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Structural Reforms in the EU – Policy Prescriptions to Boost Productivity

Productivity-enhancing structural reforms are crucial to the economic prospects of the EU. Indeed, such reforms are even more urgent in the current environment in which many economies are reaching the limits of the policy support they can provide to shore up demand. Moreover, even as some of the crisis-related effects fade, demographic headwinds loom, further strengthening the case for boosting productivity. The key question is how to identify, prioritise and calibrate the reforms that best suit each country's situation. This Forum examines specific barriers to enhanced productivity within the EU and puts forth policy proposals to offset the secular slowdown apparent in advanced economies and take better advantage of the EU's vast economic potential.

Angana Banerji*

Building a Better Union in the Euro Area

"Economic and monetary union form two integral parts of a single whole and would therefore have to be implemented in parallel." Delors Committee, 1989.¹

Since the genesis of the European Economic and Monetary Union (EMU), its founders have recognised that a monetary union would be incomplete without an economic union. The global crisis and its impact on the euro area have revived the emphasis on completing the economic union. In response, the European Union (EU) has taken steps to strengthen its economic governance framework, and important reforms have been implemented at all levels.

Nevertheless, the economic union remains incomplete. Despite progress in implementing reforms, significant gaps in income, employment, productivity and competitiveness within the euro area persist (Figure 1, panel 1). Such a situation is not sustainable, as it fosters imbalances and creates adverse spillovers for all members and the monetary union.²

A second concern is the euro area's flagging productivity, which trails the United States (Figure 1, panel 2). Subdued productivity holds back the return to strong growth and undermines the euro area's ability to overcome fully the crisis legacies of high unemployment, low investment and impaired balance sheets. This could further erode the region's

already low growth potential, with dire consequences for the monetary union.

Thus, it is widely recognised that there can be no let up in reforms and that the EU is well placed to try to keep reforms on track.³ To this end, the Five Presidents' report lays out a renewed, ambitious vision for the economic governance of the EMU to promote real convergence within the eurozone.⁴

However, the challenge remains to overcome the widening gulf between the need and the public appetite for continuing with reforms, especially those led by the EU institutions.⁵ On the one hand, better financial market conditions have made structural reforms seem less urgent. On the other, the deep recession and prolonged unemployment have sapped popular and political support for more reforms and could even lead to a reversal of the reforms already implemented.

The key question, therefore, is how to encourage actions that may be unpopular in the short run, especially when

* This article is based on joint work with IMF colleagues. See A. Banerji, B. Barkbu, J. John, T. Kinda, S. Saksonovs, H. Schölermann, T. Wu: Building a Better Union: Incentivizing Structural Reforms in the Euro Area, IMF 2015.

1 Delors Committee: Report on Economic and Monetary Union in the European Community, 1989.

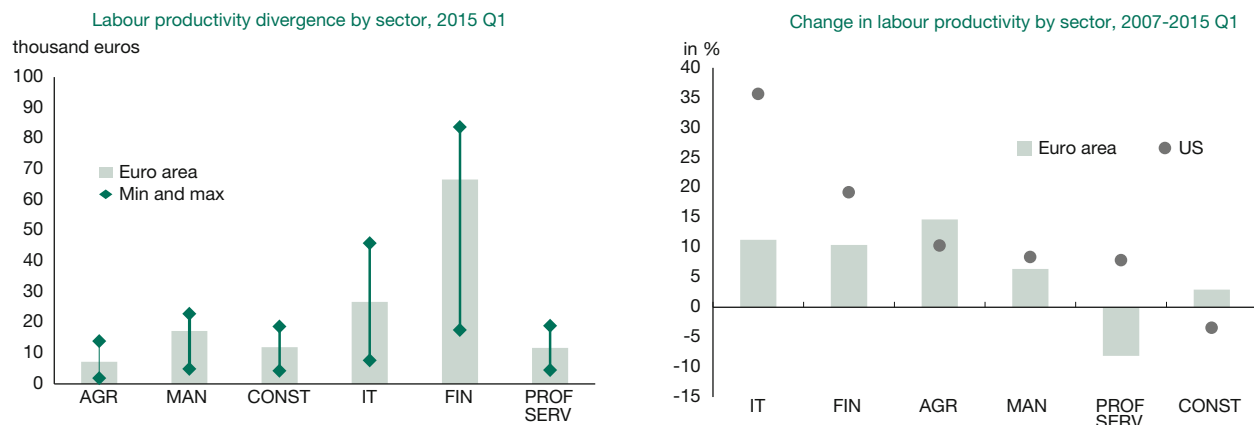
2 M. Draghi: Stability and Prosperity in Monetary Union, speech at the University of Helsinki, 27 November 2014.

3 See for example H. Enderlein, P. Bofinger, L. Boone, P. De Grauwe, J.-C. Piris, J. Pisani-Ferry, M.J. Rodrigues, A. Sapir, A. Vitorino: Completing the Euro: a road map towards fiscal union in Europe, 2012; the 2012 Four Presidents' Report (H. Van Rompuy, J.M. Barroso, J.-C. Juncker, M. Draghi: Towards a Genuine Economic and Monetary Union, 2012); B. Cœuré: Structural Reforms: Learning the Right Lessons from the Crisis, Keynote speech, Latvijas Banka, Riga, 17 October 2014; M. Draghi, op. cit.; and the recent Five Presidents' Report (J.-C. Juncker, M. Draghi, J. Dijsselbloem, M. Schulz, D. Tusk: Completing Europe's Economic and Monetary Union, 2015).

4 J.-C. Juncker et al., op. cit.

5 EU institutions refer to the European Commission (Commission), the Council of the European Union (Council) and the European Parliament (Parliament).

Figure 1
Euro area productivity



Note: The category of "professional and business services" is used for the US. For euro area countries, the sector is "professional, scientific and technology activities."

Sources: Bureau of Economic Analysis; Eurostat; and IMF staff estimates.

the impetus for reforms seems to be fading. Furthermore, how can the EU persuade and support member states to continue with reforms? These important questions need to be addressed in order to forge a stronger economic union. But first, one must understand the reasons behind the status quo.

Why has the EU governance framework not had more traction?

Lack of political appetite and ownership

Among member states, the perceived political costs of structural reforms and opposition from vested interests are a major obstacle to reform.⁶ Reforms are seen as having short-term economic costs, and therefore negative political consequences, despite wide acknowledgment of the positive effects of reforms on investor confidence, growth potential and productivity. Additionally, the failure to tackle vested interests and implement comprehensive reforms has diluted the benefits of the reforms that have been implemented, thereby eroding popular support for more reforms. The political resistance also extends to EU-led reforms which are seen as lacking "democratic legitimacy" and undermining national ownership.⁷

Limited EU jurisdiction

The EU has a more limited mandate to enforce structural reforms in member states than the fiscal governance

framework. In important areas, the EU's jurisdiction is limited to coordination, and its enforcement powers are

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John Hassler, Swedish Fiscal Policy Council, Stockholm, Sweden; and Stockholm University, Sweden.

Dan Andrews, OECD, Paris, France.

⁶ B. Coeuré, *op. cit.*

⁷ J.-C. Juncker et al., *op. cit.*

not sufficiently strong or pre-emptive. The EU can impose semi-automatic sanctions on euro area countries, but only after the Excessive Imbalance Procedure (EIP) has been triggered and the member state is already in difficult straits, thus limiting the EU's capacity to pre-empt imbalances from arising.

Complexity of EU framework

The economic governance framework – which has been significantly revamped since the onset of the crisis – is quite complex. It contains many enforcement tools and overlapping processes and leaves scope for interpretation in how the rules should apply. The interaction with the Stability and Growth Pact (SGP) – a separate but overlapping framework that has also become increasingly complicated over time – adds to the complexity.

The complexity of the framework has blunted its “overall rationale and effectiveness”.⁸ It has created communication challenges about the need for reforms and the EU's role in that regard. It has undermined incentives for reform by diluting transparency, accountability and country ownership. And it has created perceptions of an overly intrusive EU and an uneven playing field among member states.

That said, some aspects of the framework work better than others. EU legislation has been a potent enforcement mechanism for reforms, within jurisdictional limits. EU policy coordination has had mixed successes; while it has strengthened policy debate and encouraged action in some countries, reforms have progressed slowly.

Underused incentives

The EU's ability to incentivise reforms has been hampered by limited incentives for member states to pressure their peers, especially for reforms where the cross-border implications are unclear. Countries may also refrain from pressuring others in the hope of avoiding pressure themselves.

The Commission has held back in applying the enforcement tools at its disposal.⁹ It has full discretion in recommending that an EIP be launched. However, the EIP has never been opened – and thus no sanctions have been imposed – even though several countries have been di-

agnosed with excessive imbalances.¹⁰ Thus, the system of semi-automatic sanctions available under the current framework has not resulted in any actual sanctions.

Finally, the scope for positive financial incentives for reform has been limited. There is little direct EU budget support for reforms, with most EU financing being project-related. Moreover, the 2015 guidance on SGP flexibility for structural reforms has so far been used only in a few cases, as restrictive and complex eligibility criteria limit the number of qualified countries.

A three-pronged approach

Any effort to restore the momentum for reforms in the near term would need to address the above challenges. In other words, it would need to improve member state ownership of reforms and overcome political obstacles, reduce the complexity of the EU governance framework, and improve the incentives for reform. Addressing the fourth factor – namely, the EU's jurisdictional limitations – would take longer and require broader political support for a treaty change.

A three-pronged approach – “outcome-based” structural reform benchmarking, better use of existing EU processes and stronger incentives – can address many of the challenges discussed so far. These are complementary and interrelated measures that could help ensure greater specificity, transparency and consensus in setting the reform agenda. This, in turn, would help reduce excessive discretion in the application of the governance framework and improve accountability, level the playing field throughout the EU, and provide member states with the necessary support to take politically difficult actions.

Proposal 1: “Outcome-based” structural reform benchmarks

This proposal would gear the EU governance framework towards the enforcement of “outcome-based” structural reform benchmarks in priority areas, including for the euro area (see Box 1).¹¹

Why would this approach deliver results when previous efforts to benchmark – including within the EU – have not? The difference with previous benchmarking attempts is twofold. First, the selection of benchmarks focused on reform outcomes that policy makers can directly influence

⁸ Ibid.

⁹ European Central Bank: Progress with Structural Reforms Across the Euro Area and Their Possible Impacts, ECB Economic Bulletin, Issue 2, 2015.

¹⁰ In these cases, the Commission stepped up recommendations and monitored policy actions via an enhanced process of “specific monitoring”.

¹¹ The Five Presidents' Report endorses benchmarking. See J.-C. Juncker et al., op. cit.

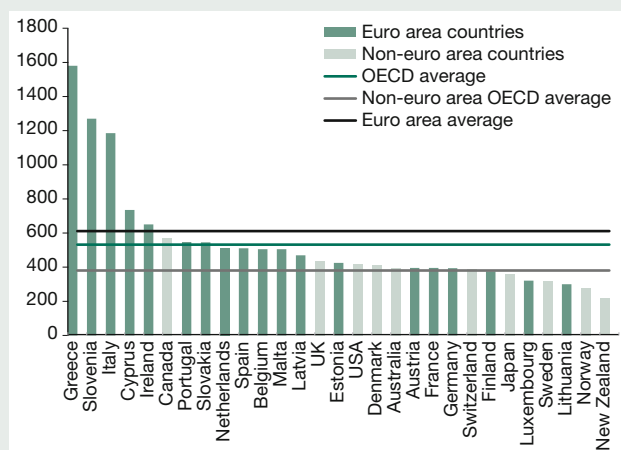
Box 1

“Outcome-based” structural reform benchmarking

“The next step is to restart the convergence process in the euro zone in a sustainable way to lift growth potential...this requires benchmarking against best practice.”¹

What are outcome-based reforms benchmarks? As the name suggests, these benchmarks are measures of reform *outcomes* which are sufficiently concrete, measurable and directly under the control of policy makers. Not every reform indicator would be a suitable candidate.

Figure 2

Number of days to enforce a contract, 2014

Source: World Bank Doing Business Indicators.

Which reforms to benchmark? The EU should have the ability to enforce reforms that achieve two goals.² First, member states should be able to thrive independently within the monetary union, and this entails reforms to foster growth, competitiveness and productivity, as well as the reduction of vulnerabilities at the national level. The second goal would be to complete the Single Market, which would improve the resilience of the monetary union. This calls for reforms to achieve sufficient flexibility in factor markets and greater private sector risk-sharing to enable faster adjustment to shocks. Some reforms can contribute to achieving both objectives. Thus, reforms with a Single Market dimension – e.g. a common market for services, capital and energy – could be prioritised, as could reforms that improve the business climate and help eliminate intra-euro area gaps in productivity and competitiveness, such as the time to enforce contracts, complete insolvency or obtain a business license.

How could benchmarking be introduced in the current EU framework? The first step would be for member states to agree at the EU level which structural reforms should be prioritised for benchmarking. The area-wide benchmark should be ambitious, ideally based on regional and global best practices and outcomes, and they would need to be given political legitimacy by the Council (and thereby the member states) and the Parliament. Benchmarks could be specified in EU legislation and national targets for each member state in country-specific recommendations (CSRs). The available financial incentives for reform could be linked to the selected benchmarks (e.g. the use of SGP flexibility). The EU would monitor and enforce progress made by member states towards achieving these benchmarks. Member states would develop their own reform agenda, with the help of national productivity councils (NPCs), to ensure that the benchmarks are reached. Illustratively, if there is political consensus among EU member states that the time to enforce contracts in the EU should be reduced as a matter of priority, then the relevant OECD indicator could be used as a benchmark (see Figure 2). And the target could be set in an ambitious manner, e.g. well below the euro area average and closer to the average of non-euro area OECD countries.

1 J. Dijsselbloem: Further Steps Towards a Thriving Economic and Monetary Union, Peterson Institute for International Economics, April 2015, Washington DC.

2 M. Draghi: Stability and Prosperity in Monetary Union, speech at the University of Helsinki, 27 November 2014.

would be crucial for its success. Second, benchmarking would need to be supported by the two other prongs of the proposal: a more effective use of the EU framework (which is stronger now than during previous benchmarking attempts) and larger financial enticements to realign incentives.

“Outcome-based” benchmarks would have a number of advantages. The reform agenda would be simpler and more specific, thereby increasing transparency and accountability regarding the implementation and enforcement of reforms.

- Ownership by member states could increase, as they would decide upon benchmarks jointly, while enjoying leeway in developing national action plans to achieve the benchmarks with the assistance of NPCs (see Boxes 1 and 2). Benchmarking reform *outcomes* has an additional advantage in that it could help generate popular buy-in for reforms by focusing the policy debate on desired goals, thereby minimising political fallout.
- By simplifying the operation of the EU framework, benchmarking would make performance gaps transparently comparable across countries, thereby facilitating monitoring. It would reduce excessive discretion in the application of the EU framework and improve even-handedness. Semi-automatic sanctions would be allowed to work as intended, enhancing their credibility.
- Benchmarking outcomes can also reduce political complications at all levels by providing early warning and scope for preemptive action when necessary. It would improve the ability to push for reforms well before imbalances become excessive, while countries still have policy space to support adjustment.

However, determining and quantifying the appropriate benchmarks will not always be straightforward. Quantifiable indicators with all the desired characteristics – measurable with a fair degree of certainty, realistic and enforceable, directly under policy makers’ control, as well as closely and strongly linked to the ultimate structural reform objective – may not be easy to identify. The following two examples are illustrative of this:

- *A simple case.* France’s 2014 CSRs included a recommendation to “simplify companies’ administrative, fiscal and accounting rules and take concrete measures to implement the Government’s ongoing ‘simplification plan’ by December 2014”. An outcome-based approximation of the same recommendation might be to “re-

duce the time it takes for a company to comply with tax rules to x hours,” or “make electronic tax filing mandatory”. While the suggested benchmarks may be narrower in scope than the original formulation, they have the advantage of being focused on a macro-critical outcome, they are more transparent and easy to monitor, and they could conceivably require a broader set of policy actions.

- *A more complex case.* Another example could be targets on employment rates, which may seem quite specific and outcome-based but may be difficult to target effectively, as other factors – such as economic growth – also influence employment but are not entirely under policy makers’ control. A more easily enforceable target might be the labour tax wedge or labour market duality (e.g. “reduce labour tax wedge or labour market duality to x percent in y years”), as these factors can be directly influenced by policy and have been empirically shown to be associated with higher employment rates.

The challenges of benchmarking, while important, should not be overstated. As a starting point, benchmarks could be based on indicators that the EU already collects and monitors, as well as OECD or other statistics. For some reforms, the main difference would be to move the indicators measuring reform outcomes from the background, where they are already used for technical analysis, to the foreground by incorporating them into the operation of the current EU economic framework for reforms. Over time, additional and better indicators for reform outcomes could be developed.

Proposal 2: More effective use of EU authority

Since EU legislation has a good track record of achieving desired outcomes, a *legislative approach* would be well suited for priority reform benchmarks that advance real convergence within the euro area. Provided there is political consensus, this would be feasible in areas where the EU has both the jurisdiction to legislate as well as the powers to coordinate, thus enabling faster progress on product market reforms and the creation of a single market for services, capital, energy and transport. Not only does a legislative approach have superior enforcement powers than coordination mechanisms, it may be particularly helpful in harmonising practices and laws to complete the Single Market. Politically, it could strengthen the ability of national governments to overcome opposition from national vested interests. It could also promote investor confidence, as uniform EU legislation would be easier to navigate than numerous national laws, and EU laws may be less susceptible to reversals than national

Box 2

The role of councils: just more bureaucracy?

*NPCs to translate area-wide benchmarks into national policies.*¹ NPCs could support national governments in developing a country-specific reform agenda to meet area-wide benchmarks. Such entities play a useful role in Australia, Belgium, Germany, the Netherlands and New Zealand. NPCs could assist the government in designing reforms and monitoring implementation and preliminary outcomes. Governments would be in charge of actual implementation. The dialog between NPCs and governments regarding reform proposals and implementation could improve transparency and help inform the public about the need for and impact of reforms. Participation by the Commission could be considered for a pan-EU perspective. This approach could foster policy innovation as member states experiment with different approaches to reach the same goals.

EU structural council to ensure transparency and accountability of EU institutions. Benchmarking via legislation and policy coordination will entail greater powers for the EU, which may be necessary in a monetary union where the EU is best situated to act in the interest of all members. Greater powers for EU institutions ought to come with greater *ex post* accountability, in part to address the perceived “democratic deficit” (lack of national control over EU decisions). An independent evaluation process, governed by the Parliament, to assess the Commission’s monitoring and enforcement of the governance framework could be considered, with a presumption of publication of assessments and reviews. The evaluation should be independent of the Commission and operationally at arm’s length from the Council and the Parliament.

