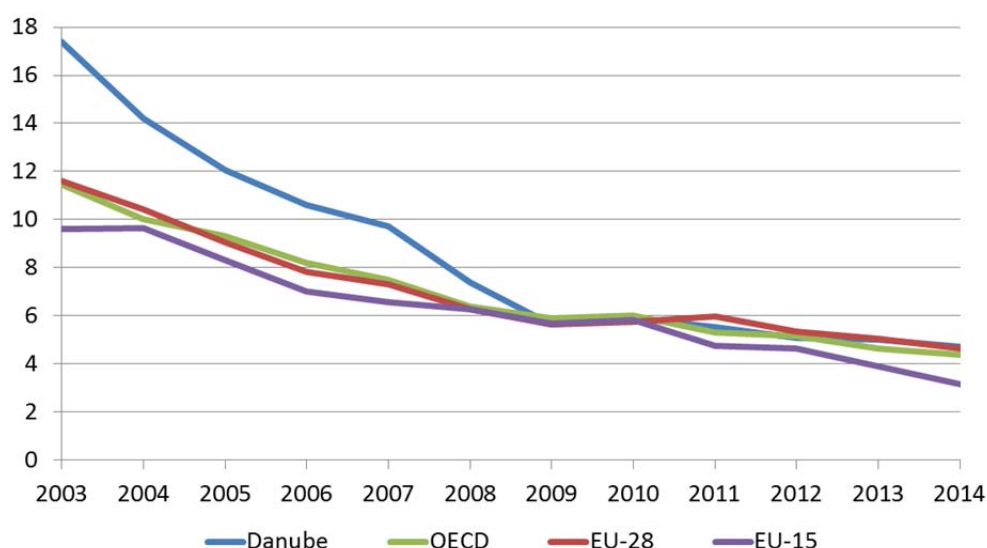
Source: Doing Business (2004-2015). Calculation and illustration: IAW

time to complete registration procedures also declined in the benchmark regions, so that the Danube average is still above the OECD average in 2013. Although we cannot be sure that the methodology of measuring time until completion is exactly the same, we see evidence that the region is going to exceed the Europe 2020 goal. According to our data, the target is already met by all Danube countries except Bosnia and Herzegovina in 2014.

All groups within the region have made progress, but there are still some discrepancies (AnnexFigure 149). Most improvements have been made by the countries of Member States Area 2 who cut the time from 64 to 10 days. The average time in 2014 for the different region ranges from 20 days in the Accession Countries to 10 in the countries of Member States Area 2. However, since these differences were substantially larger in 2003, the development indicates some degree of convergence.

A similar picture arises with regard to the cost of the starting a business, measured in relation to annual capita income (see Figure 75).¹⁰⁹ Compared to 2003, average costs decreased from 17.4% to 4.7% in 2014. The region has caught up with the OECD (4.4%) and EU-15 (4.6%) and had even surpassed the EU-28 from 2009 to 2013. Again we see some differences among the sub groups. Member and Neighbouring States have costs below 5% while Accession Countries figures at 8%. However, the difference between these groups has decreased considerably (see Annex Table 24). Differences between the Member States are relatively small. Most progress has been made by the countries of Member States Area 2 which have cut the costs from 18.7% to 4.5%.

Figure 101: Cost to complete business-registration procedures (in % of income per capita)



Notes: The cost includes all official fees and fees for legal or professional services if such services are required by law. Source: Doing Business (2004-2015). Calculation and illustration: IAW

Altogether the Danube Region has achieved considerable improvements regarding the obstacles to starting a business. Both the time requirement and

¹⁰⁹ This cost is measured as percentage of income per capita. It thus accounts for income disparities across the countries and for GDP Growth.

the cost of the start-up process have been cut by more than two-thirds. Despite the significant decline, the cost level is not yet as low as for the benchmark country groups of the OECD and EU-28.

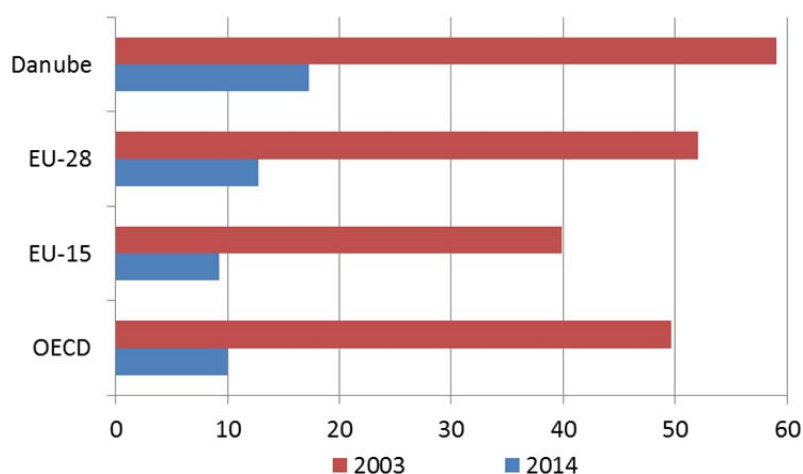
The third component which we assess is required minimum paid-in capital regulations, i.e. regulations obliging new business to hold a certain amount of capital as deposit in a bank. There is some evidence that these requirements are associated with lower market entry rates.¹¹⁰ The central argument in favour of higher capital requirements is that they may increase the security for investors and thus firms themselves¹¹¹. However, the World Bank finds that higher minimum capital requirements are associated with weaker investor protection.¹¹² Also we believe that other measures such as protective bankruptcy legislation can be more effective in guaranteeing investor protection. Thus, we view minimal capital requirements mainly as obstacles to new business formation.

As one can see from Figure 102, the level of these requirements in 2003, 59.1% of income per capita in 2003, was substantial in the Danube Region. Over the years all groups decreased requirements and by now the average is at 17.2% in 2014. This is slightly above the OECD, EU-28 and EU-15 benchmarks. Looking at the subgroup we find Member States Areas 1 and 2 leading the way in 2014 at almost 30%. The Accession Countries have made the biggest leap, starting at about 90.7% in 2003 to 9.5% in 2014 (Annex Figure 113). Bulgaria, Serbia, Montenegro, Moldova and Ukraine have abolished them completely.

¹¹⁰ "The Effect of Business Regulations on Nascent and Young Business Entrepreneurship" (2007).

¹¹¹ UNESCAP Minimum Capital Requirement UNESCAP (2011), Guidelines for Minimum Standards and Codes of Professional Conduct for Freight Forwarders, Non-Vessel Operating Common Carriers and Multimodal Transport, pp.11-14.

¹¹² Doing Business: Why are minimum capital requirements a concern for entrepreneurs? (2014)

Figure 102: Paid-in Minimum Capital Rates (in % of income per capita)

Note: Values for EU-28. No value available for the Czech Republic, Luxemburg and Malta for 2003. Average calculated for the other countries of the EU-28.

Source: Doing Business (2004-2015). Calculation and illustration: IAW

4.3.3.3 Conclusion

All in all, the indicators for market entry show strong improvements in lowering administrative obstacles to starting a business. In 2003, the region was significantly lagging behind the OECD, EU-28 and EU-15 in all measures of regulatory burden. During the past twelve years, both the time and the cost of business start-up have been cut roughly by two-thirds. Minimum capital requirements have, on average, been cut considerably, and several countries decided to abolish them completely. Still, the 2012 objectives set by the EC were not met by most countries. Thus, there is potential and need for further progress.

4.3.3.4 Attitudes of the population regarding self-employment¹¹³

Besides the administrative conditions for setting up a firm also the attitudes of the population regarding self-employment plays a role in how much start-up activity is observed in a region. In order to analyse the attitudes regarding self-

¹¹³ This subsection could not be updated because no new data is available.

employment in the Danube Region, we use information from the Eurobarometer.

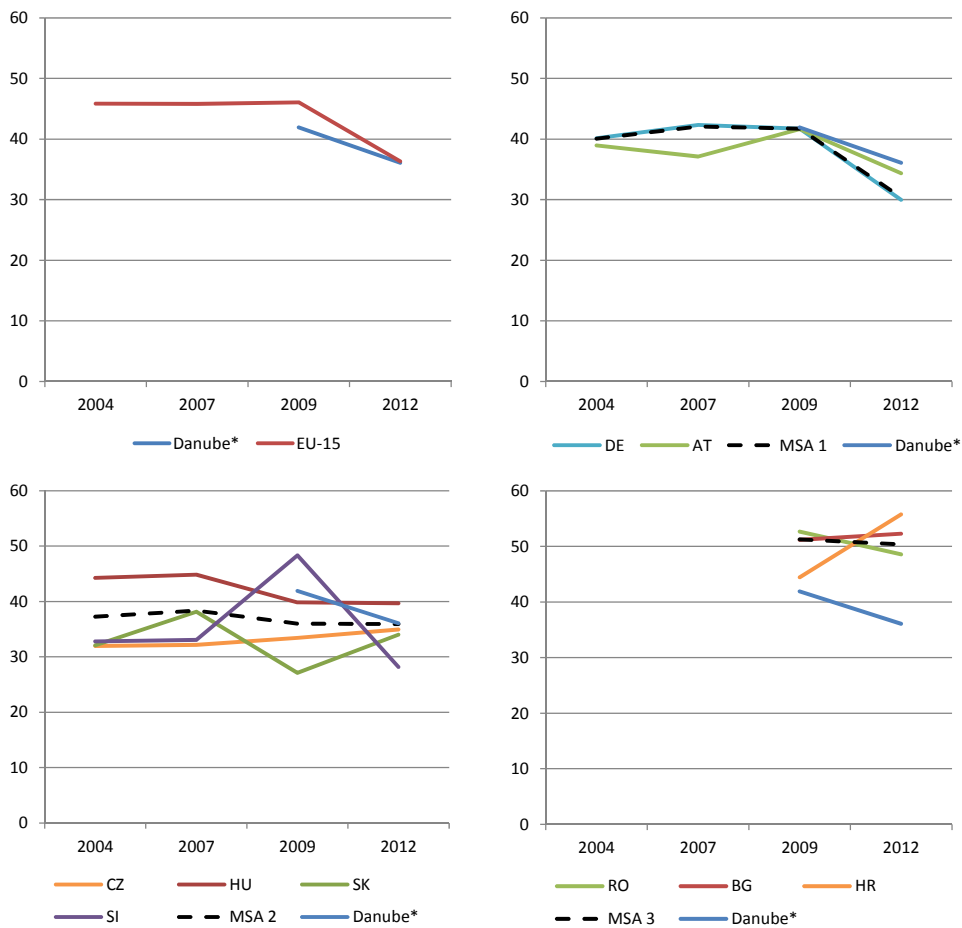
The Eurobarometer is a survey among the citizens of the EU on behalf of the EC. It serves the EC to monitor the development of opinions in the European population. Every half year, approximately 1000 people aged 15 years and above in each country of the EU are interviewed regarding their attitudes on key issues of the EU. Besides these so called Standard Eurobarometers, which cover topics such as the social situation, the environment, the Euro, and the work of the EU institutions, there are also ad hoc studies (Flash Eurobarometer) on a non-regular basis on different issues, among others on entrepreneurship. The results of these studies are published in the Flash Eurobarometer series. In the following we use information from the Flash Eurobarometers on entrepreneurship which are conducted in the years 2004 and beyond. In particular, these are the Flash Eurobarometers No. 160 (year 2004), 192 (year 2007), 283 (year 2009), and 354 (year 2012). As the Eurobarometer is a survey in the countries of the EU, the non-EU members of the Danube Region cannot be considered. In addition, because opinions cannot be captured retrospectively, only information starting with the accession of the respective country to the EU is available.

The main question regarding the attitudes of the population with respect to self-employment in the Eurobarometer is the following: "If you could choose between different kinds of jobs, would you prefer to be a) an employee, b) self-employed, c) none." Figure 103 shows the extrapolated percentage of the persons aged 15 years and above who stated that they would like to be self-employed (regardless whether or not they are actually self-employed and regardless whether or not they are employed at all).

What can be taken from Figure 103 is that the percentage of the persons who would like to be self-employed has been more or less constant between 2004 and 2009 for most of the countries/regions for which data are available. Starting with 2009 there have been changes in the attitudes regarding self-employment in a number of countries/regions. For the EU-15 countries there has been a sharp drop from 46% in 2009 to 36% in 2012 which is also reflected in the time series of the countries of Member States Area 1. In Slovenia there has been a strong increase between 2007 and 2009 and a considerable de-

crease between 2009 and 2012. For Slovakia the inverse development is observed. Croatia experienced a strong increase between 2009 and 2012. For the EU-countries of the Danube Region as a whole it can be observed that there has been a drop from 42% of the persons who would like to be self-employed in 2009 to 36% in 2012. It is likely that these changes are due to the financial crisis starting in 2008. It is reasonable to assume that people change their attitudes only if there are major changes in their environment.

Figure 103: Percentage of persons who would like to be self-employed in the Danube Region 2004-2012



Note: Question posed: "If you could choose between different kinds of jobs, would you prefer to be a) an employee, b) self-employed, c) none." Percentage of person who chose item b) reported in the figure. *Considered countries of the Danube Region: DE, AT, HU, CZ, SK, SI, RO, and BG.

Source: Flash-Eurobarometer Nr. 160, 192, 283, 354. Calculation and illustration: ZEW.

What also can be seen in Figure 103 is that there are differences regarding the attitudes with respect to self-employment between the individual subregions of the Danube Region. The highest percentage of person who would like to be self-employed can be found in the countries of Member States Area 3. In this subregion around half of the population aged 15 and above would like to be self-employed. In the countries of Member States Area 1 it was two fifth until 2009 (and 30% in 2012), and around 37% in Member Area 2. Given this numbers the populations in the countries of Member States Area 1 and 2 tend to be more reluctant to strive for a status as self-employed than the population of the EU-15 member countries as a whole. At least until 2009. After that the numbers have converged. It remains to be seen whether this assimilation is lasting.

4.3.4 Conclusion

Regarding economic freedom, a ranking as “moderately free” predominates in the Danube Region. Over time, there is a divergence between EU members and Accession Countries, which have made progress during the last 4 years, and Neighbouring Countries, in which economic freedom has decreased and which are rated as “mostly unfree”.

Our analysis highlights that corruption remains a major issue for a large part of the region. There has been policy effort both at national and international level, but this had not (yet) led to any noteworthy improvements in various measurements of corruption.

Our analysis of the regulatory framework focuses on market entry regulations. EU member states, Accession Countries and Eastern partner countries are subject to a systematic review of the criteria of the “Small Business Act for Europe” regarding the simplification of start-up procedures. Over the last 10 years, the cost and time to complete business-registration procedures have each been reduced to one-third, and minimum capital requirements to one-sixth. Still, the OECD and EU-15 benchmark levels have not been entirely reached in any of the indicators, which leaves room for further reforms.

4.4 Development of Clusters

4.4.1 Framework and methodology

The theory of geographic location suggests that competitive advantage is not exclusively created within the company or even within the industry, but it is a consequence of the fact that the industry is located in a favourable region for its development. Regional economics deems industrial agglomerations as an immediate result of economic activity, which has, in turn, a direct impact on the overall economic performance. The modern concept has been substantially developed and applied to competition analysis by Michael Porter (1990, 1998) and Michael Enright (2001), adding to an old and prolific intellectual tradition that reunites among others Marshall with Principles of Economics (1890), Isard with Location and Space-Economy (1956) and Hirschman with The Strategy of Economic Development (1958).

Porter defines clusters as „geographic concentrations of interconnected companies and institutions in a particular field“ (Porter, 1998). Clusters include a set of related industries, as well as other entities which are important in terms of competition, such as: clients, specialized suppliers, service providers, companies in related industries and associated institutions (universities, various government agencies, professional training centres and commercial associations). Porter explains these competitive agglomerations as a new spatial form of organization, which is significantly different from the traditional integration of companies on the market. They represent a new way of organizing a value chain. The fact that the companies are clustered together in one region and that the on-going exchange among them foster good communication and mutual trust produces advantages in terms of production efficiency and flexibility in drawing up competitive strategies.

The analysis will use a framework that acknowledges the conceptual and practical differences between clusters, clusters organizations and networks as set recently in the literature¹¹⁴:

¹¹⁴ Ketels, C - *The impact of clusters and networks of firms on EU competitiveness*, Final Report: Firm networks 2012, Specific Contract 605748 found on 11/09/2013 at

- *Clusters* are geographically co-located firms and other institutions engaged in economic activities in a set of related industries, connected through externalities and other type of linkages. Collaboration may or may not take place, and could focus either on broader competitiveness upgrading or on specific projects.
- *Cluster organisations* are focused on a specific geography, oriented towards a set of related industries (also called a 'cluster category'), and they provide a structure for actual collaboration of firms and other institutions (these are often called clusters in everyday practice);
- *Networks* of firms may or may not be confined to a specific geography and set of industries. They are by definition structures specifically created for active collaboration. This collaboration could be open-ended or focused on a specific project task; cluster organisations are a specific type of networks.

Such differentiation is useful from a policy perspective as well. In the 2013 TACTICS Report¹¹⁵ the following additional definitions are added:

- *Cluster initiatives* are organised efforts to increase the growth and competitiveness of a cluster within a region, involving cluster firms, government and/or the research community.
- *Cluster policies* are programmes or other organised efforts taken by the government to increase the growth and competitiveness of clusters in its constituency.

The importance of cluster-based activity is growing in the Danube Region as more and more countries have adopted active cluster development policies and inter-cluster cooperation has started to move up on the economic agenda

<http://www.clustercollaboration.eu/documents/10147/23229/Cluster+and+Networks+FINAL+REPORT+05-10-12+CK.pdf>

¹¹⁵ Transnational Alliance of Clusters towards Improved Cooperation Support (TACTICS) - *Key messages and practical recommendations from the TACTICS project*, 2013 found on 20/02/2014 at <http://www.eca-tactics.eu/page/tactics-final-reports>;

at regional level. While in Chapter 6 the focus will be on screening transnational networking and cluster initiatives in the Danube Region, in this subchapter the effort is to check the economic grounds for such cooperation.

The main questions that will be answered are as follows:

- Is there a way to map relevant clusters in the Danube Region in order to have a sense of the amplitude of potential cooperation?
- Can one identify particular sectors of potential cluster cooperation in the Danube Region based on existing and potential clustering of economic activities?
- What is the level of institutional readiness of cluster organisations to engage in cluster cooperation?

The final purpose of the analysis is to provide evidence-based recommendations for how to reinforce competitiveness in the Danube Region by enhancing cluster development and cluster cooperation across member countries.

Quantitative mapping of clusters

The first activity of this task is to take stock of the existing clusters in the Danube Region. The most useful methodology and data set for the above purpose can be drawn from the European Cluster Observatory (ECO). The ECO, launched in 2007, is an online platform that provides a single access point to information and analysis of clusters and cluster policy in Europe, including most countries from the Danube Region. The platform offers valuable data both on the geographic concentration of various industries and indicators of economic performance. Data are available for the following countries in the Danube Region: Germany, Austria, Czech Republic, Slovakia, Hungary, Croatia, Slovenia, Serbia, Bosnia and Herzegovina, Bulgaria, Romania, Ukraine, but not for Montenegro and Moldova. A cross-country comparison can be made based on data up to 2011 allowing a quantitative benchmarking of economic clusters based on the following structure:

- Industry sector classification (41 sectors at NACE 3 level) providing the cluster categories
- Regional classification (NUTS 2 - subnational level)

- Size, Specialization and Focus of clusters (see Box 4 for ECO star rating)
- Number of employees and number of enterprises in respective clusters

Box 4: European Cluster Observatory (ECO) methodology

The amount and quality of knowledge circulating and spilling over between firms, located in a cluster, is dependent upon the cluster's size, the degree to which it is specialized and the extent to which the location (the region) is focused upon production in the relevant industry comprising the cluster. The European Cluster Observatory shows the extent to which clusters have achieved this specialized critical mass by three factors as described below. Each cluster gets 1, 2 or 3 Stars depending on how many of the criteria they meet.

- *Size Star*: if employment reaches a sufficient share of total European employment, it is more likely that meaningful economic effects of clusters will be present. The size measure shows whether a cluster is in the top 10% of all clusters in Europe within the same cluster category in terms of the number of employees.
- *Specialization Star*: if a region is more specialized in a specific economic activity than the overall economy across all regions. This is likely to be an indication that the economic effects of the regional cluster have been strong enough to attract related economic activity from other regions, and that spill-overs and linkages will be stronger. The specialization measure compares the proportion of employment in a cluster category in a region over the total employment in the same region, to the proportion of total European employment in that cluster category over total European employment. The measure needs to be at least 2 to receive a star.
- *Focus Star*: if a cluster accounts for a larger share of a region's overall employment, it is more likely that spill-over effects and linkages will actually occur instead of being drowned in the economic interaction of other parts of the regional economy. The focus measure shows the extent to which the regional economy is focused upon the industries comprising the cluster category and relates employment in the cluster to total employment in the region. The top 10% of clusters, which account for largest proportion of their region's total employment, receive a star.

The quantitative data provides an excellent overview of the sectoral agglomerations per each country of the Danube Region, which reflects existent potential for cluster organizations. In order to analyse such data, a two-step filtering process will be applied.

Step 1 - Filtering for relevance

Based on the ECO methodology, the total number of potential clusters in the Danube Region that have at least 1 star is quite high - there are 2,624 such

agglomerations in the mapped industries altogether. In order to increase the relevance of the analysis, a higher benchmark needs to be applied.

If only clusters with 2 or 3 stars are taken into consideration, there are only 278 such clusters (221 with 2 stars and 57 with 3 stars). The filtering process was effective, as it discarded almost 90% of the weak agglomerations that may not have been very relevant for the analysis.

Table 13: Clusters with 2 or 3 stars per country in the Danube Region

<i>Country</i>	<i>2 star clusters</i>	<i>3 star clusters</i>	<i>Total clusters</i>
Germany*	45	18	63
Romania	26	16	42
Czech Republic	30	7	37
Austria	28	3	31
Hungary	20	3	23
Bulgaria	15	3	18
Slovakia	17	1	18
Ukraine*	14	2	16
Serbia	14	1	15
Croatia	7	2	9
Slovenia	2	1	3
Bosnia-Herzegovina	3	-	3
Total	221	57	278

Notes: *Only Baden Württemberg and Bavaria; in Ukraine the Danube region oblasts

Source: ECO database (www.clusterobservatory.eu), Calculation and illustration: Dragos Pislaru.

Data shows, that Germany gathers most of the relevant clustering of economic activity, followed by Romania, the Czech Republic and Austria. In the case of Romania, the explanation is partly due to the former communist regime's approach of scattering industry throughout the country with sectoral focus, which nowadays still provides grounds for cluster specialization.

Step 2 - filtering for potential cross-border cooperation

The assumption behind this second filter is that the most relevant form of cluster cooperation for the Danube Region is not bilateral, but involves more than two countries of the area. Therefore, if within a particular industrial sec-

tor there are clusters in three or more countries, this will indicate potential for cluster cooperation in the Danube Region in that particular sector.

By grouping the clusters with 2 and 3 stars per sector, while respecting the above filter, only 21 NACE 3 sectors show potential for cluster cooperation across the region based on the suggested methodology (Figure 104).

Figure 104: Cluster mapping by industrial sectors in the Danube Region



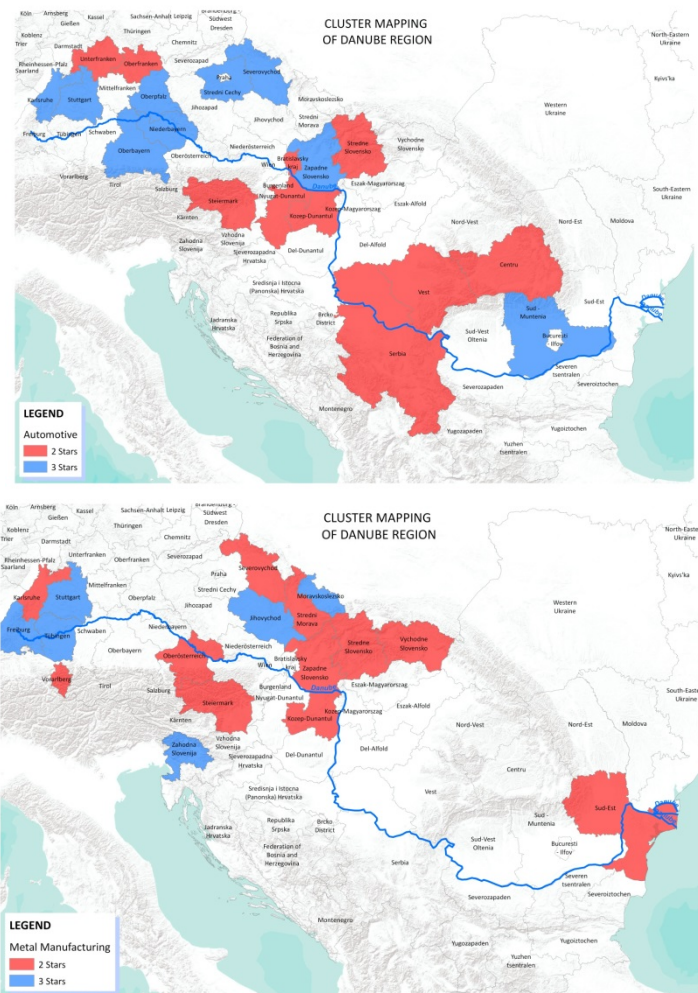
Source: European Cluster Observatory database, downloaded in 2013

Potential for cluster cooperation – a quantitative approach

Although it is rather difficult to classify the selected 21 sectors in terms of their clustering importance, there are a few features that may be rewarding to analyse. In the following we group sectoral clusters by the number of employees, and then we look at the number of enterprises and countries involved.

In terms of the number of employees, the automotive and the metal manufacturing sectors are topping the list, with around 500 thousand employees each.

Figure 105: Cluster mapping - automotive and metal manufacturing

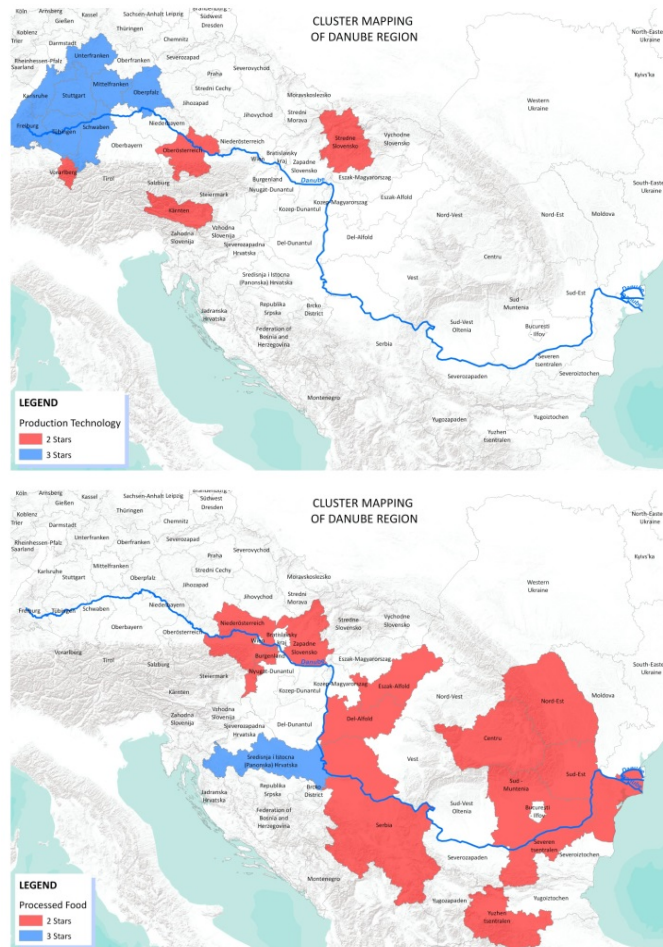


Calculation and illustration: Dragoș Pislaru.

Both sectors are well represented across a significant number of Danube countries mainly with 3 star clusters. The automotive sector is slightly more prominent and with better coverage than metal manufacturing.

A second group is comprised by four of sectors which gather around 300 thousand employees each: production technology, construction, processed food and transportation and logistics.

Figure 106: Cluster mapping - production technology and processed food



Calculation and illustration: Dragos Pislaru.

It can be easily observed that sectoral cluster distribution is uneven across the Danube Region, which is normal taken into account the high heterogeneity of member countries. Clusters of more advanced sectors, such as production

technology are located in more developed countries, and there are other sectors, such as processed food, which have clusters concentrated in less developed or agriculture-related countries.

There are also niche sectors with less than 50 thousand employees gathered in selected clusters – biotech, sporting, recreational and children’s goods, leather products, lightning and electrical equipment, oil and gas.

The heterogeneity of clusters suggests that cooperation in between clusters in different sectors may have different employment impact. If job creation is a critical target of the Danube Strategy as part of the people and skills priority, then more attention can be oriented towards the cooperation of more labour intensive clusters. On the other hand, cooperation in niche sectors may prove to be key to competitive growth, so promoting biotech cluster organizations would be advisable.

Same logic applies in factoring the number of enterprises gathered by clusters in different sectors. Company size matters in certain sectors, so in biotech or oil & gas there are less than 200 enterprises forming the respective clusters. At the other end of the spectrum, there are more than 45 thousand enterprises in metal manufacturing or more than 30 thousand enterprises in construction. The latter implies a high density of small-sized companies, which may allow for more flexibility in difficult times than in clusters with larger entities.

As regards the involvement of different countries, there are sectors that gather clusters from up to 8 countries out of the 12, such as metal manufacturing, building fixtures (Figure 107), equipment and services as well as processed food.

Such sectors should be easier to get interested in the Danube Region cluster agenda, as they have a majority of member countries involved.

However, there are sectors where despite the fact that clusters are originated from a small number of countries (only 3 countries have 2 and 3 star clusters in furniture, productive technology, construction, biotech (Figure 108), IT, farming or sporting and recreation), the stake for the respective countries is high enough to justify their involvement in the Danube cluster cooperation agenda.

Figure 107: Cluster mapping - building fixtures



Calculation and illustration: Dragos Pislaru.

Figure 108: Cluster mapping - biotech



Calculation and illustration: Dragos Pislaru.

Moreover, from a normative perspective, it may be rewarding to promote cooperation in such sectors in order to get more emerging clusters on board from other countries, especially in high-tech fields such as IT or biotech.

Last but not least, in several of the sectors, some countries have a larger stake than others, in the sense that clusters originating from a particular country are relatively dominating the respective sectoral cluster. This seems valid for Romania in the case of apparel (Figure 109), footwear, furniture and construc-

tion; for Germany as regards automotive, IT, biotech or production technology; for the Czech Republic related to building fixtures equipment & services or lightning & electrical equipment, or for Bulgaria in the case of farming and animal husbandry.

Figure 109: Cluster mapping - apparel industry



Calculation and illustration: Dragos Pislaru.

Such situation may imply that countries might choose to reinforce their dominating sectors, but it may also be the case that current low-tech oriented countries would promote more cluster cooperation in high-tech sectors as a way to upgrade their economic structure towards higher value-added activities.

To sum up, by using the ECO database, and by applying two filters in order to focus on the most relevant results, we obtained a quantitative image of how clusters are spread out across the Danube Region and which sectors may qualify for cluster cooperation based on an existing critical mass of companies.

Cluster organizations

The European Cluster Observatory also maps the cluster organizations. The source of data is mainly voluntary registration thus the coverage is uneven across countries. The European Cluster Collaboration Platform is another initiative focusing on the evaluation of cluster organizations. It is also based on voluntary registration. Table 13 and 14 compare information from both sources.

Table 13: Number of cluster organizations in the Danube Region by sources of data

	Cluster Observatory	Cluster Collaboration, all	Cluster Collaboration, labelled
Austria	36	61	9
Baden-Württemberg	34	44	18
Bavaria	27	48	27
Bosnia and Herzegovina	2	5	0
Bulgaria	11	32	3
Croatia	0	20	9
Czech Republic	22	55	12
Hungary	118	115	12
Moldova	0	1	0
Montenegro	0	3	0
Romania	21	69	3
Serbia	6	52	4
Slovakia	14	22	8
Slovenia	15	19	0
Ukraine	0	5	0
Danube Region	306	551	105

Note: Ukraine – the Danube region oblasts.

Sources: European Cluster Observatory www.clusterobservatory.eu; European Cluster Collaboration Platform www.clustercollaboration.eu

There are 306 cluster organizations registered on ECO; more than one third of them from Hungary (Table 13, 1st column). This is a relative overstatement compared with other, more developed countries. But if national reports are considered, the number of cluster organizations may be even higher. E.g. the Hungarian government supported the formation of 237 cluster organization in the framework of the Regional Operational Program in 2008-2011 (MAG, 2013). The Romanian government has registered 47 cluster organizations in 2012, more than two times more than ECO. The high number of official cluster organizations in both countries is the result of EU funding. It can be assumed that many of the supported organization will not prove sustainable. (As

checked by the author, about half of the websites of the Hungarian clusters organizations registered in OCO is not functional or has not been updated for more than a year.)