1 Also advocated by C. Allard, L. Everaert: *Lifting Euro Area Growth: Priorities for Structural Reforms and Governance*, International Monetary Fund, 2010; and A. Sapir, G. Wolff: *Euro-area governance: what to reform and how to do it*, Bruegel Policy Brief, Issue 2015/01, 2015.

legislation. That said, a legislative approach may not be appropriate for every reform.

Complementing the legislative approach, *policy coordination* should also be strengthened via benchmarking. Outcome-based country-specific benchmarks could be used to track the multi-speed transition of euro area countries to area-wide goals. This would simplify CSRs, making them more focused, specific and transparent. To encourage reforms well before economic circumstances deteriorate, it would be helpful if the progress towards CSR structural benchmarks were taken explicitly into consideration when triggering the EIP.

These measures may not be enough to ensure the effectiveness of the EU governance framework. It would be helpful to have greater *ex post* accountability – by setting up an *independent EU “structural council”* (see Box 2) – to monitor whether the EU’s authority is applied effectively and even-handedly across all of its members.

Proposal 3: Stronger financial incentives

Reforms can be costly, and financial support can pave the way for reforms by cushioning the short-term economic, redistributive and political impacts until the reform dividends have begun to materialise. Financial transfers have been successfully used in other countries to foster the implementation of centre-led reforms, including Australia,

Finland, Germany, Italy and the United States. There is also ample cross-country evidence of countries that have succeeded in implementing reforms, but at a budgetary cost and over time. Member state budgets as well as the EU budget should therefore – within their existing constraints – be used more effectively to foster reforms.

The EU should make *full use of SGP flexibility* to support reforms while maintaining the credibility of the fiscal framework. “Outcome-based” benchmarking can be helpful, as it could serve as the basis for drawing up an *ex ante* list of permissible reforms that pre-qualify for SGP flexibility and it could facilitate monitoring. A broader set of reforms should be permitted, as the budget may also play a useful role in fostering reforms that do not have a direct and measurable effect on the budget (e.g. a limited window of tax incentives to accelerate bank balance sheet restructuring). Finally, countries with good track records could be allowed additional fiscal space to implement more ambitious reforms. To ensure that structural reforms do not become an excuse for a lack of fiscal discipline, countries could precommit to binding compensatory fiscal measures in a multi-year framework if agreed structural reforms are not implemented or if the expected returns do not materialise in time.

More *financial and non-financial support from the EU* would also be helpful. A bigger and better functioning EU budget, with disbursements closely linked to the full im-

plementation of a set of *ex ante* agreed upon measures, would help provide stronger incentives for reforms. Until such time as there is political consensus to increase the EU budget, European Structural and Investment (ESI) funds could be better prioritised and linked more closely to benchmarks to strengthen financial incentives for priority reforms. EU technical support could also be helpful in countries that face absorptive and administrative hurdles in implementing reforms.¹²

Benchmarking would increase the likelihood of existing penalties being used; nevertheless, *non-compliance could be made more costly*. Since structural reforms can affect the fiscal deficit, there could be merit in ensuring greater parity with penalties under the SGP framework. This would not only simplify the governance framework, but also provide greater disincentive for non-compliance. Provisions for *non-interest bearing* deposits for failure to comply with the EIP and enhanced conditionality-based EU monitoring for repeated offenses could also be considered. Where possible, an immediate suspension of payments, rather than commitments, of ESI funds would be more effective.

¹² The Commission's "Structural Reform Support Service" goes in this direction. See European Commission, Statement/15/5218, 17 June 2015.

Conclusions

The EU can play an important role in ensuring that structural reforms continue in the euro area in order to boost productivity and growth and build a stronger monetary union. The 2010-11 reforms strengthened the EU's governance framework, but more could be done to improve traction.

In the near term, it is important to address the lack of national ownership and the perceived political costs of reforms, to reduce the complexity of the framework while boosting transparency and accountability, and to provide larger incentives for reforms. The proposed three-pronged approach – "outcome-based" reform benchmarks, more effective use of EU authority, and larger financial support for reform and penalties for inaction – would help achieve these objectives. Dynamic *ex ante* experimentation with reforms by NPCs and independent *ex post* accountability regarding the implementation of the governance framework would also be helpful.

Over the medium term, more fundamental changes to the governance framework are necessary to allow the EU to have broader jurisdiction over reforms in euro area countries. This would be essential for ensuring the resilience of the EMU, since reforms have mutually reinforcing effects and need to be considered together.

Era Dabla-Norris, Minsuk Kim and Aleksandra Zdzenicka

How Can Advanced Economies Overcome the New Mediocre?

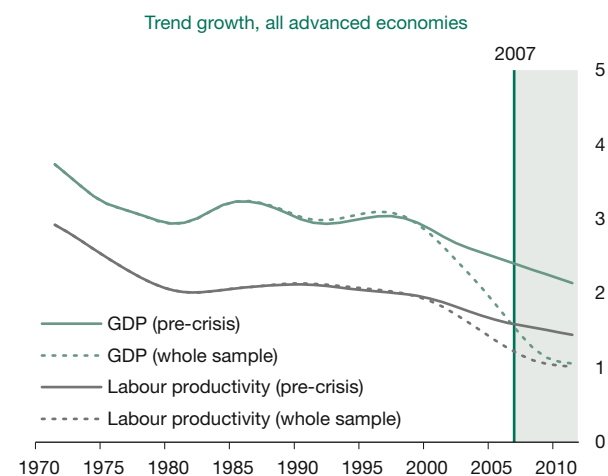
Growth in many advanced economies remains anaemic more than six years after the global financial crisis. Without productivity-enhancing reforms, the prospect of settling into a "new mediocre" will become a reality. The case for focusing decisively on these reforms is even more urgent in an environment in which many economies are reaching the limits of the policy support they can provide to shore up demand. Moreover, even as some of the crisis-related effects are expected to fade, demographic headwinds loom, further strengthening the case for boosting productivity. The key question is how to identify, prioritise and calibrate the reforms that best suit each country's situation.

In this paper, we draw on the analysis in Dabla-Norris et al. and focus on sector-level productivity developments before the global financial crisis. This enables us to high-

light ongoing long-term trends and to provide evidence on underlying productivity developments.¹ We examine which sectors have had the largest productivity gaps and identify areas where potential payoffs from reforms could be large. We find that removing impediments to the efficient allocation of resources, and implementing policies which encourage innovation and technology-uptake are associated with higher total factor productivity (TFP) growth across industries. We then derive policy priorities to boost productivity and offset the secular slowdown apparent in advanced economies.

¹ E. Dabla-Norris, S. Guo, V. Haksar, M. Kim, K. Kochhar, K. Wiseman, A. Zdzenicka: The New Normal: A Sector-Level Perspective on Productivity Trends in Advanced Economies, IMF Staff Discussion Note, 15/03, 2015.

Figure 1
Growth and productivity are in decline
in %, purchasing power parity weighted



Sources: Penn World Tables; and IMF staff calculations.



Problems started before the crisis

Underlying output and productivity growth in most advanced economies had in fact already been slowing well before the global financial crisis (Figure 1). Trend output growth declined from an annual average of more than 3.5 per cent in the 1970s to less than 2.5 per cent just before the crisis, with labour productivity explaining most of the decline. The slowing trend was most marked in core Europe and in euro area countries with high borrowing spreads,² where growth fell from the high levels achieved in the recovery following World War II. The decline moderated in the 1980s due to significant reforms, but resurfaced again by the mid-1990s. The United States saw a mini-boom as an information and communications technology (ICT) boom sparked a surge in productivity from 1995 to 2003, which temporarily offset the long-run decline. This, however, was also waning prior to the onset of the crisis.³

A slowing pace of human and physical capital accumulation and declining TFP contributed to lower trend growth in the years immediately preceding the global financial crisis. TFP growth fell dramatically throughout the crisis but was stagnant even at the pre-crisis peak across all economies (see Figure 2). The most dramatic decline was in

non-core Europe, but a significant decline also occurred in the United States, the country commonly regarded as the world technology frontier. The trend for core Europe was somewhat different. TFP growth in these countries plateaued in the run up to the global financial crisis after bouncing back from a negative trough in the early-1990s.

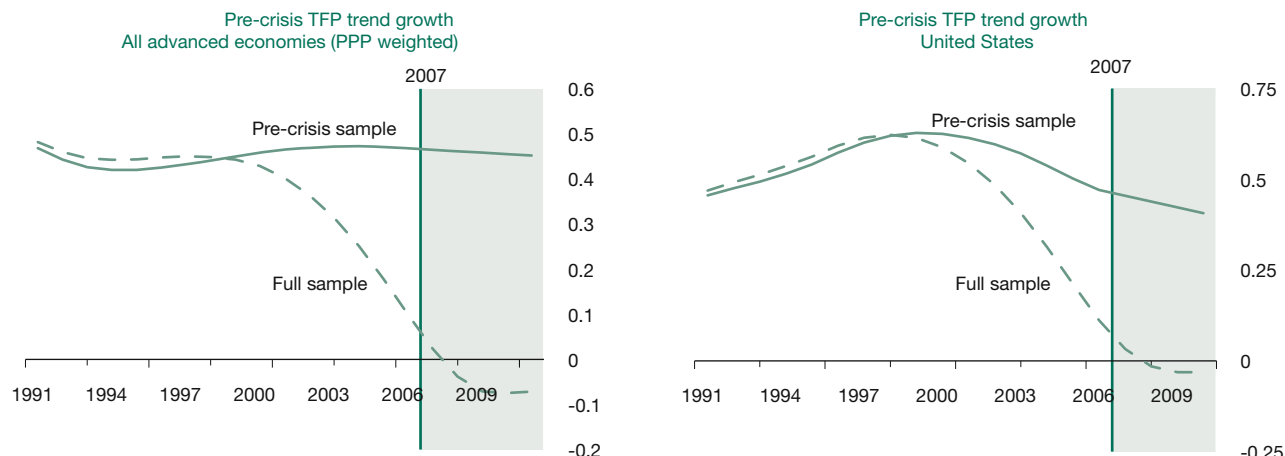
An alternative way to analyse TFP growth across countries is to examine contributions from technological innovation and catch-up. We estimated a global TFP frontier across all advanced economies, representing the maximum possible TFP levels under current technologies. This gives us the growth rate of the global TFP frontier, which is the rate of technological innovation (the light green in Figure 3). We also estimated the relative TFP levels with respect to the global frontier for each country, which we then averaged across all countries (dark green). Our results show that the pace of global technological innovation is in secular decline, while the catching-up speed of follower countries, after some initial convergence, has also stalled. These trends point to the need for a more in-depth examination of the factors underlying declining or stagnant TFP growth.

Lower TFP growth at the aggregate level can be indicative of structural changes, a falling pace of sector-specific innovation and the waning impact of past reforms. In most advanced economies, technological change within industries, changes in domestic demand and international trade have driven a process of structural transformation in which labour, capital and intermediate inputs have been reallocated away from manufacturing and towards servic-

² B. van Ark, M. O'Mahony, M.P. Timmer: The Productivity Gap Between Europe and The United States: Trends and Causes, in: *The Journal of Economic Perspectives*, Vol. 22, No. 1, 2008, pp. 25-44.

³ J. Fernald: Productivity and Potential Output Before, During, and After the Great Recession, in: *NBER Macroeconomics Annual* 2014, Vol. 29, Chicago 2014, University of Chicago Press.

Figure 2
Total factor productivity growth
in %



Notes: Trends were estimated with an HP filter on the pre-crisis (through 2007) and full sample (through 2011) total factor productivity data. PPP = purchasing power parity. Shaded area indicates the post-crisis period.

Sources: EU KLEMS database; World KLEMS database; and IMF staff calculations.

es. However, productivity growth has also been declining in many of the services sectors (e.g. personal services, non-market services, distribution), which increasingly account for the bulk of employment and economic activity (see Figure 4). These relatively protected services sectors, which are often closed to competition, were the heaviest drags in terms of TFP growth for European countries and were strongly negative in Italy and Spain.

The similarity of aggregate TFP growth trends among advanced economies masks dramatic variations in TFP levels across individual sectors. As shown in Figure 5, even the most technologically advanced countries had TFP levels in some sectors that were less than half that of the leader. Indeed, the frontier economy varies from sector to sector. Germany, for instance, led in manufacturing but lagged in services sectors. A similar story emerges for the United States, which represented the technology frontier in finance, business and personal services. In some cases, natural advantages (e.g. mining in Australia) could play a role in explaining the observed TFP gaps across countries. Measurement issues are also an important caveat, as errors due to industry misclassification, cross-country comparability of hours worked and capital services used can be larger in the levels data. As such, differences in TFP levels reported here should be viewed with care.

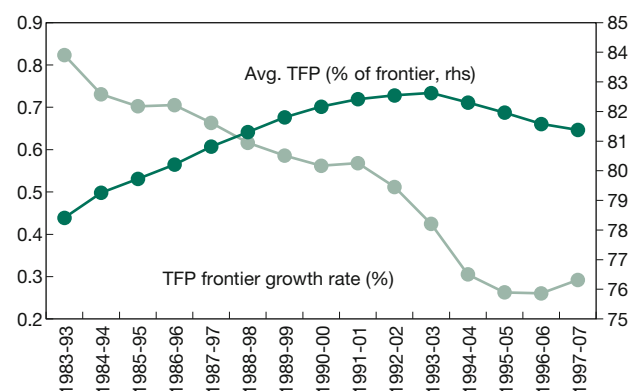
The existence of large gaps in sectoral TFP levels across countries prior to the crisis points to room for policy and structural reforms to facilitate technological catch-up. This includes improving resource allocation (allocative

efficiency) and the use of productive inputs (productive efficiency). For countries already at, or close to, the production possibility frontier (e.g. the United States in personal services, the Netherlands in distribution), innovations in products and processes could help boost productivity.

What should be done?

We first show that improving the allocation of productive inputs across sectors can generate significant produc-

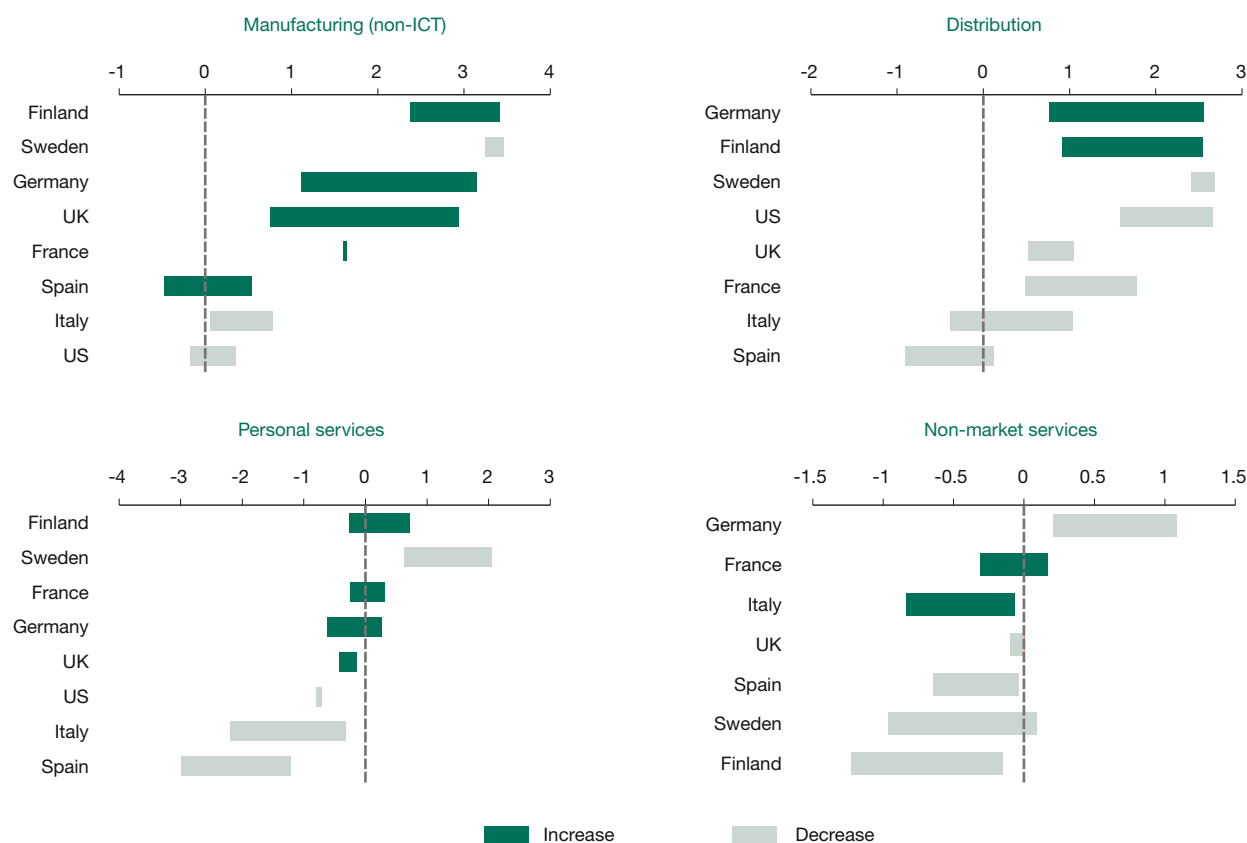
Figure 3
Sources of total factor productivity growth
Stochastic frontier analysis



Sources: EU KLEMS database; World KLEMS database; University of Groningen; and IMF staff calculations.

Figure 4
Total factor productivity growth within sectors

Change in TFP growth rates, 1990-1999 to 2000-2007, %



Sources: EU KLEMS database; World KLEMS database; and IMF staff calculations.

tivity gains. We also assess the impacts of structural reforms on TFP and output growth both over the short and the medium term, and examine how these impacts differ depending on the initial conditions of an economy. This analysis gives us further insights on how to prioritise reforms, taking into account country-specific circumstances.