On another platform, cluster organisations from across Europe were invited to form partnerships through a call for the expression of interest published on the European Cluster Collaboration Platform (ECCP) in March 2013. (<http://www.clustercollaboration.eu>) This site registers 551 cluster organizations in the Danube Region (Table 13, 2nd column) significantly more than ECO. The numbers of cluster organizations in the two sources are nearly equal in case of Hungary, while additional clusters were registered in other countries including those not covered by ECO. Small countries and those in the East of the DR have relatively low number of cluster organizations similarly to the slower advance of economic clustering of their economies. We get a different picture if we control for the size of the economy. The number of cluster organizations in relation to GDP is highest in Montenegro followed by Hungary and with some distance by Slovenia whereas the Czech Republic and Slovakia are towards the lower end. The latter two countries showed a relatively high degree of clustering (Table 2), but this potential has not been used by forming cluster organizations.

ECCP issues labels to the cluster organizations based on quality assessment by which 105 organizations received a bronze or a gold label (there is no silver label). Bavaria stands out by the number of bronze and gold label cluster organizations. Relatively high shares of labelled organization are found also in Baden Württemberg and Croatia, while the number of such organizations is relatively small in Hungary. This indicates that a large number does not necessarily mean high quality.

The cluster organizations registered in ECO tend to be in the high-tech activities. The most numerous cluster organizations have been established in ICT and in environment technology followed by biotechnology. Such modern industries which are relatively small in size by employment and hardly agglomerate into clusters are over-represented among the cluster organizations. The more developed countries are over-represented in these activities both in terms of clustering and cluster organization. But also in Romania, high-tech activities are over-represented among the cluster organizations while cluster-

ing is more advanced in traditional activities. In some specific industries such as tourism, logistics and business services almost all organizations in the database were registered in Hungary which gives an explanation to the relatively large overall size of cluster organizations in this country. As to ECCP, the majority of cluster organizations are not assigned to an industry, those which are, show similar sectoral distribution to ECO (Table 14).

Table 14: Number of cluster organizations by economic activity

Activity	Cluster Observatory	Cluster Collaboration
ICT	39	44
Environmental Technology	31	22
Biotechnology	24	14
Food, agricultural technology	16	16
Automotive	16	21
Business services	16	15
Tourism	15	
Wood, Furniture	14	
Energy Technology	13	
Construction Technology	13	
Heavy Machinery	12	
Creative and Cultural Industries	12	14
Logistics	11	
Nanotechnology	10	
Engineering	9	
Textile	9	
Mechatronics	7	
Plastics	6	
Other	21	

Sources: European Cluster Observatory www.clusterobservatory.eu; European Cluster Collaboration Platform www.clustercollaboration.eu

An alternative to registering cluster organizations based on ECO or ECCP is to carry out a survey and ask stakeholders from the cluster-related community. As part of the work within the Working Group for Cluster Excellence in PA 8 of the EUSDR, TMG Upper Austria has applied a survey on the sectoral specialisation of cluster initiatives. The survey, carried out mainly among public officials

and cluster members, is a valuable source for the normative view on cluster development, which complements the descriptive/quantitative view in the previous section (Table 15).

Table 15: Sectors and specialisations of cluster initiatives in the Danube Region – qualitative results of survey carried by TMG Upper Austria

	Total Countries	AT	BG	HR	CZ	DE	HU	ME	MD	RO	RS	SK	SI	UA	Total Counts
Automotive	11	1	1	1	1	3	6			5	6	4	2	1	31
ICT	10	2	1	1	1	2	7			5	6	4	2		31
Wood Processing	10	2	1	1	1	2	3	2		4	4		2		22
Food Processing	9	2	1	1		2	2	2		5	4			1	20
Textile Technology	9	1	1	1	1	2	3		1	6	2				18
Agricultural Technology	8	1		1		1	3		1	5	5			1	18
Engineering	8	1			1	2	4			3	2	4	2		19
Mechatronics	8	3	1	1	1	3	3			4		1			17
Renewable Energy	8	1		1	1	3	5			5	1		2		19
Biotech	7	2			1	3	7			1	1		2		17
Electronics	7		1			1	3			3	1	1	2		12
Energy Technology	7	2		1		3	6			1		2	2		17
Environmental Technology	7	1			1	3	5			1	3		1		15
Health Care	7	1		1	1	2	4				2		1		12
Logistics	7	1				2	3			1	1		1	1	10
Plastics	7	1		1	1	2	2				3	4			14
Tourism	7	2		1			5			6	5	4		1	24
Business Services	5					1	2			1	3			1	8
Construction	5	2					3				3		2	1	11
Medical Technology	5	1				3	3			1			2		10
Metallurgy	5		1	1		1					2			1	6
Other	5	1	1			2	1						2		7
Aerospace Technology	4					3	2			2	2				9
Chemical	4					2	2						1	1	6
Creative	4					2	3			1	3				9
Nanotechnology	4	1			1	3	2								7
Packaging	4				1	1	3			1					6
Recycling	4				1		1				3		1		6
Apparel	3		1							1	3				5
Handicraft	3					1	1				4				6
Heavy Machinery	3						1						1	1	3
Maritime Technology	3		1							4	1				6
Microtechnology	3		1			3				1					5
Control Systems	2					1							1		2
Education	2						2				1				3
Optics	1					2									2
Photonics	1					2									2
Human Resources	0														0
Respondents per country		3	1	1	1	3	10	2	1	8	6	4	3	1	44

Source: clustercoopproject.eu/documents/download/1395841454825683

The results show that automotive, ICT, wood processing, food and textiles are the most prominent sectors with cluster activity across the region. As it could be expected, ICT and renewable energy are also ranking high in the survey, as these sectors constitute key technologies of the future, that every country and investor in the Danube Region should consider. Other sectors with high ranking are environmental technology, healthcare, micro-nano technology, aerospace or creative industries. Cluster organizations have recently or will soon emerge in most of these fields as a policy and business response to the challenges of tomorrow. However, not all such new developments have a critical mass or sustainable development perspective without public support. Otherwise, there are a lot of sectors that are broadly validated both by the survey and by ECO data, such as automotive, wood, food, textile, engineering etc. However, from the public policy willingness to push for cluster development to mobilising private sector to engage in a process of shared value and cooperation, there still is a complicated road to follow - clustered firms will not cooperate extensively without the existence of robust cluster initiatives and organisations.

The quoted survey as were as other data highlight the high variation among countries of the region in terms of the degree of institutionalization of clusters. Results for Austria and Germany suggest strongly institutionalized clusters, whereas Ukraine, Moldova and Serbia have more than 75% of clusters weakly institutionalized. In other words, there is much work to do in order to balance the quality and performance of cluster organisations across the regions.

Below are a couple of recommendations as regards the use of the above results from a policy perspective:

- Data on clusters and on cluster organisation should be cross-checked and gathered from multiple sources in an organised and transparent way. Using government, cluster organisation and independent research data at the same time can be critical for having a proper design of cluster development and cooperation initiatives and for evidence-based policy.
- Differentiating between robust/mature cluster and emergent clusters can be useful in terms of cluster-cooperation goals and support

the cooperation agenda within the Danube Region. However, the labelling clusters at EU level may prove difficult and costly to implement. Voluntary labelling should be preserved, as compulsory labelling may lead to administrative cost and market distortion. As an alternative, simple and transparent benchmarking, coupled with rigorous self-assessment may be a solution.

- The presence of cluster initiatives and organisations is not a guarantee for excellence and a pledge for cooperation - there is a need to support and know-how transfer to allow stronger and more efficient cluster organisations. Policy evaluation is key, especially given the new generation of criticism suggesting that building an entrepreneurial ecosystem is more about facilitating talent and individual entrepreneurs rather than about building support structures.¹¹⁶
- Cross-cluster cooperation needs proper facilitation and support based on the development of cluster organisations to back-up the process. However, the public push for cluster development and cross-cluster cooperation needs to be reciprocated by a market/business pull, with enough traction to create sustainability.
- Supporting the creation of National Cluster Associations¹¹⁷ in all countries of the Danube Region as a unique contact point of information and reporting is advisable, provided that it will not become an administrative monopoly of some sort regarding cluster development.

¹¹⁶ See for instance Vivek Wadhva in Washington Post, July 15, 2011 - [Industry clusters: The modern-day snake oil](#)

¹¹⁷ Several countries of the Danube region already have National Cluster Associations, so best practices are available;

5 Cohesion Policy, International Financing and Development Aid in the Danube Region

In this chapter, we address the provision of external financing and aid to the countries of the Danube area. A multitude of funds and donors is active in the Danube area, different instruments and facilities of providing finance are used, and the purposes for the provision of finance also vary. The following description is structured by institutions. We consider first the European Union. Next, we move to other multilateral institutions. In the concluding part, we focus on bilateral aid.

5.1 EU Cohesion policy

The cohesion policy of the EU, implemented by the European Commission, is an investment policy that helps to achieve the goals of the Europe 2020 strategy and focuses on “creating new jobs, competitiveness, economic growth and sustainable development.”¹¹⁸ EU cohesion policy is implemented by means of different EU structural and investment funds. The most important of these funds are the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund (CF) that are directed to address inequalities within the EU. According to documents by the European Commission, the objective of the ERDF is to strengthen economic and social cohesion in the European Union by correcting imbalances between its regions.¹¹⁹ Its financing contributes to regional convergence across the EU, regional competitiveness and employment and territorial cooperation. The objective of the ESF is to improve employment and education opportunities across the European Union; the ESF also aims to improve the situation of the most vulnerable people at risk of poverty.¹²⁰ Finally, the CF aims to reduce economic and social disparities and to promote sustainable development. It is directed at Member States

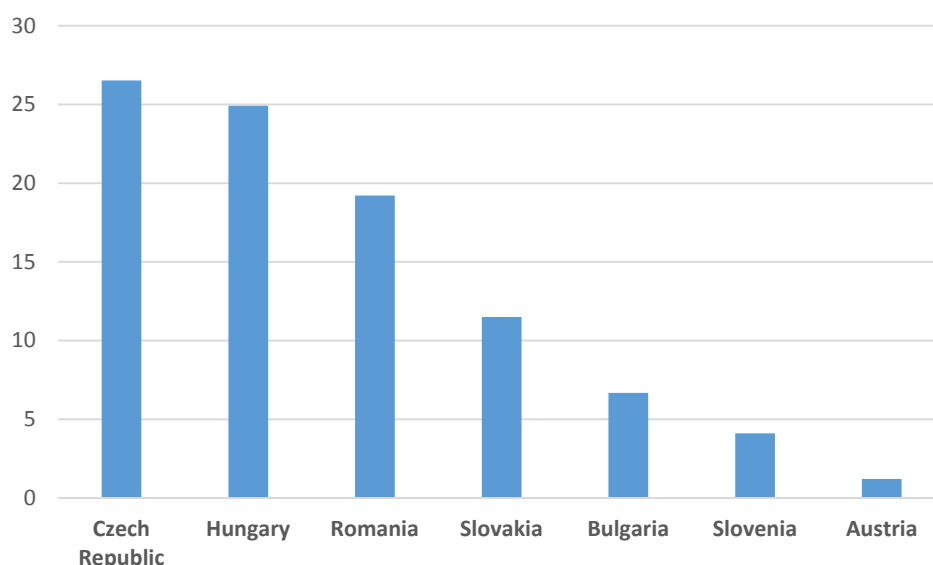
¹¹⁸ http://ec.europa.eu/regional_policy/what/index_en.cfm

¹¹⁹ http://ec.europa.eu/regional_policy/thefunds/regional/index_en.cfm

¹²⁰ http://ec.europa.eu/regional_policy/thefunds/social/index_en.cfm

whose Gross National Income (GNI) per inhabitant is less than 90% of the EU average.¹²¹

Figure 109: Cohesion policy allocation for Danube Region countries 2007-2013 (in bn €)



Note: No data for Croatia available.

Source: European Commission, EU cohesion funding – key statistics. Calculation and calculation: IAW.

The budget available for Cohesion Policy in the period from 2007 to 2013 amounts to EUR 347bn, which equalled 35.7% of the total EU budget. In this period, EUR 201bn were allocated to the ERDF, EUR 76bn to the ESF and EUR 70bn to the CF. As all cohesion policy programmes have to be co-financed by the receiving countries, this meant that the actual investment volume generated for the member states may amount to nearly EUR 700bn.¹²²

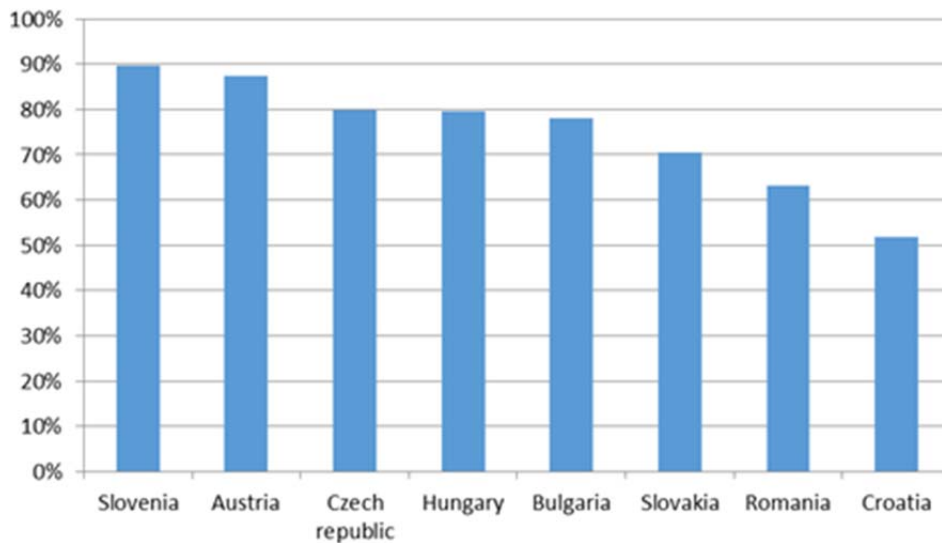
In the period 2007-2013, around EUR 94.1bn of the available budget was allocated to the countries of the Danube Region, excluding Baden-Wuerttemberg

¹²¹ http://ec.europa.eu/regional_policy/thefunds/cohesion/index_en.cfm

¹²² http://ec.europa.eu/regional_policy/thefunds/funding/index_en.cfm

and Bavaria.¹²³ This accounts for around 27% of the total available budget. Around EUR 26.5bn were allocated to the Czech Republic, followed by Hungary (EUR 24.9bn) and Romania (EUR 19.2bn). Highly developed Austria received only EUR 1.2bn (Figure 109).

Figure 110: Absorption rates (% of funds allocated to member states) 2007 – 2013



Source: European Commission, EU cohesion funding – key statistics. Information on the payment rates on this website is updated every quarter. Last update: 28/08/2015. Illustration and calculation: IAW.

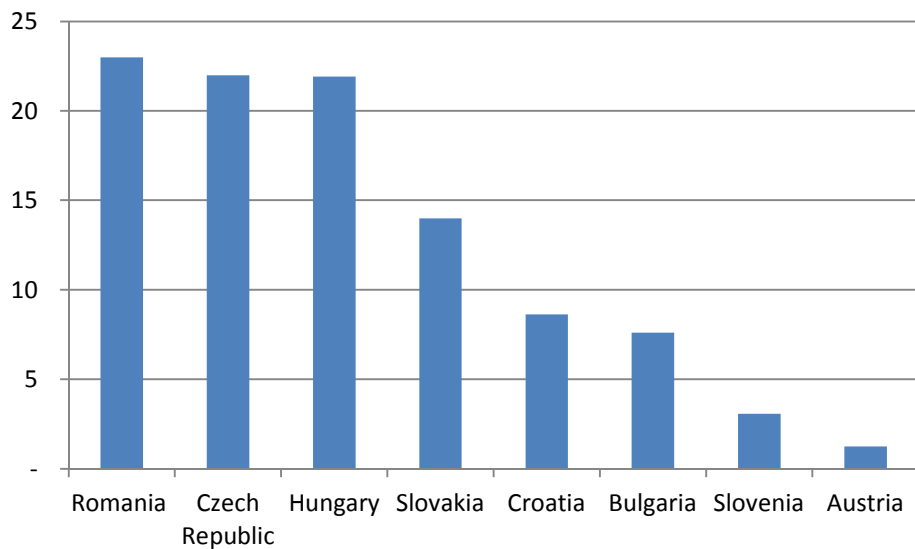
An important question in this context is what percentage of the available funds has actually been used by the Member States. This can be measured by the absorption rate, the percentage of the total funds allocated per Member State that has been paid by the Commission. Figure 110 shows that there is a strong discrepancy in the absorption rates between the Danube countries:

¹²³ Due to the German federal structure, it is difficult to break down data of the structural funds to the German Federal States Bundesländer. Hence, we exclude Bavaria and Baden-Wuerttemberg in the following.

they vary from 51.8% in Croatia to 89.7% in Slovenia. The low absorption rate of Croatia is due to the fact that Croatia only entered the EU in 2013.

Taken together, the Danube Region lags behind the rest of the EU. On average, only 65.3.8% of the funds allocated per Member State were actually paid out in the Danube Region, whereas the average was about 85% in the total EU. Measures to improve the actual use of available funds are thus, a top priority for the region. One of the reasons for the low absorption rates in the Danube Region is that co-financing capacity was not available.

Figure 111: Cohesion policy allocation to Danube Region countries 2014-2020 (in bn €)



Source: European Commission, EU cohesion funding – key statistics. Illustration and calculation: IAW.

In the period 2014-2020 period, about EUR 100bn will be allocated to the Danube Region (again excluding Baden-Wurttemberg and Bavaria). This is slightly more than in the previous programming period and accounts for about 28.8% of the total available budget for cohesion policy. Within the Danube Region, Romania will receive the largest share of the funds (EUR 23.0bn), followed by the Czech Republic (EUR 22.0bn) and Hungary (EUR 21.9bn) (Figure 111). Compared to the previous programming period, funds are allocated slightly more evenly between the countries of the Danube Region. The most recent EU member, Croatia, will receive EUR 8.5bn from the structural funds.

The Commission and the Member States are in charge of the evaluation of cohesion policy, keeping track of outputs and results and the contribution of cohesion policy to reducing economic and social disparities across Member States and to the Europe 2020 strategy. The Commission Strategic report 2013 on programme implementation 2007-2013 synthesizes the findings of these evaluations. It concludes that “cohesion policy has been instrumental in sustaining public investment in vital economic areas such as research and development, SME support and sustainable energy, re-industrialisation, social inclusion, reforms in education and training systems and labour market challenges.”¹²⁴ Concerning job creation, the Commission reports that almost 400,000 jobs have been created due to ERDF/CF interventions from 2007 to 2011. Only a small share of these (47,000, or close to 12%), however, were created in the Danube countries (excluding Baden-Wuerttemberg and Bavaria), significantly less than their share in structural funds allocations.¹²⁵

The effectiveness of cohesion policy has also been the subject of academic research.¹²⁶ There are no studies with reference to the Danube area in particular. Becker, Egger and von Ehrlich (2013),¹²⁷ however, address differences in cohesion policy effectiveness with respect to two dimensions: human capital endowment and the quality of government (absence of corruption and quality of administrative processes). Both of these influence absorptive capacity and

¹²⁴ European Commission (2013): Cohesion policy: Strategic report 2013 on programme implementation 2007-2013, p. 5.
http://ec.europa.eu/regional_policy/how/policy/strategic_report_en.cfm

¹²⁵ Numbers are own calculations from the “Core indicators” on http://ec.europa.eu/regional_policy/how/policy/strategic_report_en.cfm.

¹²⁶ See, for instance, Becker, Sascha O, Egger, Peter H and Maximilian von Ehrlich (2010), “Going NUTS: The effect of EU Structural Funds on regional performance”, *Journal of Public Economics* 94(9-10), 578-590, and Mohl, Phillip, and Hagen, Tobias (2010), “Do EU structural funds promote regional growth? New evidence from various panel data approaches,” *Regional Science and Urban Economics*, 40(5), 353-365.

¹²⁷ Becker, Sascha O, Egger, Peter H and Maximilian von Ehrlich (2013), Absorptive Capacity and the Growth Effects of Regional Transfers: A Regression Discontinuity Design with Heterogeneous Treatment Effects, *American Economic Journal: Economic Policy* 5(4): 29-77.

cohesion policy effectiveness positively. Their data concerns the period 2000 to 2006 and thus, does not include most of the Danube countries. Of those that are included, only Austria and Hungary have significantly positive growth effects, while the effects in the Czech Republic, Slovakia and Slovenia are not statistically significant.

The positive overall evaluation of the structural funds is partly due to special support programmes, such as JASPERS (Joint Assistance to Support Projects in European Regions). Along with other programmes such as JEREMIE (see chapter 5.2) and JESSICA, JASPERS is a special support instrument provided by the European Commission. It was set up to improve the implementation of cohesion policy in the New Members States in Central and Eastern Europe in the programming period 2007-2013. In this framework, the European Commission collaborates with the EIB, the EBRD and the German Kreditanstalt für Wiederaufbau (KfW). The objective is to help Member States prepare and implement major infrastructure projects, enabling them to make better use of the available financial resources from the Structural and the Cohesion Funds and to accelerate the implementation of these projects.

According to the European Commission, “there is clear evidence to suggest that projects which have received assistance from JASPERS are approved significantly faster than those which are not.”¹²⁸ Since the beginning of the JASPERS programme, around 400 assignments have been completed in the in the Danube Region. In Bulgaria, Hungary, Romania, Slovakia, and Slovenia the majority of the projects supported by JASPERS were in the water and waste sector. Several projects were in the sector air, maritime, and public transport, knowledge economy and energy and in the road sector. With the help of the JASPERS programme, the Member States of the Danube Region were able to raise funds with a total value of around EUR 24.9bn in the period from 2008 to 2012.¹²⁹ On average, JASPERS helped with the implementation of more than 90 percent of the Danube country projects submitted to DG Regio either in the

¹²⁸ http://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/eval2007/jaspers_evaluation/final_report_131212.pdf (p.41)

¹²⁹ http://ec.europa.eu/regional_policy/thefunds/instruments/jaspers_en.cfm#2

planning process or in the application of the projects. Several countries, such as Bulgaria, did not submit any projects without JASPERS assistance. The evaluation report on JASPERS concludes that “on average the availability of JASPERS assistance seems to have reduced the Decision Duration by 114 days”.¹³⁰ As Croatia joined in 2013, it is now also eligible for JASPERS assistance and some projects even were in preparation before its actual accession.

A final instrument in the context of the structural funds to be considered here is the Instrument for Pre-Accession Assistance (IPA). It offers assistance to countries during the accession process to the European Union (EU) in the period 2007-2013. It consists of five different components:

- Assistance for transition and institution building
- Cross-border cooperation (with EU Member States and other countries that are eligible for IPA)
- Regional development (support for transport, environmental protection, infrastructure, enhancing competitiveness and reducing regional disparities)
- Human resources
- Rural development.

The objective is that eligible countries are supported in building the necessary institutional capacities, so that once they have become EU member states they can absorb and make use of EU funding opportunities more efficiently. The last three components are only open to the group of Candidate Countries (this includes Croatia in the Danube Region), while the other Non-Member States of the Danube Region, namely Serbia, Bosnia and Herzegovina, Montenegro and the Neighbouring Countries the Republic of Moldova and Ukraine, can only benefit from components 1 and 2. In 2010 Montenegro was awarded

¹³⁰ http://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/eval2007/jaspers_evaluation/final_report_131212.pdf (p.41). The number refers to all eligible countries, not only the countries of the Danube Region.

Candidate Country status but for the time being, it is not yet eligible for component 3.¹³¹

IPA in Croatia

From 2007 to 2011, the IPA provided Croatia with a budget of about EUR 260m. These IPA funds were used for three multi-annual Operational Programmes. The Environmental Operational Programme (EOP) invests in projects in the waste and water sub-sectors. The Transportation Operational Programme (TOP) invests in projects which will have the greatest impact on the modernisation of several railways, and aims to continue preparing future projects for upgrading and improving inland waterway infrastructure. Finally, the Regional Competitiveness Operational Programme (RCOP) aims to achieve higher competitiveness and a balanced regional development by enhancing SMEs competitiveness, alongside with improving economic conditions in Croatia's lagging areas.¹³²

IPA Programmes are divided into several priority axes, depending on the field the programme focuses on. The cooperation programmes aim at supporting the beneficiary countries in the area of cross-border cooperation between themselves, with the EU Member States or within the framework of cross-border or inter-regional actions. They are mostly financed by EU funds. Nevertheless, a national public contribution to the programmes by participating countries has to be made. The national contribution, however, often only makes up a small amount of the total financial resources (total public contribution). For the period from 2007 to 2013, the EU has provided these IPA Programmes with generous financial resources.

- Bulgaria and Serbia: Total public contribution of about EUR 25m and an EU investment of about EUR 21m.
- Slovenia and Croatia: Total public contribution of about EUR 34m and an EU investment of about EUR 29m.

¹³¹ http://ec.europa.eu/regional_policy/thefunds/ipa/works_en.cfm

¹³² http://ec.europa.eu/regional_policy/thefunds/ipa/croatia_development_en.cfm

- Romania and Serbia: Total public contribution of about EUR 42m and an EU investment of about EUR 36m.
- Hungary and Serbia: Total public contribution of about EUR 40m and an EU investment of about EUR 34m.
- Hungary and Croatia: Total public contribution of about EUR 45m and an EU investment of about EUR 36m.

Besides, there are other IPA Programmes that also concern countries that are not part of the Danube Region. For example, there is an IPA Programme that affects Bulgaria and Macedonia with a total public contribution of about EUR 14m and an EU investment of EUR 12m, one affecting Bulgaria and Turkey with a total public contribution of about EUR 22m and an EU investment of about EUR 18m, and one affecting all countries being part of the Adriatic Region. Among others this also involves Slovenia, Bosnia and Herzegovina and Croatia that are also part of the Danube Region with a total public contribution of about EUR 196m and an EU investment of about EUR 166m.¹³³

5.2 European Investment Bank (EIB)

The European Investment Bank (EIB) is the most important international multi-lateral financing institution in the Danube Region. Being the bank of the European Union, the EIB supports projects that contribute to the implementation of the main EU policy objectives such as growth, employment, economic and social cohesion and environmental sustainability. The EIB's priorities are laid down in its operational plan. The most important of these are:

- Supporting SMEs
- Addressing economic and social imbalances between regions
- Protecting and improving the natural and urban environment
- Promoting innovation through investment in ICT and human and social capital

¹³³ <http://stats.oecd.org/Index.aspx?datasetcode=TABLE2A>

- Improving and linking regional and national infrastructure of transport and energy
- Supporting a competitive and secure energy supply.

The EIB regularly finances about one third of a project, but its share can account for up to 50%. With its contribution to important projects and outstanding pilot projects, the EIB encourages investments that would not have been made without its financial assistance due to lack of financial resources. Thus, the EIB has an important leveraging effect especially with respect to other EU funding opportunities under the Structural or the Cohesion Fund. Moreover, with its expertise and experience, the EIB provides technical assistance and essential knowledge.¹³⁴

Table 16 shows EIB lending activities (finance contracts signed) in the Danube Region over the period from 2007 to 2015. In total, lending contracts concluded with Danube countries had a value of close to EUR 65bn (excluding Baden-Württemberg and Bavaria¹³⁵). Almost half of this amount was granted to the countries of Member States Area 2, about a fifth to Austria and to the countries of Member States Area 3. Relatively small amounts went to the Accession Countries and the Neighbouring Countries.

Table 16: EIB lending (signed contracts) 2007-2015 (in billion €)

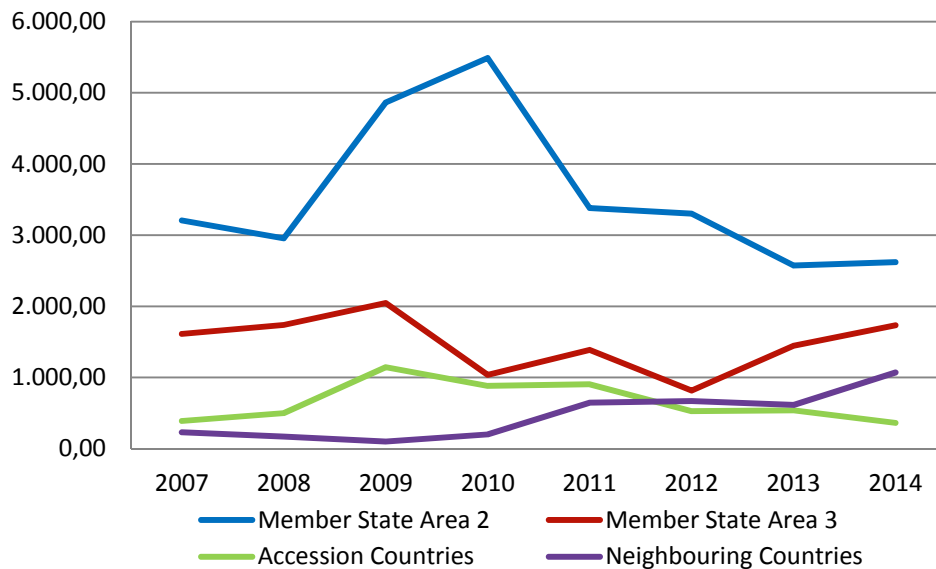
	2007-2015
Danube	64.9
Member States Area 1 (Austria only)	13.1
Member States Area 2	30.0
Member States Area 3	12.3
Accession Countries	5.4
Neighbouring Countries	4.1

Source: European Investment Bank, Finance contracts signed. Illustration and calculation: IAW.

¹³⁴ <http://www.eib.org/about/index.htm?lang=en>

¹³⁵ Figures for the period 2008 to 2012 show that around EUR 8bn were granted to the German Bundesländer Baden-Württemberg and Bavaria, which is roughly equal to EIB lending to Austria during the same period. See http://www.eib.org/attachments/country/the_eib_in_the_danube_region_en.pdf.

**Figure 112: EIB Lending Activities in the Danube Region 2007-2014
(in million €)**



Source: European Investment Bank, Finance contracts signed. Illustration and calculation: IAW.

The development over time shows that in most countries EIB lending activities increased after the financial crisis (Figure 112). This was probably due to the fact that it became harder to get access to other funding sources. As a consequence, more private and public actors made use of EIB financing. In addition, the EIB was committed to fighting the crisis and therefore expanded lending activities. In other countries, however, lending activities did not increase immediately after the crisis but with a lag of two or three years probably depending on the time when the respective countries were hit most by the crisis or when they were able to undertake some countermeasures against it. Only in Bulgaria and Bosnia and Herzegovina, EIB lending activities decreased during the crisis. The EIB normally only finances one third of a project and the EU funds are only granted if local authorities are able to commit their own funds. This has proven difficult for some Member States during a time of fiscal austerity. This puts at risk the implementation of investments that could increase their growth potential. However, the EIB's structural programme loans help to finance part of the national budget's contribution to investment in a wide range of priority projects in most of the eligible Member States in the

Danube Region. By the end of 2012, more than EUR 7bn in EIB loans had helped to generate EUR 80bn of investment. A noticeable development in the year 2014 is the increase in EIB lending to the Danube neighbouring countries. Particularly, the lending activities in the Ukraine have doubled compared to 2013. The ongoing political and economic turmoil in the Ukraine culminated in the summer of 2014. In order to stabilize the country's economy and assure the realization of priority projects, the EIB granted these additional funds.¹³⁶

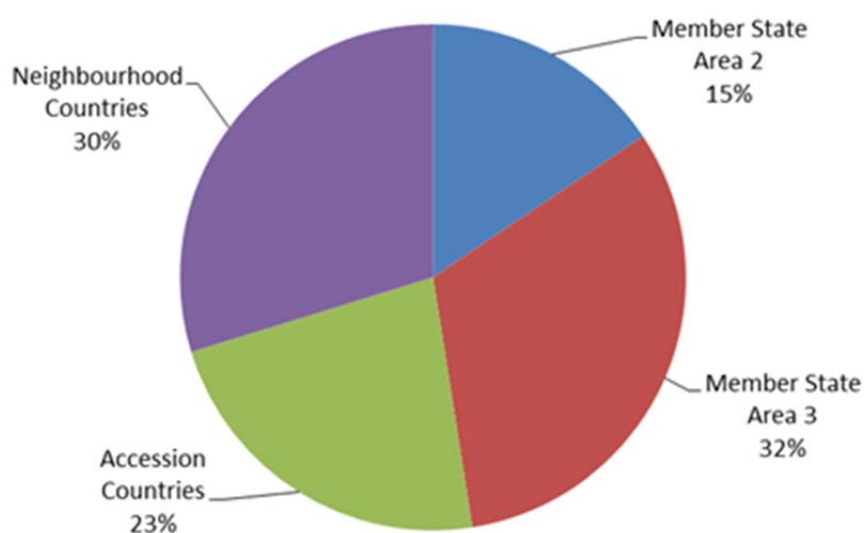
5.3 European Bank for Reconstruction and Development (EBRD)

The EBRD is a multilateral financing institution founded after the fall of the Iron Curtain in order to support the establishment of open and democratic market economies in Eastern Europe. Its shareholders are 64 countries, the EU and the EIB. Recently, the EBRD has expanded its scope also to Central Asia and started lending activities in some of the countries of Northern Africa that needed assistance after the Arab Spring in 2012. In the Danube Region, the EBRD is one of the most active financing institutions, investing especially in projects that otherwise could not be financed as capital markets are not able to provide the necessary funding. The EBRD is committed to environmentally friendly and sustainable development and supports the objectives of EU cohesion policy.

The EBRD normally provides loans from around EUR 5m to EUR 230m and finances about one third of a project. Similar to the EIB, the EBRD helps countries or its respective public and private actors to raise the necessary funds in order to make better use of the given financial resources. From 2010 to 2014, its total annual bank investment was of about EUR 44bn of which EUR 8.9bn were assigned in the year 2014. From the 2014 bank investment, about 26% were allocated to the corporate sector, 19% to the energy sector, about 32% to financial institutions and the remaining 23% were allocated to investments in infrastructure. In 2013 and 2014, the EBRD's annual bank investment in the Danube Region amounted to around EUR 5bn each year, which accounted for

¹³⁶ <http://www.eib.org/infocentre/press/releases/all/2014/2014-269-eib-president-werner-hoyer-visit-and-eu-commitment-to-supporting-ukraine.htm>

Figure 113: EBRD’s Annual Bank Investment in the Danube Region 2013



Source: EBRD Annual Report 2014. Illustration and Calculation: IAW.

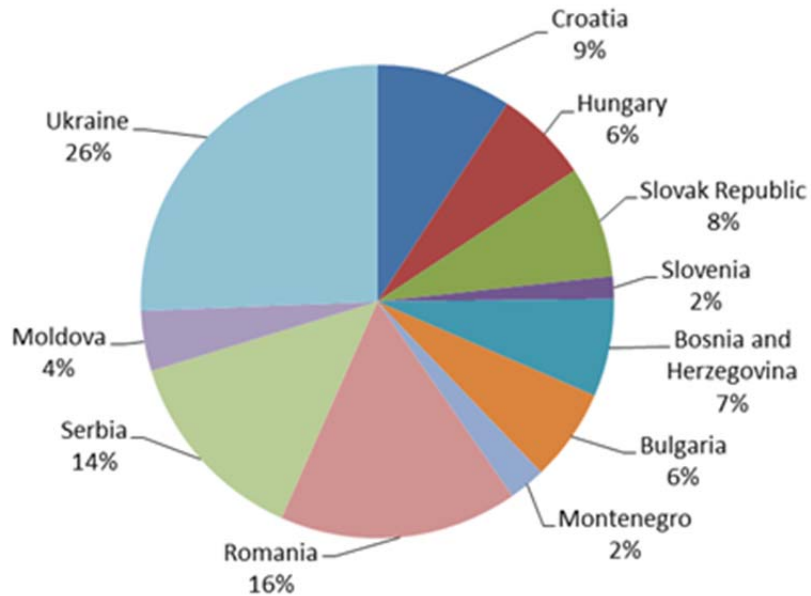
over 50% of the EBRD’s total annual bank investment in the years 2013 and 2014. This is a noticeable increase to the share of roughly 30% of annual bank investment in the years 2011 and 2012.¹³⁷

In the Danube Region, only Germany, Austria, and the Czech Republic, where the EBRD has not made any new investments since 2008, are not within the scope of EBRD lending activities. Among the remaining countries, the EBRD is very active in the Member State Area 3, which consists of Bulgaria, Romania, and Croatia. In 2013, their share of EBRD’s annual bank investment amounted to 32%. In the same year the Neighbouring Countries, namely Moldova and Ukraine, accounted for about 30%, followed by the Accession Countries with 23% (Figure 113). A more detailed overview of the individual countries’ share of EBRD’s annual bank investment in 2013 is provided in Figure 113.

Comparing the composition of bank investment for the year 2013 to 2014 (Figure 113 and Figure 115), one can observe a significant increase in the allo-

¹³⁷ EBRD Annual Report 2014, <http://www.ebrd.com/publications/annual-report>

Figure 114: EBRD's Annual Bank Investment in the Danube Region 2013

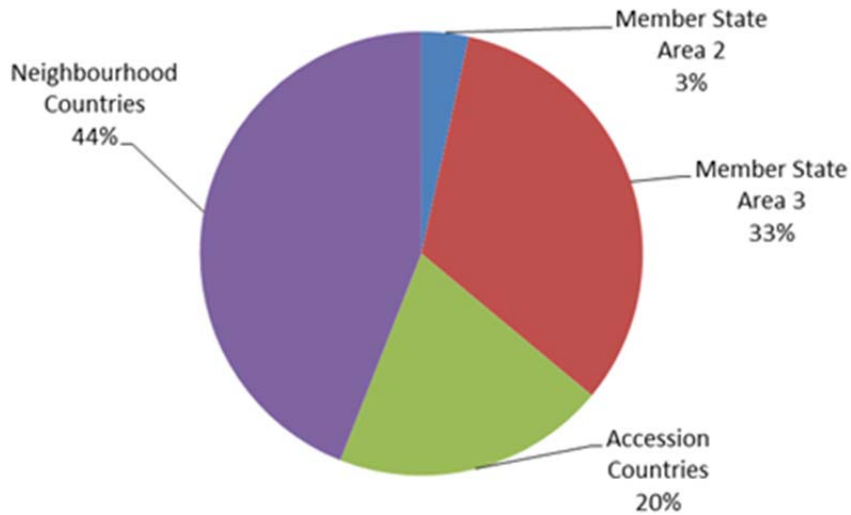


Source: EBRD Annual Report 2014. Illustration and Calculation: IAW.

cation of funds to the Neighbouring Countries. This development is driven by nearly a doubling in EBRD bank investment to the Ukraine from 2013 to 2014. Similar to the motifs of the EIB, the EBRD is reacting to the geopolitical tensions in the Ukraine. In order to contribute to a stabilization of the country, the EBRD extended new loans and renewed commitments. Moreover, the EBRD sees reasons for hope as the Maidan protests resulted in more democratic accountability, a stronger rule of law and fight against corruption. This aids to improve the investment climate in the medium-run.

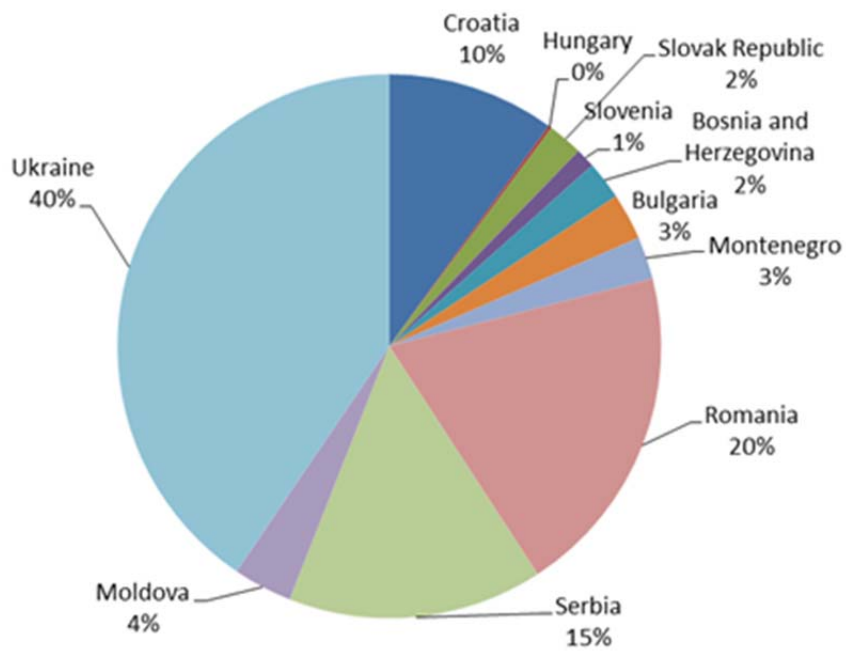
This shift in priorities also meant that compared to 2013, the investment in Danube Region 2 decreased in 2014. Particularly Hungary and the Slovak Republic were affected. Similarly, Bosnia and Herzegovina (as part of the Accession countries) received only about a quarter of the funds in 2014 (Figure 116).

Figure 115: EBRD’s Annual Bank Investment in the Danube Region 2014



Source: EBRD Annual Report 2014. Illustration and Calculation: IAW.

Figure 116: EBRD’s Annual Bank Investment in the Danube Region 2014



Source: EBRD Annual Report 2014. Illustration and Calculation: IAW.

5.4 Council of Europe Development Bank (CEB)

The CEB is a multilateral development bank with a social vocation, focusing on activities that contribute directly to strengthening social cohesion in Europe. The CEB represents a major instrument of aid policy in Europe, which aims to achieve sustainable and equitable growth. Therefore it participates in financing social projects that improve the living conditions of the most disadvantaged population groups. The CEB contributes to the implementation of socially oriented investment projects through four sectorial lines of action. These are strengthening social integration, managing the environment, supporting public infrastructure with a social vocation and supporting Micro-, Small and Medium Sized Enterprises (MSMEs).¹³⁸

In the 2010-2014 period, the total value of projects approved by the CEB in the countries of the Danube Region was of about EUR 1.9bn. There has been a decline of activities in the Danube countries: whereas in 2013, the value of the projects approved in the Danube Region amounted to EUR 645.5m, the volume amount decreased to EUR 578.5m in 2012.¹³⁹

5.5 International Financing Institutions

World Bank

The World Bank Group is an active player in the countries of the Danube Region. It consists of several institutions; the focus here is on the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). In order to assess their activity in the Danube Region, we take a closer look at the data provided by the World Bank itself for IBRD loans and IDA credits (DOD, current US\$) in the period from 2003 to 2013.

Not all countries of the Danube Region are part of World Bank lending programmes. Austria, Croatia, the Czech Republic, Germany, Slovakia and Slove-

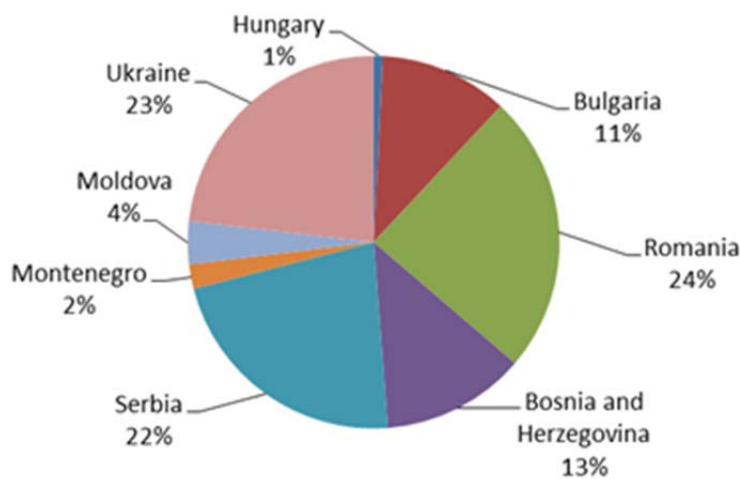
¹³⁸ <http://www.coebank.org/Contenu.asp?arbo=74&theme=1>

¹³⁹ CEB Annual Report 2014, <http://www.coebank.org/en/news-and-publications/ceb-publications/>

nia did not receive any loans or credits from these institutions during this period. Only Hungary, Bulgaria, Romania, Bosnia and Herzegovina, Serbia, Montenegro, Moldova and Ukraine received loans and credits. These amounted to USD 133bn between 2003 and 2013. Figure 117 shows that around 23% of these were allocated to each Romania, Serbia and Ukraine. Relative to population and GDP, World Bank activities were most important in Serbia, probably due to the aftermath of its military conflicts in the 1990s and the resulting reconstruction work. In the same period, USD 15bn each were granted to Bulgaria and Bosnia and Herzegovina. Relative to population and GDP, World Bank lending is more important in Bosnia and Herzegovina than in Bulgaria. From 2003 to 2013, the value of the loans and credits allocated to the Republic of Moldova by the IBRD and the IDA amounted to around USD 5bn (4% of total Danube lending), for Montenegro this amount was about USD 3bn (2%) and for Hungary only about USD 1bn (less than 1%).

The development of World Bank lending in the Danube Region over time shows that in Bulgaria and Serbia, lending activities fluctuated a little but remained more or less constant. The same is true for Montenegro after its independence. By contrast, lending in Bosnia and Herzegovina, Romania, Moldova and Ukraine has increased since 2003. In addition, in most of these countries

Figure 117: IBRD Loans and IDA Credits to the Danube Region 2003-2013



Source: World Bank, IBRD loans and IDA credits (DOD, current US\$). Illustration and calculation: IAW.

this trend accelerated in the years after the crisis. Only in Hungary did World Bank lending activities, which already started at a very low level, decrease and nearly stopped towards the end of the observation period. Taken together, World Bank lending activities relative to GDP are more important in the Balkan countries than in the other regions. In most of the Danube countries in which the World Bank is active, lending increased after the financial crisis.

International Monetary Fund

The IMF's activities are centred around macroeconomic stability and the reduction of poverty. The IMF generally deals with crisis prevention in order to stabilize the balance of payments and avoid public default; it imposes conditions in form of macroeconomic programmes which the government is obliged to implement in exchange for the loan. Table 17 shows IMF loans (purchases) for the 2007-2013 period. Purchases are total drawings on the General Resources Account (GRA) of the IMF during the year specified, excluding drawings in the reserve tranche. Only 6 out of 15 countries and regions in the Danube Region received financial support between 2007 and 2013.

Table 17: IMF purchases (DIS, in Million US\$)

Country Name	2007	2008	2009	2010	2011	2012	2013	Sum
Bosnia and Herzegovina	0	0	281	237	0	154	167	841
Hungary	0	6,662	5,278	0	0	0	0	11,941
Moldova	33	36	0	183	157	152	0	562
Romania	0	0	9,390	5,664	1,212	0	0	16,267
Serbia	0	0	1,575	457	73	0	0	2,106
Ukraine	0	4,742	6,169	3,433	0	0	0	14,345
Total	33	11,441	22,695	9,975	1,443	307	167	46,065

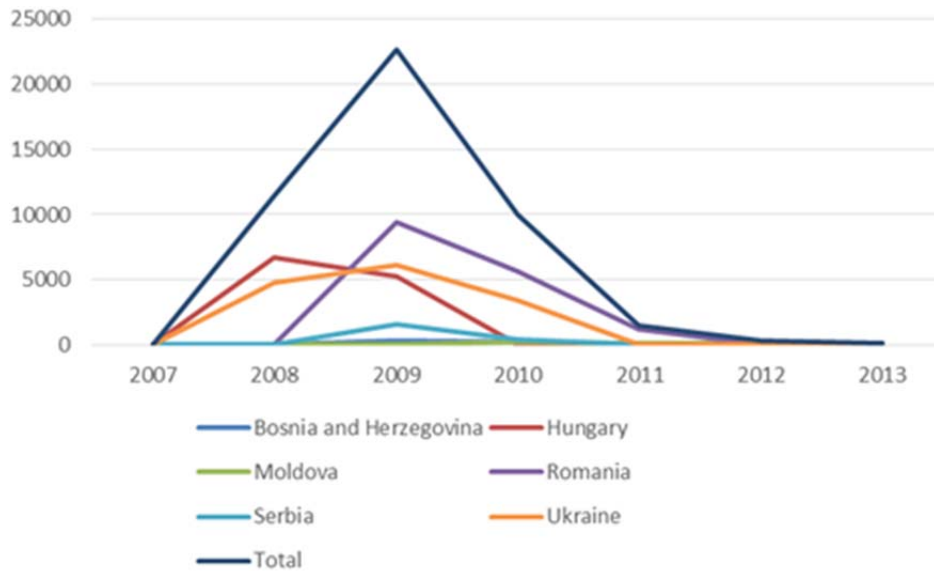
Source: World Bank, IMF purchases (DIS, current US\$). Illustration and calculation: IAW.

The recipient countries belong to Member States Area 2 (Hungary), Member States Area 3 (Romania), the Accession Countries (Bosnia and Herzegovina, Serbia) and the Neighbouring Countries (Ukraine, Moldova). In general, a spike can be observed from 2007 to 2009 that subsequently diminishes, probably due to increased support during the worst period of the financial and sovereign debt crisis. But the aggregated view hides considerable differences between the countries. For example, Hungary only received loans in 2008 and

2009, whereas Moldova consistently received loans, except for 2009 and 2013. The largest disbursements were given to Romania, with a sum of USD 16,267m, followed by Ukraine (USD 14,346m), Hungary (USD 11,941m). In comparison, Serbia (USD 2,106m), Bosnia and Herzegovina (USD 842m) and Moldova (USD 563m) received relatively small loans. Note that in the period under discussion, for EU member states the loans were not given out by the IMF alone, but joint with other partners, e.g. from 2009-2011 there was a BOP assistance programme for Romania.¹⁴⁰

The change in purchases over time can be detected easily when looking at Figure 118.

Figure 118: IMF purchases (disbursement, in Million US\$)



Source: World Bank, IMF purchases (DIS, current US\$). Illustration and calculation: IAW.

To alleviate poor financing conditions in low-income countries, the IMF created the Poverty Reduction and Growth Trust (PRGT), which is part of a new framework of the Fund’s concessional lending facilities for low-income coun-

¹⁴⁰ http://ec.europa.eu/economy_finance/assistance_eu_ms/romania/index_en.htm

tries approved in January 2010.¹⁴¹ Among the Danube Countries, only Moldova received disbursements from this special fund. As of January 2014 and considering all years starting in 2003, flows were only registered by the IMF between 2006 and 2012, except 2009. In sum, Moldova received USD 259m (Table 18).

Table 18: PRGT disbursements to Moldova between Jan 1st 2003 and Jan 31st 2014 (in Million US\$)

2006	2007	2008	2009	2010	2011	2012	Sum
43.41	21.71	22.88	0	80.0	60	30.88	258.88

Source: IMF, PRGT disbursements. Illustration and calculation: IAW.

5.6 Official Development Assistance

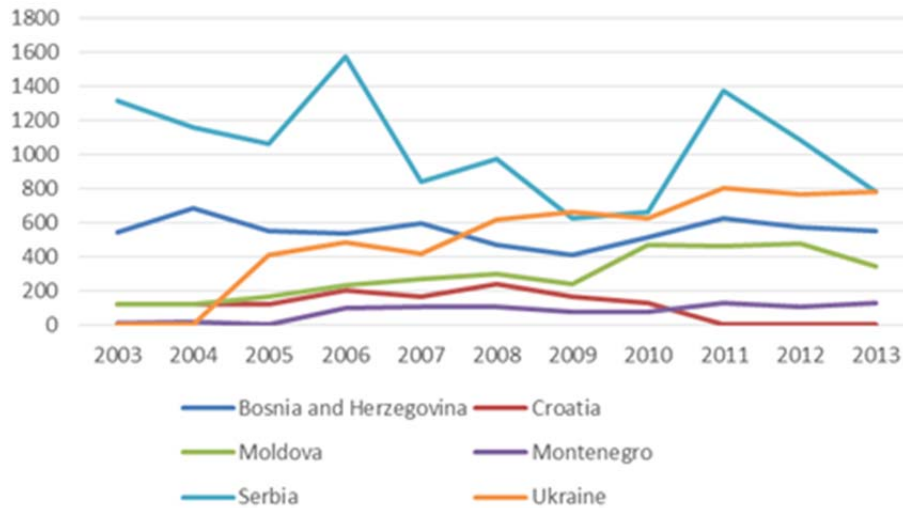
The term Official Development Assistance (ODA) is defined by the OECD as *“flows of official financing administered with the promotion of the economic development and welfare of developing countries as the main objective, and which are concessional in character with a grant element of at least 25 percent (using a fixed 10 percent rate of discount). By convention, ODA flows comprise contributions of donor government agencies, at all levels, to developing countries (“bilateral ODA”) and to multilateral institutions. ODA receipts comprise disbursements by bilateral donors and multilateral institutions. Lending by export credit agencies—with the pure purpose of export promotion—is excluded.”*¹⁴² In the Danube Region, with the exception of Croatia, only the Accession Countries, i.e. Bosnia and Herzegovina, Serbia and Montenegro, and the Neighbouring Countries, Moldova and Ukraine, received ODA during the last ten years. Since 2011, Croatia has ceased to receive ODA (Figure 119). The reason why the Balkan Countries have received more than \$19.6bn of ODA since 2003 can still be traced back to the military conflicts during the 1990s, when large parts of this region and its infrastructure were damaged. This is why this region in many areas still lags behind and therefore is one of the economically weaker regions within the Danube Region. The Republic of Moldova

¹⁴¹ <https://www.imf.org/external/np/exr/facts/concesslending.htm>

¹⁴² <http://stats.oecd.org/glossary/detail.asp?ID=6043>

and Ukraine also belong to the economically weakest countries of the Danube Region and since 2003 were paid around \$ 8.8bn of ODA.

Figure 119: ODA Total Net (in million US\$)



Source: OECD: Aid (ODA) disbursements to countries and regions. Illustration and calculation: IAW.

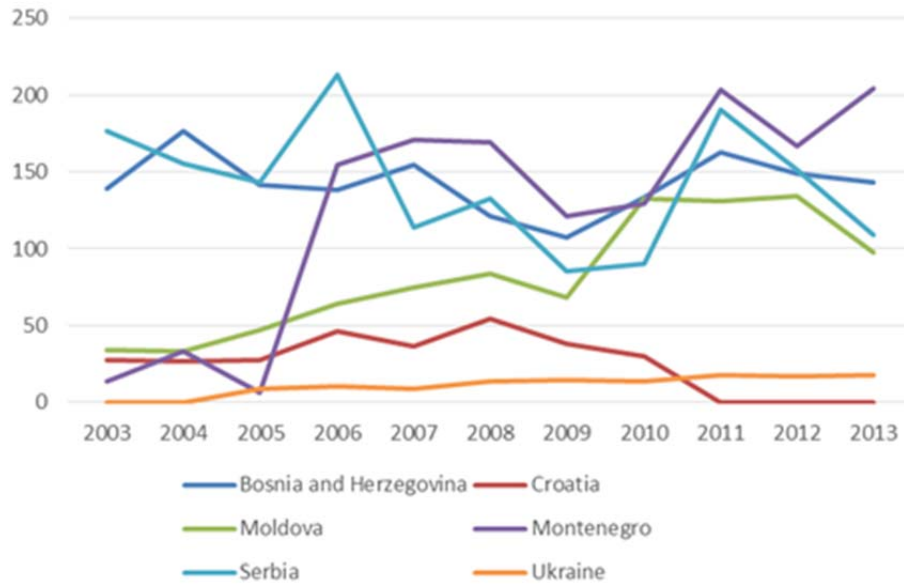
Looking at ODA per capita (Figure 120) instead of total ODA per country reveals a somewhat different pattern. ODA tends to be higher in countries with smaller population size. For instance, ODA per capita is relatively low in Ukraine although it is one of the countries that receive most ODA in the Danube Region.

Figure 120 also points to a strong rise in ODA per capita in Montenegro between 2005 and 2006. Clearly, this has to be put into context with Montenegro's independence in 2006.

Finally, Figure 121 shows that in Croatia and in Ukraine ODA is only a very small portion of total GNI, suggesting that these two countries are mostly independent of ODA. This can be due to the fact that these countries receive less ODA in absolute value or due to the fact that total GNI is simply much bigger than in the other countries considered and therefore ODA is less important for these countries. In the first graph we indeed saw that Croatia received only little ODA in absolute value and since 2011 received none. This suggests that Croatia's situation has improved a lot in the last years. However, in Ukraine ODA flows increased in absolute value in the last years but because

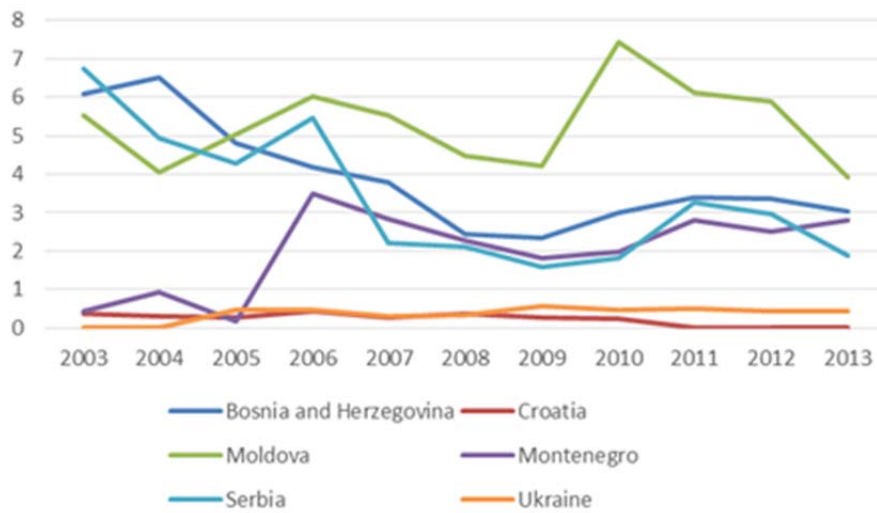
of the size of the country and its larger GNI, ODA still has only a small share in GNI.

Figure 120: ODA per Capita (in US\$)



Source: OECD: Aid (ODA) disbursements to countries and regions. Illustration and calculation: IAW.

Figure 121: ODA (in % of GNI)



Source: OECD: Aid (ODA) disbursements to countries and regions. Illustration and calculation: IAW.

In Bosnia and Herzegovina and Serbia, the share of ODA in GNI started at a very high level of around 6 or 7 percent in 2003. Subsequently, this share has decreased first and then moderately increased after 2008, possibly because of the economic crisis. In both countries, ODA currently amounts to three percent of GNI. The share of ODA in GNI in Moldova also started at a high level of more than 5 per cent and then increased further in the aftermath of the economic crisis. In 2013, the share of ODA of total GNI in Moldova decreased again to around four percent, which is still the highest level in the Danube Region. In Montenegro, the ODA share in GNI started at a very low level and then increased to a level of around three percent in 2013.

5.7 Implications for competitiveness

There is a multitude of institutions providing external financing and aid to the countries of the Danube area. However, the effects of the different instruments on competitiveness and growth in the Danube area are difficult to assess.

Quantitatively, EU cohesion policy is particularly important as far as the EU member states are concerned. Many existing studies show that the structural funds have a positive effect on growth. However, they also point to differences in the effectiveness of cohesion policy. These are partly driven by differences in absorption rates, which range from 50% to 90% in the Danube Area. These differences are partly due to the lack of co-financing in some countries, but the literature also points to differences in government effectiveness and administrative capacities.

Another issue is to which extent the programmes and projects funded by cohesion policy contribute to competitiveness and growth. Spending in different areas (such as education, research and development, environment etc.) is likely to have a different effect on long-run economic development. A study by Borgloh et al. (2012)¹⁴³ shows that the share of structural funds allocated to

¹⁴³ Borgloh, Sarah; Friedrich Heinemann; Florian Misch; Christoph Schröder; Mustafa Yeter (2012): Growth-Enhancing Expenditure in EU Cohesion Spending from 2007 to 2013, Final Report to the Federal Ministry of Finance, ZEW Mannheim

areas with a high impact on growth varies substantially between EU member states. This suggests that a redistribution of funds could enhance their effectiveness on growth and competitiveness.

Financing institutions such as the EIB and the EBRD are essential for funding infrastructure, education and innovations. With a particular focus on small and medium-sized companies, the EIB is likely to enhance growth and job creation in the SME sector. Different institutions also have a different regional focus; for instance, the EBRD is more active than the EIB in the Neighbouring and Accession Countries.

The countries within these regions are also recipients of loans and credits of the World Bank and Official Development Assistance (ODA). Enhancing competitiveness is one of three pillars of the World Bank's lending strategy; the other two are social inclusion and climate policy. Recent World Bank projects in the Danube Area concerned tax administration, infrastructure, business environment and policies conducive to innovation, as well as policies that strengthened financial sector regulations (World Bank, 2013).¹⁴⁴

A complex evaluation system has been set up to monitor the effectiveness of World Bank projects on a regular basis, including the validation of the Independent Evaluation Group (IEG). A cost-benefit analysis performed by the IEG (2010) suggests that the implementation of market-oriented reforms positively influences the rates of return to World Bank projects.¹⁴⁵ For instance, the rates of return in Romania and Bulgaria more than doubled after the implementation of reforms in the late 1990s (IEG 2010, Table C2). This emphasizes that the provision of funds is only a necessary but not a sufficient condition for an increase in competitiveness and growth. Institutional qualities, as discussed in other parts of this report, and the economic capacity crucially determine whether the provision of finance unleashes economic competitiveness and dynamics.

¹⁴⁴ World Bank (2013): Annual Report. World Bank, Washington, DC

¹⁴⁵ Independent Evaluation Group (IEG) (2010): Cost-Benefit Analysis in World Bank Projects. World Bank, Washington, DC

6 Cooperation and Cooperation Potential in the Danube Region

6.1 International cooperation of administrative bodies in the Danube Region and beyond

6.1.1 Political and economic cooperation networks in Europe

Countries and various other administrative bodies cooperate in the Danube Region based on proximity and joint interests. Some of the countries are EU members; others receive EU support to intensify cooperation as future or potential candidate countries. Regions of the former Soviet Union belong to countries of the European Neighbourhood policy. Cooperation projects exist within and along these division lines. Some of the networks go beyond the Danube area. In the following we cover those organisations that already have or may have in the future some role in enhancing cooperation within the Danube Region. Information is based on websites of the cooperation networks and their supported projects.

Visegrad Group (V4)

Established in 1991 the Visegrad Group (V4) comprises the Czech Republic, Hungary, Poland and Slovakia – three of which are in the Danube Region. The backbone of this cooperation consists of mutual contacts at all levels, from the highest-level political summits to expert and diplomatic meetings, to activities of the non-governmental associations in the region, think-tanks and research bodies, cultural institutions or numerous networks of individuals. The V4 was a vehicle of EU and NATO accession and remains an important network to support joint interest of members in the EU. The V4 may set an example what level of cooperation may be achieved also in the Danube Region. The Hungarian Presidency in the Visegrad Group (2013/2014) set various economic targets from energy security through transport connection to cluster cooperation. The related document states that “the regional cooperation of states in the framework of the EU macroregional strategies like the EUSDR are aiming mainly at the improvement of security, prosperity and the sustainability of the given macro region in a coherent way. These tools stretching across the counties of the Visegrad Group could play an important role during the next budg-

etary period to achieve major development goals of the V4, in terms of North-South infrastructure connection as well as in boosting growth and rising employment, improvement of R&D capacities and acceleration of the technology transfer. Through a strategic V4 thinking, cooperation and new partnerships, based on shared interest the V4 should enhance the efficiency of these tools in our region, in practice these actions could serve as a bridge concerning the institutional cooperation between the Baltic and the Danube Regions.” (<http://www.visegradgroup.eu/about/cooperation>)

The Slovak Presidency ending in June 2015 under the motto “Dynamic Visegrad for Europe and Beyond” focused on the implementation of long-term objectives of the Visegrad cooperation in priority areas such as energy, transport, defence, and external dimension. The Danube Region cooperation was not mentioned in the final declaration of the Slovak Presidency (<http://www.visegradgroup.eu/joint-statement-of-the-150619>). The programme of the current Czech Presidency mentions the EUSDR only in the context of energy policy (<http://www.visegradgroup.eu/documents/presidency-programs/presidency-programs>.) It seems that V4 leaders seek solutions to political and economic challenges in the V4 rather than the Danube Region context.

Transnational programmes under the European Territorial Cooperation

Transnational cooperation, known as Interreg B, involves regions from several countries of the EU forming bigger areas. It aims to promote better cooperation and regional development within the Union by a joint approach to tackle common issues. Interreg B supports a wide range of project investment related to innovation, environment, accessibility, telecommunications, urban development etc. The transnational programmes add an important extra European dimension to regional development, developed from analysis at a European level, leading to agreed priorities and a coordinated strategic response. Five of the 15 transnational programmes have relevance to the Danube Region in the 2014-2020 financing period:

Alpine Space

Central Europe

Adriatic - Ionian

Mediterranean

Danube

(http://ec.europa.eu/regional_policy/atlas2007/transnational/index_en.htm)

Alpine Space Programme

This transnational cooperation programme supports cooperation projects between Germany, France, Italy, Austria and Slovenia (with participation from Liechtenstein and Switzerland). The Alpine Space is composed of territories with contrasted demographic, social and economic trends and a great cultural and linguistic diversity. This diversity goes along with a great variety of governance systems and traditions. Both the common specificities of the Alpine Space and its variety and diversity call for cooperation. The Programme aims to boost research, technological development and innovation; contribute to support the shift towards a low-carbon economy in all sectors; protect the environment and promote resource efficiency; enhance institutional capacity and an efficient public administration

The Programme focuses on four main priorities:

- Innovative Alpine Space
- Low Carbon Alpine Space
- Liveable Alpine Space
- Well-Governed Alpine Space

Expected impacts

- Number of enterprises cooperating with research institutions (1000 in 2023).
- Increase by 1% the level of potential to access and use low carbon mobility and transport options.
- Increase between 1% and 3% the level of sustainable valorisation of cultural and natural heritage of the Alpine Space.