Reduce misallocation across sectors

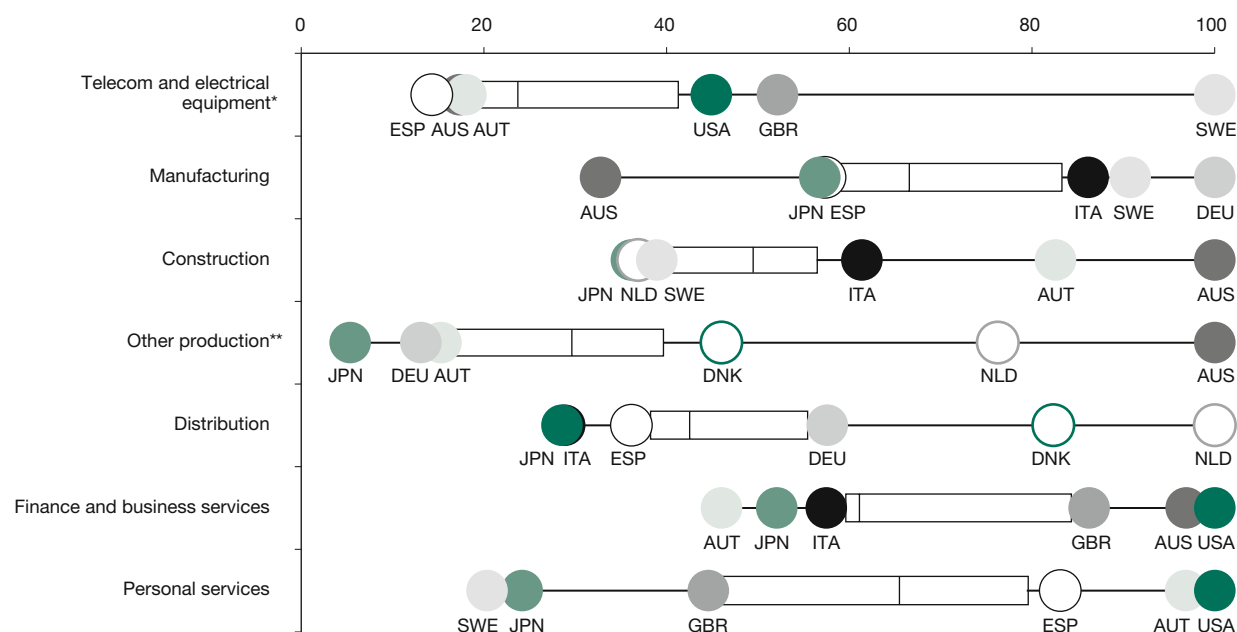
Policy-induced distortions prevented efficient allocation of factors of production across diverse industries and economic sectors even prior to the global financial crisis. Reducing these distortions and achieving more efficient resource allocation could have a substantial impact on boosting productivity.

Evidence suggests that substantial TFP gains can accrue from reducing resource misallocation and improving efficiency even within narrowly defined sectors of the econo-

my.⁴ Exemptions of certain producers from regulations or taxes, heavily subsidised agricultural sectors, and “size-dependent policies” (e.g. employment protection policies in Italy and France that only take effect beyond a certain size threshold) are examples of distortions that induce a misallocation of factors. Labour and product market rigidities, market structure, and imperfect competition also influence factor reallocation, innovation and firm restructuring. While within-industry misallocation accounts for the bulk of cross-country productivity differences, reducing misallocation across broad economic sectors within an economy can also spur aggregate productivity and output.

⁴ D. Restuccia, R. Rogerson: Misallocation and productivity, in: *Review of Economic Dynamics*, Vol. 16, No. 1, 2013, pp. 1-10; H.A. Hopenhayn: Firms, Misallocation, and Aggregate Productivity: A Review, in: *Annual Review of Economics*, Vol. 6, 2014, pp. 735-770.

Figure 5
Average range of TFP levels by industry, 2000-07
 % of frontier, 2000-07 average



Notes: The box plot shows the minimum, first quartile, median, third quartile and maximum TFP levels in each industry. * These ICT sub-industries are presented as deflators for other sub-industries (e.g. IT and other information services) and are not available across all countries. ** Other production includes agriculture, forestry, fishing, mining, quarrying, electricity, gas and water-related industries.

Sources: EU KLEMS database, GGDC Productivity Level database; and IMF staff calculations.

We calculated the TFP and output growth gain that could accrue if each country were to adopt a better allocation of its productive inputs across sectors.⁵ This exercise, while illustrative, indicates that a better allocation of productive inputs could have sizable growth effects. For example, if Italy and Portugal were to eliminate all distortions (i.e. achieve Pareto efficient allocation) within the next ten years, their annual growth rates of TFP (and GDP) could potentially increase by 1.8 and 1.3 per cent per annum respectively over the decade (Figure 6). If labour inputs are measured as skill-weighted hours worked, the TFP gains are even larger, indicating that labour misallocation includes not only the allocation of working hours but also

skill mismatches in the labour force. For instance, improving the labour skill composition in Italy could raise TFP growth by an additional 1.5 per cent a year. While these potential gains appear substantial, it is useful to recall that the underlying distortions themselves can be significant and that the exercise assumes that these are completely eliminated.

Improve productivity within sectors

In addition to the economy-wide misallocation of resources discussed above, the TFP growth of an economy can be influenced by various within-industry structural settings that constrain the allocation of factors and returns to innovation. Using the conceptual framework of “distance from the technology frontier”,⁶ we empirically assessed the relative importance of a range of policy and structural factors for TFP growth across industries and countries

5 Using data on sector-level value-added outputs, factor inputs and input payments from the EU KLEMS database for 12 advanced economies over 2000-07, we assessed the size of the potential labour and capital frictions that must be in place for the data to be an equilibrium outcome of the distorted economy. We then undertook a counterfactual exercise to assess aggregate productivity and growth gains from eliminating these distortions. The Pareto efficient allocation requires that the marginal return to capital (or labour) be identical across sectors. A larger cross-sector dispersion of input marginal products thus implies a less efficient input allocation, and hence a lower aggregate TFP. For more details, see E. Dabla-Norris et al., op. cit.

6 P. Aghion, P. Howitt: Joseph Schumpeter Lecture – Appropriate Growth Policy: A Unifying Framework, in: Journal of the European Economic Association, Vol. 4, No. 2-3, 2006, pp. 269-314; P. Aghion, P. Howitt: The Economics of Growth, Cambridge, MA 2009, MIT Press.

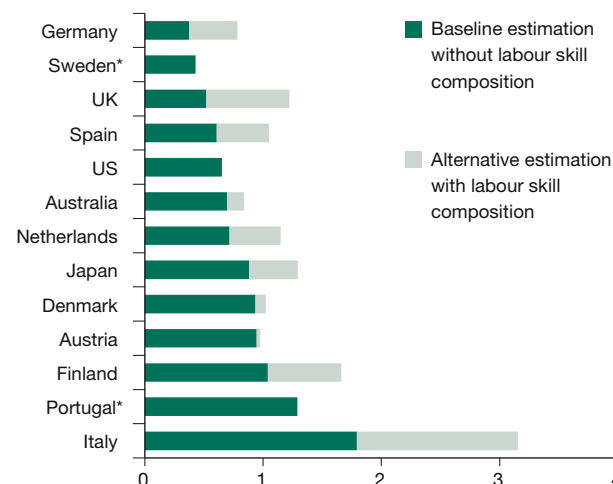
and over time.⁷ According to this framework, the set of policies aimed at sustaining productivity growth in different industries and sectors can vary depending on the industry or sector's distance from the technological frontier.

Two econometric specifications were used to assess the effect of structural reforms on total factor productivity. The first established whether changes in structural indicators have a material impact on TFP growth and whether the impact depends on the distance from the technological frontier.⁸ Because policy reforms and structural shocks can result in adjustment costs, particularly in a weak demand environment, it is also useful to assess their productivity impacts over time. Consequently, the second specification focused on assessing the dynamic (short- and medium-term) impact of structural shocks – identified by episodes of large changes in structural indicators – on TFP levels.⁹

We examined how institutional and product and labour market regulations affect efficiency and convergence to the frontier. The regressions also included other industry-specific factors that drive expansion of the technological frontier and facilitate technology adoption, such as education (share of high-skilled labour in total labour), innovation (research and development expenditure as a share of industry value added), and ICT use (ICT capital share of total capital).

Evidence obtained using the first specification suggests that removing product market rigidities can lift productivity growth, particularly in the more heavily regulated services sectors (e.g. distribution, business and personal services). Moreover, the negative impact of stringent product market regulations on TFP growth is more severe the closer the industry is to the technology frontier. This suggests that increasing competition in the services

Figure 6
Annual total factor productivity growth from better input allocation
in %



Note: Assuming the adjustment to Pareto optimal allocation will take ten years.

*Scenario with labour skill heterogeneity not available.

Source: EU KLEMS database; World KLEMS database; and IMF staff calculations.

sector by eliminating entry barriers, constraints to business operations, and red tape and administrative burdens would provide a needed productivity boost to services sectors.

More intensive use of high-skilled labour and ICT capital inputs and higher spending on R&D activities is also associated with higher productivity growth. The channels through which these factors affect TFP growth, however, differ. A highly skilled labour force can foster innovative activities and the diffusion of new technologies. The more intensive and widespread use of ICT can support more efficient organisational structures and business processes within firms, leading to efficiency gains. Greater R&D spending creates new efficiency-enhancing technologies. These results clearly support an important public policy role for improving educational attainment, fostering ICT diffusion and encouraging innovation in advanced economies.¹⁰ Moreover, TFP growth across industries is also spurred by developments at the technological fron-

7 The sample consists of industry-level annual data from the EU KLEMS combined with TFP levels data from the Groningen Growth and Development Centre Productivity-Level database. See R. Inklaar, M. Timmer: GGDC Productivity Level Database: International Comparisons of Output, Inputs and Productivity at the Industry Level, Paper No. GD-104, Groningen Growth and Development Centre, University of Groningen, 2008. The database covers 23 market industries in 11 advanced economies (including European countries, Australia, Japan and the US) during 1970-2007. See E. Dabla-Norris et al., op. cit. for details.

8 This specification controls for country- and industry-specific characteristics and common factors affecting TFP growth, as well as for the TFP gap with respect to the "global frontier" – defined as the highest level of TFP in the particular industry in a given year.

9 The analysis follows the approach proposed by Jordà by tracing the response of TFP in the aftermath of these reforms. This is done by controlling for pre-crisis trends as well as for country- and industry-specific characteristics and common factors affecting the evolution of TFP in the aftermath of the reforms. See O. Jordà: Estimation and Inference of Impulse Responses by Local Projections, in: American Economic Review, Vol. 95, No. 1, 2005, pp. 161-82.

10 Differences in the flexibility of product markets and the business environment also explain observed differences in the uptake and diffusion of ICT across advanced economies. See A. Coliccia, P. Shreyer: ICT Investment and Economic Growth in the 1990s: Is the United States a Unique Case? A Comparative Study of Nine OECD Countries, in: Review of Economic Dynamics, Vol. 5, 2002, pp. 408-42.

tier, which suggests significant productivity-enhancing knowledge spillovers from the technological leaders.

To put these results in economic terms, using the empirical estimates, we calculated the range of expected gain in annual TFP growth if advanced economies were to close the gap with the top three best practice countries. In the case of labour skills, for example, the TFP growth gain is larger for countries closer to the global frontier (i.e. technologically more advanced countries). Our analysis indicates that even among major European countries there are significant variations in the expected TFP gains from structural reforms (see Figure 7). The TFP growth gains through higher R&D expenditure, as well as through the more intensive use of high-skilled labour and ICT capital, are relatively large for Italy, Spain, Germany and Portugal. For example, if countries increased the use of high-skilled labour to the “best practice” level (average of top three highest countries), TFP growth in Germany and Italy would be boosted by around one percentage point.

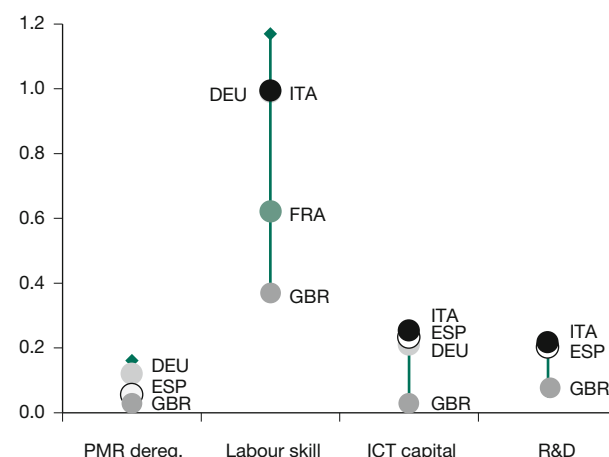
The results from the dynamic specification confirm the previous results and suggest that reforms are typically associated with higher TFP in both the short and the medium term (see Figure 8). Overall, the results suggest a cumulative medium-term increase in the average TFP levels across all industries following the implementation of key reforms, with the effect depending on the particular reform. The largest gains in productivity are associated with increasing R&D and ICT capital. For instance, a ten per cent shock in R&D spending boosts TFP on average across all industries by 0.7 per cent after three years and by two per cent after five years. The results also suggest that an increase in infrastructure capital has a positive impact on productivity over a longer horizon. This is a result of economies of scale, the existence of network externalities and competition-enhancing mechanisms.

We find that the productivity impact of labour market reforms tends to vary depending upon the type of reform.¹¹ In particular, we find that a reduction in employment protection is associated with a decline in TFP after three years, potentially reflecting weaker incentives for investment in firm-specific skills through excessive job turnover.

11 Studies do not always agree on the role of specific labour market institutions, and cross-country evidence on their productivity impact is less clear-cut. See Organization for Economic Cooperation and Development: OECD Employment Outlook, 2007. In general, firm-level evidence points to stronger productivity effects, with less-stringent labour market institutions and a more efficient use of human capital (e.g. reducing labour skills mismatches) facilitating the movement of labour to more productive firms and fostering creative destruction (firm entry and exit). See M. Henrekson: How Labor Market Institutions Affects Job Creation and Productivity Growth, IZA World of Labor 38, 2014.

Figure 7
TFP growth gains from structural improvement

Average TFP growth gain range for major AEs, in percentage points



Source: EU KLEMS database; World KLEMS database; University of Groningen; and IMF staff calculations.

A reduction in the labour tax wedge, however, is associated with higher productivity three years after the reform, suggesting that the efficiency impact of different labour market reforms can vary, rendering a one-size-fits-all reform recipe unsuitable.

The productivity effects also vary across sectors. For example, TFP gains associated with product market liberalisation are highest in the ICT, personal services, and finance and business services sectors, sectors in which many European countries have lagged behind the United States. Lower tax wedges, higher R&D spending and education reforms can boost productivity growth in innovation-intensive manufacturing and ICT sectors. Reforms can also have short-term negative productivity effects (e.g. a negative impact on ICT and personal services from product market regulation and on personal services from labour tax wedges), reflecting varying adjustment costs across sectors during the reform process.¹² Importantly, we find a positive productivity impact from infrastructure for all countries, a result which holds irrespective of a country's distance to the technology frontier.

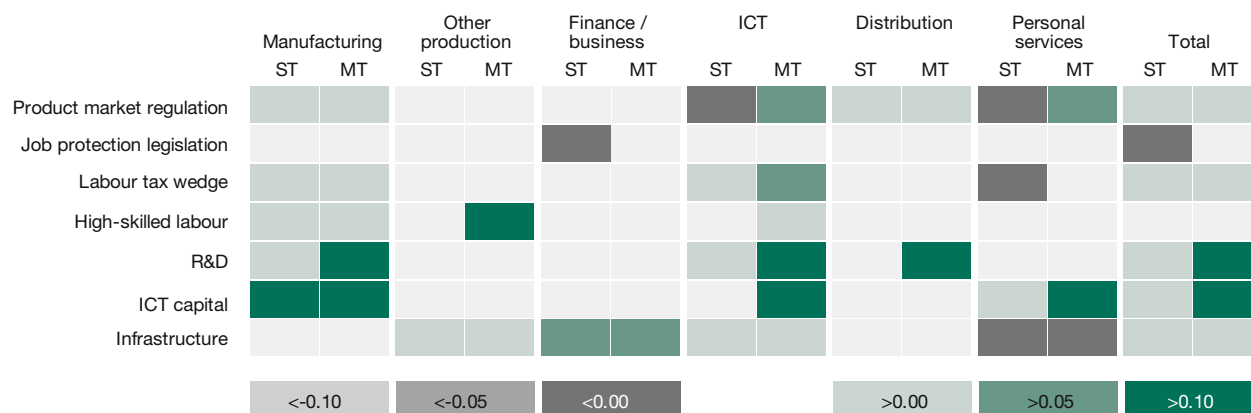
The impact of reforms depends on initial (pre-reform) settings (see Figure 9). For example, the effect of reducing product market regulations and labour tax wedges is

12 O. Blanchard, F. Giavazzi: Macroeconomic Effects of Regulation and Deregulation in Goods and Labor Markets, in: The Quarterly Journal of Economics, Vol. 118, No. 3, 2003, pp. 879-907; and S. Gomes, P. Jacquinet, M. Mohr, M. Pisani: Structural Reforms and Macroeconomic Performance in the Euro Area Countries: A Model-Based Assessment, in: International Finance, Vol. 16, 2013, pp. 23-44.

Figure 8

Short- and medium-term impact of structural reforms on total factor productivity

in %



Note: The results show the cumulative three-year (ST) and five-year (MT) level gains in TFP. Shades of grey indicate a negative and statistically significant impact; shades of green indicate a positive and statistically significant one. For instance, an ICT capital shock leads to a cumulative TFP level increase in ICT-related industries of about 30 per cent after five years (i.e. two standard deviations of the average cumulative five-year change in TFP in the sample). "Other production" includes agriculture, forestry, fishing, mining, quarrying, electricity, gas and water-related industries.

Sources: EU KLEMS database; World KLEMS database; OECD and IMF databases; and IMF staff estimates.

greater in highly regulated services sectors.¹³ Moreover, the medium-term productivity impact of knowledge capital, innovation and infrastructure is, on average, highest for industries with higher initial levels of innovation and infrastructure (e.g. manufacturing, ICT sectors). Some differences, however, can be gleaned across industries, especially in ICT and personal services, where the lower the initial levels of R&D spending and ICT capital use are, the higher the productivity gains will be. This points to the policy role of fostering greater diffusion of ICT services, particularly in economies where productivity growth has been lagging (e.g. many European countries).