Central Europe

Transnational cooperation in Central Europe is the catalyst for implementing smart solutions answering to regional challenges in the fields of innovation, low-carbon economy, environment, culture and transport. It builds regional capacities following an integrated bottom-up approach involving and coordinating relevant actors from all governance levels.

The Programme focuses on four main priorities:

- Cooperating on innovation to make Central Europe more competitive
- Cooperating on low-carbon strategies in Central Europe
- Cooperating on natural and cultural resources for sustainable growth in Central Europe
- Cooperating on transport to better connect Central Europe

Expected impacts:

- to improve sustainable linkages among actors of the innovation systems for strengthening regional innovation capacity and to improve skills and entrepreneurial competences for advancing economic and social innovation;
- to develop and implement solutions for increasing energy efficiency and renewable energy usage in public infrastructures; to improve territorially based low-carbon energy planning strategies and policies supporting climate change mitigation;
- to improve capacities for mobility planning in functional urban areas to lower CO₂ emissions
- to improve integrated environmental management capacities for the protection and sustainable use of natural heritage and resources;
- to improve capacities for the sustainable use of cultural heritage and resources;
- to improve planning and coordination of regional passenger transport systems for better connections to national and European transport networks; to improve coordination among freight

transport stakeholders for increasing multimodal environmentally-friendly freight solutions

Adriatic – Ionian

The ADRION Programme (2014-2020) is built around four thematic priority axes:

1. Innovative and smart region

Specific objective: to support the development of a regional innovation system for the Adriatic-Ionian area.

2. Sustainable region

Specific objective: promote the sustainable valorisation and preservation of natural and cultural assets as growth assets in the Adriatic-Ionian area.

Specific objective: enhance the capacity in transnationally tackling environmental vulnerability, fragmentation and the safeguarding of ecosystem services in the Adriatic-Ionian area.

3. Connected region

Specific objective: enhance capacity for integrated transport and mobility services and multimodality in the Adriatic-Ionian area.

4. Supporting the governance of the EU Strategy for the Adriatic and Ionian Region EUSAIR

Specific objective: Facilitate the coordination and implementation of the EUSAIR by enhancing institutional capacity of public administrations and key stakeholders and by assisting the progress of implementation of joint priorities.

The programme will invest EUR 83.5 million from the ERDF and EUR 15.7 million from IPA II for transnational projects in the Adriatic-Ionian area. Eligible partners will come from 4 EU countries: Croatia, Greece, part of Italy, Slovenia, and 4 non-EU countries: Albania, Bosnia and Herzegovina, Montenegro, and Serbia – five of the mentioned countries are also parts of the DR.

Mediterranean

The Programme aims to promote growth in the Balkan and Mediterranean area by fostering innovative concepts and practices (technologies, governance, and innovative services). It will also encourage sustainable use of (natural and cultural) resources and support social integration, through an integrated and territorially based cooperation approach.

The Programme will focus on four main priorities:

- Promote innovation capacities to develop smart and sustainable growth
- Foster low carbon strategies and energy efficiency
- Protect and promote the Mediterranean natural and cultural resources
- Enhance the Mediterranean transnational governance

Expected impacts

- Foster innovation of public and private actors involved in green and blue growth sectors, creative industries and social economy, increasing by 16% the share of innovative clusters involved in transnational activities;
- Raise capacity for better management of energy in public buildings by doubling the number of plans with energy management measures for public building stocks;
- Increase access and use of sustainable transports systems by doubling the share of urban plans with low carbon transport soft actions;
- Improve by 10% the level of sustainability of tourism in MED coastal regions, through better cooperation and joint and integrated planning;

Danube Transnational Programme (DTP)

The Danube Transnational Programme (2014-2020) is a financing instrument which supports the policy integration in the Danube Region. Geographically

the DTP overlaps with the EUSDR and a coordination mechanism is in place between the financing instrument and the broader strategy. DTP is built around four thematic priority axes:

1. Innovative and socially responsible Danube region:

1.1 Improve framework conditions for innovation;

1.2 Increase competences for business and social innovation;

2. Environment and culture responsible Danube region:

2.1 Strengthen transnational water management and flood risk prevention;

2.2 Foster sustainable use of natural and cultural heritage and resources;

2.3 Foster the restoration and management of ecological corridors;

2.4 Improve preparedness for environmental risk management;

3. Better connected and energy responsible Danube region:

3.1 Support environmentally-friendly and safe transport systems and balanced accessibility of urban and rural areas;

3.2 Improve energy security and energy efficiency;

4. Well-governed Danube region:

4.1 Improve institutional capacities to tackle major societal challenges;

4.2 Support to the governance and implementation of the EUSDR.

The programme will invest EUR 202.3 million from the European Regional Development Fund (ERDF) and EUR 19.8 million from the Instrument for Pre-Accession (IPA II) for transnational projects in the Danube basin territory in the 2014-2020 financing period. The first calls have been envisaged for the third quarter of 2015.

Central European Initiative (CEI)

The CEI is an intergovernmental forum promoting political, economic, cultural and scientific cooperation among its Member States. Its core mission is: Regional Cooperation for European Integration. Moreover, the CEI considers itself in a unique position to act as a bridge between macro-regions, such as the Baltic, Danube, Adriatic and Black Sea Regions. Member states include all Danube Region countries minus Germany plus Italy and some neighbouring non-EU members. The CEI Cooperation Activities include projects of small scale and limited duration, which mainly take the form of seminars, workshops, short training courses or other kind of meetings. CEI participates in EU Projects, has a Know-how Exchange Programme, a University Network and a Science and Technology Network. The CEI Cooperation Fund has directly supported some EUSDR programmes. (<http://www.cei.int>)

The partnership between the CEI and the European Bank for Reconstruction and Development (EBRD) through the Italy-sponsored CEI Fund at the EBRD has brought about very concrete results in the CEI region. Grant-financing for technical assistance contributed to the preparation and implementation of a number of investment and non-investment operations as well as to the provision of advisory services for EBRD private and public sector clients. CEI Cooperation Fund supports action under the EUSDR. E.g. the *Danube:Future* White Paper on Integrated Sustainable Development of the Danube River Basin was presented in July 2015 at a workshop in Klagenfurt, Austria. (Danube:Future is a flagship project of PA7).

Organisation of the Black Sea Economic Cooperation (BSEC)

The BSEC came into existence in 1992 as a multilateral political and economic initiative aimed at fostering interaction among the Member States (Albania, Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Moldova, Romania, Russia, Serbia, Turkey and Ukraine), as well as to ensure peace, stability and prosperity, encouraging friendly and good-neighbourly relations in the Black Sea region. Romania is providing chairmanship in the second half of 2015 and envisages revitalizing economic cooperation. (<http://www.bsec-organization.org>)

There are a large number of working groups from culture to SME development with coordinators from the various member states. Among them, the BSEC Business Council aims to promote business cooperation and regional integration. The main objectives of the BSEC Business Council are to provide a plat-

form for public-private partnership, lobbying and acting for the improvement of the business and investment environment throughout the region by broadening cooperation with countries outside of the region as well as by creating and strengthening cooperation with international organizations and financial institutions and to ensure the full-fledged participation in the global and regional initiatives. EUROLINK-House of Europe is the co-ordinator of the Black Sea – Danube Regional Network for Social & Economic Innovation, which was launched in 2011. Within an institutional partnership with the Romanian National Coordinator of the EU Strategy for the Danube Region, the Regional Network plays the role of integrator of initiatives and partnerships from the Black Sea - Danube area.

6.1.2 Regional cooperation in South-East Europe (SEE) with EU support

The transnational programmes Central Europe, Mediterranean and Danube have replaced the former South-East Europe Programme for the 2014-2020 financing period. Still the SEE coordination bodies remained in place and they implement the SEE 2020 Development Strategy.

Regional Cooperation Council (RCC)

The Regional Cooperation Council (RCC) was launched by the Ministers of Foreign Affairs of the South-East European Cooperation Process (SEECP) in 2008, as the successor of the Stability Pact for South Eastern Europe. (www.rcc.int) Through a regionally owned and led framework, the RCC focuses on promotion and enhancement of regional cooperation in South East Europe (SEE) and supports European and Euro-Atlantic integration of the aspiring countries. The RCC provides operational capacities to and works under the political guidance of the SEECP. The work of the RCC focuses on the priority areas of economic and social development, energy and infrastructure, justice and home affairs, security cooperation, building human capital, and parliamentary cooperation as an overarching theme. The activity of the RCC is not directly linked to the EUSDR although most of its member states and policy goals are identical.

Various activities of RCC cover different sets of countries but the West-Balkan countries comprise the core. In the Economic and Social Development priority

area, the RCC is partnering with 10 regional initiatives – three of them outlined below are promoting the business and investment climate in the SEE.

South East Europe Investment Committee (SEEIC)

SEEIC is a high-level coordination body that supports the implementation of policies promoting foreign and domestic investment. (<http://www.seeic.rcc.int>) Members of SEEIC include Albania, Bosnia and Herzegovina, Bulgaria, Croatia, The Former Yugoslav Republic of Macedonia, Moldova, Montenegro, Romania, Serbia, with Kosovo* as an observer. SEEIC was empowered to engage in the SEE 2020 vision-building and placed into regional ownership. SEEIC currently has three main objectives:

- Development of the South East Europe 2020 Strategy (jointly with the SEE countries), based on 5 growth pillars: 1) integrated, 2) smart, 3) sustainable and 4) inclusive growth underpinned by 5) governance for growth
- Increasing competitiveness and enhancing regional value chains
- Promoting the SEE region as an attractive investment destination

Central European Free Trade Agreement 2006 (CEFTA)

CEFTA, in its current form, came into existence through the Agreement to amend and enlarge the Central European Free Trade Area in 2006 and signed by Albania, Bosnia and Herzegovina, Croatia, Macedonia, Moldova, Montenegro, Serbia and UNMIK on behalf of Kosovo. The main objectives of the agreement are to expand trade in goods and services and foster investment by means of fair, stable and predictable rules, eliminate barriers to trade between the members, provide appropriate protection of intellectual property rights in accordance with international standards and harmonise provisions on modern trade policy issues such as competition rules and state aid. The free flow of goods has been established between members and the liberalization of trade in services is under negotiation as of mid-2015. (www.cefta.int)

The Regional Rural Development Standing Working Group of SEE (RRDSWG)

RRDSWG is an intergovernmental organisation for regional rural development in SEE, which aims to empower and promote sustainable agriculture and rural

development through networking and permanent cooperation between stakeholders in the SEE region. (seerural.org)

6.2 Business and cluster cooperation programmes in the EU involving DR countries

Fostering competitiveness is in the focus of activity for several EU and transnational initiatives. One group of initiatives is related to business organisations like chambers of commerce, another type supports the cross-border cooperation of clusters. The general aims have been set in the Europe 2020 growth strategy having three mutually reinforcing priorities for the EU to become a smart, sustainable and inclusive economy.

EU programme for the Competitiveness of Enterprises and SMEs (COSME)

The activity of the European Commission in the field of SMEs is based on the Small Business Act which is an overarching framework for the EU policy. COSME is the main support programme of the EU DG GROWTH (Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs) in support of SMEs. It is running during 2014–2020 with a planned budget of EUR 2.3 billion. (http://ec.europa.eu/growth/smes/cosme/index_en.htm)

- COSME aims to make it easier for SMEs to access finance in all phases of their lifecycle – creation, expansion, or business transfer. Thanks to this support, businesses have easier access to guarantees, loans and equity capital.
- COSME also helps businesses to access markets in the EU and beyond. It funds the Enterprise Europe Network that helps SMEs find business and technology partners, and understand EU legislation; the Your Europe Business portal that provides practical information on doing business within Europe; and the SME Internationalization Portal for companies who want to develop their activities outside Europe. It also finances a number of IPR (intellectual property rights) SME Helpdesks.
- COSME supports entrepreneurs by strengthening entrepreneurship education, mentoring, guidance and other support services. Actions support specific groups who may find it difficult to reach their full

potential, such as young people, women and senior entrepreneurs. The programme also aims to help businesses access opportunities offered by digital technologies.

- COSME aims to reduce the administrative and regulatory burden on SMEs by creating a business-friendly environment. COSME also supports businesses to be competitive by encouraging them to adopt new business models and innovative practices. This complements actions in areas with high growth potential such as the tourism sector.

6.2.1 Cooperation of business organizations in the EU

Enterprise Europe Network (EEN)

The Enterprise Europe Network is a key instrument in the EU's strategy to boost growth and jobs. Bringing together close to 600 business support organisations from more than 50 countries, the Network helps small companies seize business opportunities in the EU Single Market. The Network member organisations include chambers of commerce and industry, technology centres, research institutes and development agencies. Most of them have been supporting local businesses for a long time. The members are linked up through powerful databases, sharing their knowledge and sourcing technologies and business partners across all Network countries. They are also closely linked with the EC, which enables them to keep abreast of EU policies and to feed small companies' views on them back to Brussels. Services of the Network include:

- Going international
- Technology transfer
- Access to finance
- Research funding
- Advice on EU law and standards
- Intellectual property and patents
- Speak up on EU law

- Support packages for innovative SMEs

All 14 countries of the Danube Region have Enterprise Europe Network points. There is no sub-network for the Danube Region countries. EEN activity is co-financed under “COSME” - an EU funding programme designed to encourage the competitiveness of European enterprises. The services are tailored to SMEs but are also available to all other businesses, universities and research centres. (<http://een.ec.europa.eu/about/about>).

European Association of Development Agencies (EURADA)

The EURADA has a membership of about 130 regional development agencies from across the EU. It runs conferences and seminars and has an extensive publications programme. It keeps its members up-to-date with EU policy developments and provides briefing on critical issues such as state aid rules. It alerts members to funding and contract opportunities and helps with forming and running partnerships. EURADA lobbies and briefs the EC on behalf of members and maintains a communications network there. Countries from the Danube area involved are Austria, Bosnia and Herzegovina, Bulgaria, Czech Republic, Romania, Serbia and Slovakia. (eurada.org)

Association of the European Chambers of Commerce and Industry (Eurochambers)

Eurochambers represents, serves and promotes member chambers through:

- strengthening the voice and position of European chambers as significant, respected, valued influencers of EU affairs on all major economic issues;
- developing the participation of European chambers in projects of value to business;
- delivering services to the members, and developing a European network of services for enterprises.

Eurochambers manages and coordinates various projects to the benefit of both Chambers and the wider business community. Most of these EU-funded projects focus on encouraging business relations between the EU and third countries and on promoting entrepreneurship. The voice of the European

business community is also promoted through regular communication actions, events, trainings and networking activities. Eurochambers flagship initiatives in this respect are the Academies and the European Parliament of Enterprises. (<http://www.eurochambres.eu>)

C.R.E.A.M. Europe PPP Alliance

This is a European Public Private Partnership Association and the acronym stands for COMMUNITY, REALIZATION, EUROPE-AN, AID, MASTERPLAN. C.R.E.A.M. As a “think tank and learning organisation” it promotes and initiates PPP projects in infrastructure as a sustainable regional development strategy. The network consists of 9 national public private partnership associations and over 200 PPP units worldwide. (www.cream-europe.eu)

Vienna Economic Forum (VEF)

The aim of VEF is popularising and promoting investment opportunities in the region from the Adriatic to the Black Sea. Providing impulses and pointing out – on the basis of research – the joint projects required in the region for short-term, medium-term and long-term realisation, and promoting their implementation. Becoming a place of definition, encounter, and of realising the public and private interests in connection with the various projects in the region as part of the United Europe. The members are companies and organisations from a wide region covering all Danube Region countries. <http://www.vienna-economic-forum.com>

6.2.2 Cluster network cooperation in the EU

Clusters (in the sense of cluster organizations) are groups of specialised enterprises – often SMEs – and other related supporting actors that cooperate closely together in a particular location. In working together SMEs can be more innovative, create more jobs and register more international trademarks and patents than they would alone. Clusters can facilitate cross-sectoral and cross-border collaboration, helping SMEs to grow and internationalise.

The Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs of the European Commission (DG Growth) set up the EU Cluster Portal. It provides tools and information on key European initiatives, actions and events

for clusters and their SMEs with the aim of creating more world-class clusters across the EU. (http://ec.europa.eu/growth/smes/cluster/index_en.htm)

What is on the Portal?

- **The European Cluster Observatory** – providing information, mapping tools and analysis of EU clusters and cluster policy. Also informs about events and activities for clusters.
- **Cluster Excellence** – supporting benchmarking and training tools for cluster organisations.
- **Cluster Internationalization** – enabling EU clusters to profile themselves, exchange experience and search for partners for cooperation within and beyond the EU.
- **Clusters and Emerging Industries** – providing background information on EU initiatives which support emerging industries.

The Smart Specialisation Platform complements the EU Cluster Portal. It assists regional and national policy-makers to develop, implement and review their Research and Innovation Strategies for Smart Specialisation (RIS3) such as through guidance documents and tools to identify regions with similar policy priorities.

European Cluster Observatory (ECO)

The online platform provides a single access point to information and analysis of clusters and cluster policy in Europe. Launched in 2007, the observatory offers a range of services providing data and analysis on clusters and competitiveness, a cluster library, and a classroom for cluster education. Updated were made for the year 2011 (see chapter 4.4). The European Cluster Observatory (www.clusterobservatory.eu) also produces analysis and reports on regional competitiveness conditions, transnational cluster networks, clusters in emerging industries and studies on better practices in cluster organisations. The latest such reports were published in 2014/2015. The reports do not treat the Danube Region as a special geographic area. The European Cluster Observatory provides the following services:

- a bi-annual “European Cluster Panorama”(cluster mapping) providing an update and enrichment of the statistical mapping of clusters

in Europe, including for ten related sectors (i.e. cross-sectoral) and a correlation analysis with key competitiveness indicators;

- a “European Cluster Trends” report analysing cross-sectoral clustering trends, cluster internationalisation and global mega trends of industrial transformations; identifying common interaction spaces; and providing a foresight analysis of industrial and cluster opportunities;
- a “Regional Eco-system Scoreboard” setting out strengths and weaknesses of regional and national eco-systems for clusters, and identifying cluster-specific framework conditions for three cross-sectoral collaboration areas;
- “European Stress Test for Cluster Policy”, including a self-assessment tool accompanied by policy guidance for developing cluster policies in support of emerging industries;
- showcase modern cluster policy practice through advisory support services to six selected model demonstrator regions, including expert analysis, regional survey & benchmarking report, peer-review meeting, and policy briefings in support of emerging industries. The policy advice builds also upon the policy lessons from related initiatives in the area of emerging industries;
- bring together Europe’s cluster policy-makers and stakeholders at the European Cluster Conferences 2014 and 2016 for a high-level cluster policy dialogue and policy learning, and facilitate exchange of information through these webpages, newsletters, videos, etc.

European Cluster Excellence Initiative (ECEI)

To create more world-class clusters across the EU by strengthening cluster excellence, the Commission launched in 2009 the European Cluster Excellence Initiative - ECEI. ECEI's main aim was to create a benchmarking methodology for cluster organisations to improve their internal management process and the way they offer services. Secondly, the ECEI sought to develop training materials to help cluster managers improve their own managerial capability. To validate and apply the benchmarking tool and the training materials, two Calls

for proposals were launched under CIP in 2011 and 2013 and 8 pilot projects were funded. The actions developed under the ECEI were pursued by the European Secretariat for Cluster Analysis and the European Foundation for Cluster Excellence. By May 2014, 566 cluster organisations from 35 countries applied the EU benchmarking methodology and acquired the bronze label of cluster excellence, and 42 of them hold the gold label.

The Cluster Excellence Programme under COSME will continue to support benchmarking efforts and training activities for cluster organisations and business networks on cluster excellence through annual calls for proposals. The first call was launched in July 2014.

Cluster internationalization

The *European Cluster Collaboration Platform (ECCP)* facilitates cluster cooperation within the EU and helps clusters access international markets. This lets European cluster organisations profile themselves, exchange experience and search for potential partners for transnational cooperation. The ECCP currently counts over 950 registered cluster organisations from across Europe. (See for the results referring to the Danube Region in chapter 4.4)

International Cluster Matchmaking Events are being organised to offer cooperation opportunities for European cluster organisations with partners within and beyond Europe. The matchmaking events can be organised in third markets as well as in Europe with a view to bring together delegations of cluster representatives from Europe and third countries to promote business opportunities and initiate partnerships in strategic fields of mutual interest. Events may also be organised in Europe with European cluster representatives active in different sectors with a view to promoting cross-sectoral cooperation and contributing to the emergence of new value chains in Europe.

European Strategic Cluster Partnerships (ESCPs) are being promoted to lead international cluster cooperation in new areas, notably in support of emerging industries. These partnerships encourage clusters from Europe to work together to exploit synergies and develop a joint 'European' strategic vision with a global perspective and common goals towards specific third markets. These partnerships shall contribute to better supporting European SMES in global competition in strategic fields. A pilot cluster internationalisation action was

launched during 2012-2014 to support 6 European cluster consortia to develop joint cluster internationalisation strategies in different business sectors. (<http://www.clustercollaboration.eu>) The quantitative results of the Initiative have been presented in chapter 4.4.

The Cluster Go International action has been launched under COSME to support the establishment and development of European Strategic Cluster Partnerships – a first call for proposals was published at the end of 2014 covering 2014-15.

European Cluster Alliance, ECA

ECA was founded in September 2006 by the partners involved in four cluster policy projects, known as INNO-Nets, funded under the PRO INNO Europe initiative of the EC, namely the BSR InnoNet, CEE-ClusterNetwork, CLUNET, and INNET. Since January 2008, it has opened to a wide audience: any European cluster policy maker or cluster funding agencies willing to share experiences and to develop joint activities with the other partners of the Alliance could join the ECA. After 2010 new members aimed to promote and enhance the contribution of the Alliance to cluster policy dialogue and action at all levels, with the aim of improving the efficiency of existing efforts in order to facilitate the emergence of new competitive industries in Europe through clusters, as well as fostering international cluster cooperation amongst clusters for the benefit of their members, SMEs, research organisations etc. (<http://www.ecatactics.eu/eca>)

The ECA formed part of the PRO INNO Europe initiative funded under the Competitiveness and Innovation Programme (CIP) in 2007-2013 which developed a number of initiatives and programmes to support cluster policy makers and encourage trans-national cooperation and pilot initiatives. These included the European Cluster Observatory (ECO) and the Cluster Excellence initiative. ECA members from the Danube Region included mainly government agencies and cluster associations in Austria, Croatia, Czech Republic, Germany, Hungary, Serbia and Slovakia.

ECA stopped issuing newsletters in 2013 but the website keeps publishing information and may become a beneficiary of a new financing arrangement. A recent call named "Towards EU Regional Economic Convergence (TREC) - Pilot

Projects to reinforce collaboration among clusters and technology centres" was published at the DG Internal Market, Industry, Entrepreneurship and SMEs web site in May 2015 with the deadline of 28 July 2015. The main objective of this call is to launch pilot projects reinforcing cooperation among clusters and related technology centres. These pilot projects should be in line with regional smart specialisation priorities, exploit growth opportunities and accelerate regional economic convergence across the EU.

6.3 Competitiveness initiatives to implement the EUSDR

PA8 Working Groups and project initiatives

One of the main objectives of the EU Strategy for the Danube Region is to identify, support and promote projects in the countries of the Danube Region which are of relevance for the implementation of the targets set in the Action Plan for the Priority Area 8th. Projects are to be developed by cluster and business organisation, NGOs and the academia. The Priority Area Coordinators together with the Steering Group established seven thematic Working Groups (WGs). The WGs have established their main aims and also support setting up of flagship or pilot projects as follows:

WG Innovation and Technology Transfer – *Danube Transfer Centers (DTC)* set up in Romania, Slovakia and Serbia in cooperation with Steinbeis Center. The project is a one-stop-shop for SMEs in the area of technology transfer between research and economy.

WG Cluster of Excellence – *Danube Cluster Networks (DanuClas* – see details below)

WG Vocational and Educational Training – A pilot project is to reform the *Hungarian and Slovakian Vocational Education and Training System with German and Austrian know-how*. Additional projects on the topic are *Danube Academy for Dual Education* (a PA7 flagship project) and *SeeDual* a project on dual education under the DCCA.

WG Cooperation of Business Organizations – *Danube Chambers of Commerce Association (DCCA* – see details below)

WG Environmental Technology and Energy Efficiency – *Environmental Technology Network in the Danube Region (ETNDR)*; the initiative focuses on sup-

porting small and medium-sized companies, which entails networking with research organisations operating in the state.

WG Competitiveness in Rural and Urban Areas – *Smart and Innovative Rural Areas (SIRA DANUBE)*; goal of this initiative is to install 3-5 Centers of Competence to professionalize rural innovation knowledge system. In general SIRA wants to foster innovative and competitive rural development. Another important aim is the economic diversification and business development especially for SMEs.

WG Entrepreneurial Learning – *South East European Centre for Entrepreneurial Learning (SEECCL)* in place already since 2009, to be enlarged to other DR countries.

Two of the working groups have initiated the cooperation of clusters and of business networks. The WG Cluster of Excellence aims "to foster cooperation and exchange of knowledge between SMEs, academia and the public sector in areas of competence in the Danube Region." (See for projects Section 6.3.1) The WG Cooperation of Business Organisations aims "to improve business support to strengthen the capacities of SMEs for cooperation and trade". (See for projects Section 6.3.2) One over-arching project, Danube-INCO.NET delivers the most up-to-date information about activities in the field of research and innovation (R&I, see Section 6.3.3).

The discussion of cluster cooperation and business networks in the Danube Region cannot be restricted to the activities in the framework of the two working groups because international cooperation involving the countries of the region has longer history and a broader scope. European initiatives and multi-country initiatives involving EU members and other countries have developed institutions and networks, the members of which are also part of the Danube Region cooperation. It is not clear yet, how far the Danube Region cooperation networks will replace earlier initiatives or will function side by side to them. Many of the projects listed as EUSDR projects on the <http://groupspaces.com/Competitiveness/> website or by Bundeskanzleramt Österreich (2015) have either not started yet, or were completed in the previous financing period in 1014.

EUSDR competitiveness project initiatives receiving initial funding

Several projects are in the preparation and receiving financial support for formulating a viable proposal. The *financing facility START* coordinated by PA 10 (<http://www.danube-capacitycooperation.eu>). START is a pilot initiative of the EUSDR which provides small grants for the development and implementation of Danube Region projects in the form of seed money. In the first call two project initiatives were selected which are related to PA8:

Smart Furniture Remanufacturing (Furnitu-RE) has been initiated by the Bulgarian Furniture Cluster. Remanufacturing is a form of recycling by manufacturing, where used durable goods are refurbished to a condition comparable to new products. With reduced energy and resource consumption, remanufactured goods are produced at a fraction of the original cost and with lower emissions of pollution. Furnitu-RE is also addressing the lack of skilled workforce, low attractiveness for young people and the low level of innovation in enterprises - problems relevant for most of the countries in the Danube region.

Smart and Innovative Rural Areas - Connect Centres of Competences (SIRA DANUBE connected) coordinated by the University of Hohenheim Germany and fostered by the “WG Competitiveness in Rural and Urban Areas”

One project related to PA9 is also close to the issue competitiveness:

Danube Competence Centres for Creativity and Entrepreneurship (Danube ENTRE) has been initiated by the Business Support Centre for Small and Medium Enterprises in Ruse, Bulgaria. The overall goal is to build up discussion about fostering creativity and entrepreneurship and to prepare the project idea to a fundable project concept.

Another financing line the *TAF-DRP EU grant* scheme is to develop project ideas relevant to the EU Strategy for the Danube Region, into “bankable/fundable” project concepts. In the first two calls 35 projects were selected for financing as of end-2014. Three of them have been enlisted as related PA8, although the last two are primarily related to transport and environment:

DanuClus coordinated by TMG Upper Austria (see details further below).

Transport-Logistics Centre Vuka – Vukovar-Srijem County Croatia. Logistics Centre Vuka will be a centre (hub) for the wider region in this part of Eastern Europe in which all activities related to transport, logistics and distribution of goods (for national and international transit) will take place, for the most varied subjects / users of services on a commercial basis.

Waste to energy sludge management (WESMA) coordinated by the Energy Institute Hrvoje Požar, Croatia. WESMA will analyse current and projected future anaerobic sludge disposal options to devise economically advantageous, environmentally sound, and socially acceptable strategies for the sustainable waste management in the Danube Region.

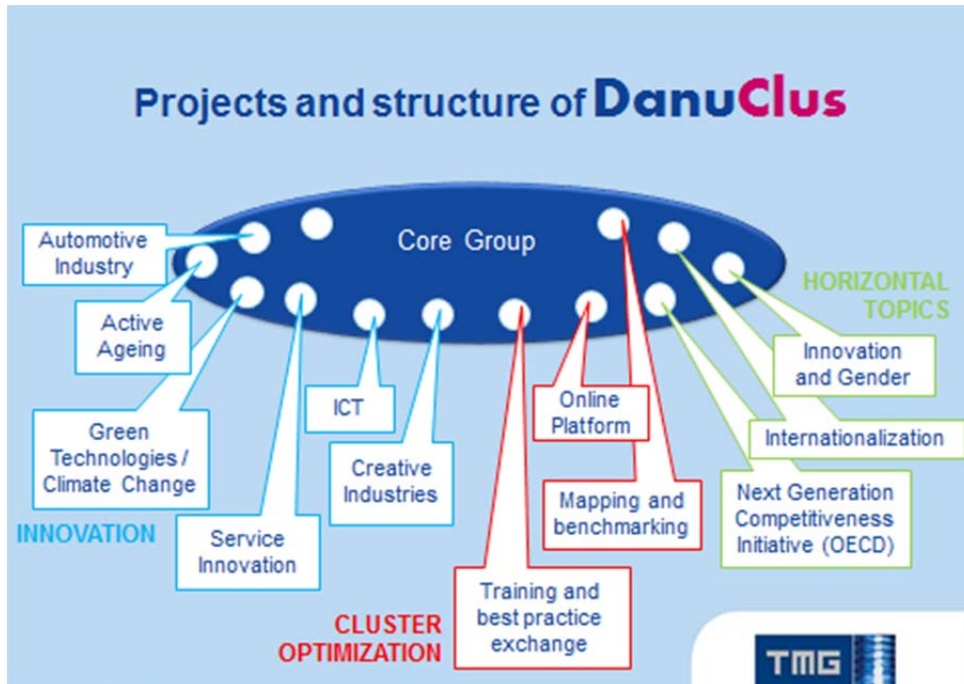
The 3rd TAF-DRP call was closed 26th June 2015, the results are not available by mid-July. It is only known that only 1 proposal of the 22 has been submitted which is related to PA8.

6.3.1 Cluster organisation networks in the EUSDR

Danube Cluster Networks (DanuClus)

The PA8 Working Group “Clusters of Excellence” provides the framework for cluster cooperation in the EUSDR. TGM Upper Austria (Oberösterreichische Technologie- und Marketinggesellschaft n.b.H.) takes a coordinative role in this area. At the conference "Boosting Innovation Policies with Clusters along the Danube" held on 27-28 June 2013 in Linz Austria, three initiators (Upper Austria, EC, Baden-Wuerttemberg) officially launched the cooperation initiative *Danube Cluster Networks (DanuClus)*. The third DanuClus Workshop for Networking and Cluster Development in Danube Region was held on March 10-11, 2015 in the city of Vukovar, Croatia with more than a hundred of participants. The topics of the workshop were primarily focused on development of activities of Danube Cluster Network with special emphasize on the sources and prospect of cluster financing in the programmatic period 2014-2020 as well as addressing the internationalization and networking with the best practice of clusters in Danube region.

DanuClus aims to link clusters, cluster managers, cluster experts and cluster policy-makers from the Danube Region, in order to prepare clusters in this geographic area for the new EU funding period of 2014-2020. The stakeholders collect and develop project ideas for clusters and support their implemen-



Source: TGM Upper Austria.

tation with their expertise. (<http://groupspaces.com/Competitiveness>). A Memorandum of Understanding on deeper cooperation of cluster organisations was signed by the Associations of 6 countries (CZ, SK, RO, BG, RS, HR) in 2013; three other countries are interested to join the network (HU, DE, AT).

The EUSDR Cluster Network *DanuClus* targets the following main aims:

- inter-cluster cooperation and internationalisation of clusters within the Danube Region;
- the aggregation and exchange of knowledge, data, information and best practices on clusters in the participating countries;
- the boosting of key factors for cluster excellence, such as awareness and capacity building, training, evaluation, innovation and R&D, technology transfer, emerging industry and responses to social challenges;
- the development and strengthening of cluster strategies at the regional, national and EU level through joint projects;

In practice the activity includes:

- Mapping potential for clusters in emerging markets
- Piloting transnational cross-sector cluster cooperations
- Creating a Danube Region Accreditation System for cluster initiatives

Automotive Industry Supercluster DonauMotor

DonauMotor is a project Coordinated by Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Stuttgart, Germany. The core team includes: Automotive Cluster Bulgaria (BG), AutomotiVest Cluster Romania (RO), Moravian-Silesian Automotive Cluster (CZ), Landesnetzwerk Mechatronik Baden-Württemberg (DE) and IMACOS Truckenmüller & Company GmbH (DE). Another 18 organizations have signed the cooperation agreement. (<http://automotive.bg/projects/donaumotor/>)

Main goals of DonauMotor include:

- improving the competitiveness and expanding the manufacturing industry within the Danube region;
- increasing R&D investment of enterprises up to 3% of GDP within the countries especially on the lower stream;
- enabling the Danube Region to become the European technology axis of Best Practices

Cluster networks under other international platforms partly overlapping with the EUSDR

- ClusterPoliSEE – South-East Europe Programme (finished in 2014)
- CluStrat – Central Europe Programme providing a link between industrial clusters and high-tech service clusters lead by Steinbeis Europa Center
- Open-Alps – provides support to innovative SMEs

These are regional cluster cooperation programmes mainly with similar aims and methods as DanuClus promoting networking and the preparation of joint projects.

Cluster House

The Cluster House is an innovative business development organization for support to clusters, business associations and SMEs in the Balkans, founded upon the initiative of seven clusters from South-East Serbia and with technical support of the Danish Programme for Local Economic Development in the Balkans (LEDIB) in 2011. (<http://www.clusterhouse.rs>)

The Cluster House is an initiator and a coordinator of the *Balkan Cluster Network* which includes more than 170 cluster organizations and support institutions from all of the Balkan countries. It also organizes the annually Balkan and Black Sea Conference "*Days of Clusters*" as well as a cluster training programme for countries in transition.

6.3.2 Business organization cooperation networks

The cooperation of business organisations links business support and trade agencies in the Danube Region to develop economic services, trade and commercial cooperation. Relevant business organisations include e.g. Chambers of Commerce and Industry, Federations of Entrepreneurs and Industrialists, Investment and Trade Agencies, associations of entrepreneurs. They follow different aims as compared with clusters. While clusters are partnerships between various economic, public and NGO actors, the chambers represent the interest of its members in policy dialogues. Clusters aim at utilising synergies in a given economic policy environment, while chambers try to influence economic policy to be more pro-business. Chambers can at the same time be catalysts and partners in building cluster organizations. At the EU level Eurochambres is the association of national chambers of commerce.

In the *PA8* there is an *Actions Plan* aimed "to improve business support to strengthen the capacities of SMEs for cooperation and trade". Its main aims include:

- Set up a network among business organisations in the region,
- Create a framework of business organisations to exchange experiences and best practices as well as to support capacities of SMEs,
- Create a single platform to establish common projects e.g.:
 - "To hold annual business forums bringing together Danube Region businesses, governments, regional organisations and

academia” – the goal is to strengthen cooperation and business opportunities for SMEs with private sector, public sector as well as academia to stimulate growth and competitiveness

- “To strengthen Danube Region entrepreneurs and SMEs” – the goal is to identify innovative approaches to knowledge transfer from academia to SMEs and businesses.

The main target areas and sectors to improve business support for SMEs:

- Information technology – IT sector,
- Automotive industry,
- Electro industry,
- Renewable energy and green energy,
- Innovation for SMEs, services and industry.

The action plan will be implemented through the cooperation of business organisations in the Danube Region. The Danube Chambers of Commerce Association (DCCA) is the main cooperation organisation of chambers which excludes country level chambers. The national chambers in the Danube Region have no specific organisation of their own. The WG Cooperation of Business Organisations in PA8 has been formed by the most active members of the DCCA with the aim to implement specific projects during the 2014-2020 financing period.

Danube Chambers of Commerce Association (DCCA)

The association of 20 regional and municipal chambers of commerce along the river Danube is the main cross-border organisation of such institutions in the Danube Region. It was established in June 2010 and the driving force is the Budapest Chamber of Commerce whose president is also the current president of the DCCA. The members are municipal chambers along or close to the river Danube. There is no member from the more remote provinces of the Danube Region countries. It does not cover all organisations in the region and also excludes Moldova and Ukraine. (www.danubechambers.eu)

The DCCA was the driving force to create the PA8 Working Group Business Organisations. The WG decided to draw up the framework of institutional cooperation and suggested some future project proposals. It also decided on future project proposals included:

- Innovation for SMEs

The Vienna Chamber of Economy as well as Enterprise Europe Network-Bulgarian Business Support Center and experts from Varazdin have drawn up a project proposal which is focusing innovation for SMEs, services and industry.

- New Banking and Financial Instrument for companies and SMEs

Enterprise Europe Network – Bulgarian Business Support Center proposed new instruments for SMEs serving to boost the liquidity of Danube Region micro, small and medium size enterprises.

- Support for SMEs in the delivery of the automotive industry – Supplier Development Programme

The Budapest Chamber of Commerce and Industry and Ruse Chamber of Commerce and Industry proposed a Supplier Development Programme, which is focusing on support for SMEs in the automotive supplier sector.

- Mix Start-Up Pilot Project for competitiveness between Bulgaria and Romania

Bulgarian-Romanian Chamber of Commerce indicated a pilot project, which is focusing on competitiveness of Bulgarian and Romanian start-up companies in the first step.

DanubeCat

DanubeCat is a project of IDM – Institute for the Danube Region and Central Europe based in Vienna. IDM provides with DanubeCat a new platform for skills, expertise, and know-how in the Danube Region. It is an online catalogue that provides reliable information about companies, institutions, initiatives, and projects related to the Danube Region. In the context of the EU Danube Region Strategy, DanubeCat has a focus on economic issues, the countries of South-Eastern Europe, and collaboration between EU countries of the Region, candidates, and non-members.

6.3.3 Danube-INCO.NET

Danube-INCO.NET is a FP7 funded coordination and support action for the official EUSDR in the field of research and innovation. It focuses on PA 7 “Knowledge Society” and PA 8 “Competitiveness”. Within these two priority areas the project picks up pressing social and entrepreneurial challenges, such as weak economic ties related to research and innovation (R&I) cooperation between Danube Regions, the brain drain as such and the loss of human capital or the lack of innovative approaches to social problems. The project has 19 project partners from 14 countries and last for three years starting in 2014. The project leader is the Centre for Social Innovation (ZSI) Vienna. The partners are coming from very different institutional backgrounds and provide a broad field of expertise, such as universities, research centres, ministries and companies. (www.danube-inco.net scheduled launch in April 2014). The project is putting in effort to ensure that events, publications and policy recommendations related to R&I cooperation in the Danube Region will reach an audience as broad as possible interested and engaged in the future macro-regional development of the Danube Region.

6.3.4 Business networks not directly linked to the activity of PA8

Danube Business Advisory Council (DBAC)

DBAC is an independent network organization whose members are promoting or providing high quality innovation support and technology transfer services to firms, with the ultimate aim to develop the knowledge economy and boost the wealth creation process. The network involves decision makers from all over the Danube Region and beyond to establish production networks of companies/research/universities to stay at the cutting-edge of technology, further interaction between different disciplines, sub-sectors, economic fields. Intensive, systematic and wide-range collaboration between economy, academia and scientific institutions is promoted, as well as public-private initiatives to support the development of Danube Business and Technology platforms. Being in charge to develop and implement the European research and innovation policy, the EC Directorate-General for Research and Innovation ensures the policy coordination of the DBAC’s strategy with a view to achieving the goals of Europe 2020 and the Innovation Union. (www.danubeinnovationunion.com)

Council of Danube Cities and Regions (CODCR)

Launched in Ulm by the "Deklaration der Donaustädte" on 4 July 1998, the CODCR is a major inter-municipal and interregional network, to become an example of cross-border cooperation in the Danube Region. With its political Head Office in Ulm and operational Headquarters and General Secretariat in Bucharest, the Council of Danube Cities and Regions is a bridge that links European, regional and local institutions to the academic, business, financing networks and other representatives of the civil society. (<http://www.codcr.com>)

Danube Competence Centre (DCC)

The Danube Competence Centre (DCC) is a regional network of public, private and non-government organisations involved in tourism sector development along the Danube. DCC was founded in early 2010 as the initiative of 22 organisations and is supported by the German Ministry of Economic Cooperation and Development through its agency GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit). It involves 60 members from 9 Danube countries, its mission being strengthening visibility of the Danube Region and enhancing and promoting cross-border cooperation and sustainable tourism development. Countries from the Danube area involved are: Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Romania, Bulgaria, Moldova and Ukraine. (<http://www.danubecc.org>)

Arge Donauländer

Created in 1990, the Arge Donauländer aims at promoting co-operation among its members for the development of the Danube area to serve the interests of its inhabitants and to foster peaceful cooperation in Europe. Location of the Secretariat used to be St Pölten, Land Lower Austria; in 2014 it moved to Government of Baden Württemberg, Germany.

Steinbeis Danube-Center

This is a non-profit institution engaged in fostering the implementation of the Danube Strategy. It acts as the integrative link for all stakeholders of Danube Region. The Center is directly involved in activities of several Priority Area Steering Groups (PA 7, 8, 9). It is also lead partner in the INTERREG B project

CluStrat. The Danube-Center is Part of the Steinbeis Innovation GmbH the work of which is based on 17 years of experience in economic promotion and regional development in Middle and Eastern Europe. In the *WG* Innovation and Technology Transfer it coordinates the Danube Transfer Centers (DTC) set up in Romania, Slovakia and Serbia.

Danubiz

The company “local global GmbH” in Stuttgart has developed the concept of Danubiz to promote sustainable business development in the Danube Region. It works towards fostering competitiveness in an effort to deliver improvement in the business performance of small and medium enterprises. They envision Danubiz as an expanding entity that comes as a natural response to the current informational and economic impediments that are holding SMEs back from expanding outside their national environment towards international markets. (danubiz.eu)

The network’s specific purpose is to motivate and enable young entrepreneurs and founders in all sectors of the Danube region to cooperate internationally and to create cross-border value-chains, based on local employment and co-working via collaborative IT technologies. The danubiz.eu network is open for new partners and stakeholders able and willing to provide expertise and service for sustainable SME development in the Danube Region. Danubiz.eu published the Danube Region Business Atlas in 2015, a kind of overview of possibilities and achievements.

6.4 Summary and Conclusions

This chapter provided an overview of the existing organisations and networks related to economic cooperation in the Danube Region based on which conclusions on the present stage of institutional cooperation can be formulated.

- Political cooperation initiatives in the region contribute to peace and stability. They also support economic initiatives to raise competitiveness by cooperation based on common interest. Especially the activity of the Visegrad Group can provide useful experience. Having started as a platform for political dialogue, V4 is now active

in encouraging economic cooperation, the coordination of energy policies and supports research.

- The new transnational ETC programme DANUBE 2014-2020 set up for the DR provides an operational programme as an instrument to implement the goals of the EUSDR. Besides contributing to the Strategy's thematic goals by realizing relevant cooperation projects, the programme can also support the institutional cooperation of stakeholders and institutions of the Danube Strategy.
- Countries in the DR have different status in relations to the EU; there are EU members, potential members and Eastern neighbourhood countries. These are included in different kinds of EU programmes and have access to different funds from the EU and from multinational financing institutions. Overlapping goals are present under different financing frameworks.
- Business organizations and cluster networks set up with the goal to foster cooperation in the Danube Region are in their inception while there is a long tradition to cooperate in the framework of EU programmes and the Southeast European cooperation process. The adaptation of projects to the aim of the new EU programmes for the 2014-2020 financing period is still under way.
- The targets of cooperation to increase economic competitiveness in the EUSDR are set in the Action Plan for the Priority Area 8. Specific working groups have initiated the cooperation of clusters and of business networks. Cluster organisations are first of all active to improve the capacities of clusters and their international networking. Among the business organizations the chambers of commerce and industry support start-up businesses, develop cross-border cooperation of businesses facilitate trade.
- The WG Cluster of Excellence aims "to foster cooperation and exchange of knowledge between SMEs, academia and the public sector in areas of competence in the Danube Region." DanuClus aims to link clusters, cluster managers, cluster experts and cluster policy-

makers from the Danube Region, in order to prepare clusters in this geographic area for the new EU funding period of 2014-2020.

- The Danube Chambers of Commerce Association DCCA has been the driving force to create the PA8 Working Group “Business Organisations”. This aims "to improve business support to strengthen the capacities of SMEs for cooperation and trade". DCCA is an association of 20 regional and municipal chambers of commerce along the river Danube. There are no members from the more remote provinces of the Danube Region countries, however.
- The participation in cooperation initiatives is very uneven in the Danube Region. German, Austrian and Hungarian organisations are the most active, those from Croatia, Serbia, Romania and Bulgaria are less so while other countries hardly show up. This has to do with unevenness concerning cooperation culture, financing opportunities and public governance. But the third call of TAF-DRP has attracted a number of project proposals from Moldova. It seems that initial funding for setting up joint projects through START and TAF-DRP improves the possibilities of less developed regions to participate in the DR cooperation.

6.5 Recommendations

The analysis of the current cooperation networks and a small questionnaire survey resulted in the following recommendations:

- *Recommendation 1:* Clarification is needed as to the role of various initiatives and programmes in the framework of the EUSDR in relation to other initiatives and programmes of the EC, Southeast Europe and the Neighbourhood. Financing opportunities for EUSDR activities must be clear for all (potential) participants in cooperation projects. These must be also available and attractive for organizations in non-EU members. Also the information about existing cooperation initiatives need better visibility on the PA8 website.
- *Recommendation 2:* The inclusion of less developed regions is required. Organisations from less developed regions of South-East Eu-

rope and especially from Moldova and Ukraine need to be invited and integrated into the cooperation process of the EUSDR. These have poorer organizational and financial capacities than organizations in more developed countries. There seem to be two ways ahead: (1) to enlarge existing networks and initiatives to the less developed regions; (2) to support initiatives in less developed regions to set up networks where they have leading position.

Following the first route has potential albeit it may become a management problem if networks grow too large. The problem has been raised already that information and knowledge flow between PAs, WPs, project coordinators and (potential) interested organizations need to improve.

The second route may need some kick-off effort in the form of a special programme. A strong motivation must be created as cooperative attitudes in business are by and large absent in many countries. A special coaching project may also help to establish self-organizing initiatives.

- *Recommendation 3:* Cooperation should be also more professional and deeper in order to foster the development of world-class clusters in line with the EU innovation strategy. A cross-sectoral approach for cluster projects is the new trend to foster innovation, which also allows for a transfer of knowledge to more traditional industries and for developing a smart specialisation strategy that goes beyond national borders. Clustering is needed in service innovation, creative industries and social innovation. In order to the quality of the cooperation, EUSDR cluster-organization labelling can be developed with minimum quality requirements going beyond simple benchmarking of cluster management skills.

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8 Annex

The Mannheim Firm Panel (MUP)

The **Mannheim Enterprise Panel (MUP)** of the Centre for European Economic Research (ZEW) is probably the most extensive micro database on firms in Germany. Since its establishment, ZEW cooperates with Creditreform (Verband der Vereine Creditreform), the largest credit rating agency in Germany. Twice a year Creditreform gives a complete copy of its extensive data base covering economic information on companies located in Germany – including closed businesses – for scientific purposes to ZEW. The series of individual cross-sectional data form the basis for the MUP, which is created and maintained at ZEW. The storage of the individual cross-sections as panel dataset enables ZEW to also perform longitudinal analyses.

The MUP represents the total population of companies in Germany – including micro-enterprises and self-employed freelancers. The statistical unit of the MUP is the legally independent company. Creditreform records all companies in Germany which are enlisted in a publicly accessible register like the Commercial Register or are “sufficiently” economically active meaning that owners/founders generally run their businesses in fulltime. Sideline businesses are underreported as they are not the aim of Creditreform’s survey routines.

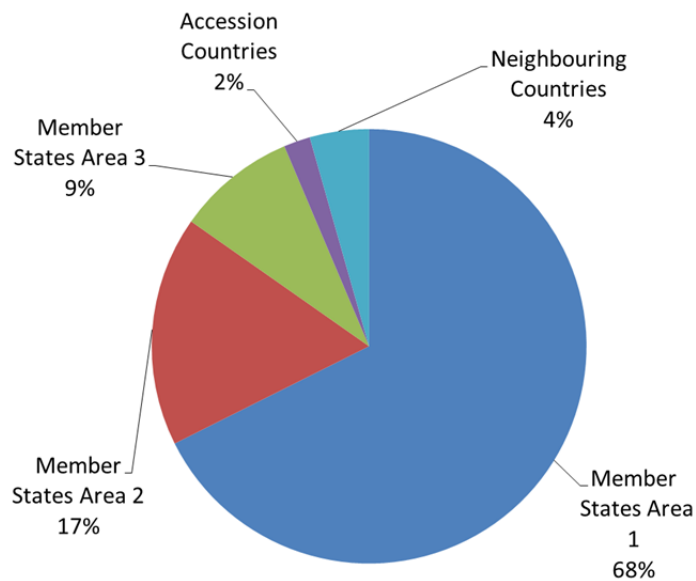
The information contained in the MUP forms the basis for sampling of enterprise surveys and extrapolation forecasts of data collected in sectors in which the official statistics fail to provide information on the total population of businesses. The MUP is designed to retrace the dynamics of job creation within companies and to analyse start-ups and market exits.

Table 19: Population and population growth rates in the Danube Region and its subgroups

Population	2003	2013	growth 2003-2013 (in %)
Danube	156,182,366	151,762,917	-2.83
Member States Area 1	31,237,365	31,714,897	1.53
Member States Area 2	27,692,657	27,880,700	0.68
Member States Area 3	33,837,883	31,504,508	-6.90
Accession Countries	11,988,637	11,614,646	-3.12
Neighbouring Countries	51,425,824	49,048,166	-4.62

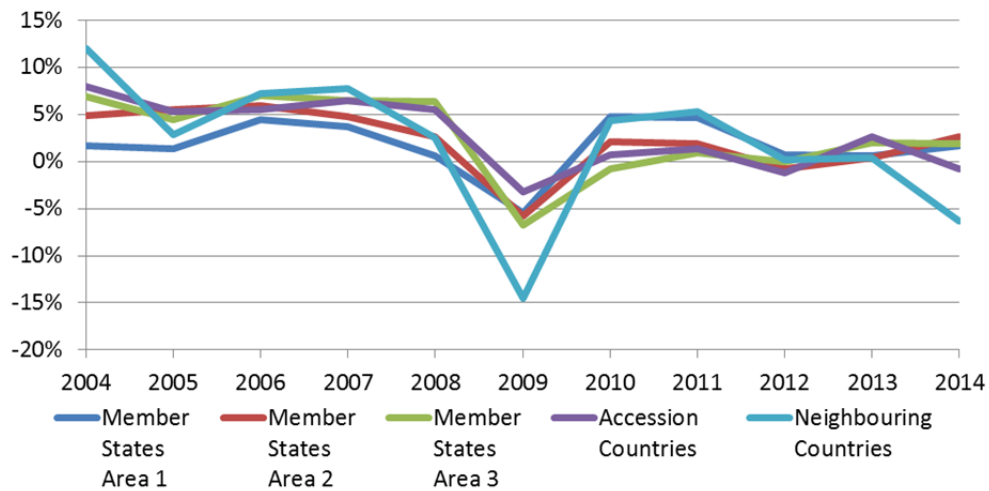
Source: World Bank, national statistics. Calculation and illustration: IAW.

Figure 122: Share of GDP of the subregions of the Danube Region in total GDP of the Danube Region in 2003 (in %)



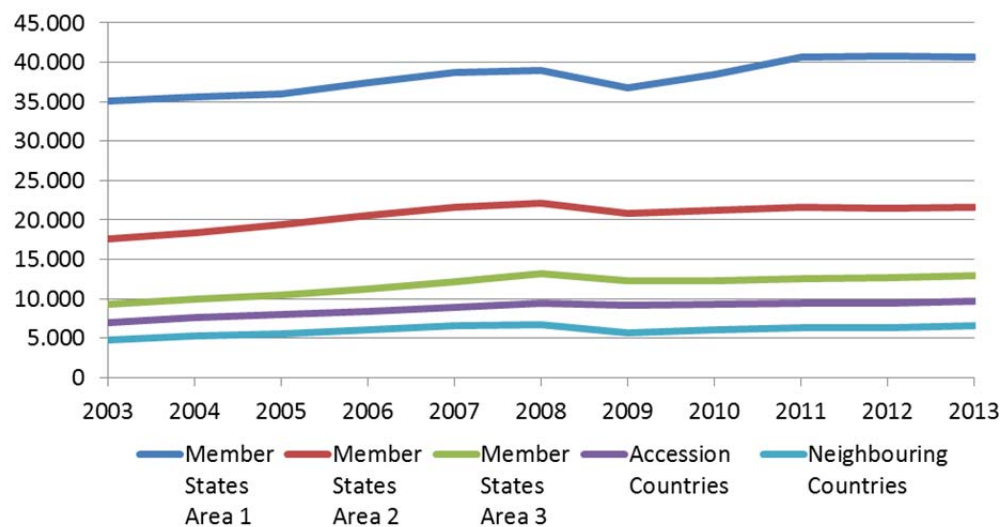
Source: Eurostat, World Bank, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

Figure 123: Annual real GDP growth 2004-2014, by subregions of the Danube Region (in %)



Source: Eurostat, World Bank, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

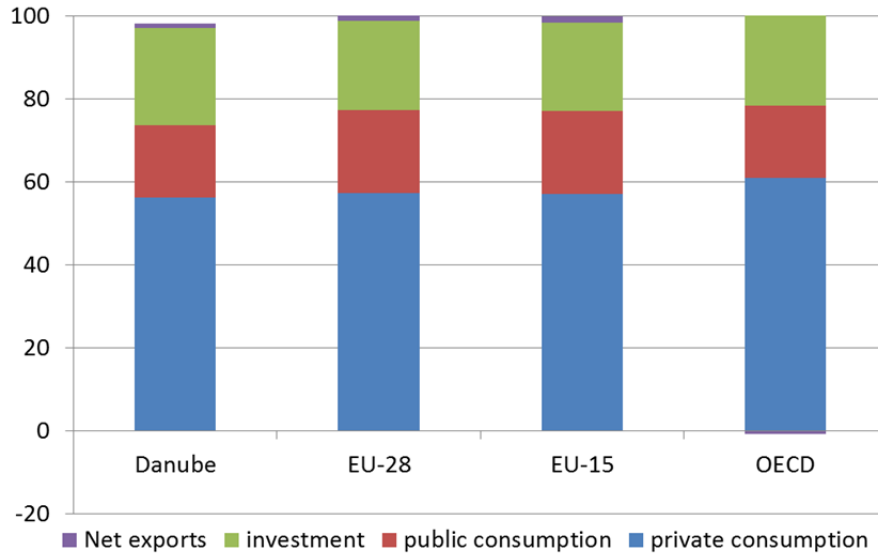
Figure 124: GDP per capita, PPP adjusted



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

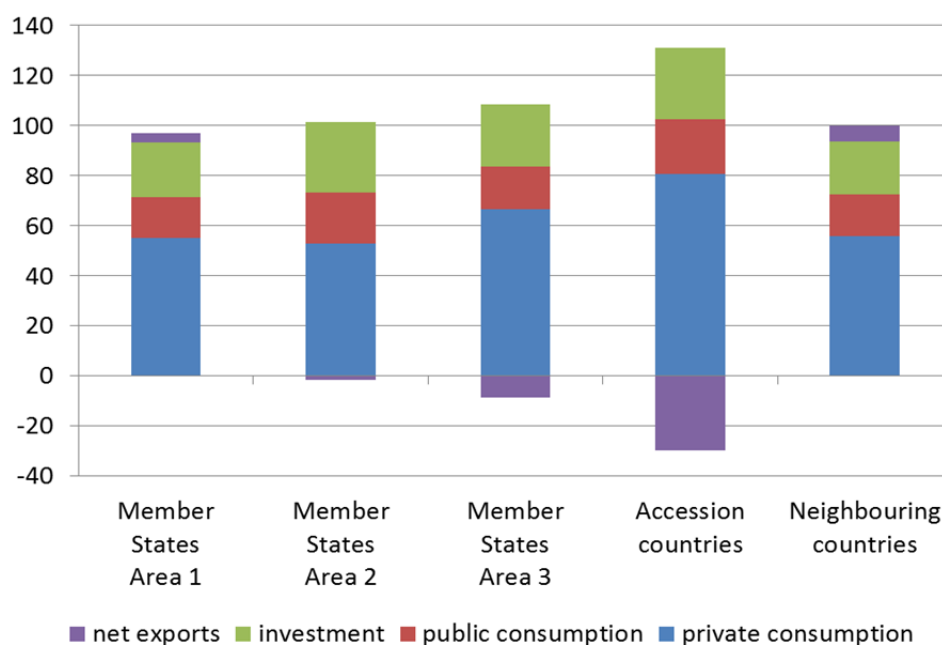
Source: Eurostat, UNdata, World Bank, national statistics. Calculation and illustration: IAW.

Figure 125: GDP components in 2004 (in %)



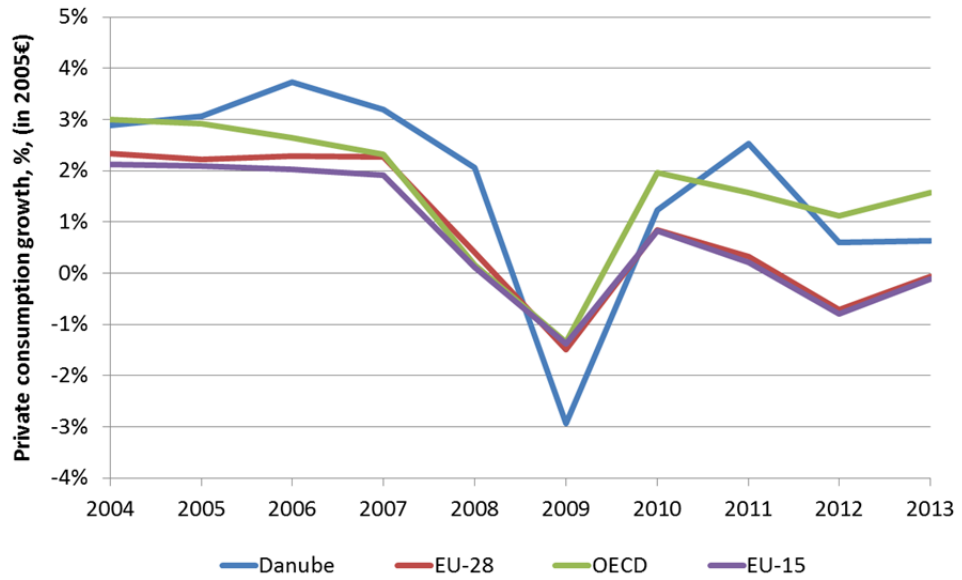
Source: Eurostat, World Bank, wiiw Annual Database, national statistics. The shares of the GDP components in the Danube Region do not amount to 100 % because at the regional (Bundesland) level in Germany - and therefore, for Bavaria and Baden-Wuerttemberg – there is a “residual GDP component” that does not solely consists of the net exports. Calculation and illustration: IAW.

Figure 126: GDP components in 2004, by subregions of the Danube Region (in %)



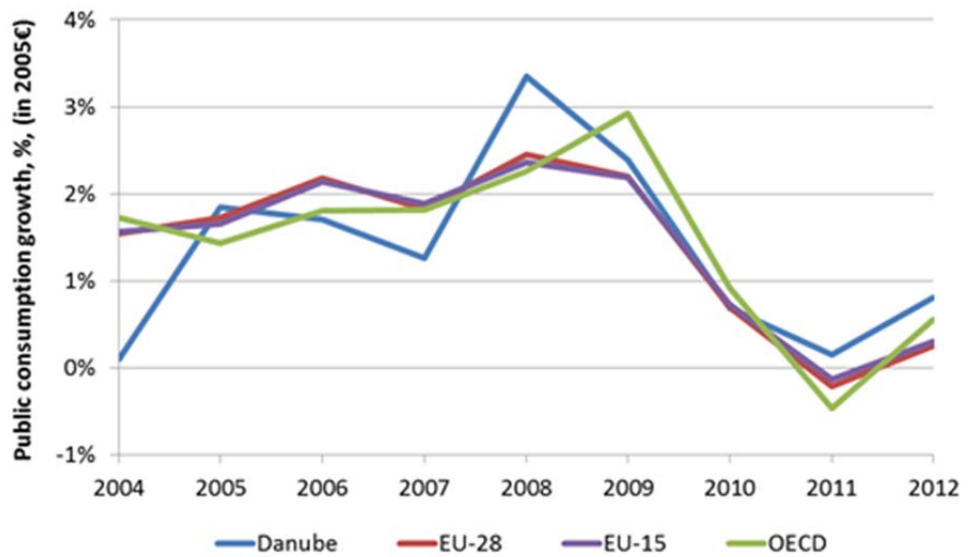
Notes: Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA. Source: Eurostat, World Bank, wiiw Annual Database, national statistics. The shares of GDP components in Member States Area 1 do not amount to 100 % because at the regional (Bundesland) level in Germany - and therefore, for Bavaria and Baden-Wuerttemberg – there is a “residual GDP component” that does not solely consists of the net exports. Calculation and illustration: IAW.