The impact of reforms also depends on business cycle conditions. Infrastructure shocks are associated with larger productivity gains during periods of economic downturn, suggesting an important policy role for infrastructure investment in spurring productivity. In contrast, productivity gains from product market liberalisation and, not surprisingly, innovation reforms tend to be higher during upturns. However, product market deregulation could still be a useful tool for propelling growth. Liberalising en-

try into regulated sectors, for instance, can be a significant source of investment and job creation.¹⁴

Conclusion

The long-run decline in output and productivity growth in advanced economies raises the question of what reforms are needed to turn this around. Clearly, there is no one-size-fits-all policy prescription for all country circumstances and growth experiences. Looming demographic headwinds suggest that measures to increase labour force participation will be essential. More broadly, the outlook puts a high premium on productivity-enhancing reforms, which require tackling market and institutional rigidities that hamper efficiency. Reform priorities depend on country-specific settings, including the scale of particular distortions, and the level of technological development, which is a key determinant of the payoff from different reforms. Overall, our analysis points to a few important takeaways:

Reduce misallocation across sectors. The extent of misallocation varies by country, but removing binding product and labour market rigidities that impede resource allocation towards the most dynamic sectors and firms is crucial to boosting productivity. Indeed, reducing such distortions can yield large TFP and growth gains.

Services reform is a priority. Lifting services sector productivity is a priority, given the poor performance and

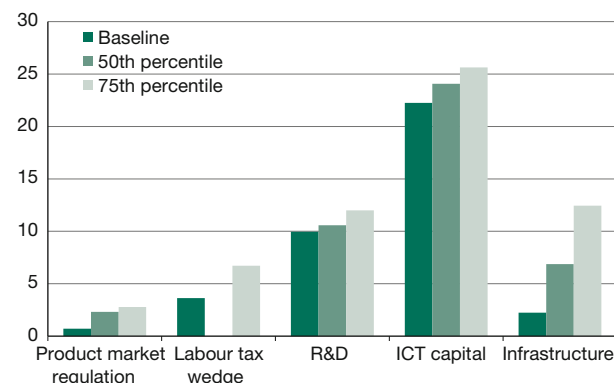
13 R. Boursès, G. Cette, J. Lopez, J. Mairesse, G. Nicoletti: Do Product Market Regulations in Upstream Sectors Curb Productivity Growth? Panel Data Evidence for OECD Countries, in: The Review of Economics and Statistics, Vol. 95, No. 5, 2013, pp. 1750-768. To assess this, we examined the productivity effects in industries with low (below the 25th percentile of the distribution), medium and high (above the 75th percentile) initial policy and structural settings.

14 E. Dabla-Norris et al., op. cit.

Figure 9

Medium-term impact of reforms on total productivity growth, conditional on initial settings

in %



Note: This reports the average cumulative five-year impact of a shock on TFP levels as a function of the initial level of the structural indicator.

Sources: EU KLEMS database; World KLEMS database; OECD and IMF databases; and IMF staff estimates.

large size of the sector in most countries. The variance in performance and regulations across peers suggests significant upside scope from determined efforts, especially from product market reforms, to increase competition. The potential to boost service productivity from lowering barriers to entry can be particularly large for countries where initial efficiency is low.

Back to basics investment. Our analysis suggests that the advance of the technology frontier has slowed. This sug-

gests that back-to-basics investments in innovation, information and communications technology, labour skills, and new ideas can yield high productivity dividends. These gains are particularly pronounced for the most technically advanced countries, such as the United States and Germany. Increasing returns to scale are evident in knowledge capital, and they create many opportunities for countries to boost their own and global prospects. While this will support countries that are further from the frontier, these countries need to work doubly hard to remove impediments to productivity growth.

Infrastructure investment has clear benefits. Investments in transport, energy and telecommunications are essential to improving productivity, boosting employment and increasing output. Because these investments tend to be large-scale and long-term, they require high levels of coordination to maximise the wider benefits to society as a whole. In many cases, governments will need to play a vital role in planning, delivering and financing these projects. At present, debt-financed projects could have large productivity and output effects, particularly if clearly identified infrastructure needs are met through efficient investment.

Calibrating reforms. Changes in economic structures during the reform process can have short-term costs in terms of employment and growth. Where demand is weak and there is slack in the labour market, and where investment efficiency is high, product market reforms and increased investment in productive infrastructure could be prioritised to reap immediate employment and output benefits.

Werner Roeger, Janos Varga, Jan in 't Veld*

The Growth Impact of Structural Reforms in the EU

Potential growth rates have fallen steadily over the last two decades. The slowdown in productivity growth, which started well before the crisis, is ongoing, and the financial and sovereign debt crises have reinforced the need for structural reform. Unemployment rates have risen to dramatic heights in many countries, and the duration and depth of the crisis weigh on long-term growth prospects. Low growth also hampers debt sustainability and has forced more consolidation measures in vulnerable member states, which have further reduced growth. All this has provided an impetus to carry out reforms to

boost growth – EU country-specific recommendations in the European Semester aim to increase competition and reduce labour market rigidities in member states.

This paper aims to provide a quantitative assessment of the potential macroeconomic impact of reforms in the EU. The benchmarking methodology used in this paper is based on structural indicators of labour and product markets. It applies a distance-to-frontier approach to quantify the potential for reform by assuming a gradual and partial closure of the gap vis-à-vis the average of the

three best EU performers. Crucially, to avoid setting unrealistic and/or unattainable targets, the scenarios involve only half of the gaps being gradually closed. Most of the literature quantifying the impact of structural reforms has relied on such hypothetical shocks. This shows the potential impact of reforms in EU countries. The paper also addresses results from a recent ECFIN exercise which tries to measure the impact of actual reforms.

This assessment uses the semi-endogenous growth model specifically adapted for the analysis of structural reforms. The model follows the structure of Roeger et al. in a multi-country setting and includes the EU member states individually and the rest of the world as a single separate region, thus allowing an analysis of spillover effects in a context of simultaneous reforms.¹ Previous exercises using this model have shown that structural reforms can have sizeable macroeconomic effects.² Similar conclusions have been reached in other studies which have quantified the potential gains from EU structural reforms through regression analysis and/or model simulations of exogenous productivity or aggregate mark-up shocks.³

The modelling methodology

The model

The macroeconomic model used in this paper is a dynamic stochastic general equilibrium model with semi-endogenous growth based on Jones.⁴ The Jones model

is a closed economy semi-endogenous model with only one type of household supplying labour services for final and R&D goods production. Roeger et al. extended that model by introducing mark-ups for the final goods sector and entry costs for the intermediate sector.⁵ They also added two types of households, liquidity and non-liquidity constrained, and three types of labour skills that allow the authors to conduct more detailed human capital reforms. The model also includes a fiscal and monetary authority with the appropriate decision rules. Importantly, the model is a multicountry model including the 28 EU member states and the rest of the world. The individual country blocks are interlinked through international trade, financial flows and knowledge spillovers. For each country block, the model economy is populated by households, final and intermediate goods-producing firms, a research industry, a monetary authority and a fiscal authority. Final good producers use a composite of intermediate goods and three types of labour: low-, medium- and high-skilled. The intermediate sector is composed of monopolistically competitive firms which produce intermediate products from rented capital input using the designs licensed from the household sector. The production of new designs takes place in research labs, employing high-skilled labour and making use of the commonly available domestic and foreign stock of knowledge. The model is calibrated in a multicountry setting for the member states.⁶

Benchmarking analysis

Reform shocks are based on a set of structural reform indicators covering a wide range of areas, including market competition and regulation, R&D expenditure, skill structure, tax structure, labour market participation, unemployment benefit “generosity”, and active labour market policies. We define the potential for reform as a narrowing of the gap by one-half in these indicators vis-à-vis the three best-performing countries in the EU.⁷ This exercise provides an upper bound estimate of the growth effects of structural reforms in the EU (and individual countries) and also shows the dynamic impact of structural reforms in different areas. In modelling the dynamic effects, we have been careful to take into account decision and implementation lags. Delays in implementing reform measures are likely, and it also takes time before measures have a visible impact on structural indicators (e.g. time between

* The views expressed in this paper are those of the authors and should not be attributed to the European Commission.

1 See W. Roeger, J. Varga, J. in 't Veld: Structural reforms in the EU: a simulation-based analysis using the QUEST model with endogenous growth, European Economy Economic Papers, No. 351, 2008; and J. Varga, J. in 't Veld: The potential growth impact of structural reforms in the EU: A benchmarking exercise, in: European Economy Economic Paper, No. 441, 2014.

2 For the effect of standardised structural reforms across the European Union member states, see W. Roeger, J. Varga, J. in 't Veld: Modelling the Lisbon Strategy: Analysing policies to promote knowledge investment with an endogenous growth model, in: Comparative Economic Studies, Vol. 51, 2009, pp. 520-39; and F. D'Auria, A. Paganò, M. Ratto, J. Varga: A comparison of structural reform scenarios across the EU member states: simulation-based analysis using the QUEST model with endogenous growth, in: European Economy Economic Paper, No. 392, 2009. The same benchmarking methodology as our current paper is also applied – though only for selected euro area countries – in European Commission: The growth impact of structural reforms, Quarterly report on the euro area, No. 4, 2013, pp. 17-27; and J. Varga et al., op. cit.

3 See e.g. R. Bouis, R. Duval: Raising potential growth after the crisis: a quantitative assessment of the potential gains from various structural reforms in the OECD area and beyond, OECD Economics Department Working Papers, No. 835, 2011; and B. Barkbu, J. Rahman, R. Valdes: Fostering growth in Europe now, IMF Staff Note, SDN/12/07, 2012.

4 C.I. Jones: Growth and Ideas, in: P. Aghion, S. Durlauf (eds.): Handbook of Economic Growth, Vol. 1, Part B, Amsterdam 2005, North-Holland, pp. 1063-1111.

5 W. Roeger et al.: Structural reforms ..., op. cit.

6 See J. Varga, W. Roeger, J. in 't Veld: Growth effects of structural reforms in Southern Europe: the case of Greece, Italy, Spain and Portugal, in: Empirica, Vol. 41, No. 2, pp. 323-363, for more details.

7 The indicators used in the benchmarking exercise are based on the most recent available data (see Table 1 for detailed information), but these may not always capture some recent changes due to reforms that have already been adopted.

creating more childcare facilities and an actual rise in female participation rates). In this exercise, we assume that reforms are implemented gradually. “Speed limits” are applied, e.g. changes in mark-ups of at most one percentage point per year. Tax reforms are phased in over a five-year period, while educational reforms lead to only very gradual changes in skill levels due to cohort effects. However, the overall results may still overestimate how quickly reforms can have an impact in the short term, in particular at the current juncture, with depressed demand and tight credit conditions due to public and private deleveraging.⁸ We therefore focus our discussion mainly on effects over five and ten years rather than the short term.

Another reason why the results could be considered as an upper limit is that some reforms may have considerable budgetary costs which could not always be taken into account, as they can be difficult to quantify. To the extent that reform measures have additional costs which would have to be financed through higher taxes, macroeconomic impacts could be smaller than those presented here.

Structural reforms

Market competition and regulation

Estimates indicate that mark-ups in services are larger than in manufacturing and vary more across countries.⁹ This finding is explained by high levels of international competition in manufacturing, which limits the ability of manufacturing firms to reap large economic rents. The mark-up estimates reported in Table 1 indicate that there is scope for reducing profit margins in services. There also remains some room for reforms in manufacturing, as indicated by a wide variety of administrative entry barriers in the form of the costs of setting up a business.

⁸ Some authors have also claimed the impact of structural reforms on economic activity in the short term can be counterproductive when the zero lower bound (ZLB) on monetary policy rates is temporarily binding, due to the downward pressure on prices (e.g. mark-up reductions in G. Eggertsson, A. Ferrero, A. Raffer: Can structural reforms help Europe?, in: *Journal of Monetary Economics*, Vol. 61, No. C, 2014, pp. 2-22). In a larger macroeconomic model such as ours, the contractionary short-term effects of deflationary supply-side reforms at the ZLB are smaller due to various mitigating factors: the impact of reforms on the profitability of investment, the disposable income of liquidity-constrained households and the competitiveness effect in external trade. The adverse real interest rate effect also depends on the short-term deflationary impact of the reform (which can be smaller for other measures). See European Commission: Structural reforms at the zero lower bound, Quarterly report on the euro area, No. 3, 2014, pp. 21-26.

⁹ See A. Thum-Thysen, E. Canton: Estimation of service sector mark-ups determined by structural reform indicators, *European Economy Economic Papers*, No. 547, 2015; and R. Christopoulou, P. Vermeulen: Markups in the Euro area and the US over the period 1981-2004: a comparison of 50 sectors, in: *Empirical Economics*, Vol. 42, No. 1, 2012, pp. 53-77.

Medium-term growth effects can be expected from these measures via reduced prices and the market entry of innovative firms.

Tax reform

Countries in Europe show large discrepancies in the structure of taxation. Thus, there appears to be room for shifting the burden of taxation from labour incomes to consumption in a budget-neutral way. Since this shifts taxation away from labour and towards transfers and income from capital and economic rents used for consumption, this increases the net consumption wage and increases employment.¹⁰ It also improves competitiveness and mimics the effects of a currency devaluation on the terms of trade (“fiscal devaluation”).

Unemployment benefit reform

A reduction in the benefit replacement rate acts in the model like a reduction in the reservation wage, which puts downward pressure on wages and increases employment.¹¹ The calibration of wage elasticity to unemployment benefits is based on regression studies on the link between the unemployment rate and the benefit replacement rate.¹² Wages and productivity increase over time and return to their baseline values as investment picks up and the economy moves to a new equilibrium with higher employment.

Other labour market reforms

Rising participation rates for women, low-skilled male workers and 55-64 year olds increase the labour force. Such reforms form an important part of our simulated packages and yield significant improvements in GDP.

Active labour market policies (ALMPs) affect labour market outcomes by improving the matching process, thus favourably affecting employment. Firms can perceive ALMPs as a reduction in non-wage costs, e.g. training costs borne by the government (employment subsidy).

¹⁰ See M. Burgert, W. Roeger: Fiscal Devaluation: Efficiency and Equity, *European Economy Economic Papers* 542, 2014.

¹¹ The target is defined as the EU average replacement rate; this scenario is not included for member states below the average.

¹² For example, results from Bassanini and Duval as well as Orlandi point to an average effect for a panel of OECD/EU countries of somewhat less than 0.2 per cent from a one percentage point reduction in the unemployment benefit replacement rate. See A. Bassanini, R. Duval: Employment patterns in OECD countries: reassessing the roles of policies and institutions, *OECD Economics Department Working Paper*, No. 486, 2006; and F. Orlandi: Structural unemployment and its determinants in the EU countries, *European Economy Economic Papers*, No. 455, 2012. We obtain results of a similar order of magnitude, but somewhat differentiated across countries.

Table 1
Structural indicators and benchmarks, selected EU member states

	AT	BE	BG	CZ	DE	DK	EE	EL	ES	FR	HU	IE	IT	NL	PL	PT	SE	UK	Average 3 best EU performers
Market competition																			
Services sector markups (%)	15.3	15.9	11.9	17.0	15.0	12.7	16.4	19.7	14.9	15.7	15.2	13.8	14.1	13.9	15.4	15.1	13.3	12.2	11.6
Market regulation																			
Entry costs (%)	11.7	6.3	5.9	12.6	9.1	1.8	3.3	23.8	12.3	2.7	9.5	2.6	18.0	6.4	22.1	3.2	5.0	3.9	2.0
Tax reform																			
Labour-to-consumption tax revenue ratio	2.4	3.0	0.7	1.7	2.5	1.9	1.3	1.7	2.6	2.8	1.4	1.6	3.0	2.6	1.5	1.3	1.9	1.5	0.9
Skill-enhancing reforms																			
Share of high-skilled (%)	6.4	7.9	6.4	6.0	9.2	7.5	11.4	7.3	9.8	8.5	4.9	9.3	4.2	6.3	6.0	4.1	9.0	9.4	11.2
Expenditure on high-skilled education (% GDP)	0.4	0.2	0.2	0.3	0.4	0.5	0.3	0.4	0.3	0.3	0.2	0.4	0.2	0.2	0.2	0.3	0.5	0.3	0.5
Share of low-skilled (%)	16.9	27.2	18.2	7.2	13.7	21.7	9.4	32.8	44.5	24.9	17.5	23.3	41.8	24.2	9.9	60.2	16.8	21.6	7.3
Expenditure on medium-skilled education (% GDP)	3.8	4.0	2.1	2.8	3.3	4.8	3.1	3.2	2.6	3.5	2.8	3.5	2.6	3.9	2.6	3.0	3.9	3.4	2.9
Labour market reforms																			
Female non-participation (% , 25-55ys):																			
low-skilled	30.1	44.4	47.1	34.1	38.2	32.0	34.3	39.9	27.8	33.2	43.6	54.4	50.2	34.7	46.9	22.4	31.8	40.5	25.8
medium-skilled	12.9	19.6	18.1	17.2	16.2	13.9	17.4	27.8	17.8	15.3	20.6	31.2	27.7	15.4	24.8	8.7	11.6	19.8	10.8
high-skilled	8.8	9.0	10.0	19.1	11.1	7.3	13.6	10.9	10.3	8.7	17.2	15.8	17.3	7.3	9.3	4.8	6.6	11.8	4.8
Low-skilled male non-participation (% , 25-55ys)	17.1	19.6	33.2	20.2	16.5	20.2	19.2	7.9	10.4	13.6	27.8	20.6	15.0	14.9	28.0	10.6	13.9	18.0	7.9
Elderly non-participation (% , 55-64ys):																			
low-skilled	22.9	25.0	19.9	29.5	13.2	16.0	14.4	20.5	15.0	22.4	25.6	17.9	20.0	17.6	32.1	14.5	12.6	14.5	13.4
medium-skilled	10.5	10.6	11.2	11.2	8.3	8.1	9.3	9.9	6.1	11.9	14.0	6.7	7.6	6.9	15.6	4.2	4.8	7.1	5.0
high-skilled	5.5	6.5	6.7	3.5	4.6	4.4	4.5	7.5	3.5	5.6	7.0	4.1	4.4	4.2	4.6	5.0	2.6	5.5	3.2
ALMP (% of GDP over unemployment share)	25.2	18.9	3.8	4.4	12.3	36.7	3.9	3.9	6.5	15.2	12.7	10.3	7.7	22.9	7.3	5.7	24.0	2.0	28.6
Benefit replacement rate* (%)	68.8	65.1	38.5	57.4	60.9	73.1	42.8	10.8	46.9	57.8	30.1	74.1	9.2	71.7	45.6	48.8	64.3	62.2	52.3
R&D measure																			
R&D tax-credit rates	0.12	0.15	n.a.	0.18	-0.02	-0.01	n.a.	0.01	0.34	0.38	0.25	0.26	0.12	0.23	0.00	0.49	-0.01	0.17	0.41

Notes: CY, FI, HR, LT, LU, LV, MT, RO, SI and SK are included in the model but excluded from the table for presentation purposes. * For benefit replacement rate: EU average.