Figure 127: Real private consumption growth



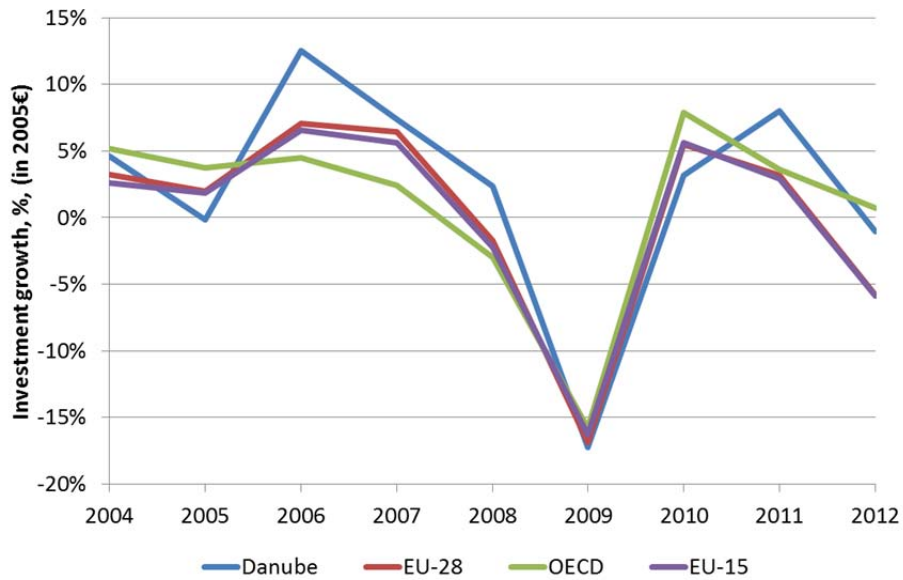
Source: Eurostat, World Bank, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

Figure 128: Real public consumption growth



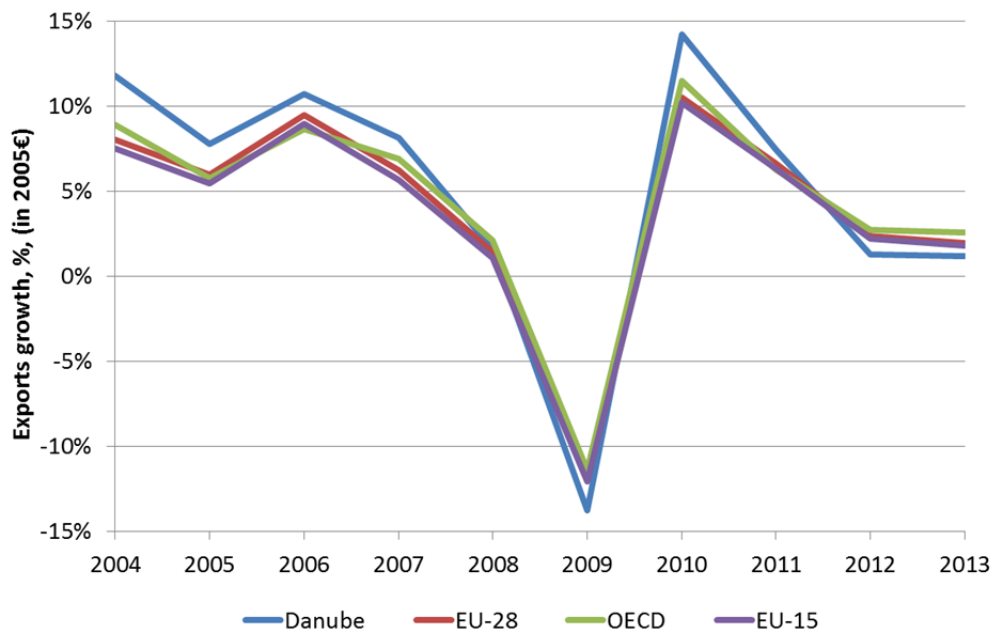
Source: Eurostat, World Bank, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

Figure 129: Real investment growth



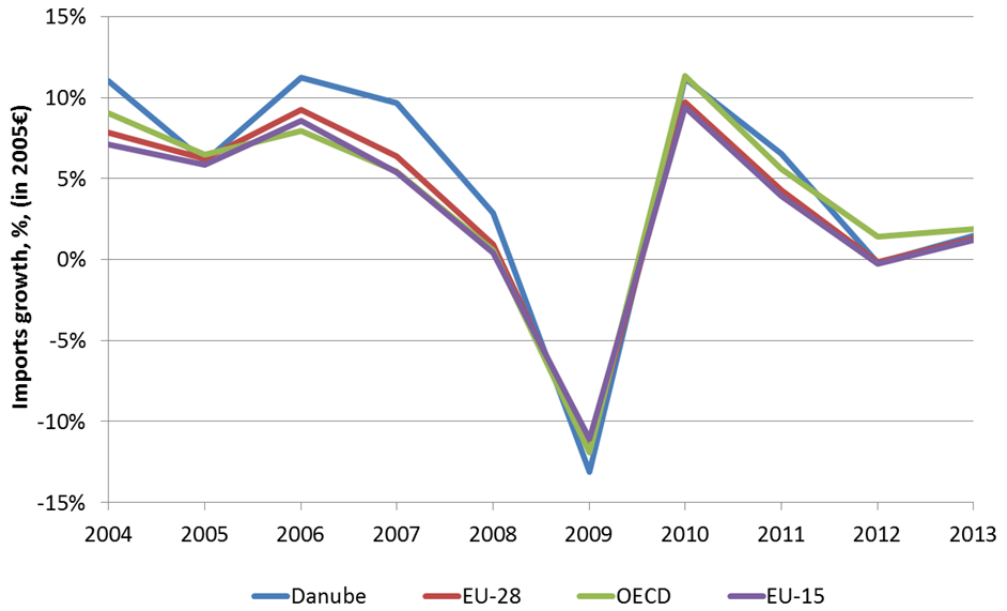
Source: Eurostat, World Bank, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

Figure 130: Real export growth



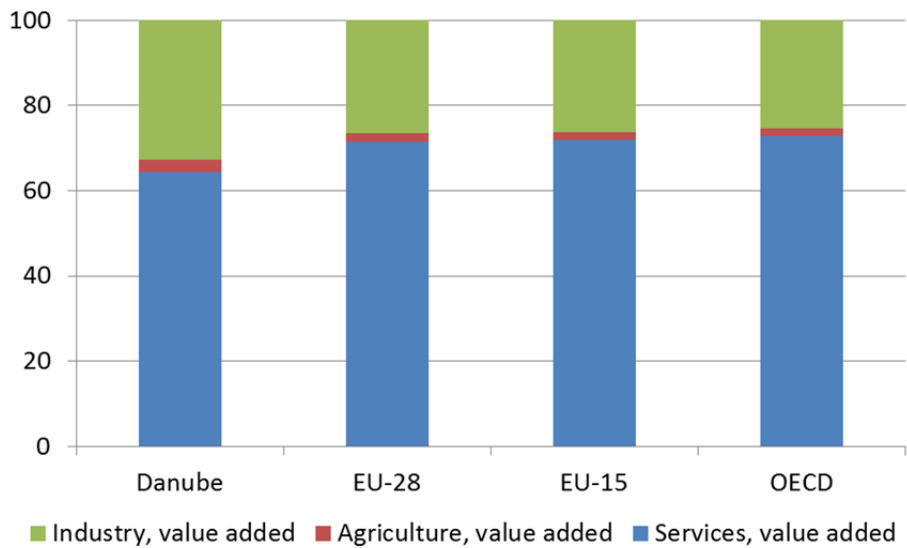
Source: Eurostat, World Bank, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

Figure 131: Real import growth



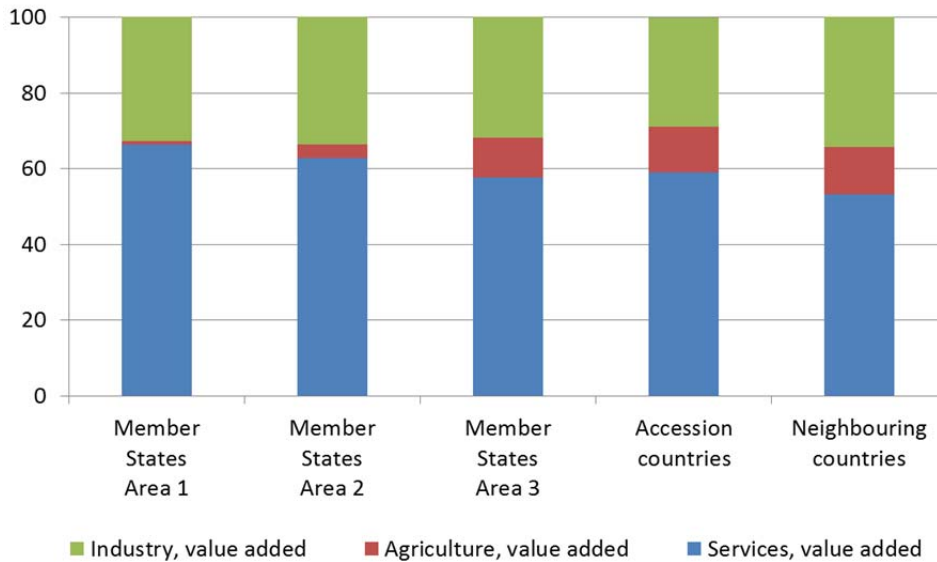
Source: Eurostat, World Bank, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

Figure 132: Contribution of sectors to GDP in 2003 (in %)



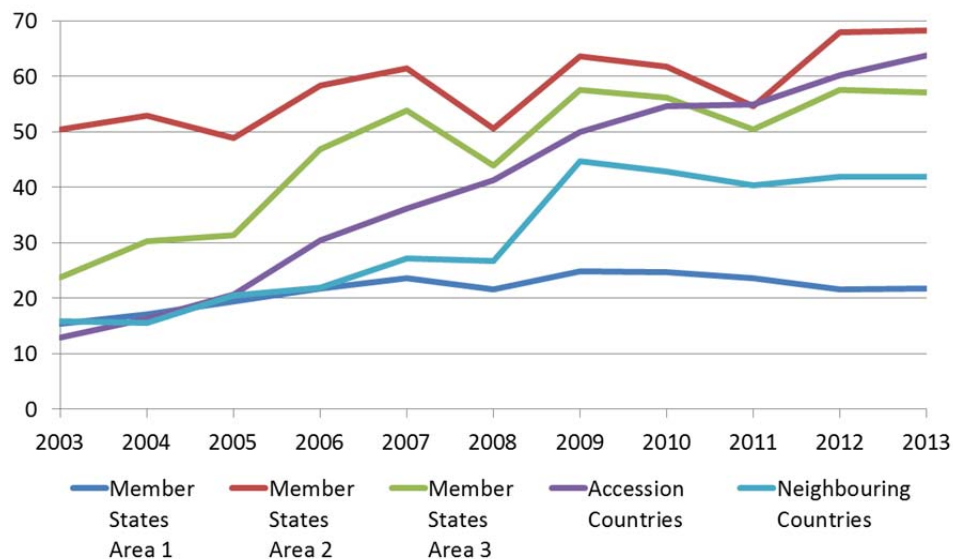
Source: Eurostat, World Bank, national statistics. Calculation and illustration: IAW.

Figure 133: GDP sectors in 2003, by subregions of the Danube Region in (%)



Source: Eurostat, World Bank, national statistics. Calculation and illustration: IAW.

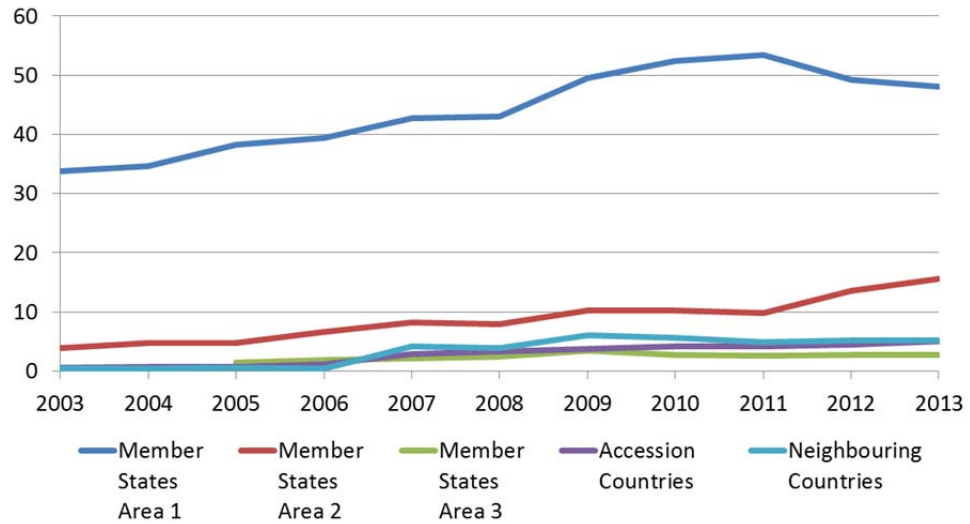
Figure 134: FDI stock inwards 2003-2013, by subregions of the Danube Region (in % of GDP)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: UNCTAD, national statistics. Calculation and illustration: IAW.

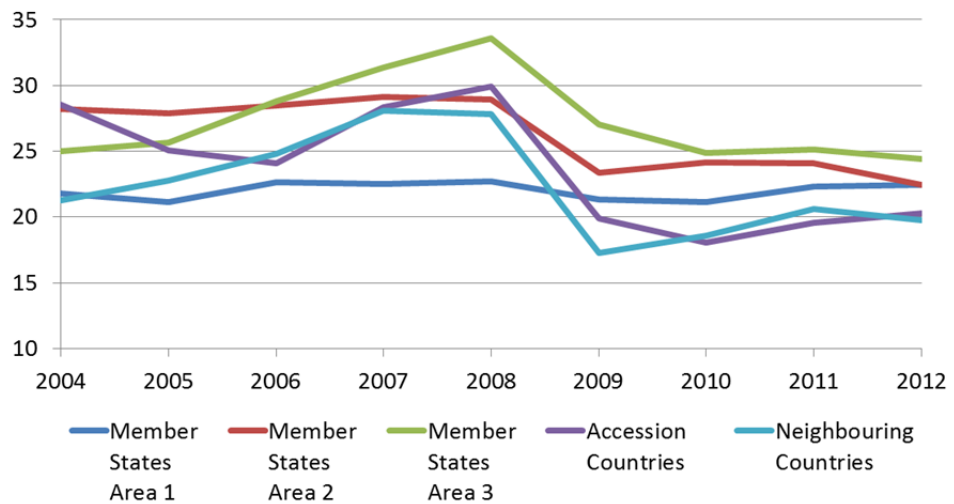
Figure 135: FDI stock outwards 2003-2013, by subregions of the Danube Region (in % of GDP)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

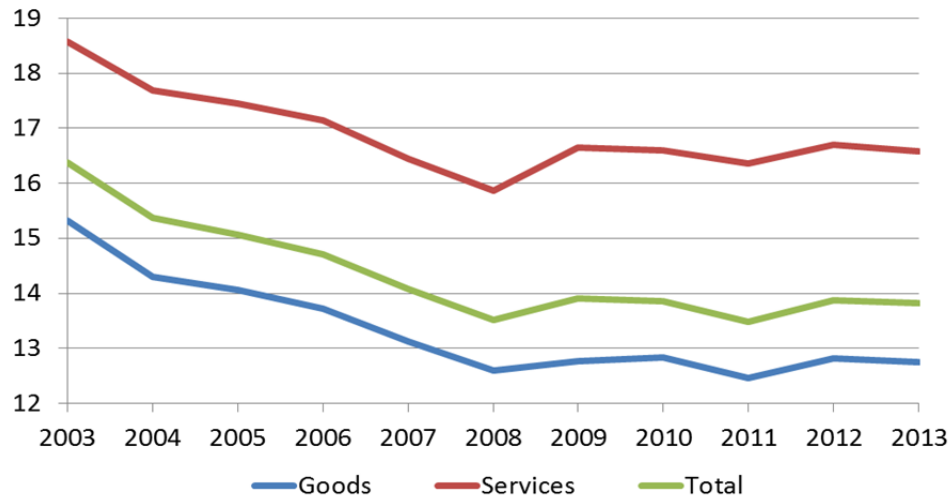
Source: UNCTAD, national statistics. Calculation and illustration: IAW.

Figure 136: Domestic Investment 2003-2012, by subregions of the Danube Region (in % of GDP)



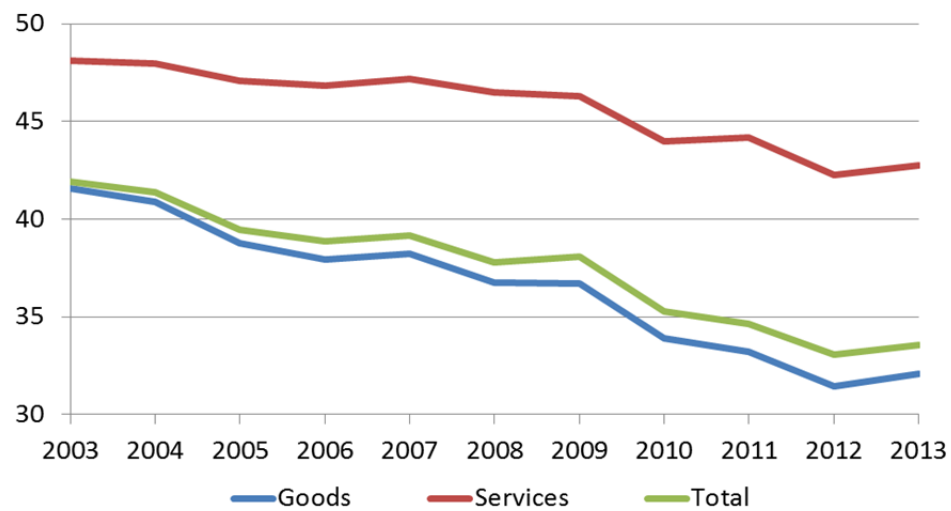
Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: Eurostat, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

Figure 137: NAFTA World export shares 2003-2013 (in % of world exports)

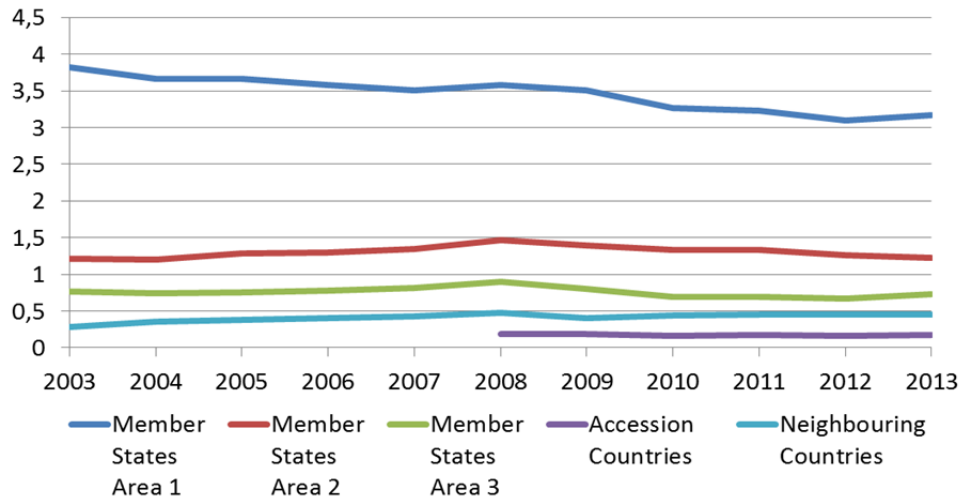
Note: NAFTA data used here because OECD data are not available.

Source: UNCTAD. Calculation and illustration: IAW.

Figure 138: EU-28 World export shares 2003-2013 (in % of world exports)

Source: UNCTAD. Calculation and illustration: IAW.

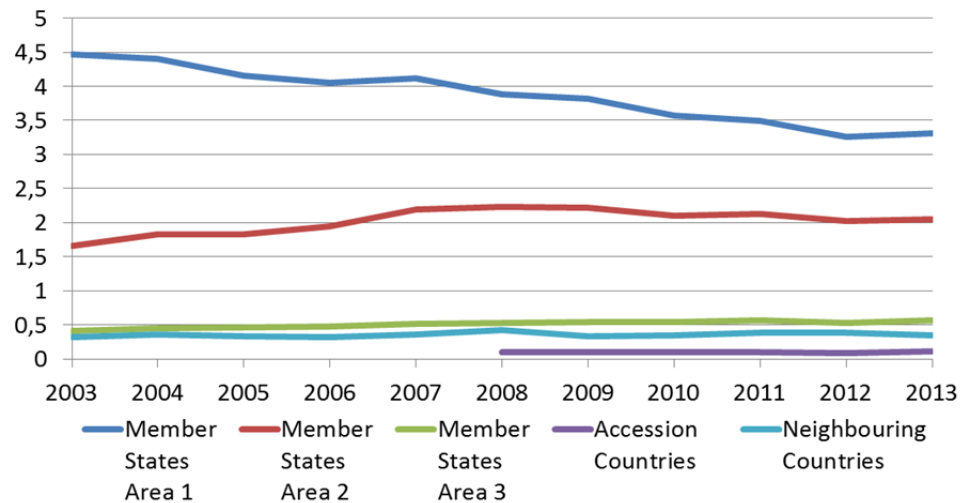
Figure 139: Danube Region World export shares 2003-2012 (in % of world service exports)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: UNCTAD, national statistics. Calculation and illustration: IAW.

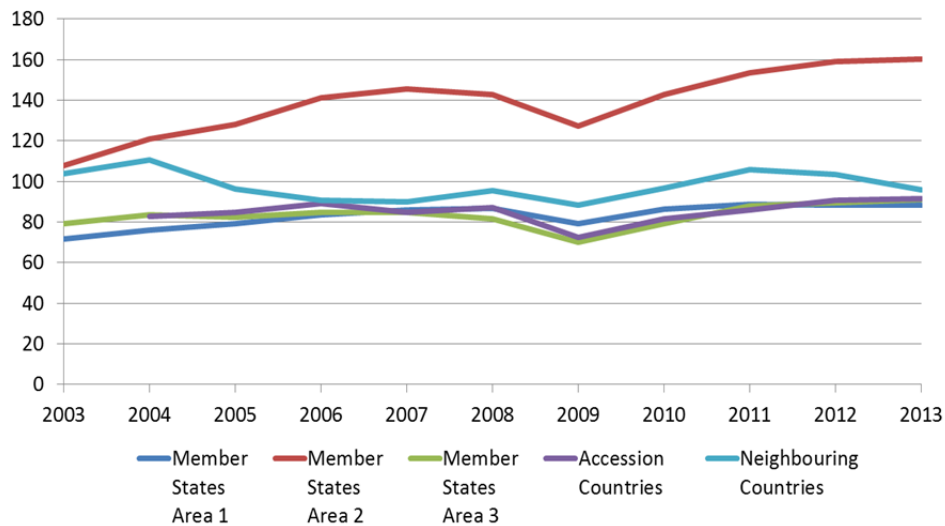
Figure 140: Danube Region World export shares 2003-2012 (in % of world goods exports)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

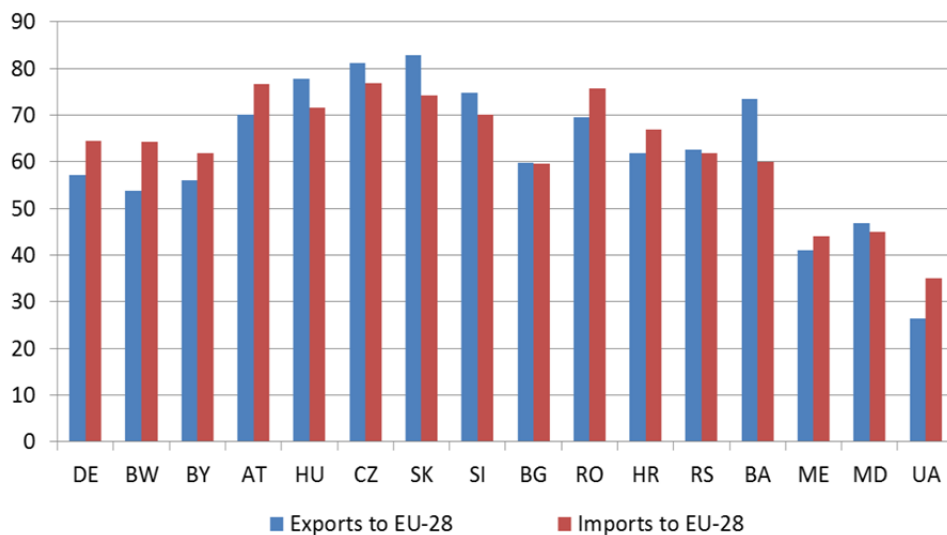
Source: UNCTAD, national statistics. Calculation and illustration: IAW.

Figure 141: Trade intensity, by subregions of the Danube Region (in % of GDP)



Source: Eurostat, wiiw Annual Database, national statistics. Calculation and illustration: IAW. Trade Intensity is defined as Exports + Imports, divided by GDP.

Figure 142: Share of imports and export with EU-28 in 2013 (in % of total imports and exports)



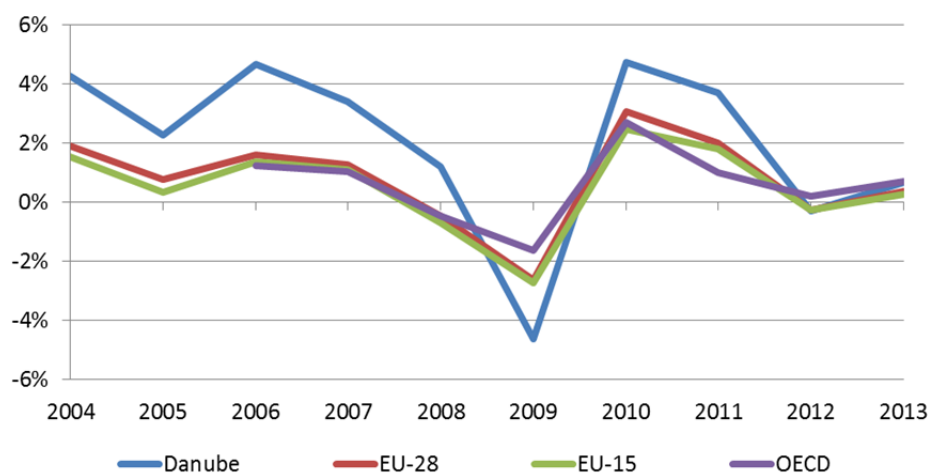
Source: Eurostat, UNCTAD, national statistics. Illustration and calculation: IAW

Table 20: Trade with the EU-28 2003-2014 (in % of total trade)

	2003	2014	change from 2003
Germany	65,6%	61,3%	-4,3%
Austria	79,5%	73,4%	-6,1%
Hungary	74,4%	77,4%	3,1%
Czech Republic	79,5%	79,9%	0,4%
Slovak Republic	80,4%	80,3%	-0,1%
Slovenia	78,7%	72,4%	-6,3%
Bulgaria	60,4%	62,0%	1,6%
Romania	71,5%	73,3%	1,8%
Croatia	71,7%	70,9%	-0,8%
Moldova	43,1%	49,8%	6,8%
Ukraine	36,0%	35,2%	-0,9%
	2008	2014	change from 2008
Serbia	50,6%	60,9%	10,3%
Bosnia and Herzegovina	67,1%	63,5%	-3,6%
Montenegro	45,5%	44,2%	-1,3%

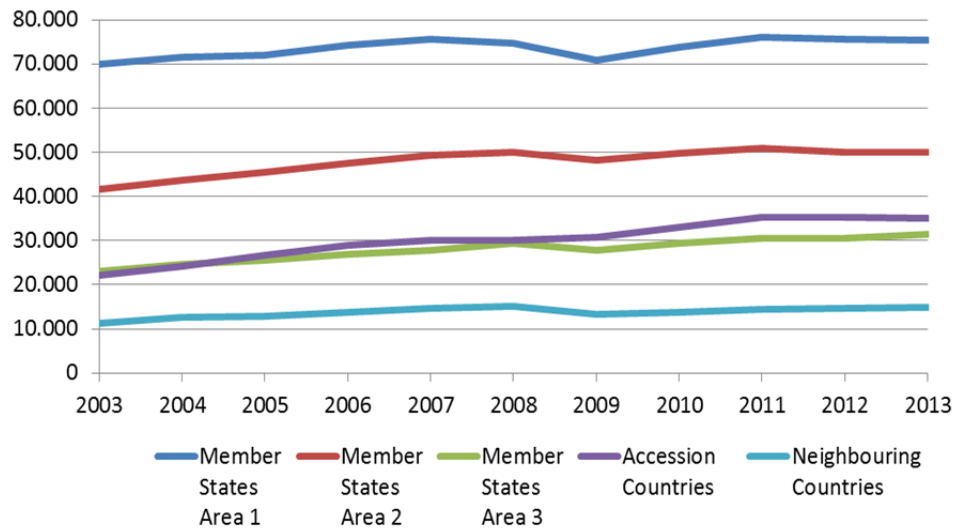
Source: Eurostat. Calculation and illustration: IAW.

Figure 143: Real Labour productivity growth (in GDP per person employed)



Source: Eurostat, UNdata, World Bank, UNECE, wiiw Annual Database, national statistics. Calculation and illustration: IAW.

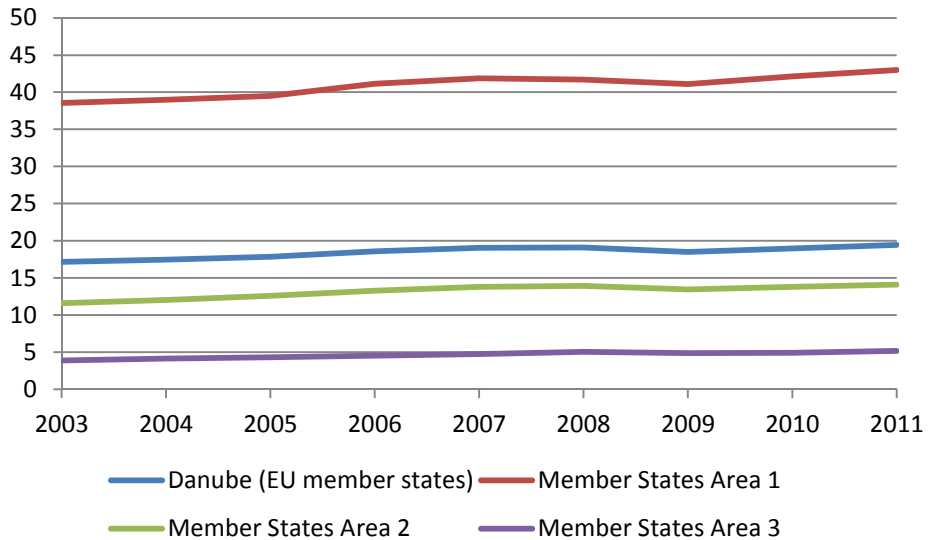
Figure 144: Labour productivity 2003-2013, by subregions of the Danube Region (GDP per person employed, in Million 2005 US\$)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA.

Source: Eurostat, UNdata, World Bank, UNECE, wiiw Annual Database, national statistics. The Benchmark for the OECD countries could not be calculated due to missing data on persons engaged for 2003 and 2004. Calculation and illustration: IAW.

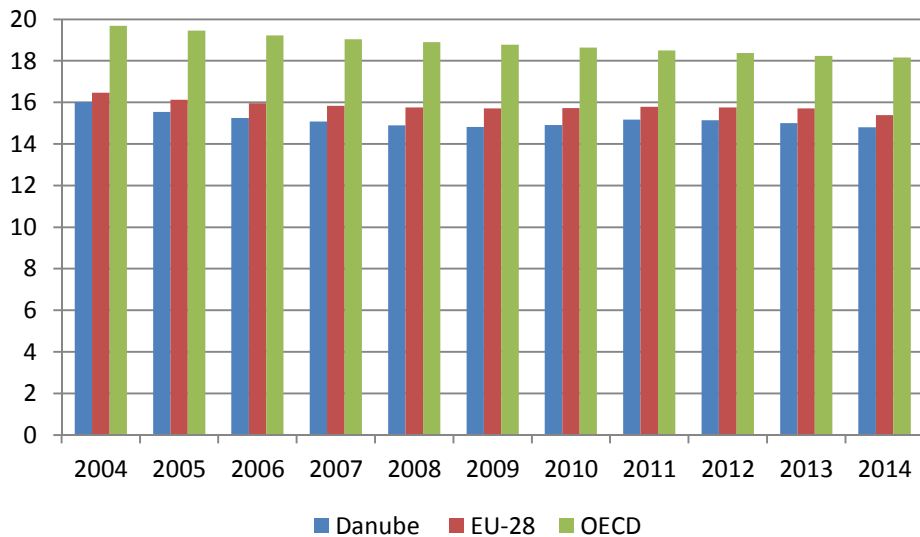
Figure 145: Labour productivity 2003-2011, by subregions of the Danube Region (only EU member states, GDP per person employed, in € per hour worked)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO. Data only available for EU member states. HR is not included in Member States Area 3 because there is also no data available.

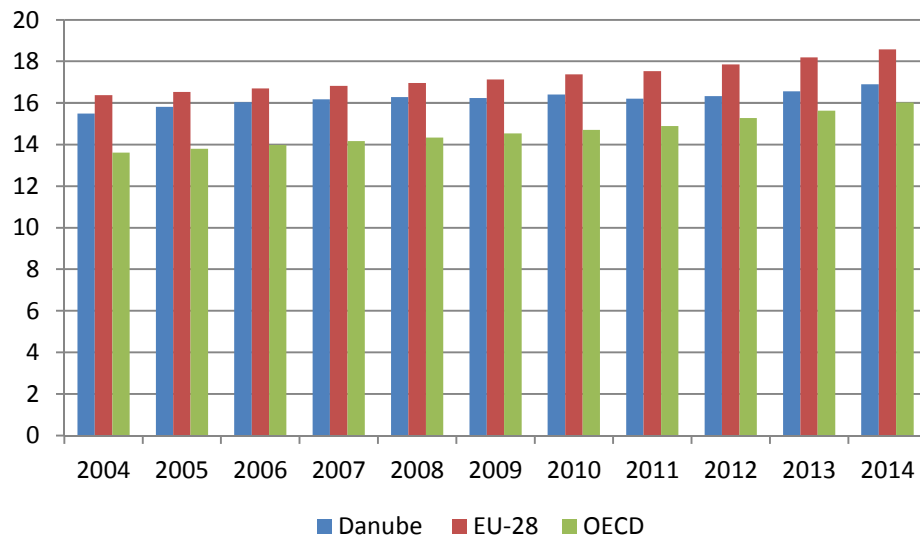
Source: Eurostat, Arbeitskreis VGR. Calculation and illustration: IAW.