Sources: Services mark-ups, 2013: based on A. Thum-Thyssen, E. Canton: Estimation of service sector mark-ups determined by structural reform indicators, European Economy Economic Papers, No. 547, 2015; Entry costs: starting business costs in % of income per capita, 2014: Doing business database; Tax revenues, 2012: European Commission, Taxation trends in the European Union, 2014 edition, Luxembourg 2014; Skill-shares, non-participation rates, 2013 or latest available: EUROSTAT, low-skilled correspond to ISCED 0-2 categories, high-skilled correspond to scientists and engineers (in natural science, mathematics, computing, manufacturing or construction), the rest of the population is defined as medium-skilled; Education expenditures: 2011 or latest available: EUROSTAT, corrected with the share of high- and medium-skilled; ALMP: 2012 or latest available: EUROSTAT; Benefit replacement rates, 2012: OECD, Benefits and Wages Statistics; average of net replacement rates over 60 months of unemployment, 2012; R&D tax-credit rates, EL and IT: 2008 data, average over large and small firms, J. Warda: An Update of R&D Tax Treatment in OECD Countries and Selected Emerging Economies, 2008-2009, 2009, mimeo; AT, BE, CZ, DE, DK, EL, ES, FI, FR, HU, IE, LU, NL, PL, PT, SE, SI, SK, UK: 2013 data, average over large and small firms, OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing.

We calibrate this shock to match the panel regression estimates in Orlandi on the effect of ALMP expenditures on the unemployment rate.¹³

¹³ F. Orlandi, op. cit.

Human capital investment

Our data (see Table 1) suggest that there are large skill gaps within EU countries. Changes in the quality of education and their effects on the quality of the labour force

are captured in the model as changes in the skill composition. The increase of the average skill level in the economy is modelled as a gradual change to account for the substantial lags in achieving that objective, including lags in reforming the education system and the gradual passing through of new cohorts into the labour market. The reform cost is modelled as an increase in education-related expenditure. As regards the impact of such a measure, the results of the model are in line with empirical estimates.¹⁴

Policies aimed specifically at increasing the share of high-skilled workers (engaged in R&D activities) are also modelled. Increasing the share of high-skilled workers improves supply conditions in the R&D production sector.

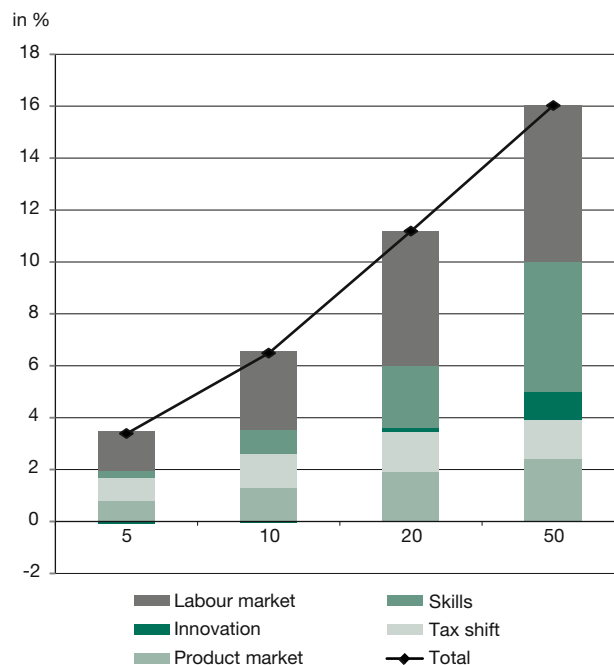
Policy can affect R&D investment via demand side measures as well. For example, R&D tax credits reduce the capital costs of intangibles and increase R&D activities, resulting in increased demand for intangibles. On the labour side, this is accompanied by increasing demand for high-skilled workers. The size of the output effect will therefore depend crucially on high-skilled labour supply elasticity. For countries with limited high-skilled labour, the crowding-out effect of R&D subsidies will be greater.

Macroeconomic impact of structural reforms

What is the EU growth potential in the coming years if all EU countries were to undertake structural reform measures which close half the gap to the best performers, as measured by the indicators reported in Table 1? Figure 1 shows the impact of structural reforms on GDP for member states after five, ten and twenty years. The simulated reform shocks boost GDP levels in the EU by 3.4 per cent after five years, 6.5 per cent after ten years, and 11.2 per cent after 20 years (see Figure 1).

Which reforms have the largest impact? This is obviously related to the identified performance gaps. The relative contribution of different reforms also changes over time, as Figure 1 shows. In the short run, labour market reforms (increased participation, active labour market policies and benefit reforms), tax reforms (shifting taxation towards indirect taxes) and product market reforms (higher competition in the services sector and lower entry costs) have the largest effects. It is clear that education/training (or other skills-enhancing) reforms cannot be expected to deliver significant growth effects in the short run. In the

Figure 1
GDP effects after 5, 10, 20 and 50 years, by reform area¹



¹ Difference from baseline.

Source: Model simulations.

medium to long run, though, the effects of these reforms become sizeable. This also holds for innovation reforms (R&D-promoting policies), which may not have a significant impact in the short to medium run but can make a considerable contribution to higher output in the very long run (the final bar in Figure 1 shows the effects after 50 years).

Actual reform measures

While the above benchmarking approach shows the potential that reforms could deliver, it is not an assessment of measures that have actually been taken. The latter requires detailed information on reform measures adopted and/or planned in each member state and an assessment of how they impact on structural indicators that feed into the model.

The European Commission has conducted a pilot exercise for Italy, Spain, the Czech Republic and Denmark which considered reforms put forward in these countries' 2013 and 2014 National Reform Programmes. Reform measures were translated into quantitative shocks that could be simulated with the Commission's QUEST model. This turns out to be a much more complicated task than a

¹⁴ In particular, de la Fuente estimates the impact of an extra year's schooling in the EU on long-term productivity at 9.3 per cent, which is close to the result yielded in our model. See A. de la Fuente: Human capital in a global and knowledge-based economy, part II: assessment at the EU country level, Barcelona Graduate School of Economics Working Papers, No. 98, 2003.

benchmarking analysis, since actual policy measures do not always translate directly into the structural indicators used in the model. This is notably the case for some product and labour market reforms. In this case, we apply a two-step procedure. In a first step, we translate concrete measures into changes in the OECD's Product Market Regulation (PMR) and Employment Protection Legislation (EPL) indicators, and in a second step, we use estimated elasticities linking these indicators to sector-specific mark-ups in the case of PMR and to aggregate total factor productivity in the case of EPL. After these two steps, concrete reform measures can be fed into the QUEST model.

We now illustrate our approach in the case of Italy and Spain.

Selected reforms in Italy

The 2012-13 labour market reform targeted the rigidities and segmentation of the labour market, leading to a reduction in the EPL indicator. Active labour market policies, in particular those with a focus on the youth (e.g. Youth Guarantee), have also been strengthened.

The 2012-13 simplification of public administration reform is wide-ranging and includes measures such as simplifying the framework for infrastructure investment, facilitating the setting-up of businesses, financial advantages for young entrepreneurs and widening the scope of e-government.

The 2012 liberalisation of professional services, whereby minimum tariffs were abolished and access eased, resulted in a reduction in the services PMR indicator.

The 2012 unbundling of the gas market decreased prices for consumers, which translates, by the same token, into a reduction in the energy PMR indicator.

The 2013 tax reforms lowered the tax wedge on labour via a reduction of the income tax and of social security contribution for insurances (such as the National Institute for Insurance against Accidents at Work, which affects manufacturing and construction more than services). This was accompanied by an increase in the VAT standard rate from 21 per cent to 22 per cent.

The 2014 public administration reform is wide-ranging, including e.g. measures on the opening of construction sites, public works, digitalisation, the simplification of bureaucracy, a reduction of chambers of commerce fees, hydrogeological instability and the recovery of production activities. Based on figures from Italy's 2015 Draft Budgetary

Plan, this was translated into a reduction of overhead labour costs.

The 2014 tax reform includes various measures aimed at reducing the labour tax wedge and facilitating access to finance for SMEs. These measures were translated into a permanent labour tax cut on low-skilled earners and reductions in the corporate income tax. To finance these tax cuts, a number of tax hikes on consumption and capital taxes have been implemented, thereby increasing the implicit tax rates (ITRs) on consumption and capital.

Selected reforms in Spain

The 2012 reform of unemployment benefits reduced unemployment benefits for beneficiaries who draw them for more than six months.

The 2012 tax reforms led to increases in ITRs. An increase in VAT in 2012 raised the ITR on consumption. A reform of the debt bias in the treatment of housing in personal income tax which reduced compensations and allowances translated into an increase in the ITR on labour. Additionally, new taxes on electricity generation also reduced output and employment.

The 2013 pension reforms in Spain restricted access to early and partial retirement and introduced a sustainability factor which will curtail the initial pension benefit in line with changes in life expectancy when it takes effect in 2019.

The 2012 retail reform made shop opening hours more flexible, liberalised sales periods and simplified licensing procedures for small retail outlets.

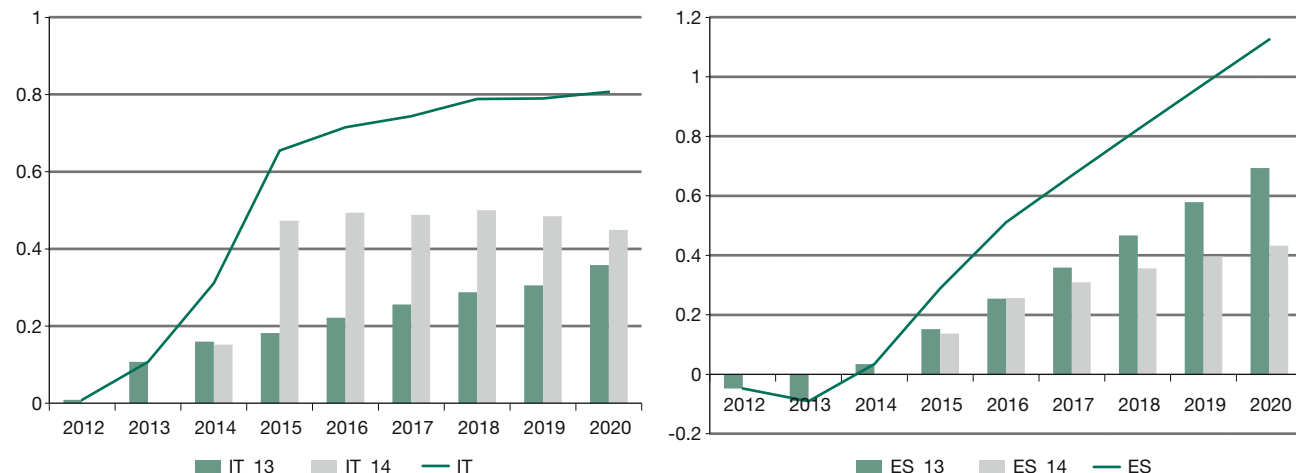
The 2012 reform of the employment protection legislation led to a small improvement in the OECD indicator for strictness of employment protection. The estimate does not take into account other elements of the 2012 labour market reform, like introducing more flexible working conditions, adapting collective bargaining to firm conditions, limiting the use of indexation clauses or introducing incentives to indefinite hiring by small and medium-sized enterprises.

The market unity law, adopted in December 2013, aims at removing measures that may directly or indirectly obstruct the free movement of goods and services and the establishment of new operators throughout Spain. The law removes administrative requirements, reducing the number of cases where authorisations (or other administrative acts) are required, although only in some areas. Based on estimates from the Spanish government, we as-

Figure 2

GDP effects of selected actual reform measures, Italy (left) and Spain (right)¹

in %

¹ Difference from baseline.

Source: Model simulations.

sume a reduction in the barriers for start-ups (entry costs) of 35 per cent.

The 2014 tax reform focuses on cuts in personal income taxes and corporate income taxes. The reform has led to a decrease in the implicit tax rates on labour and capital.

The 2013 education reform is also considered. The law on the quality of education aims to reduce early school leaving and increase dual vocational training offers, but it entails no increase in spending. It is assumed that it will decrease the share of low- and medium-skilled workers and increase the share of high-skilled workers.

It must be acknowledged that not all announced measures have been taken into account here. There were 18 measures selected both for Italy and Spain, of which only ten were translated into model parameter shocks in each case. Translation into quantified shocks was considered infeasible for the remaining eight reforms in each country. Figure 2 shows the total impact of these reform measures on GDP. The GDP effects are sizeable and amount to a rise in GDP of 0.8 per cent in Italy and 1.1 per cent in Spain between 2012 and 2018. Compared to the benchmarking results, which would yield GDP gains for Italy and Spain of 3.9 per cent and 3.2 per cent respectively, these results indicate that while some progress has been made, more remains to be done.

Concluding remarks

The model simulations reported here show that large potential gains could be reaped from structural reforms. In

our benchmarking exercise, EU GDP could be around six per cent higher after ten years if member states adopt measures to halve the gap vis-à-vis the average of the three best-performing member states in each of the reform areas considered.

It should be borne in mind that this exercise shows the *potential* effects of structural reforms. While this analysis is based on the most recent available indicators, these may exclude the impact of measures (e.g. pension reforms) that have been adopted in recent years but will only take effect in the future. Although some phasing-in is allowed for, the successful introduction of structural reform measures may take longer than assumed here, and delays in implementation would lead to smaller effects in the initial years. In the current environment, with private and public deleveraging and tight credit conditions in many countries, the short-term impact could be lower, as financing constraints are more binding. In addition, possible distributional effects may require that some groups in society be compensated, which may have budgetary implications.

Of the reforms simulated in this paper, labour market reforms, and in particular reforms that raise labour force participation, yield the largest output effects in the short to medium run, followed by tax reforms and reforms increasing competition in product markets. R&D subsidies can have significant positive long-term effects. Some labour market reforms, in particular incentives to raise participation among women and improving the skills structure of the labour force, can involve significant frontloading of budgetary costs. In contrast, reforms that increase

the participation rate of older workers can yield significant budgetary savings.

In the second part of this paper, we presented results from an assessment of the impact of selected actual reform measures in Italy and Spain.¹⁵ GDP effects are sizeable – they can add up to 0.2 percentage points to potential

¹⁵ See European Commission: Market Reforms at Work in Italy, Spain, Portugal and Greece, European Economy 5/2014.

growth rates over five years. It has to be acknowledged that translating actual reform measures into quantified shocks is very challenging. For nearly half of the reforms, the information provided was overall insufficient, e.g. in terms of the quantitative elements and substantiation of the expected impacts or the description of the country-specific institutional details, timeframe and implementation strategies. In a few cases, appropriate methodologies and reform indicators were also missing. Therefore, these impact assessments are surrounded by a large range of uncertainties.

John Hassler

Experiences from the Swedish Crisis in the 1990s – An Opportunity for a Complete Makeover

The Great Recession that started in 2008 affected Sweden no less than most other OECD countries, and the fall in Swedish GDP between 2008 and 2009 was the largest recorded since 1931. The GDP gap was more negative in 2009 than under the recession in the early 1990s. Real GDP fell by six per cent during the crisis year of 2008 and 2009, which was nearly three per cent more than the OECD average. During the crisis in the early 1990s, it took three years for real GDP to fall by five per cent. Despite this fact, the negative effect of the latest recession on public finances has been contained. Automatic stabilisers have been functioning as intended, and there has been little domestic amplification of the negative consequences of the fall in foreign demand. Unemployment increased much less than in the 1990s. Employment fell initially but in 2010 began to increase again. Corrected for changes in the age composition of the labour force, employment is now back at pre-crisis levels, despite large inflows of immigrants and the fact that Sweden already has the highest employment rate in the EU.

Sweden's experience during the Great Recession represents a textbook case of how a robust economy would be affected by an exogenous and temporary shock to foreign demand or productivity in the export sector. Automatic stabilisers could do their job in keeping up domestic demand and protecting individuals directly affected. Expectations did not deteriorate and firms did not lay off many workers. The fact that Sweden was robust enough to withstand the Great Recession without too much damage is strongly related to the reforms undertaken in the aftermath of the crisis in the early 1990s. In this paper, I

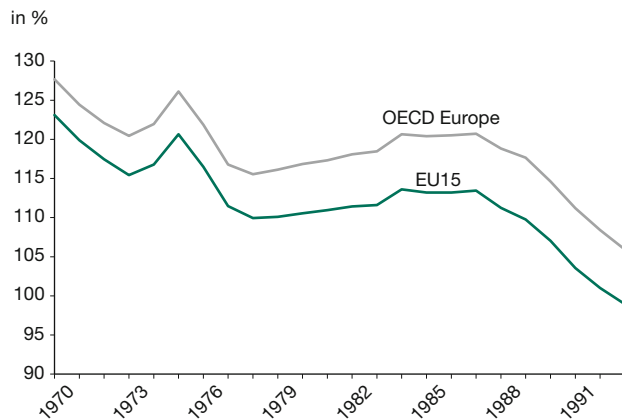
will shortly describe these and the potential lessons for other countries.

Sweden before the reforms

Between 1870 and 1970, Sweden had among the highest growth rates in per capita GDP in the world. This transformed Sweden from a quite poor country with a very large level of economic emigration to one of the richest countries in the world. However, in the 1970s the trend started to reverse. This manifested itself in different ways, but the most important was arguably in GDP per capita relative to other developed countries. Figure 1 shows Swedish real GDP per capita (PPP) relative to the EU15 and OECD Europe average. In 1970 Sweden was 25 per cent ahead of the EU15, but this lead had disappeared some 20 years later. While it appears as though the 1980s were a good decade for Sweden, with hindsight it becomes clear that the development during this decade, which was driven by credit market deregulations that fuelled a property price bubble, was unsustainable. This served to mask the fundamental problems of Sweden.

In the early 1990s, crisis hit Sweden. Unemployment increased from 2.3 per cent in 1990 to 10.1 per cent in 1993. Public sector savings went from a surplus of 4.1 per cent in 1990 to a deficit of 11.2 per cent in 1993. The Swedish government had made strong commitments to ensure that the Swedish devaluation cycle, in which problems with export competitiveness were solved temporarily by devaluations, would not be repeated. During the fall of 1992, the Riksbank raised its discount rate to 500 per

Figure 1
Swedish real GDP per capita (PPP) relative to the EU15 and OECD Europe



Source: Data extracted on 12 Sep 2015 from OECD.Stat.

cent.¹ Fairly soon it became apparent that defending the fixed exchange rate was futile, and in November 1992 the fixed exchange rate was abandoned.