Figure 146: Population 0-14 years (share of total population) 2004-2014



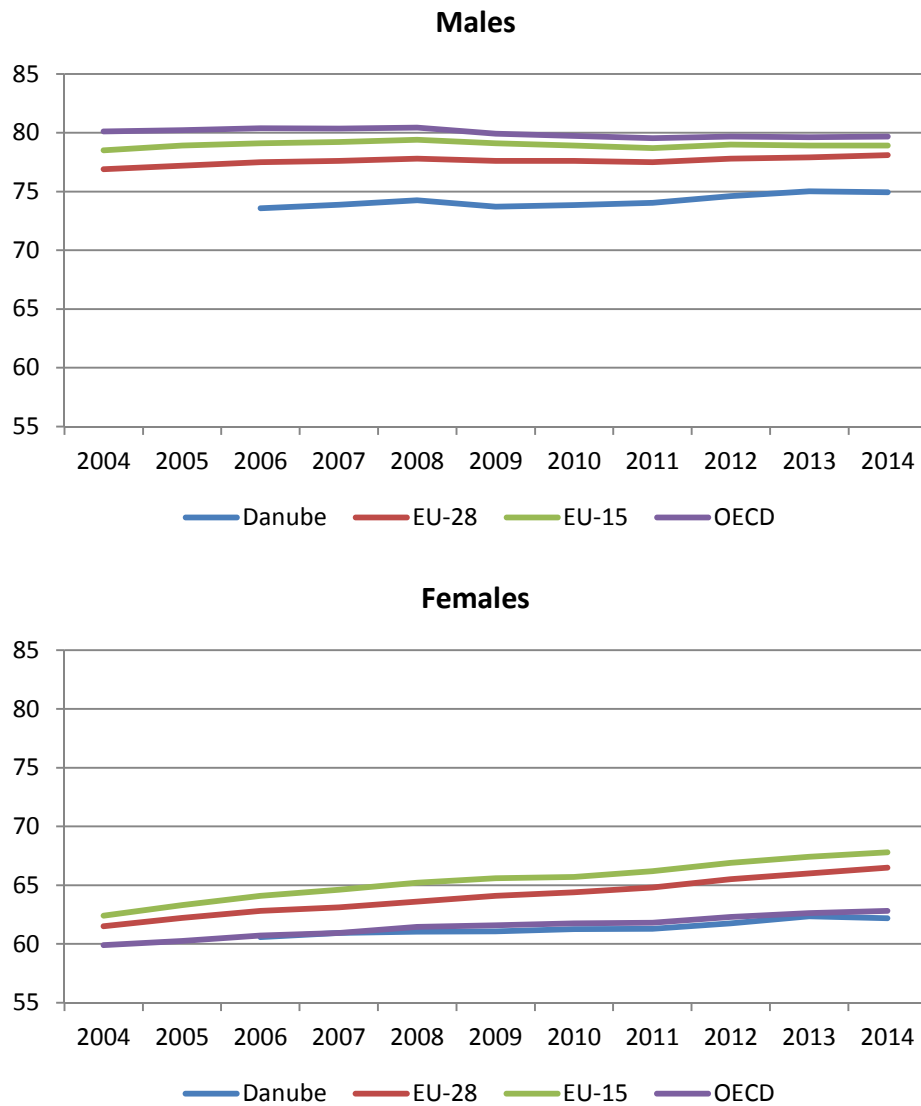
Source: Eurostat, OECD. Calculation and illustration: wiw.

Figure 147: Population 65 years and older (share of total population) 2004-2014



Source: Eurostat, OECD. Calculation and illustration: wiiw.

Figure 148: Activity rates 2004-2014, by gender (in % of the population of males and females respectively)



Source: Eurostat, OECD. Calculation and illustration: wiw.

Table 21: Global Competitiveness Index

Country	Global Competitiveness Index	Domestic Market Size	Cost of crime and violence	Gov. Regulation
---------	------------------------------	----------------------	----------------------------	-----------------

Germany	5.49	5.82	5.18	3.60
Change	-	+	-	+
Austria	5.16	4.36	6.09	3.39
Change	-	+	-	-
Hungary	4.28	3.90	4.77	2.60
Change	-	-	-	+
Czech Republic	4.53	4.14	4.83	2.55
Change	-	-	-	+
Slovakia	4.15	3.66	4.55	2.44
Change	-	+	-	-
Slovenia	4.22	3.08	5.54	2.53
Change	-	-	-	-
Bulgaria	4.37	3.56	4.26	3.06
Change	+	+	+	+
Romania	4.30	4.23	4.35	3.21
Change	+	+	+	-
Croatia	4.13	3.34	5.23	2.17
Change	-	-	+	-
Serbia	3.90	3.44	4.18	2.21
Change	+	+	-	+
Bosnia-Herzegovina	4.02	2.88	6.22	3.58
Change	+	-	+	+
Montenegro	4.23	1.88	4.72	3.59
Change	+	+	-	+
Moldova	4.03	2.36	4.90	2.91
Change	+	+	-	+
Ukraine	4.14	4.36	3.85	2.87
Change	+	-	-	+

Country	Property Rights	Intellectual Property Rights	Trade barriers	Flexibility of wage determination
Germany	5.64	5.41	4.28	3.41
Change	-	-	-	+

Austria	5.84	5.51	4.52	2.50
Change	-	-	-	-
Hungary	3.73	3.69	4.66	5.08
Change	-	-	-	-
Czech Republic	4.00	3.92	4.35	5.37
Change	-	+	-	-
Slovakia	3.84	3.78	4.57	4.62
Change	-	-	-	-
Slovenia	4.18	4.06	4.56	3.94
Change	-	-	-	-
Bulgaria	3.47	3.02	4.11	5.37
Change	-	+	-	-
Romania	3.96	3.35	3.96	5.04
Change	-	+	-	-
Croatia	3.79	3.61	4.61	5.47
Change	-	-	-	+
Serbia	3.15	2.88	4.26	5.36
Change	-	+	±	+
Bosnia- Herzegovina	3.68	2.47	3.98	4.40
Change	+	+	-	-
Montenegro	4.10	3.65	4.31	4.98
Change	-	+	-	+
Moldova	3.16	2.83	4.27	5.52
Change	-		-	+
Ukraine	2.70	2.66	4.06	4.92
Change	-	-	+	-

Note: Change to 2008/2009. Source: Global Competitiveness Report 2008/9 – 2014/15, Calculation and illustration: IAW

Table 22: Economic Freedom

Country	Property Rights	Freedom from Corruption	Fiscal Freedom	Government Spending	Business Freedom	Labour Freedom
DE	90	78	60.8	40.1	88.2	51.2
AT	90	69	50.1	19.8	78	76.7
HU	55	54	78.7	25.9	74.5	67.7

CZ	75	48	81.5	40.6	68.2	82.9
SK	50	47	80.8	55.1	69.6	56.5
SI	60	57	58.1	0	81.2	57.1
BG	30	41	91	64.5	68.5	76.6
RO	40	43	86.9	62.3	69.8	68.6
HR	40	48	74.9	46.5	55.8	42.8
RS	45	42	82.4	27.1	57.8	70.4
BA	20	42	82.9	27.3	53.5	63.4
ME	40	44	92.6	36.7	77.1	77.5
MD	40	35	85.1	51.8	66.8	40.6
UA	20	25	78.7	28	59.3	48.2

Country	Monetary Freedom	Trade Freedom	Investment Freedom	Financial Freedom	change from 2009	Score 2009	Overall Score
DE	81.5	88	90	70	3.3	70.5	73.8
AT	80.3	88	90	70	0.0	71.2	71.2
HU	79.2	88	75	70	0.0	66.8	66.8
CZ	81.2	88	80	80	3.1	69.4	72.5
SK	75.5	88	80	70	-2.2	69.4	67.2
SI	81.3	88	70	50	-2.6	62.9	60.3
BG	83.2	88	65	60	3.6	63.2	66.8
RO	77.3	88	80	50	11.5	55.1	66.6
HR	80	87.2	80	60	-3.1	64.6	61.5
RS	72.2	78.2	75	50	3.4	56.6	60.0
BA	84	87.2	70	60	5.9	53.1	59.0
ME	79.7	84.8	65	50	6.5	58.2	64.7
MD	76.1	79.8	50	50	2.6	54.9	57.5
UA	78.6	85.8	15	30	-1.9	48.8	46.9

Source: Heritage Foundation (2015), Calculation and illustration: IAW

Table 23: EU 2012 targets: Licensing time and cost for countries

Group	Country	Time in days	Costs in €
Member States Area 1	DE	6	225
	AT	11	385
Member States Area 2	HU	2	392
	CZ	15	345
	SK	12	335
	SI	3	0
Member States Area 3	BG	4	40-80
	RO	3	100-125
	HR	1 – 5	>250
Accession Countries	RS	1 – 5	10 - 50
	BA	1 – 5	>250
	ME	1 – 5	10 - 50
Neighbouring Countries	MD	1 – 5	10 - 50
	UA	5 - 15	10 - 50

Notes: **Red**: Does comply with targets, **Yellow**: Does partly comply with targets, **Green**: Does comply with targets.

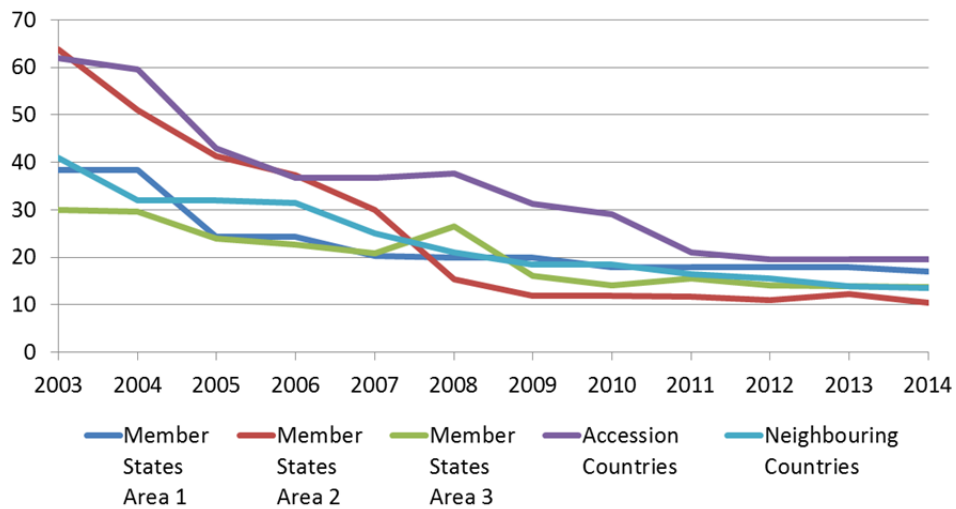
Source: SME Performance Review (2012), SME Policy Index (2012). Calculation and Illustration: IAW

Table 24: World Rank 2014 by country in the category „Starting a Business“

DE	AT	HU	CZ	SK	SI	BG	RO	HR	RS	BA	ME	MD	UA
114	101	57	110	77	15	49	38	88	66	147	56	35	76
-	+	-	±	+	-	-	-	-	-	-	-	+	-

Source: Doing Business 2015, **Green (+)** means improvement, **red (-)** decline compared to 2012. Calculation and Illustration: IAW.

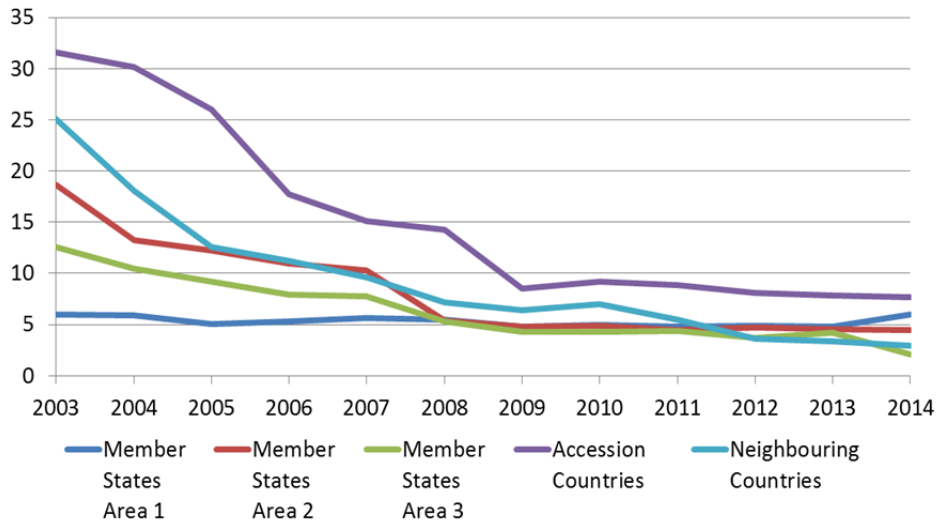
Figure 149: Time to complete business-registration procedures, by subregion (in days)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA. Median time „necessary in practice to complete a procedure with minimum follow-up with government agencies and no extra payments“. The company form is a limited liability.

Source: Doing Business (2004-2015). Calculation and illustration: IAW.

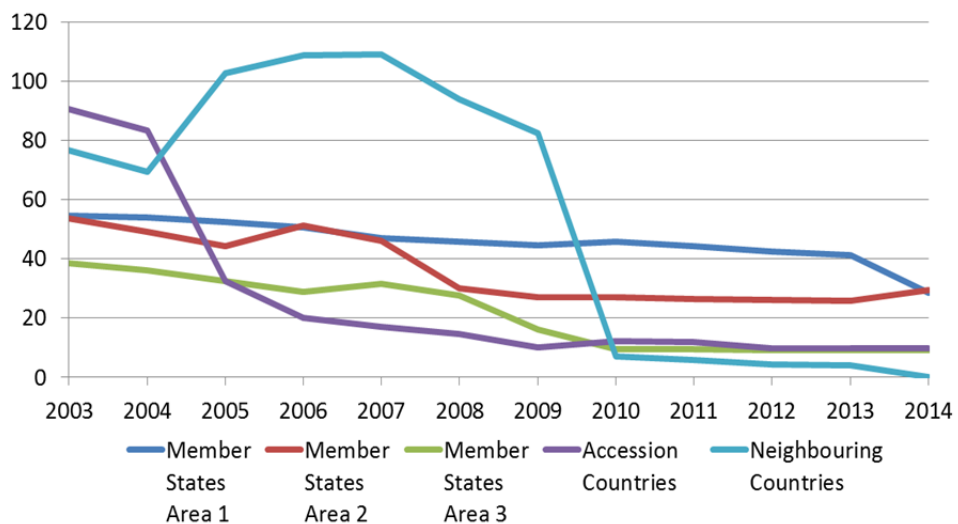
Figure 150: Cost to complete business-registration procedures, by subregions of the Danube Region (in % of income per capita)



Notes: Member States Area 1: BW, BY, AT; Member States Area 2: HU, CZ, SK, SI; Member States Area 3: BG, RO, HR; Accession Countries: RS, BA, ME; Neighbouring Countries: MD, UA. The cost includes all official fees and fees for legal or professional services if such services are required by law.

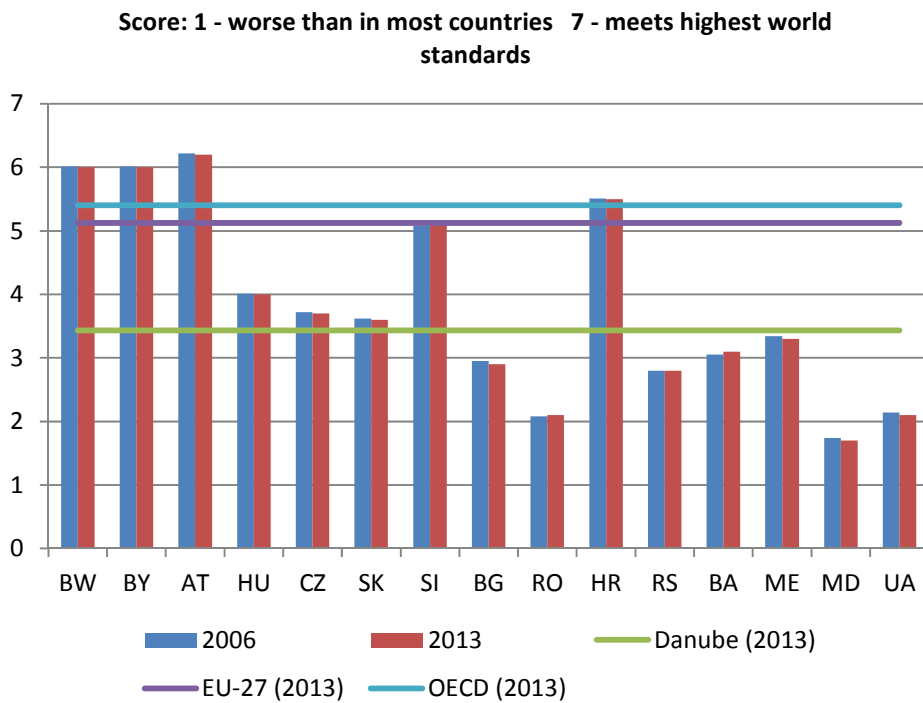
Source: Doing Business (2004-2015). Calculation and illustration: IAW

Figure 151: Paid-in Minimum Capital Requirements, by subregions of the Danube Region (in % of income per capita)



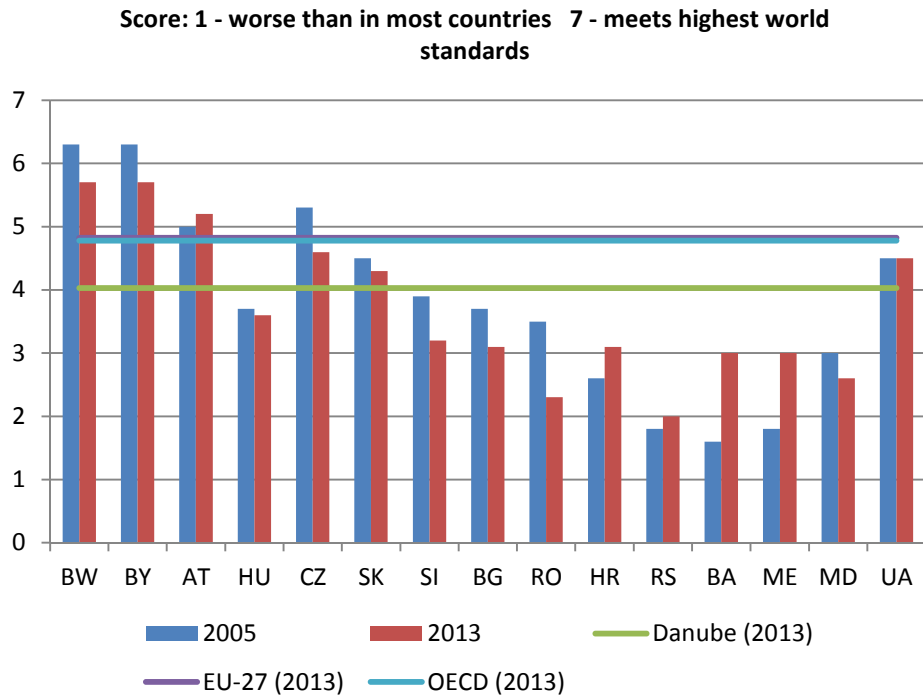
Source: Doing Business (2004-2015), Calculation and illustration: IAW

Figure 152: WEF Road Scores 2006 and 2013



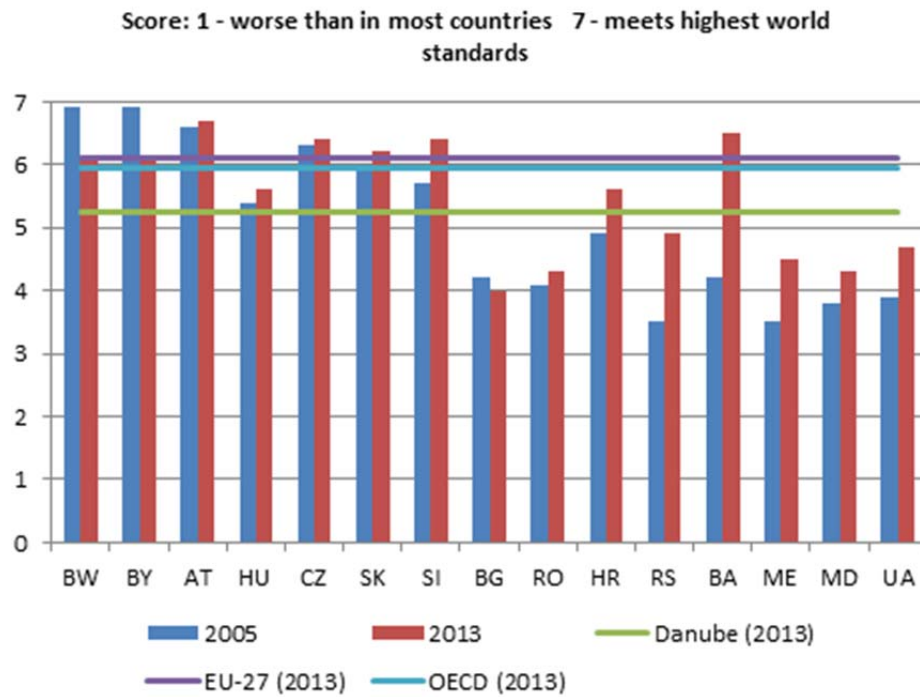
Source: Schwab, K. (2005-2013), Global Competitiveness Report, World Economic Forum, Geneva, Switzerland, Database of the World Bank (Code: SP.POP.TOTL), Statistical Office of Germany. Calculation and illustration: ZEW.

Figure 153: WEF Railroad Scores 2005 and 2013



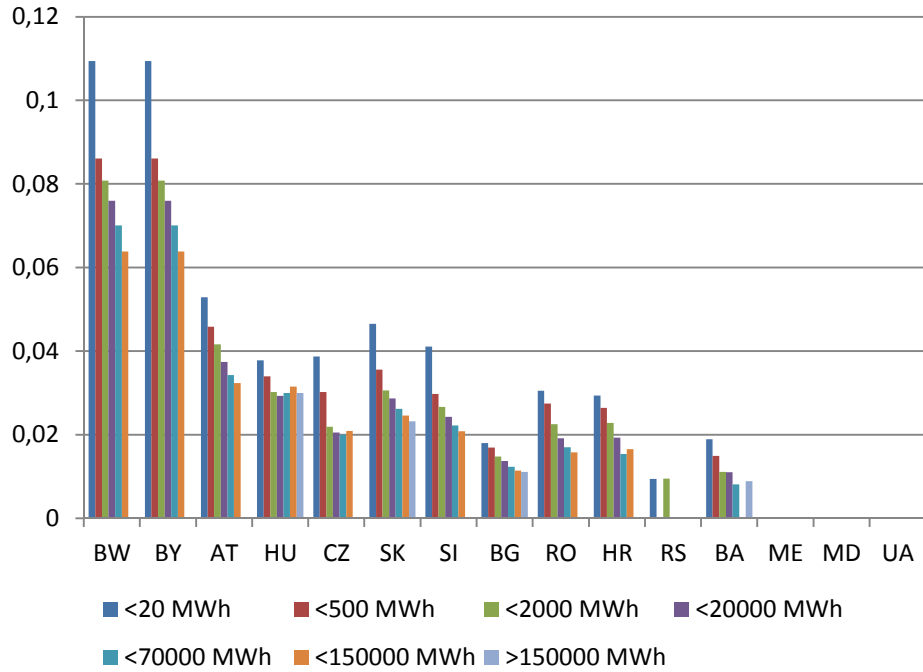
Source: Schwab, K. (2005-2013), Global Competitiveness Report, World Economic Forum, Geneva, Switzerland, Database of the World Bank (Code: SP.POP.TOTL), Statistical Office of Germany. Calculation and illustration: ZEW.

Figure 154: WEF Electricity Score 2005 and 2013



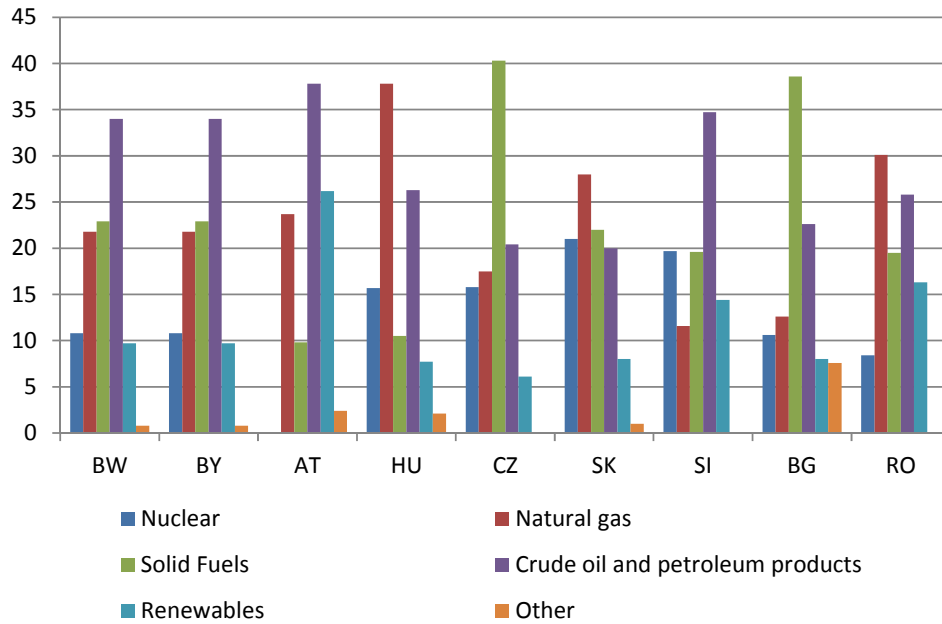
Source: Schwab, K. (2005-2013), Global Competitiveness Report, World Economic Forum, Geneva, Switzerland, Database of the World Bank (Code: SP.POP.TOTL), Statistical Office of Germany. Calculation and illustration: ZEW.

Figure 155: Taxes on electricity prices 2012 (in Cent/kWh)



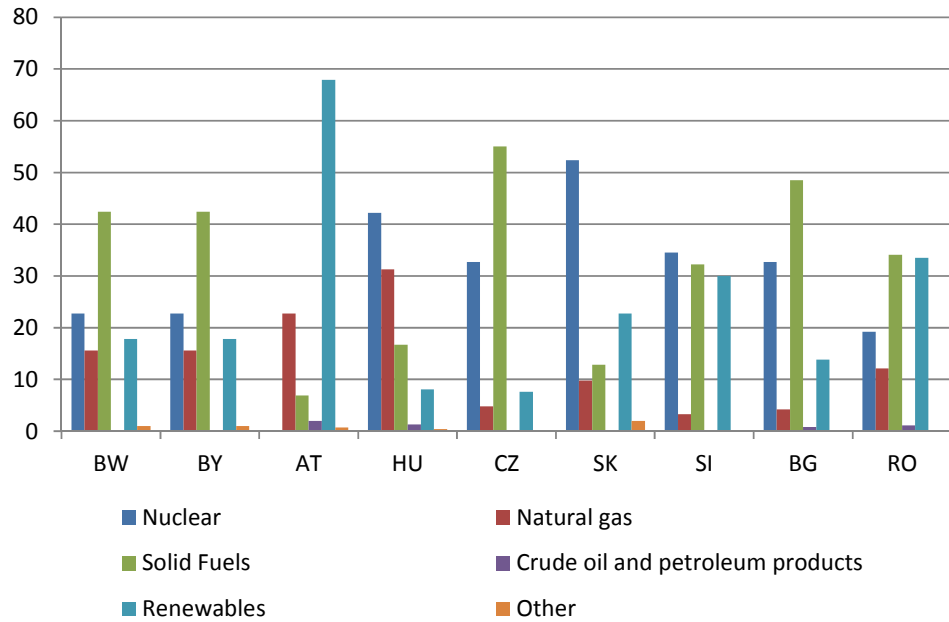
Source: European Commission (2011), Energy markets in the European Union in 2011. Calculation and illustration: ZEW.

Figure 156: Gross national energy consumption 2010 (in %)



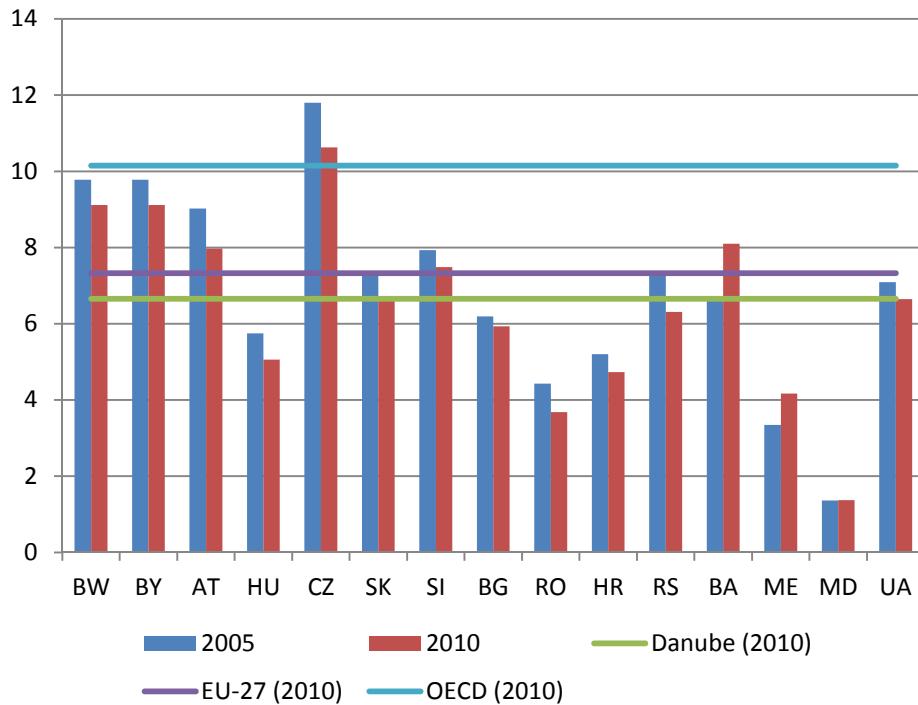
Source: European Commission (2011), Energy markets in the European Union in 2011. Calculation and illustration: ZEW.

Figure 157: Gross electricity generation 2010 (in %)



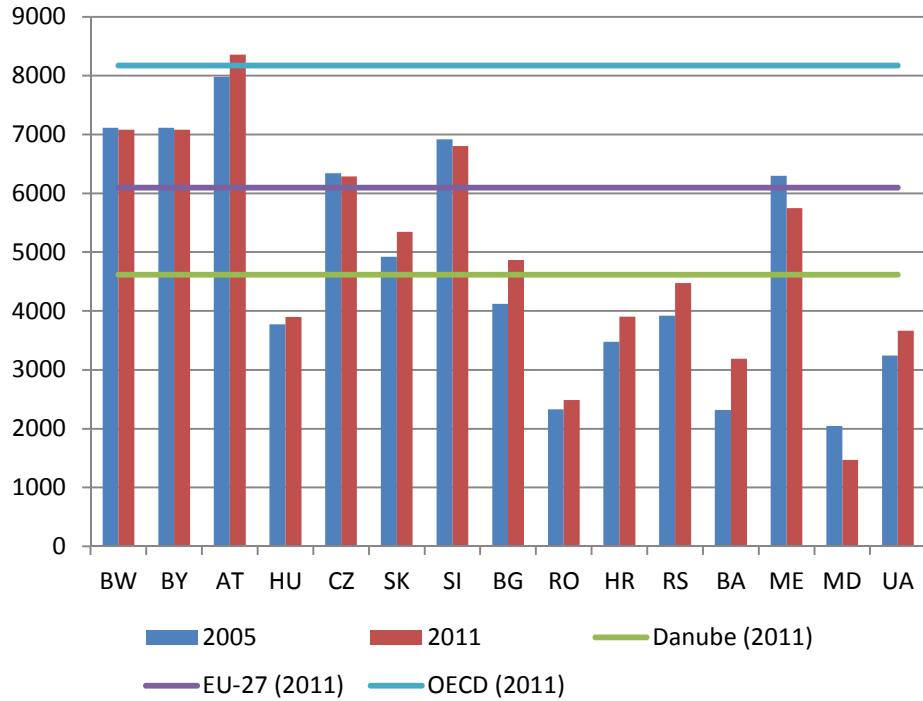
Source: European Commission (2011), Energy markets in the European Union in 2011. Calculation and illustration: ZEW.

Figure 158: CO² emissions (in metric ton per capita)



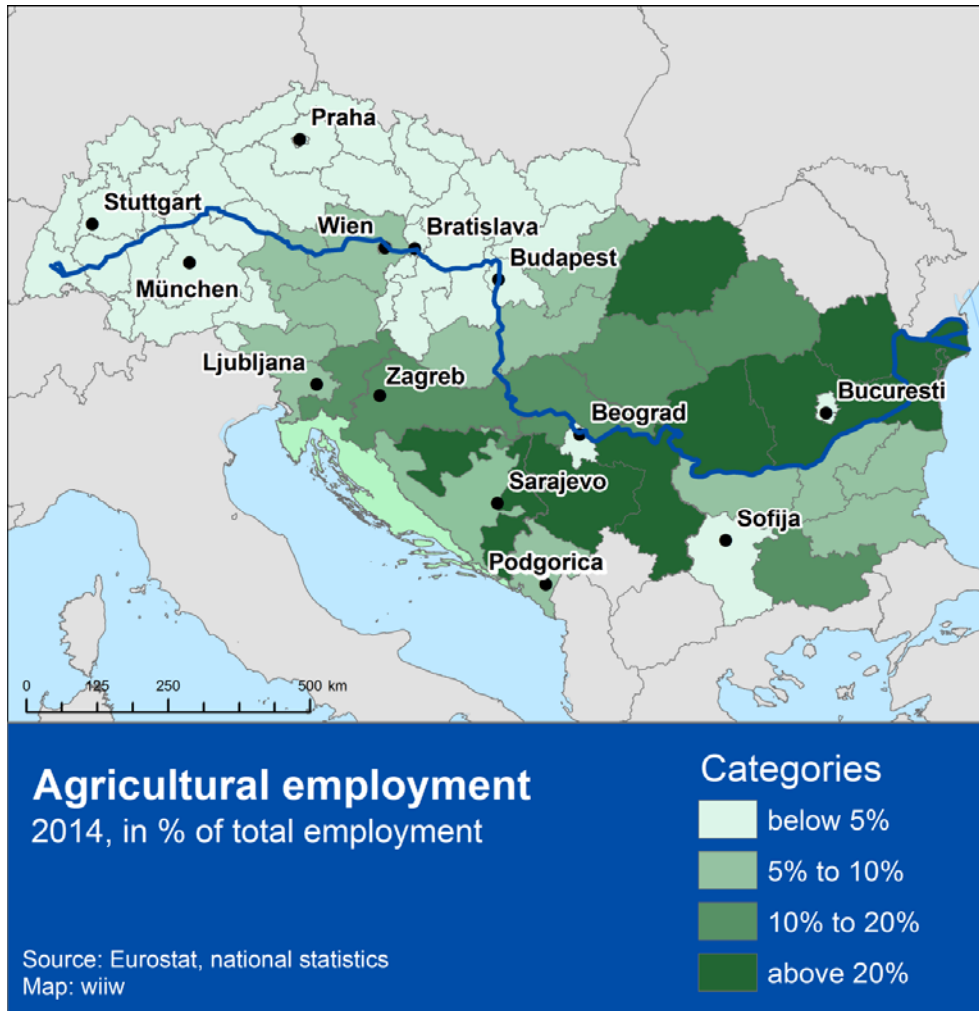
Source: Database of the World Bank (Code: EN.ATM.CO2E.PC). Calculation and illustration: ZEW.