The crisis revealed a number of structural problems that had to be dealt with. For example:

- A long trend of increasing public expenditures had to be stopped and likely reversed.
- Wage setting was dysfunctional, leading to a low connection between productivity and wage increases.
- The competitiveness of the Swedish export industry could no longer depend on recurrent devaluations. Instead, large shares of important sectors needed to be restructured and many jobs permanently closed. The laid-off workers could not be absorbed by an expanding public sector.
- Many markets were regulated in an inefficient way.
- Incentives to work needed to be increased, and even if they were, the very low unemployment rate in the decades before the crises could likely not be maintained.
- Important transfer systems, including pensions, were unsustainable.

¹ The rate was $500/365 = 1.37$ per cent per day. The compounded yearly rate was therefore $100 \times (1.0137)^{365} = 14,240$ per cent! In his memoirs, the Riksbank governor, Bengt Dennis, later stated that he was prepared to raise the discount rate to 4,000 per cent per year.

Table 1
Employment change

Industry	2008Q1-2010Q1		1990Q1-1992Q1	
	Persons	% of total	Persons	% of total
Agriculture, forestry and fishing	-7,200	-7.6%	-12,800	-8.6%
Manufacturing, extraction and energy	78,550	-11.8%	-135,400	-13.7%
Construction	-5,600	-1.9%	-28,600	-9.2%
Commerce	11,600	-2.1%	-36,600	-6.3%
Transport	-3,850	-1.6%	-11,800	-3.8%
Hotels and restaurants	-650	-0.5%	-3,100	-3.3%
Information and communication	10,700	-5.9%	-4,100	-3.7%
Financial services	18,000	2.6%	13,700	3.6%
Public administration	14,200	5.6%	8,800	3.8%
Education	5,050	1.0%	15,800	3.2%
Health care	26,950	-3.8%	-30,400	-4.3%
Personal and cultural services	13,850	6.6%	8,800	11.4%
No information	-800	-10.5%	-100	-1.8%
Total	94,900	-2.1%	-215,800	-4.95%

Source: Swedish Fiscal Policy – Report of the Swedish Fiscal Policy Council 2010.

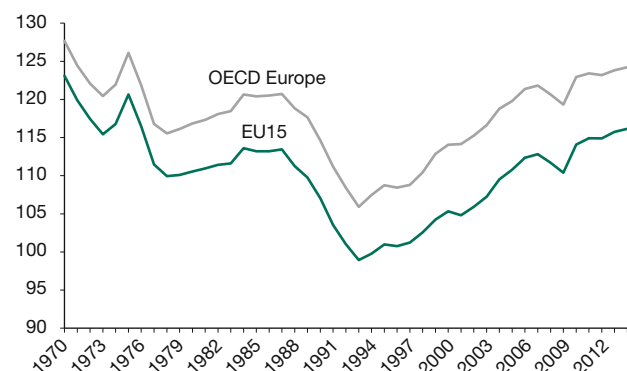
The sudden understanding of the need for structural changes led to a drastic fall in consumer confidence, consumption and investments. This affected the whole economy, and employment fell in most sectors. Table 1 shows that employment in several important sectors not only fell in the beginning of the crisis but continued to fall for many quarters. This is in particular true for manufacturing, construction, commerce, and the sectors dominated by public employment, like healthcare and public administration. Assuming some foresight among employers, it is not difficult to understand that labour hoarding was not an option for a large share of employers during the crisis in the '90s. In contrast, although employment has fallen in many sectors during the current crisis, the bulk of the fall is accounted for by manufacturing. The total fall in employment between 2008Q1 and 2010Q1 was 94,900 individuals, while the loss of employment in manufacturing was 78,550 individuals. The fall in employment during the crisis in the 1990s was 215,800, of which 135,400 came from manufacturing.

Reforms in the 1990s

The crisis created a general awareness about reform needs. The Social Democrats as well as the centre-right

Figure 2
Swedish real GDP per capita (PPP) relative to EU15 and OECD Europe

in %



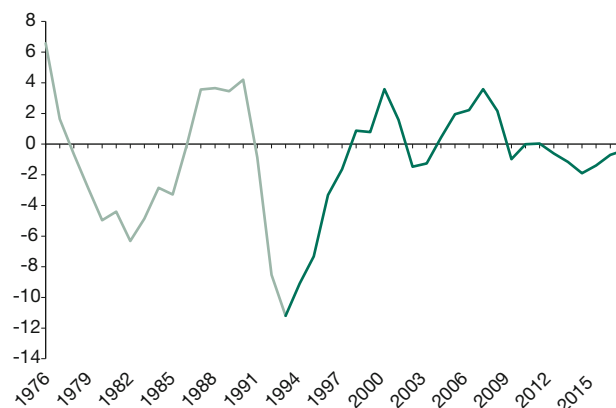
Source: Data extracted on 12 Sep 2015 from OECD.Stat.

bloc agreed that Sweden needed to undergo a radical transformation. In December 1992, the liberal finance minister Anne Wibble asked the economist Assar Lindbeck to head an academic commission with the assignment to identify the weaknesses of the Swedish economy and to propose solutions. Already in March 1993, the commission had finished its work, proposing 113 changes and reforms.² A key theme in the report was to reduce tendencies for political myopia. The report was quite influential and laid the foundation for the extensive reform process. Despite alterations of governments in power between the Social Democrats and the centre-right, a consistent reform agenda was implemented. Among the changes in the Swedish economy that were undertaken during the 1990s were:

- fiscal consolidation, aiming for a long-run surplus
- takeover of insolvent banks without compensation to previous owners, the threat of which induced private capitalisation of other insolvent banks
- an increase from three to four years between parliamentary elections
- a fiscal framework with a top-down budget process, a surplus target and expenditure ceilings
- an independent central bank with an inflation target
- a new tax system that cut corporate taxes in half, reduced marginal top income taxes from 90 per cent to 50 per cent and broadened the VAT tax base
- new structure for wage bargaining with the export industry leading

² The report is published in English as A. Lindbeck, P. Molander, T. Persson, O. Pettersson, A. Sandmo, B. Swedenbor, N. Thygesen: *Turning Sweden Around*, Cambridge MA 1994, MIT Press.

Figure 3
Consolidated public sector financial savings
in % of GDP



Sources: Swedish National Institute of Economic Research; and Swedish Government Budget Bill 2015.

- a new contribution-defined pension system immune to variation in growth and demographics
- large privatisations of rail, telecom, taxis, schools, post and electricity.

Most of these reforms were on the list of the 113 reforms proposed by the Lindbeck commission.

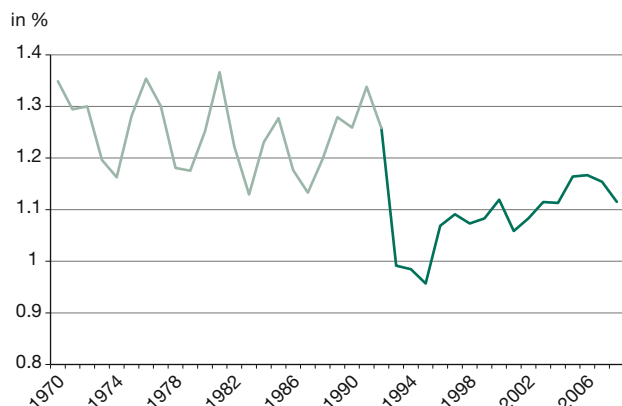
Sweden after the reforms

It is not possible to make an exact account of the effects of particular reforms, but it is clear that the negative trends Sweden was experiencing were broken or reversed. Figure 2 shows a continuation of Figure 1, i.e. Swedish real GDP per capita relative to EU15 and OECD Europe. As we see, Swedish growth rates have been substantially higher than those of its European counterparts since 1994.

The new fiscal framework was also successful, with much less volatile public sector financial savings and achieving on average a surplus, as seen in Figure 3. In particular, expenditures came down to tolerable levels.

As noted above, Sweden abandoned its fixed exchange rate in 1992. This led to a depreciation of the currency that clearly was helpful for the recovery. However, Sweden did not repeat the previous pattern of unsustainably large nominal wage increases eventually leading to a lack of competitiveness. The combination of an inflation-targeting independent central bank and a changed pattern of wage negotiations, whereby the export sector took the lead and provided a “mark” for the other sectors based on the development of unit labour costs in competing countries, led to the much more stable development of

Figure 4
Swedish consumer prices relative to German in common currency



Source: Data extracted on 12 Sep 2015 from OECD.Stat.

the Swedish relative price level. An indication of this is given in Figure 4, which shows the Swedish price level relative to that of Germany.

Before the reforms in the 1990s, Sweden tended to have higher inflation than Germany, and this created the devaluation cycle pattern visible in the peaks and valleys in Figure 4 prior to 1992. During such a cycle, devaluation restored competitiveness but led to wage and price inflation, which, after a few years, induced a new devaluation. Since the depreciation in 1992, which likely overshot its long-run equilibrium value, the development has been much less cyclical.

How Sweden managed to reform

A key question is how Sweden managed to undertake such an extensive reform plan. Certainly, such a question is difficult to answer rigorously, and we are still awaiting scientific work on this. I will therefore only give a number of, to my mind, reasonable factors that perhaps could serve as hypotheses for future work.

First, the crisis was obvious to everyone – it was an *eye opener* to politicians, union leaders and the general public. Unemployment skyrocketed, and the government budget collapsed. The central bank raised interest rates to levels unheard of, and households and firms also faced extremely high interest rates. The depth and abruptness of the crisis created an almost war-like atmosphere in which it was not beneficial to try to exploit short-run political opportunities at the expense of the long-run recovery of the economy. Therefore, the political discussion became quite constructive.

Second, Swedes understood that there was no one else to save Sweden. Sweden joined the EU in 1995 after a

fairly close referendum in November 1994. The crisis likely affected the popular support for EU membership positively, perhaps due to the hope that membership would be beneficial in a crisis situation. However, when the crisis erupted, Sweden was not a member of the EU and support from abroad was not expected. Instead, the Swedish Finance Minister Göran Persson had to go Wall Street to explain the Swedish situation and what was being done about it and ask for money from the market.³ Everyone understood that borrowing had to be done at market interest rates that Sweden largely had to take as given. That no support was to be expected from abroad fostered a feeling of *being in the same boat*.

Third, the need for a complete makeover implied that structural reforms had to be quite *comprehensive*. That meant that people were to be affected in many different ways by a large number of changes. This made it less interesting to focus on the distributional consequences of particular reform elements. Likely, the sheer width of the reform package also made it more difficult to identify winners and losers. In politics, there is generally a status quo bias, since it is often easy to identify specific losers of reforms that have more general gains that are more spread out and difficult to evaluate. In Sweden in the early 1990s, it was pretty clear to everyone that the status quo was not an option.

Fourth, the Swedish society had a substantial stock of social capital in the form of *trust*. Swedish politicians were not seen as corrupt, and compared to many other countries, the level of popular trust in politicians was high. I also believe that trust among politicians was at a comparatively high levels, and thus the political discussion had little of the “blame game” character. Also, trust in academics was high, as indicated by the importance of the Lindbeck commission, as noted above.

Fifth, the Social Democrats seem to have perceived that structural reform was not only, perhaps not even primarily, about rolling back the welfare state. Certainly, the Social Democratic leadership understood that major cuts in marginal tax rates, reductions in corporate tax rates, reduced government spending and market liberalisations were necessary. Although this was not in line with previous strategies, social democratic ambitions of a fair and equal society did not have to be given up. Fiscal rules and

³ Later, when Göran Persson became Prime Minister and Sweden was on a recovery track, he said, “I do not want coming finance ministers to have to go to New York, Washington or London and explain the Swedish welfare system to grinning 25-year-old stock brokers.” See Dagens Nyheter, 27 April 27, author’s translation. Persson also wrote the book with the telling title “The one in debt is not free”. In Swedish, Göran Persson: Den som är satt i skuld är icke fri: min berättelse om hur Sverige återfick sunda statsfinanser, Stockholm 1997, Atlas.

changes in parliamentary procedures were *not forced upon* the Swedish politicians from abroad. The Social Democrats and the parties to the right of them organically worked out new rules that both sides saw as useful for their own respective political agendas. Jens Henriks-son, a long-time state secretary at the finance ministry, argues that successful consolidation requires that the government must challenge its own constituency. Therefore, a left-wing government needs the expenditure ceiling to cut expenditures and a liberal/conservative one needs the surplus target to increase taxes.⁴

Lessons for other times and countries

It is close to tautology to say that a crisis reveals structural weakness in an economy. Clearly, a crisis almost by definition implies that transfer systems and other welfare state policies will undergo a significant test. Such stress tests are unwelcome but nevertheless have the positive side effect of revealing structural weaknesses. By being real, rather than theoretical, calculations of fiscal sustainability can work as eye openers for policy makers and the general public. Therefore, they create windows of opportunity for necessary structural change. However, such opportunities are not always seized.

Some of the factors that were identified above as key for the Swedish reform success are not easy to replicate in other countries. Trust is very valuable for an economy, not least when it comes to making use of a crisis as a reform catalyst. However, trust is a social capital that is not easy to build, and the accumulation process is slow. When the crisis has already arrived, it is too late to attempt to build much new trust.

Other key factors are arguably more transferable. Foreign help from other countries or institutions can of course be useful. However, it is key that negotiations over such help do not work against the notion that a country must solve its own problems. If such a feeling is instead replaced by the view that what is needed is a tough negotiator in Brussels to secure the best possible deal, the reform window is easily closed. It is certainly not obvious how foreign assistance should be constructed in order to be beneficial in this sense. However, once-and-for-all debt relief combined with a commitment not to lend more is arguably better than repeated negotiations over continuous budget support. Similarly, pressure in the form of market signals like higher rates on government borrowing is likely to be better than punishment decided by foreign political leaders. This argument is not only about money. If structural reform is forced

upon a country, it is much less likely to be successful than if it had been devised by domestic policy makers.

Along the same line of argumentation is the recommendation that structural reform implementation is much more likely to work if reforms are perceived as non-partisan. That both Social Democrats and the conservative-liberal parties in Sweden believed that their respective political visions were compatible with the reforms was key for reform success. When the political power shifted during the 1990s and 2000s, policies shifted, but the structural reforms were not rolled back. The fact that structural reform often involves measures that have or may be perceived as having regressive redistributive consequences makes it extra valuable to include political groups with more egalitarian ambitions into the coalition that decides on the reforms. Full redistributive neutrality may be impossible, but making “the rich” also contribute to the reform efforts certainly has an important value. Having left-wing politicians taking responsibility for reforms may increase the credibility of reform. Paraphrasing Cuikerman and Tommasi, it took a Swedish socialist to reduce top marginal taxes and corporate taxes by half.⁵

Another lesson is to aim for broad reform packages to overcome a situation in which reform costs are borne by small and easily identified groups while gains are distributed broadly to “the general public”, a problem described by Olson.⁶ This should not be seen as a way to hide the distributional effects of structural reform. Rather, by combining reforms with different and partly offsetting distributional consequences, it becomes less relevant to identify losers of particular reform items. This enables the more aggregate consequences to become salient. However, one should not overestimate the ability of people to look beyond their own short-run budget.

Finally, the window of opportunity for reform should not only be used to resolve the acute crisis and get the country back on track. Instead, the opportunity should be taken for creating an institutional memory that helps the society remember the lessons from the crisis after it is over. Independent fiscal councils consisting of academics without government career ambitions, fiscal frameworks with targets and ceilings, top-down budget decision-making, and systems for automatic budget consolidation under constant law through imperfect indexation of transfers and taxes are all examples of reforms that can make the gains of reform more long-lived.

4 J. Henriks-son: 10 lessons about budget consolidation, Bruegel, 2007.

5 A. Cuikerman, M. Tommasi: When Does It Take a Nixon to Go to China?, in: The American Economic Review, Vol. 88, No. 1, 1998, pp. 180-197.

6 M. Olson: The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities, New Haven and London 1982, Yale University Press.

Dan Andrews*

Misallocation, Big Time: Why (and How) Structural Reform Can Revive Productivity Growth in Europe

Paul Krugman once noted that “productivity isn’t everything, but in the long run it’s almost everything”.¹ Productivity is about “working smarter”, rather than “working harder”. It reflects our ability to produce more output by better combining inputs, owing to new ideas, technological innovations and business models. Unsurprisingly, productivity drives long-run living standards, with the large differences in income per capita observed across countries mostly due to differences in labour productivity (Figure 1), as opposed to labour utilisation. This suggests

that productivity is the key margin through which structural reforms will operate to raise potential growth.

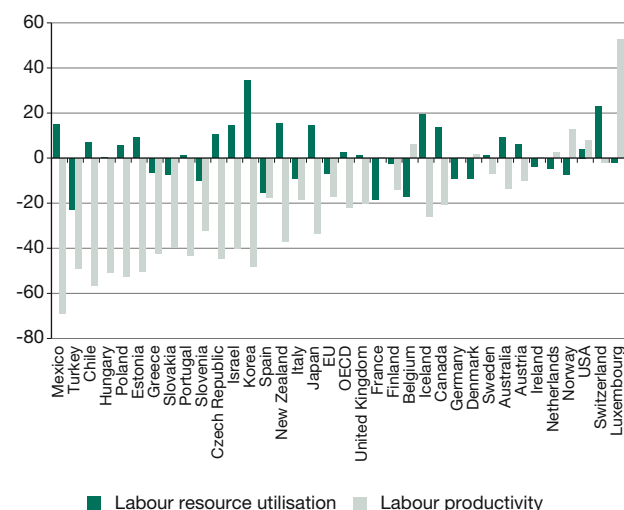
Unfortunately, labour productivity growth has slowed across the OECD, even before the crisis. In general, this reflects persistent weakness in total factor productivity (TFP) since the early 2000s – TFP measures the efficiency with which inputs are used in the production process – and more recently, a slowdown in capital deepening. It is notable that European levels of labour productivity have increasingly fallen behind the United States since the mid-1990s, following an earlier period of productivity convergence. Even more striking is the fact that TFP had consistently subtracted from GDP growth in southern European economies (e.g. Italy, Spain, Portugal and Greece) well before the crisis.

* This paper draws on a range of recent OECD analysis, particularly M. Adalet McGowan, D. Andrews, C. Criscuolo, G. Nicoletti: *The Future of Productivity*, Paris 2015, OECD.

¹ P. Krugman: *The Age of Diminished Expectations: U.S. Economic Policy in the 1990s*, 3rd ed., Cambridge, MA 1997, MIT Press, p. 11.

Figure 1
Differences in GDP per capita mostly reflect labour productivity gaps

in %

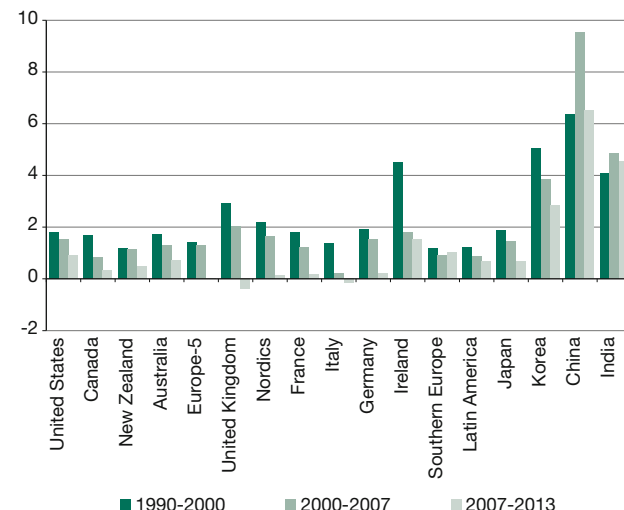


Notes: Percentage differences compared with the upper half of OECD countries. GDP per capita can be decomposed into the contributions of labour productivity (GDP per hour worked) and labour resource utilisation (total number of hours worked per capita). The sum of the percentage difference in labour resource utilisation and labour productivity do not add up exactly to the GDP per capita difference since the decomposition is multiplicative. Compared to the simple average of the 17 OECD countries with highest GDP per capita in 2013 based on 2013 purchasing power parities (PPPs).

Source: OECD, Going for Growth Database.

Figure 2
Labour productivity growth slowed even before the crisis

in %

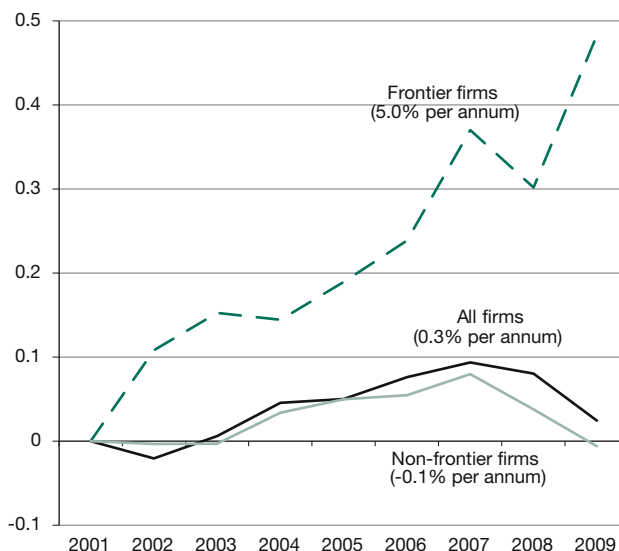
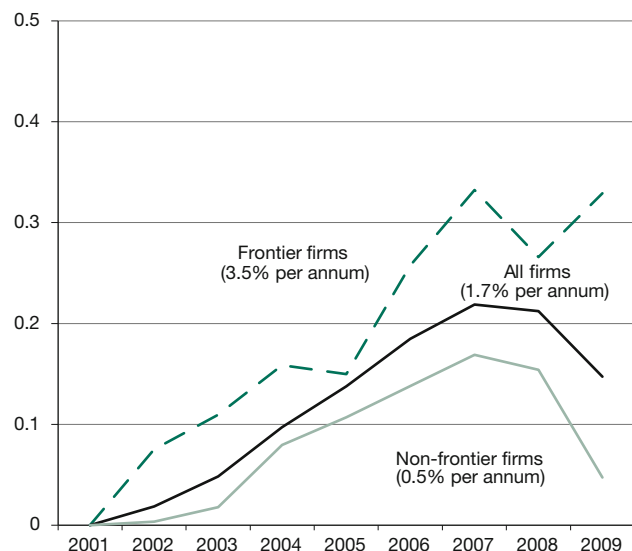


Notes: Labour productivity data for China and India refer to GDP per worker. Growth rates for the period ranges are the annual averages. Country groupings are aggregated using GDP-PPP weights. Europe-5 consists of: Austria, Belgium, Luxembourg, the Netherlands and Switzerland; Nordics consists of: Denmark, Finland, Iceland, Norway and Sweden; Southern Europe consists of: Greece, Portugal and Spain; and Latin America consists of: Brazil, Chile and Mexico.

Source: OECD calculations based on the Conference Board Total Economy Database.

Figure 3
The breakdown of the diffusion machine

Labour productivity; index 2001=0



Notes: "Frontier firms" corresponds to the average labour productivity level of the 100 globally most productive firms in each two-digit sector. "Non-frontier firms" is the average of all other firms. "All firms" is the sector total. The average annual growth rate is shown in parentheses.

Source: D. Andrews, C. Criscuolo, P. Gal: Frontier Firms, Technology Diffusion and Public Policy: Micro Evidence from OECD Countries, OECD Mimeo, 2015.

Productivity: what's wrong?

Using aggregate data to understand the proximate drivers of the weakness in productivity only gets one so far. In fact, cross-country differences in aggregate-level productivity outcomes are increasingly being linked to the widespread asymmetry and heterogeneity in firm performance within sectors.² The distribution of firm productivity is typically not clustered around the mean (as would be the case with a normal distribution) but is instead characterised by many below-average performers and a smaller number of star performers. Moreover, the degree of heterogeneity is striking: even within narrowly defined industries in the United States, firms at the 90th percentile of the TFP distribution are twice as productive as firms at the 10th percentile,³ while heterogeneity in the size distribution of firms is equally striking. These findings suggest that the focus on average outcomes is misleading and that distinguishing between different types of firms is crucial.

2 E. Bartelsman, J. Haltiwanger, S. Scarpetta: Cross-Country Differences in Productivity: The Role of Allocation and Selection, in: *American Economic Review*, Vol. 103, No. 1, 2013, pp. 305-334; C.-T. Hsieh, P.J. Klenow: Misallocation and Manufacturing TFP in China and India, in: *Quarterly Journal of Economics*, Vol. 124, No. 4, 2009, pp. 1403-1448.

3 C. Syverson: Product Substitutability and Productivity Dispersion, in: *The Review of Economics and Statistics*, Vol. 86, No. 2, 2004, pp. 534-550.

The OECD is increasingly using a firm-level approach to understand aggregate developments, both conceptually and empirically. From a conceptual perspective, aggregate productivity growth in a well-functioning economy would ideally be propelled by two processes: i) global frontier firms experiment with new innovations, which ultimately diffuse to other firms in the economy, raising within-firm productivity; and ii) the efficient reallocation of scarce resources to underpin the growth of productive firms. Crucially, these processes interact, since firms' incentives to innovate or adopt technologies are shaped by their perceptions of the costs and benefits of implementing and commercialising new ideas and by their ability to scale up activity if successful or to exit at low cost if unsuccessful, which each depend on the ease of reallocating resources to their best use.⁴ As discussed below, however, these two processes are not always evident from an empirical standpoint, partly due to policy weakness.

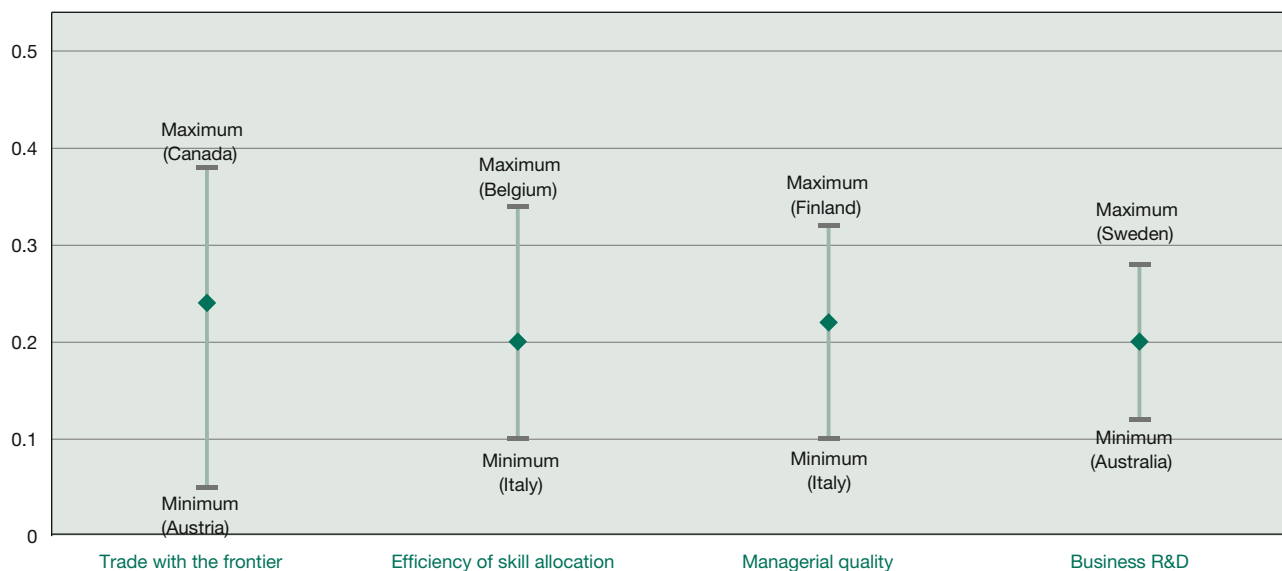
Broken diffusion machine

Our research shows that a key feature of the productivity slowdown is not so much a slowing of innovation by

4 D. Andrews, C. Criscuolo: Knowledge Based Capital, Innovation and Resource Allocation, OECD Economics Department Working Papers, No. 1046, 2013.

Figure 4
Structural factors shaping productivity diffusion from the global frontier

in %



Notes: Estimated frontier spillovers (% per annum) associated with a two percentage point increase in TFP growth at the global frontier. The chart shows how the sensitivity of multifactor productivity growth to changes in the growth of the frontier leader varies with different levels of policy variables. The diamond refers to the estimated frontier spillover effect associated with a two per cent multifactor productivity growth at the frontier around the average level of the policy. The label "Minimum" (Maximum) indicates the country with the lowest (highest) value for the given structural indicator.

Source: A. Saia, D. Andrews, S. Albrizio: Productivity Spillovers from the Global Frontier and Public Policy: Industry Level Evidence, OECD Economics Department Working Paper, No. 1238, 2015.

the most globally advanced firms, but rather a slowing of the pace at which innovations spread out throughout the economy – a breakdown of the diffusion machine. Productivity growth of the globally most productive firms has remained robust in the 21st century, despite the slowdown in aggregate productivity, but the gap between those high-productivity firms and the rest has been increasing over time. Labour productivity at the global technological frontier increased at an average annual rate of 3.5 per cent in the manufacturing sector over the 2000s, compared to just 0.5 per cent for non-frontier firms (see Figure 3).⁵ The breakdown in diffusion is even more pronounced in the market services sector, which tends to be more sheltered due to less exposure to international competition and more stringent market regulations compared to the manufacturing sector.

The scope for productivity diffusion increases with the extent of: i) global connections and competition via trade, FDI and participation in global value chains (GVCs); ii) experimentation by firms and synergic investments in R&D

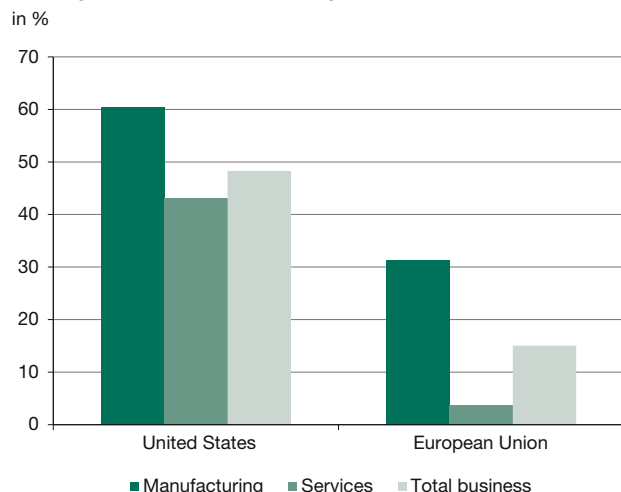
and managerial quality to enable economies to absorb and implement new technologies; and iii) the efficient allocation of scarce resources – especially skills – to underpin the growth of innovative firms. Crucially, OECD countries differ significantly with respect to these factors – suggesting that diffusion comes easier to firms in some economies than others – and this carries significant implications for aggregate TFP growth (Figure 4). Efficient resource allocation, however, is particularly vital given that firms need to achieve sufficient scale to cover the fixed costs of entry into global markets and to incentivise experimentation by making it easier to scale up successful ideas.

Misallocation, big time

Besides supporting diffusion, efficient resource allocation has important direct effects on productivity growth. The larger the more productive firms are, the greater the extent to which their good performance gets reflected in aggregate growth. Unfortunately, OECD research points to a widespread misallocation of labour, skills and capital in some European economies, suggesting that a recovery in productivity growth will necessarily entail a significant reallocation of resources.

⁵ Concurrent analysis using a cross-country industry-level dataset beginning in the mid-1980s also suggests that the diffusion machine broke down in the early 2000s.

Figure 5
Europe does a poor job at channelling resources to more productive firms compared to the US

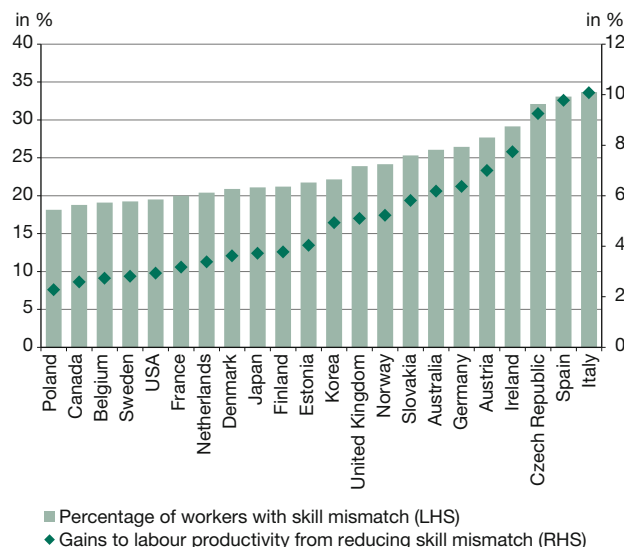


Notes: Estimated contribution of the allocation of employment across firms to the level of labour productivity. The estimates show the extent to which firms with higher than average labour productivity have larger employment shares. For example, productivity in the manufacturing sector in the US is around 60 per cent higher due to the actual allocation of employment, compared to a baseline in which labour is allocated randomly across firms (index=0).

Source: D. Andrews, F. Cingano: Public Policy and Resource Allocation: Evidence from Firms in OECD Countries, in: Economic Policy, Vol. 29, No. 78, 2014, pp. 253-296.

At any point in time, differences in aggregate labour productivity will reflect the productivity distribution of firms – i.e. the fraction of “better” relative to “worse” firms, and the extent to which, all else equal, it is the more productive firms that command a larger share of industry employment (i.e. allocative efficiency, AE). According to this metric, more productive firms are likely to account for a much larger share of employment in the United States than in the European Union (see Figure 5). For example, relative to a random allocation of labour across firms (where $AE=0$), the actual allocation of labour boosts business sector labour productivity by almost 50 per cent in the United States, but only by 15 per cent across the European Union on average. Digging deeper, significant differences emerge within Europe, ranging from relatively efficient labour allocation in some Nordic economies to widespread misallocation in Southern Europe, where the actual allocation of workers across firms tends to be worse than a random allocation (i.e. $AE<0$). Allocative efficiency is much lower in market services than in manufacturing. This might be a symptom of lower exposure to international competition in services, but it also provides a “smoking gun”, since product market reforms have generally been less extensive in services than in manufacturing.

Figure 6
Large scope to boost productivity by reducing skill mismatch



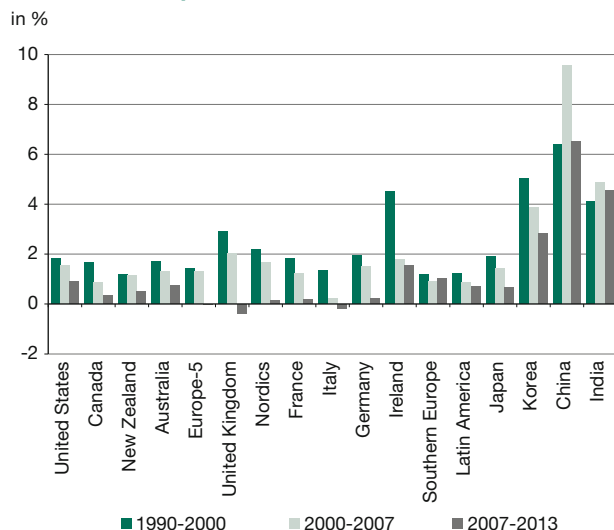
Notes: The figure shows the percentage of workers who are either over- or under-skilled and the simulated gains to allocative efficiency from reducing skill mismatch in each country to the best practice level of mismatch. The figures are based on OECD calculations using OECD, Survey of Adult Skills, 2012.

Source: M. Adalet McGowan, D. Andrews: Labour market mismatch and labour productivity: Evidence from PIAAC data, OECD Economics Department Working Paper, No. 1209, 2015.

Skill misallocation is also widespread, with one-quarter of workers reporting a mismatch between their existing skills and those required for their job (Figure 6). Over-skilling is more common than under-skilling, with significant implications for labour productivity. When firms draw from a scarce and fixed pool of skilled labour, trapping highly skilled labour in relatively low-productivity firms – which tends to occur in industries with a high share of over-skilled workers – makes it difficult for more productive firms to attract the workers necessary for their expansion. A better use of human talent in countries where skill mismatch is very high, such as Italy and Spain, could boost the level of labour productivity by around ten per cent, potentially closing one-fifth of Italy’s allocative efficiency gap with the United States.

Significant differences also emerge in the ease with which capital gets reallocated to innovative firms across economies (Figure 7). While a ten per cent increase in the patent stock is associated with an increase in the typical firm’s capital stock of roughly three per cent in the United States and Sweden, the corresponding figure is closer to one per cent in Spain and Italy, and similar cross-country differences are evident with respect to the labour. These patterns are significant because firms require a range of

Figure 7
Capital reallocation to innovative firms is difficult in Southern Europe



Notes: Additional capital attracted by a firm that increases its patent stock by ten per cent, 2002-2010 average. These estimates are obtained from a firm-level fixed-effects regression of the capital stock on the firm's depreciated patent stock. To obtain the country-specific estimate, the patent stock is interacted with various dummy variables for each country.