Figure 159: Electric power consumption (in kWh per capita)



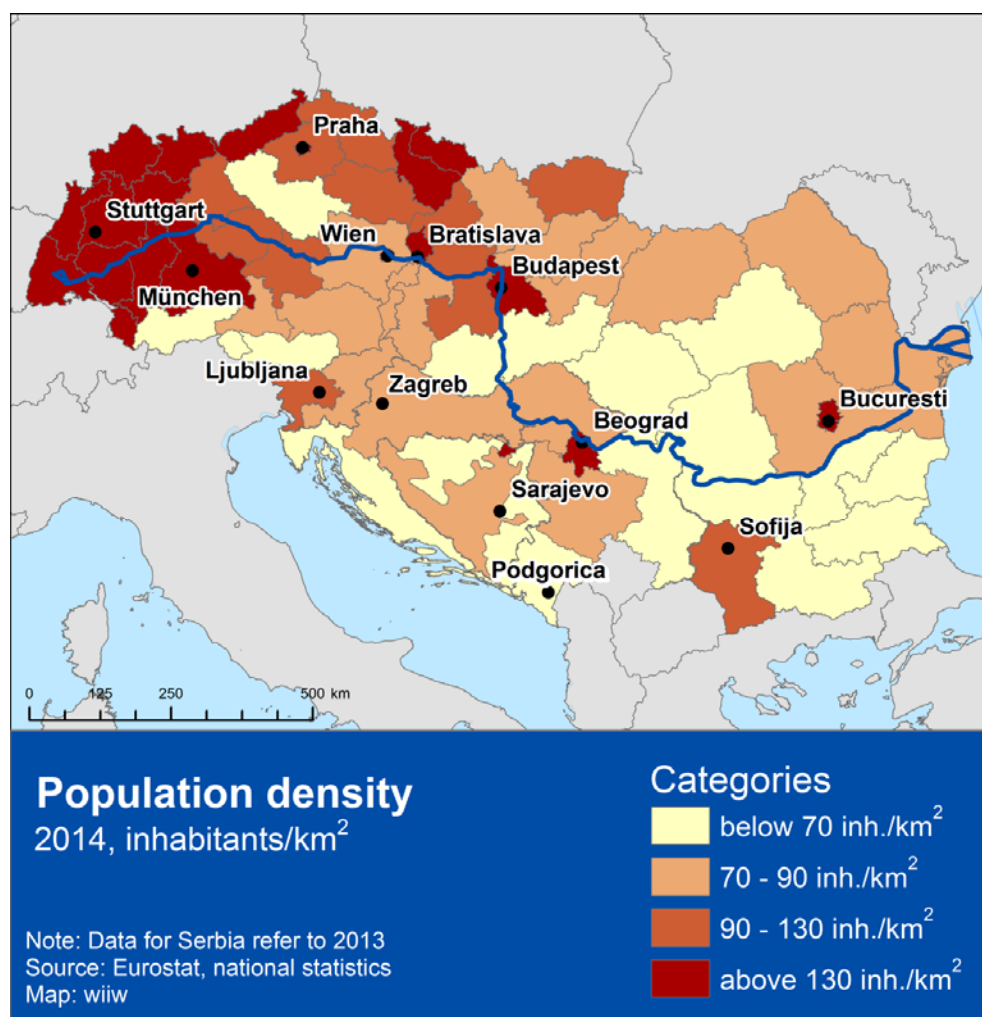
Source: Database of the World Bank (Code: EG.USE.ELEC.KH.PC). Calculation and illustration: ZEW.

Figure 160: Share of agriculture in total employment 2014



Source: Eurostat, national statistics. Calculation and illustration: wiiw.

Figure 161: Population density 2014



Source: Eurostat, national statistics. Calculation and illustration: wiiw.

Table 25: Regions in the Danube Region, population and population density, 2014

Code	Region	Population	Population density	Code	Region	Population	Population density
AT	AUSTRIA	8,506,889	101.4	HR	CROATIA	4,246,809	75.0
AT11	Burgenland	287,318	72.5	HR03	Jadranska Hrvatska	1,405,908	56.9
AT12	Niederösterreich	1,626,262	84.8	HR04	Kontinentalna Hrvatska	2,840,901	89.1
AT13	Wien	1,765,575	4254.4	HU	Hungary	9,877,365	106.2
AT21	Kärnten	555,743	58.3	HU10	Közép-Magyarország	2,965,413	428.8

AT22	Steiermark	1,214,927	74.1	HU21	Közép-Dunántúl	1,069,190	96.2
AT31	Oberösterreich	1,425,982	119.0	HU22	Nyugat-Dunántúl	984,521	86.9
AT32	Salzburg	534,185	74.6	HU23	Dél-Dunántúl	917,492	64.8
AT33	Tirol	721,574	57.1	HU31	Észak-Magyarország	1,176,894	87.6
AT34	Vorarlberg	375,323	144.3	HU32	Észak-Alföld	1,484,375	83.7
BG	BULGARIA	7,245,677	65.3	HU33	Dél-Alföld	1,279,480	69.8
BG31	Severozapaden	810,401	42.5	RO	ROMANIA	19,947,311	83.7
BG32	Severen tsentralen	835,813	56.5	RO11	Nord-Vest	2,590,220	75.8
BG33	Severoiztochen	954,536	65.2	RO12	Centru	2,355,312	69.1
BG34	Yugoiztochen	1,063,690	53.7	RO21	Nord-Est	3,273,367	88.8
BG41	Yugozapaden	2,127,618	105.0	RO22	Sud-Est	2,509,094	70.2
BG42	Yuzhen tsentralen	1,453,619	65.1	RO31	Sud - Muntenia	3,085,095	89.5
CZ	CZECH REPUBLIC	10,512,419	133.3	RO32	Bucuresti - Ilfov	2,282,968	1253.6
CZ01	Praha	1,243,201	2505.9	RO41	Sud-Vest Oltenia	2,033,360	69.6
CZ02	Strední Cechy	1,302,336	118.2	RO42	Vest	1,817,895	56.8
CZ03	Jihozápad	1,210,176	68.7	SI	SLOVENIA	2,061,085	101.7
CZ04	Severozápad	1,125,429	130.1	SI01	Vzhodna Slovenija	1,079,655	88.4
CZ05	Severovýchod	1,506,503	121.1	SI02	Zahodna Slovenija	981,430	121.8
CZ06	Jihovýchod	1,680,287	120.1	SK	SLOVAKIA	5,415,949	110.4
CZ07	Strední Morava	1,222,655	132.5	SK01	Bratislavský kraj	618,380	301.2
CZ08	Moravskoslezsko	1,221,832	225.1	SK02	Západné Slovensko	1,836,664	122.5
	GERMAN DANUBE R.			SK03	Stredné Slovensko	1,347,233	82.8
DE11	Stuttgart	3,972,881	376.3	SK04	Východné Slovensko	1,613,672	102.6
DE12	Karlsruhe	2,702,831	390.6	ME00	MONTENEGRO	622,777	45.1
DE13	Freiburg	2,174,500	232.4	BH	BOSNIA AND HERCEGOVINA	3,835,645	74.8
DE14	Tübingen	1,781,066	199.7	BH01	Federation of Bosnia and Hercegovina	2,336,072	89.5
DE21	Oberbayern	4,469,342	255.0	BH02	Republika Srpska	1,428,320	58.0
DE22	Niederbayern	1,189,153	115.1	BH03	District Brcko	71,253	144.5
DE23	Oberpfalz	1,077,991	111.2	RS	SERBIA	7,164,132	92.3
DE24	Oberfranken	1,056,365	146.1	RS01	Beogradski region	1,669,552	516.2
DE25	Mittelfranken	1,707,376	235.7	RS02	Region Vojvodine	1,912,095	88.5
DE26	Unterfranken	1,297,992	152.1	RS03	Region Sumadijei Zapadne Srbije	2,003,118	75.6
DE27	Schwaben	1,806,025	180.7	RS04	Region Juzne i Istocne Srbije	1,579,367	60.2

Note: Data for Germany and Serbia refer to 2013.

Source: Eurostat, national statistics

Table 26: National and International SME-Financing Support Programmes and Institutions in the Danube Region

EU Member States										Accession Countries			Neighbouring Countries	
Austria	Hungary	Germany	Bulgaria	Romania	Slovenia	Czech Rep.	Slovak Rep.	Croatia	Montenegro	Serbia	Bosnia & Herzegov.	Moldova	Ukraine	
International Programmes														
Entrepreneurship and Innovation Programme (EIP) as part of the Competitiveness and Innovation Framework Programme														
Activities Supporting Small and Medium-Sized Enterprises by the European Investment Bank (EIB)														
Joint European Resources for Micro to Medium Enterprises Initiative (JEREMIE)										Joint IFI Action Plan				
Joint Action to Support Microfinance Institutions (JASMINIE)						Western Balkans Enterprise Development and Innovation Facility (WB EDIF)								
EU Member States										Accession Countries			Neighbouring Countries	
Austria	Hungary	Germany	Bulgaria	Romania	Slovenia	Czech Rep.	Slovak Rep.	Croatia	Montenegro	Serbia	Bosnia & Herzegov.	Moldova	Ukraine	
Network of European Financial Institutions for SMEs - Development Banks														
AWS Austria Economic Service - Dev. Bank	MFB Hungarian Dev. Bank	KfW Banking Group	Bulgarian Dev. Bank (BDB), Black Sea Trade and Dev. Bank (BSTDB)	Black Sea Trade and Dev. Bank (BSTDB)	SID Bank	Czech-Moravian Guarantee and Dev. Bank (CMZRB)	SZRB - Slovak Guarantee and Dev. Bank	HBOR Croatian Bank for Reconstruction and Dev.	Hipotekarna Banka A.D.		ProCredit Bank Bosnia and Herzegovina	Black Sea Trade and Dev. Bank (BSTDB)	Ukrainian Bank for Reconstruction and Dev. (UBRD), Black Sea Trade and Dev. Bank (BSTDB)	
EU Member States										Accession Countries			Neighbouring Countries	
Austria	Hungary	Germany	Bulgaria	Romania	Slovenia	Czech Rep.	Slovak Rep.	Croatia	Montenegro	Serbia	Bosnia & Herzegov.	Moldova	Ukraine	
National Programmes and the Sponsoring Institutions														
SME Programme, SME Fund, Small Credit Programme	New Hungary Loan Programme for SMEs	Programmes for Promoting R&D in Enterprises	Loans for financing SMEs	National Credit Guarantee Fund for SMEs	Bank loan guarantee line and equity financing instruments	Guarantees and loans are provided directly to SMEs	Bank Guarantees for Loans and Direct Loans to SMEs	Loan Programme for the Dev. of Private SMEs	Strategy for Dev. of SMEs 2011-2015	Dev. Fund of the Republic of Serbia	Establishment of Microcredit System	Fostering SME Dev.	Ukraine Micro Lending Programme (UMLP)	
AWS Austria Economic Service - Dev. Bank	MFB Hungarian Dev. Bank	IHK Karlsruhe	BDB Bulgarian Dev. Bank	FNGCIMM (non-bank financial institution)/ Ministry of Economy	Slovene Enterprise Fund (SEF)	CMZRB - Czech-Moravian Guarantee & Dev. Bank	SZRB - Slovak Guarantee & Dev. Bank	HBOR Croatian Bank for Reconstruction and Dev.	Montenegro Directorate for Dev. of SMEs	Serbian Government	Banking Agency of the Federation of Bosnia and Herzegovina	OECD Private Sector Dev.	EBRD and the German-Ukrainian Fund (GUF)	
	Secchenyi Card Programme - Subsidised interest loans to SMEs	SME Credit Programme (MKP)	Guaranteed Loans for SMEs by the National Guarantee Fund (NGF)	Kogalniceanu Programme - Subsidized interest credit lines	Agency for Implementation of Projects and Programmes for SMEs	Financial Services for SMEs	Loan guarantees, export credit insurance, direct investment	SME Finance Facility	Support for SMEs Sector and Entrepreneurs (direct loans, guarantees)	Loans for Start-ups Programme	SME Dev. Strategy (2009-2011)	State Credit Guarantee Fund		
	AVHGA	LfA Promotional Bank Bavaria	United Bulgarian Bank		SID Bank	The Czech Export Bank, Export Guarantee & Insurance Company	OTP Banka Slovensko		Investment and Dev. Fund of Montenegro	Republic Agency for the Dev. of SMEs & Entrepreneurship	Ministry of Foreign Trade and Economic Relations of BiH	Organization for SME Sector Dev. (ODIMM)		
	Rural Credit Guarantee Foundation					Operational Programme Enterprise & Innovation (OPEI)	Micro-loan Programme				Programme for Encouragement of Balanced Regional Dev.			
	AVHGA					The Ministry of Industry and Trade of the Czech Republic	National Agency for Development of SMEs (NADSME)				Ministry of Economy and Regional Development of Serbia			

Table 27: Quantitative cluster identification approach – NACE 3 sectors with 2&3 star clusters in NUTS 2 areas from at least 3 countries of the Danube Region

Code	Region	Employees	Enterprises	Stars	Size	Specialisation	Focus
Apparel							
BG31	Severozapaden	11845	337	3	1.16	10.48	6.46
BG32	Severen tsentralen	13790	458	3	1.34	9.78	6.03
BG42	Yuzhen tsentralen	20964	1216	3	2.04	8.88	5.47
RO11	Nord-Vest	17901	678	3	1.75	6.23	3.84
RO12	Centru	20035	520	3	1.95	7	4.31
RO21	Nord-Est	21373	652	3	2.08	9.87	6.08
RO22	Sud-Est	18376	419	3	1.79	7.6	4.68
RO31	Sud - Muntenia	21532	515	3	2.1	8.41	5.18
RO41	Sud-Vest Oltenia	12530	330	3	1.22	7.39	4.55
BG41	Yugozapaden	20064	1056	2	1.96	3.68	2.27
HR00	Hrvatska	16221	1367	2	1.58	3.08	1.9
RS12	Å umadija and Western Serbia	10973	1709	2	1.07	6.51	4.01
SK04	Vychodne Slovensko	6247	79	2	0.61	5.06	3.11
UA16	Zakarpattya oblast	5023	62	2	0.49	8.66	5.33
6 countries	14 NUTS 2 regions	216874	9398				
Textiles							
AT34	Vorarlberg	3208	227	2	0.4	5.6	2.68
BG41	Yugozapaden	11072	496	2	1.39	2.61	1.25
BG42	Yuzhen tsentralen	8465	348	2	1.06	4.62	2.21
CZ03	Jihozapad	8456	399	2	1.06	3.1	1.48
CZ04	Severozapad	8030	254	2	1.01	3.35	1.6
CZ06	Jihovychod	8096	573	2	1.02	2.26	1.08
HR00	Hrvatska	8554	552	2	1.07	2.09	1
RO21	Nord-Est	8803	308	2	1.11	5.23	2.5
CZ05	Severovychod	21847	860	3	2.74	6.58	3.15
RO42	Vest	8635	184	2	1.08	4.7	2.25
6 countries	10 NUTS 2 regions	95166	4201				
Footwear							
BA00	Bosnia and Herzegovina	9262		2	3.19	8.67	1.51
BG41	Yugozapaden	6895	155	2	2.37	4.46	0.78
BG42	Yuzhen tsentralen	3987	147	2	1.37	5.96	1.04
CZ07	Stredni Morava	3299	126	2	1.14	3.48	0.61
RO11	Nord-Vest	17802	331	3	6.13	21.86	3.81
RO42	Vest	10479	190	3	3.61	15.62	2.73
HU32	Eszak-Alfold	2973		2	1.02	5.83	1.02
RO12	Centru	9495	141	2	3.27	11.71	2.04
RO21	Nord-Est	4866	181	2	1.67	7.93	1.38
RO32	Bucuresti - Ilfov	5012	266	2	1.73	3.33	0.58
RS13	Southern and Eastern Serbia	3488	215	2	1.2	10.95	1.91
SK02	Zapadne Slovensko	7232	63	2	2.49	12.47	2.18
7 countries	12 NUTS 2 regions	84790	1815				

Code	Region	Employees	Enterprises	Stars	Size	Specialisation	Focus
Leather products							
BG42	Yuzhen tsentralen	2189	87	2	1.94	8.44	0.57
CZ03	Jihozapad	1202	120	2	1.07	3.11	0.21
CZ05	Severovychod	1509	183	2	1.34	3.21	0.22
HR00	Hrvatska	3839	146	2	3.41	6.65	0.45
HU22	Nyugat-Dunantul	1539		2	1.37	9.74	0.66
HU32	Eszak-Alfold	1400		2	1.24	7.08	0.48
RO12	Centru	3701	129	2	3.28	11.77	0.8
RO42	Vest	1410	82	2	1.25	5.42	0.37
SI00	Slovenija	1896	80	2	1.68	3.84	0.26
6 countries	9 NUTS 2 regions	18685	827				
Furniture							
AT31	Oberösterreich	7249	597	2	0.88	3.17	1.57
CZ06	Jihovychod	9076	400	2	1.1	2.45	1.21
RO11	Nord-Vest	19820	498	3	2.41	8.58	4.25
RO12	Centru	13043	494	3	1.58	5.67	2.81
UA16	Zakarpatya oblast	3750	41	2	0.46	8.05	3.98
3 countries	5 NUTS 2 regions	52938	2030				
Automotive							
AT22	Steiermark	9334	67	2	0.4	2.04	2.85
CZ02	Stredni Cechy	28842	179	3	1.24	3.77	5.27
CZ05	Severovychod	30191	235	3	1.3	3.11	4.35
DE11	Stuttgart	114771	279	3	4.93	5.27	7.37
DE12	Karlsruhe	42210	152	3	1.81	2.95	4.13
DE21	Oberbayern	84791	175	3	3.64	3.48	4.86
DE22	Niederbayern	33864	85	3	1.45	6.05	8.46
DE23	Oberpfalz	21489	88	3	0.92	3.93	5.49
RO31	Sud - Muntenia	22328	154	3	0.96	3.84	5.37
SK02	Zapadne Slovensko	21707	79	3	0.93	4.67	6.53
DE24	Oberfranken	14634	52	2	0.63	2.71	3.79
DE26	Unterfranken	18957	71	2	0.81	2.9	4.05
HU21	Kozep-Dunantul	16655		2	0.72	4.43	6.19
HU22	Nyugat-Dunantul	19460		2	0.84	5.96	8.34
RO12	Centru	14840	150	2	0.64	2.28	3.19
RO42	Vest	18716	108	2	0.8	3.48	4.87
RS12	Å umadija and Western Serbia	12561	268	2	0.54	3.28	4.59
SK01	Bratislavsky kraj	10206	50	2	0.44	2.25	3.14
SK03	Stredne Slovensko	9703	52	2	0.42	3.28	4.58
7 countries	19 NUTS 2 regions	545259	2244				

Code	Region	Employees	Enterprises	Stars	Size	Specialisation	Focus
Metal manufacturing							
AT22	Steiermark	18241	430	2	0.55	2.77	5.56
AT31	Oberösterreich	19432	588	2	0.58	2.1	4.21
AT34	Vorarlberg	8945	208	2	0.27	3.73	7.47
CZ05	Severovýchod	26512	8947	2	0.79	1.91	3.82
CZ07	Stredni Morava	24995	7362	2	0.75	2.29	4.6
DE12	Karlsruhe	32664	1390	2	0.98	1.59	3.19
HU21	Kozep-Dunantul	14421		2	0.43	2.67	5.36
CZ06	Jihovýchod	30217	8159	3	0.9	2.01	4.03
CZ08	Moravskoslezsko	52100	4985	3	1.56	4.85	9.74
DE11	Stuttgart	65375	2447	3	1.96	2.09	4.2
DE13	Freiburg	47544	1718	3	1.42	3.13	6.28
DE14	Tübingen	30095	1076	3	0.9	2.33	4.68
SI00	Slovenija	36066	3640	3	1.08	2.47	4.95
RO22	Sud-Est	16429	262	2	0.49	2.09	4.19
RS12	Äumadija and Western Serbia	16537	2114	2	0.5	3.01	6.04
RS13	Southern and Eastern Serbia	11951	948	2	0.36	3.26	6.54
SK02	Zapadne Slovensko	17823	491	2	0.53	2.67	5.36
SK03	Stredne Slovensko	12130	342	2	0.36	2.85	5.73
SK04	Vychodne Slovensko	16511	156	2	0.49	4.1	8.23
8 countries	19 NUTS 2 regions	497988	45263				
Heavy Machinery							
BG34	Yugoiztochen	6880	31	2	0.83	4.72	2.35
DE11	Stuttgart	25996	166	2	3.13	3.35	1.67
DE26	Unterfranken	7703	67	2	0.93	3.3	1.65
DE27	Schwaben	7378	67	2	0.89	2.37	1.18
HU22	Nyugat-Dunantul	6613		2	0.8	5.69	2.83
RO31	Sud - Muntenia	15247	37	3	1.84	7.36	3.67
RO42	Vest	28445	59	3	3.43	14.85	7.4
RO11	Nord-Vest	12037	58	2	1.45	5.18	2.58
UA16	Zakarpattya oblast	3734	7	2	0.45	7.96	3.97
5 countries	9 NUTS 2 regions	114033	492				
Production technology							
AT21	Kärnten	4078	66	2	0.27	3.16	2.88
AT31	Oberösterreich	14752	228	2	0.97	3.51	3.19
AT34	Vorarlberg	3995	63	2	0.26	3.66	3.34
DE11	Stuttgart	76575	957	3	5.05	5.39	4.91
DE12	Karlsruhe	36743	585	3	2.42	3.94	3.59
DE13	Freiburg	30469	511	3	2.01	4.42	4.02
DE14	Tübingen	43529	449	3	2.87	7.42	6.76
DE23	Oberpfalz	16583	165	3	1.09	4.65	4.24
DE25	Mittelfranken	22047	263	3	1.45	3.54	3.22
DE26	Unterfranken	23344	206	3	1.54	5.47	4.99
DE27	Schwaben	27773	367	3	1.83	4.88	4.45
SK03	Stredne Slovensko	7365	94	2	0.49	3.82	3.48
3 countries	12 NUTS 2 regions	307253	3954				

Code	Region	Employees	Enterprises	Stars	Size	Specialisation	Focus
Building fixtures, equipment and services							
AT31	Oberösterreich	12703	512	2	0.66	2.38	2.75
CZ04	Severozapad	13912	821	2	0.72	2.4	2.77
CZ06	Jihovýchod	17490	1425	2	0.91	2.02	2.33
CZ03	Jihozapad	18127	1375	3	0.94	2.75	3.18
CZ05	Severovýchod	18884	1324	3	0.98	2.36	2.72
DE24	Oberfranken	10411	184	2	0.54	2.33	2.69
HU21	Közép-Dunántul	8499		2	0.44	2.74	3.16
RO12	Centru	15026	770	2	0.78	2.8	3.23
RS12	Å umadija and Western Serbia	9293	1739	2	0.48	2.94	3.39
RS13	Southern and Eastern Serbia	5308	1158	2	0.28	2.52	2.91
SK02	Zapadne Slovensko	9335	293	2	0.49	2.43	2.81
SK03	Stredne Slovensko	6195	176	2	0.32	2.53	2.93
SK04	Vychodne Slovensko	7898	178	2	0.41	3.41	3.94
UA15	Ivano-Frankivsk oblast	3371	163	2	0.18	3.02	3.49
UA17	Chernivtsy oblast	2330	69	2	0.12	3.24	3.75
8 countries	15 NUTS 2 regions	158782	10187				
Construction							
HR00	Hrvatska	83374	9610	3	1.28	2.49	9.76
RO11	Nord-Vest	42722	5393	2	0.65	2.33	9.15
RO21	Nord-Est	32585	3351	2	0.5	2.36	9.26
RO22	Sud-Est	31170	3052	2	0.48	2.02	7.94
RO31	Sud - Muntenia	34320	3677	2	0.52	2.1	8.25
RO32	Bucuresti - Ilfov	56354	5151	2	0.86	1.66	6.54
RO41	Sud-Vest Oltenia	24706	2179	2	0.38	2.29	8.97
UA17	Chernivtsy oblast	6052	228	2	0.09	2.48	9.73
3 countries	8 NUTS 2 regions	311283	32641				
Biotech							
AT13	Wien	1836	21	2	2.44	5.89	0.27
CZ01	Praha	1368	5	2	1.82	4.94	0.22
CZ06	Jihovýchod	1059		2	1.41	3.13	0.14
DE12	Karlsruhe	2679	38	2	3.56	5.8	0.26
DE21	Oberbayern	3103	58	2	4.13	3.94	0.18
3 countries	5 NUTS 2 regions	10045	122				
IT							
AT21	Kärnten	4081	175	2	0.26	3.01	2.88
DE21	Oberbayern	42381	2072	2	2.66	2.54	2.43
DE12	Karlsruhe	29289	866	3	1.84	2.99	2.86
DE25	Mittelfranken	34540	508	3	2.17	5.27	5.05
RO32	Bucuresti - Ilfov	18726	2098	2	1.17	2.27	2.17
3 countries	5 NUTS 2 regions	129017	5719				

Code	Region	Employees	Enterprises	Stars	Size	Specialisation	Focus
Telecom							
BG41	Yugozapaden	18305	402	2	1.12	2.1	2.07
DE23	Oberpfalz	13227	93	2	0.81	3.44	3.38
HU23	Del-Dunantul	9560		2	0.58	5.01	4.93
HU31	Eszak-Magyarország	6803		2	0.42	3.1	3.04
AT13	Wien	18934	189	3	1.16	2.79	2.74
RO32	Bucuresti - Ilfov	26202	1103	3	1.6	3.09	3.04
SK01	Bratislavsky kraj	9129	93	2	0.56	2.86	2.81
6 countries	7 NUTS 2 regions	102160	1880				
Oil and gas							
AT13	Wien	2739	8	2	1.23	2.97	0.4
BA00	Bosnia and Herzegovina	6918		2	3.11	8.46	1.13
CZ04	Severozapad	6682	7	2	3	9.97	1.33
CZ08	Moravskoslezsko	7046	7	2	3.17	9.86	1.32
HU10	Kozep-Magyarország	4977		2	2.24	3.07	0.41
RO12	Centru	4009	24	2	1.8	6.46	0.86
RO31	Sud - Muntenia	7829	75	2	3.52	14.09	1.88
RS11	Belgrade	4212	35	2	1.89	7.4	0.99
6 countries	8 NUTS 2 regions	44412	156				
Lighting and electrical equipment							
AT31	Oberösterreich	3553	41	2	0.96	3.45	0.77
CZ05	Severovýchod	5402	362	2	1.46	3.49	0.78
CZ06	Jihovýchod	3670	979	2	0.99	2.19	0.49
CZ07	Stredni Morava	5101	285	2	1.37	4.21	0.94
DE13	Freiburg	4613	62	2	1.24	2.73	0.61
SK02	Zapadne Slovensko	4453	25	2	1.2	6.01	1.34
UA16	Zakarpattia oblast	3463	10	2	0.93	16.49	3.68
5 countries	7 NUTS 2 regions	30255	1764				
Power generation and transmission							
AT13	Wien	7975	14	2	3.15	7.59	1.15
AT22	Steiermark	3000	13	2	1.18	6.01	0.91
CZ07	Stredni Morava	4741	1618	2	1.87	5.73	0.87
DE11	Stuttgart	5313	92	2	2.1	2.24	0.34
DE12	Karlsruhe	4504	49	2	1.78	2.9	0.44
DE13	Freiburg	3976	60	2	1.57	3.45	0.53
DE25	Mittelfranken	8717	22	2	3.44	8.37	1.27
DE26	Unterfranken	5122	32	2	2.02	7.19	1.09
RO41	Sud-Vest Oltenia	2980	24	2	1.18	7.12	1.08
SI00	Slovenija	4415	76	2	1.74	3.98	0.61
SK02	Zapadne Slovensko	3478	10	2	1.37	6.88	1.05
6 countries	11 NUTS 2 regions	54221	2010				

Code	Region	Employees	Enterprises	Stars	Size	Specialisation	Focus
Farming and animal husbandry							
BG31	Severozapaden	6352	1494	2	0.67	6.06	3.46
BG32	Severen tsentralen	9989	1465	2	1.05	7.64	4.36
BG33	Severoiztochen	9016	2022	2	0.95	6.06	3.46
HU32	Eszak-Alfold	11354		3	1.19	6.8	3.88
HU33	Del-Alfold	12522		3	1.32	8.24	4.71
HU23	Del-Dunantul	8123		2	0.85	7.33	4.19
UA15	Ivano-Frankivsk oblast	2950	207	2	0.31	5.35	3.06
UA17	Chernivtsy oblast	2846	159	2	0.3	8.01	4.58
3 countries	8 NUTS 2 regions	63152	5347				
Processed food							
AT11	Burgenland	3091	243	2	0.07	2.18	5.46
AT12	Niederösterreich	22498	1043	2	0.54	2.02	5.04
BG32	Severen tsentralen	13735	770	2	0.33	2.4	6
BG42	Yuzhen tsentralen	19822	1339	2	0.48	2.07	5.17
HU32	Eszak-Alfold	17053		2	0.41	2.33	5.83
HU33	Del-Alfold	21207		2	0.51	3.19	7.98
RO12	Centru	25294	1290	2	0.61	2.18	5.44
RO21	Nord-Est	21621	1230	2	0.52	2.46	6.15
HR00	Hrvatska	46921	2897	3	1.13	2.2	5.5
RO22	Sud-Est	22128	1396	2	0.53	2.26	5.64
RO31	Sud - Muntenia	26611	1332	2	0.64	2.56	6.4
RS12	Å umadija and Western Serbia	21380	4179	2	0.51	3.12	7.81
RS13	Southern and Eastern Serbia	11657	2580	2	0.28	2.55	6.38
RS20	Vojvodina	30915	3747	2	0.74	3.91	9.78
SK02	Zapadne Slovensko	16738	385	2	0.4	2.02	5.04
UA15	Ivano-Frankivsk oblast	5662	211	2	0.14	2.35	5.87
UA17	Chernivtsy oblast	3583	96	2	0.09	2.31	5.76
8 countries	17 NUTS 2 regions	329916	22738				
Sporting, recreational and children's goods							
AT31	Oberösterreich	2417	44	2	1.2	4.31	0.52
CZ02	Stredni Cechy	2385	299	2	1.18	3.59	0.44
CZ03	Jihozapad	2239	238	2	1.11	3.23	0.39
CZ06	Jihovýchod	2620	279	2	1.3	2.88	0.35
CZ07	Stredni Morava	2177	289	2	1.08	3.3	0.4
DE14	Tübingen	2008	34	2	0.99	2.57	0.31
DE24	Oberfranken	2022	44	2	1	4.32	0.52
DE25	Mittelfranken	3135	44	2	1.55	3.78	0.46
3 countries	8 NUTS 2 regions	19003	1271				
Transportation and logistics							
HR00	Hrvatska	46947	2795	2	0.98	1.91	5.5
SK01	Bratislavsky kraj	27711	180	2	0.58	2.97	8.54
AT13	Wien	57512	377	3	1.2	2.89	8.33
HU10	Kozep-Magyarország	90110		3	1.88	2.58	7.43
RO22	Sud-Est	47348	1313	3	0.99	4.19	12.07
UA51	Odesa oblast	48686	480	3	1.02	4.53	13.03
6 countries	6 NUTS 2 regions	318314	5145				