Source: D. Andrews, C. Criscuolo, C. Menon: Do Resources Flow to Patenting Firms?: Cross-Country Evidence from Firm Level Data, OECD Economics Department Working Papers, No. 1127, 2014.

complementary tangible resources to test ideas (e.g. to develop prototypes and business models), develop marketing strategies and eventually produce at a commercially viable scale. Recent evidence suggests that capital misallocation in Southern Europe has intensified, with capital inflows into Spain, Italy and Portugal over the period 1999-2012 increasingly allocated towards less productive firms.⁶

High rates of resource misallocation often coincide with the presence of many ageing firms that are relatively small. Our research shows that these firms are often unproductive and tend to lower aggregate productivity to the extent that they absorb valuable resources, thereby constraining the growth of more innovative firms. This phenomenon is particularly evident in Italy, where there is a high share of small and old firms. The most advanced Italian firms have productivity levels close to the global frontier, but they are undersized relative to their peers in other countries. Estimates suggest that if Italy's "national

frontier" firms were of a comparable size to global frontier firms, manufacturing labour productivity in Italy could be up to 15 per cent higher.⁷ The secular decline in business start-up rates in OECD countries implies that small and old firms are becoming increasingly common, which raises important questions about potential barriers to the exit of inefficient firms.⁸

The role of structural reform

OECD research shows there is much scope for structural reform to raise productivity growth in Europe. Reviving the diffusion machine will depend on lifting policy-induced barriers to firm entry and exit in product markets, which play a key role in blocking technological diffusion (Figure 8). For example, given a two per cent acceleration in frontier growth, multifactor productivity growth would be 0.2 percentage points higher when administrative barriers to entrepreneurship are low (e.g. Sweden) compared to when such barriers are high (e.g. Greece) due to more effective diffusion. Entry barriers are harmful given the comparative advantage of young firms in commercialising and adopting new technologies, while high exit costs (e.g. stringent bankruptcy regimes) stifle diffusion by raising the expectation of entrepreneurs that they will be heavily penalised in case of failure. These gains are also realised through heightened competitive pressures – which improve managerial performance and thus scope for diffusion – but also because they underpin the growth of productive firms, as discussed in more detail below.

The research also shows that innovation policies can play a role in supporting diffusion – e.g. higher public provision of basic research and R&D collaboration between firms and universities – but crucially, the effectiveness of such policies is generally enhanced by policies that improve resource allocation. For example, Acemoglu et al. show that policy intervention such as subsidies to private R&D are only truly effective when policy makers can encourage the exit of low-potential incumbent firms, in order to free up R&D resources (i.e. skilled labour) for innovative incumbents and entrants.⁹

The scope for structural reforms to boost aggregate productivity through more efficient resource allocation is difficult to understate. Andrews and Cingano estimated that

6 G. Gopinath, S. Kalemli-Ozcan, L. Karabarbounis, C. Villas-Villar: Capital Allocation and Productivity in South Europe, presented at the NBER Summer Institute, Joint CRIW/Macro-Productivity Session, 2015.

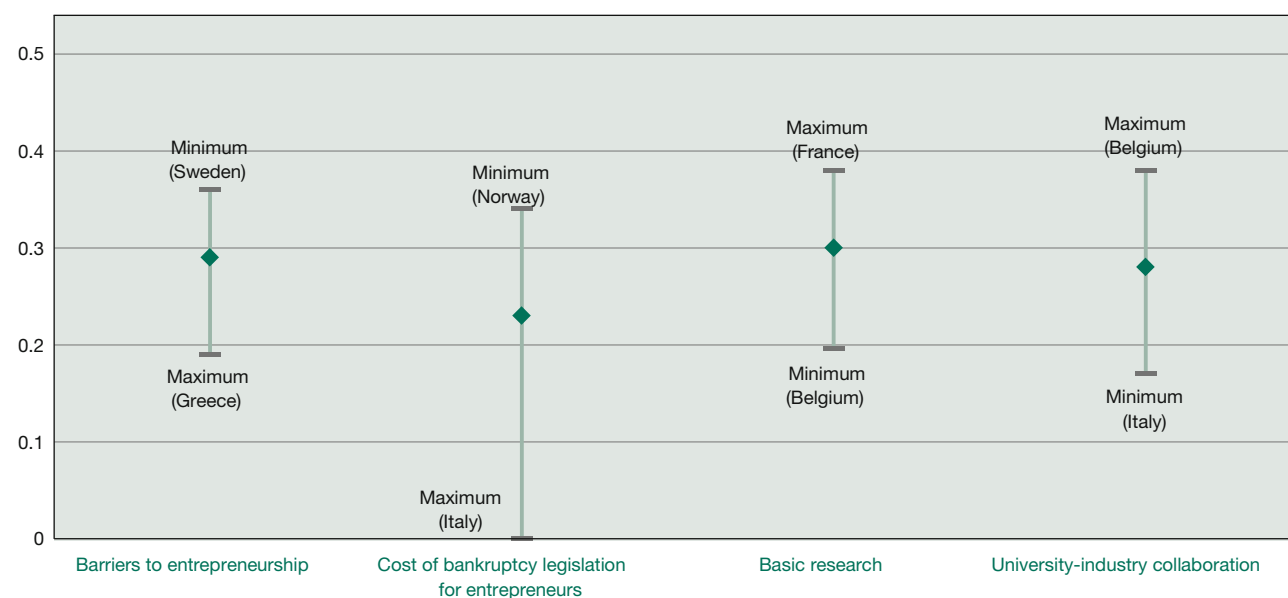
7 D. Andrews, C. Criscuolo, P. Gal: Frontier Firms, Technology Diffusion and Public Policy: Micro Evidence from OECD Countries, OECD Mimeo, 2015.

8 C. Criscuolo, P. Gal, C. Menon: The Dynamics of Employment Growth: New Evidence from 18 Countries, OECD Science, Technology and Industry Policy Papers, No. 14, 2014.

9 D. Acemoglu, U. Akcigit, N. Bloom, W. Kerr: Innovation, Reallocation and Growth, NBER Working Papers, No. 18993, 2013.

Figure 8
Policy factors shaping productivity diffusion from the global frontier

in %



Notes: Estimated frontier spillover (% per annum) associated with a two percentage point increase in TFP growth at the global frontier. The chart shows how the sensitivity of TFP growth to changes in the growth of the frontier leader varies with different levels of policy variables. The diamond refers to the estimated frontier spillover effect associated with two per cent TFP growth at the frontier around the average level of the policy. The label "Minimum" (Maximum) indicates the country with the lowest (highest) value for the given policy indicator.

Source: A. Saia, D. Andrews, S. Albrizio: Productivity Spillovers from the Global Frontier and Public Policy: Industry Level Evidence, OECD Economics Department Working Paper, No. 1238, 2015.

easing the stringency of product and labour market regulations across European economies to best-practice levels could close at least half of the gap in business sector allocative efficiency between the EU and the US (Figure 5), with the gains especially large in Southern European economies.¹⁰ Lowering product market regulation would on average be more beneficial in service industries such as retail trade, transport and communication than in manufacturing. Indeed, it is crucial that the structural reform agenda focuses on product market regulations in market services, which remain stubbornly high in some European countries. Such reforms would not only improve productivity growth directly in the affected sectors, but also indirectly to the extent that logistics, finance, business services and communications are key inputs in manufacturing and are crucial to moving goods and coordinating production along GVCs.

Structural reforms can also raise the expected returns to innovative activity by making it easier for patenting firms

to attract the necessary tangible resources required to implement and commercialise new ideas (Figure 9). It is here that reforms affecting the stringency of employment protection legislation (EPL) loom large. For example, reducing the stringency of EPL from the highest observed level (Portugal) to the mean level (Norway) is estimated to more than double the extent to which capital flows to patenting firms (the same is true with respect to labour). Andrews et al. also find that the burden of stringent EPL falls disproportionately on young firms, which is consistent with existing studies showing that stringent EPL reduces the scope for experimentation with uncertain technologies.¹¹

Structural reforms can also boost productivity by reducing the incidence of skill misallocation (Figure 10). Again, product and labour market regulations matter, and stringent EPL is found to disproportionately raise the incidence of skill mismatch amongst young people. This is consistent with the idea that labour market fluidity is par-

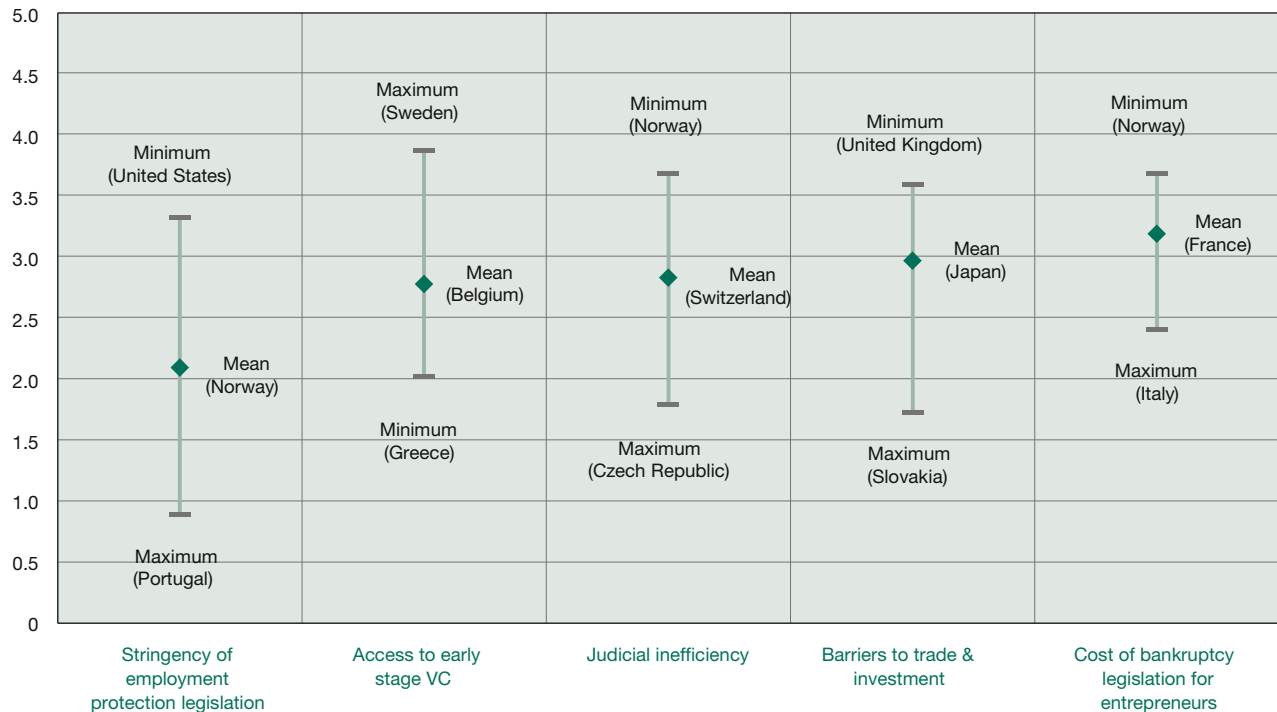
10 D. Andrews, F. Cingano: Public Policy and Resource Allocation: Evidence from Firms in OECD Countries, in: Economic Policy, Vol. 29, No. 78, 2014, pp. 253-296.

11 D. Andrews, C. Criscuolo, C. Menon: Do Resources Flow to Patenting Firms?: Cross-Country Evidence from Firm Level Data, OECD Economics Department Working Papers, No. 1127, 2014.

Figure 9

Impact of various policies and resource flows on the responsiveness of firm investment in patenting, 2003-2010

in %



Notes: Additional capital attracted by a firm that increases its patent stock by ten per cent, 2002-2010. The chart shows that the sensitivity of firm employment and capital to changes in the patent stock varies according to the policy and institutional environment. The label "Minimum" (Maximum) denotes the country with the lowest (highest) average value for the given policy indicator over the sample period.

Source: D. Andrews, C. Criscuolo, C. Menon: Do Resources Flow to Patenting Firms?: Cross-Country Evidence from Firm Level Data, OECD Economics Department Working Papers, No. 1127, 2014.

ticularly important for the job prospects of youth, since it provides scope to improve the quality of job-worker matching, which is naturally lower amongst young people due to their lack of experience.¹² More significantly, bankruptcy legislation that does not excessively penalise business failure can dramatically reduce the likelihood that valuable skills are trapped in inefficient firms. Reducing the stringency of bankruptcy legislation from its most restrictive level in Italy (where mismatch is very high) to the median level in Canada is associated with a ten percentage point decrease in mismatch. This in turn can facilitate more effective knowledge diffusion (Figure 8).

But policy makers also need to cast a wider net and address the potentially adverse effects of housing policies

on skill mismatch. By creating lock-in effects, transaction costs affecting the buying and selling of dwellings – e.g. stamp duties, acquisition taxes, registration and notarial fees, which tend to be high in a number of European economies – can reduce residential mobility and exacerbate skill mismatch. Finally, structural reforms should be accompanied by adult learning policies that make skills complementary to technical progress, which can support inclusive growth by reducing skill mismatch.

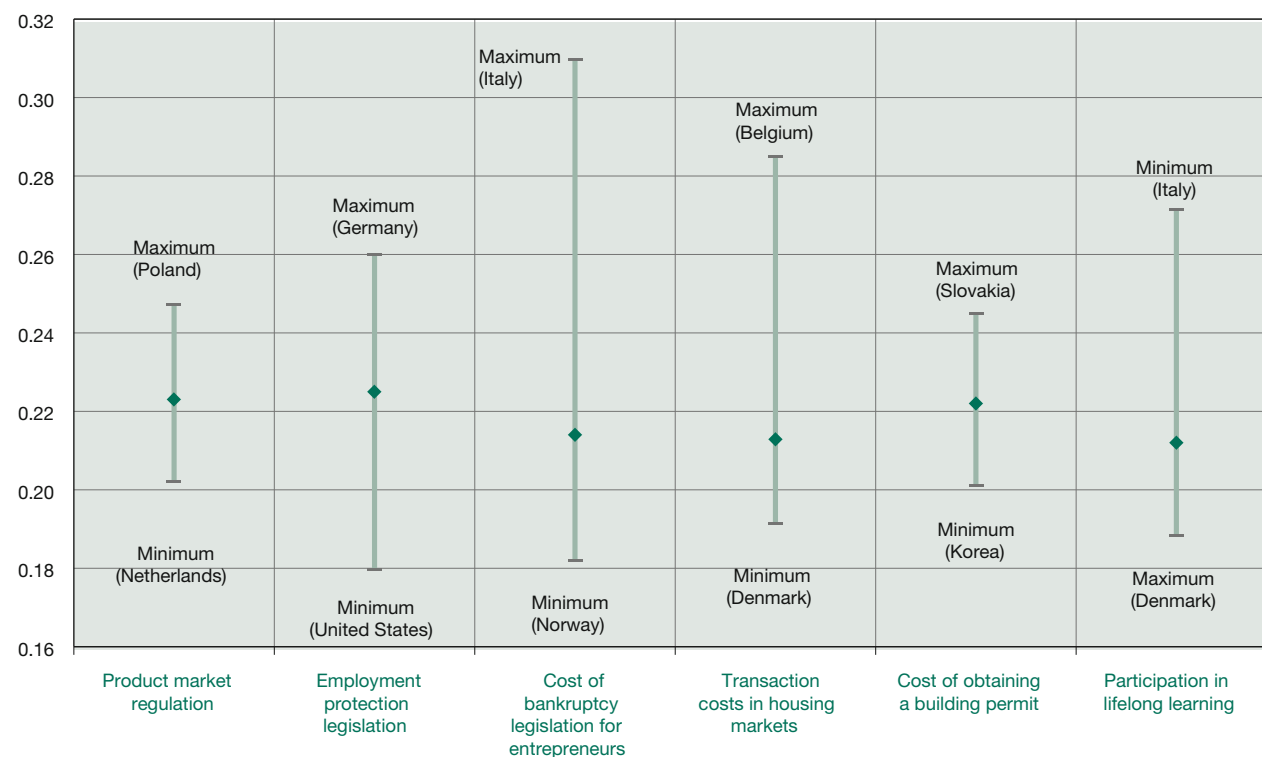
Discussion

OECD research suggests that European policy makers should endeavour to tap two key sources of productivity growth where there is potentially large scope for improvement: knowledge diffusion and resource allocation. The good news is that targeting these sources of growth may

¹² S. Davis, J. Haltiwanger: Labor Market Fluidity and Economic Performance, NBER Working Papers, No. 20479, 2014.

Figure 10
Policy reforms can help reduce skill mismatches

probability of skill mismatch and selected policies



Notes: The green diamond is the average probability of having a mismatch evaluated at the median level of the policy and individual characteristics, which include age, marital and migrant status, gender, level of education, firm size, contract type, and dummies for working full time and working in the private sector. The distance between the Min/Max and the median is the change in the probability of skill mismatch associated with the respective policy change.

Source: M. Adalet McGowan, D. Andrews: Skill mismatch and public policy in OECD countries, OECD Economics Department Working Paper, No. 1210, 2015.

allow more firms and workers to reap the benefits of the knowledge economy. While certain sources of productivity growth – e.g. innovation – may exacerbate income inequality, the observed rise in wage inequality largely reflects the increasing dispersion in average wages paid across firms,¹³ rather than differences within firms. This implies that raising the productivity of laggard firms – via more effective diffusion – need not entail an equity-efficiency trade-off. A better matching of skills to jobs also makes workers more productive – implying scope for higher wages – and reduces the risk that under-utilised skills will quickly depreciate. Finally, improving market

flexibility can potentially empower outsiders, such as young workers and young innovative firms, which are more sensitive to rigidities in the reallocation process.

Yet, the scale of the challenge Europe faces is vast, and the harsh reality is that raising productivity via structural reforms will require a large-scale reallocation of resources in many European economies. To be sure, this reallocation process can also involve costs, but governments have the tools in the form of flanking policies to minimise the disruption to workers, firms and society as a whole. They can do this via education and adult learning policies that make skills complementary to technical progress, while mechanisms to support displaced workers and insure workers against labour market risk more generally, such as well-designed social safety nets and portable health and pension benefits, will be vital.

13 See D. Card, J. Heining, P. Kline: Workplace Heterogeneity and the Rise of West German Wage Inequality, in: Quarterly Journal of Economics, Vol. 128, No. 3, 2013, pp. 967-1015; and J. Song, D.J. Price, F. Guvenen, N. Bloom, T. von Wachter: Firming Up Inequality, NBER Working Paper Series, No. 21199, 2015.