

McKinsey Germany

The Golden Twenties

How Germany can master the challenges
of the next decade



1 bn more

consumers are expected to be in the global economy.

If they pull the right levers, Ireland, Portugal, and Spain can achieve a public debt ratio of

90% by 2017.

To get close to EU targets, the peripheral countries will need investments of

140 bn p.a.

beyond current projections from 2017 onwards.

From 2010 to 2012, the peripheral countries reduced their public deficit by

EUR 108 bn to EUR 152 bn.

A per capita growth rate of Germany's GDP

of **2.3% p.a.** is attainable.

Industrial customers in Germany

currently pay **300%** more for

gas than in the US.

By 2020, electricity prices in Germany will increase by up to

34% in real terms.

Energy efficiency initiatives can

save up to **EUR 53 bn p.a.**

If no corrective action is taken, the potential labor force in Germany will decrease by

4.2 million by 2025.

Nearly **25%** of the employees in the public sector in Germany are expected to retire within the next 10 years.

The Golden Twenties

How Germany can master the challenges
of the next decade

Preface

With this translation of our latest publication, “Die Goldenen Zwanziger,” we would like to contribute to a wider discussion of how Germany and Europe can develop over the next 15 years. In past publications, such as “Germany 2020,” “Welcome to the volatile world,” and “The future of the euro,” the German office of McKinsey & Company has analyzed how the macroeconomic environment influences the German economy and individual industries. “The Golden Twenties” continues this series. It draws on recent economic developments and numerous observations from client projects and discussions to clarify the central challenges for Germany, its companies and employees.

As indicated in the programmatic title of our previous publication “Welcome to the volatile world,” the world’s increasing interconnectedness and the many links among business, politics, and society have resulted in new levels of uncertainty. This makes it harder to define robust scenarios for planning purposes. Nevertheless, it is important for decision makers to gain a perspective on the possibilities and how they might play out in the future. In this context, the adoption of a pragmatic and adaptive approach in the political arena has a key role to play in establishing a more stable solution space for possible scenarios.

On this basis, we have framed a perspective for Germany with a time horizon that extends into the mid-2020s. With the title “The Golden Twenties,” we are deliberately alluding to the 1920s, which were shaped by a boom (starting in 1924), but one that was socially, politically, and also economically fragile. It was largely a bubble, primarily financed by short-term international loans – an influx of easy money that dried up suddenly when the stock market crashed in October 1929. With the Great Depression, those supposedly “golden twenties” came abruptly to an end.

Today, the 1920s appear golden, if at all, only when looking back across the distorting distance of nearly a century. Looking ahead, our objective is to describe conditions that will make the 2020s a truly positive counterpoint, a sustainably successful decade. Germany’s economy and society are now at a crossroads where it is crucial to chart the right course. The goal must be to build on Germany’s current positive momentum and create genuinely “golden twenties” – with sustainable and economically solid growth. We therefore attempt to outline ways for Germany, as part of Europe, to master some of the current challenges and make use of new opportunities.

While making these recommendations, we remain aware that we all live in a highly volatile world and that the trends and solutions we focus on here describe only part of the journey ahead.

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Executive summary

Since 2005, the German economy has grown faster than Europe as a whole and also faster than the US. This success can be attributed to four factors: first, the German economy has a diversified industrial structure and a large share of innovative, internationally oriented, and flexible companies. Second, Germany has been able to profit from strong growth in emerging markets because its key industries offer exactly the products these markets demand. Third, Germany has also benefited from having a large supply of highly skilled workers, a more flexible labor market since implementation of the Agenda 2010 reforms, and effective political action to cope with the drop in demand in the 2009 financial crisis. Fourth, German companies have benefited from the tailwind of relatively favorable euro exchange rates, which have supported exports.

The German economy will also be able to build on these factors in the future. Its strong competitive position is, however, increasingly at risk. In our work with clients and in our own internal analyses, four major challenges have crystallized for Germany's economic role in Europe:

- Finding solutions for the euro and sovereign debt crisis
- Renewing Germany's industry structure
- Completing the transformation of the energy sector and dealing successfully with the resulting opportunities and risks.
- Overcoming the foreseeable demographics-related shortage of skilled workers.

If Germany addresses these challenges systematically, it can increase its per capita gross domestic product (GDP) by up to 2.3 percent p.a. or total GDP by 2.1 percent p.a.¹ by 2025. This ambitious but attainable scenario for a "golden decade" requires Germany to increase exports significantly and overcome its shortage of skilled workers. At the same time, this picture assumes a period of stable economic and political development without major crises. Our models and our recommendations should therefore not be taken as a forecast of what will happen, but as likely scenarios.

Solving the euro and sovereign debt crisis

With their crisis management, the members of the European currency union have mainly bought themselves some more time. By providing liquidity, they have succeeded in stabi-

¹ The difference between per capita and total GDP growth rates reflects the assumption that the total population will decrease by about 3 million by 2025.

lizing those banks and governments for which the danger of default was most acute. However, monetary policy actions are not sufficient to develop a lasting solution to the underlying problems; what is needed is a strong real economy.

For nearly all the peripheral countries², our extensive set of analyses shows that it is possible to reduce public debt by 2017 to a level close to 90 percent of GDP. To help achieve such a debt ratio reduction, the eurozone needs to promote a strong real economy through a comprehensive stabilization and growth program. The basis for such a program has already been laid: the reforms initiated to consolidate public budgets are already having a positive effect. These successes must be sustained and expanded in order to restore confidence among EU citizens and in the capital markets and thereby ensure the stability of the eurozone. For this, three levers are available: selectively reducing public spending, increasing public revenues (above all through more efficient tax administration), and selling public assets, such as ownership stakes in companies, which could bring onetime proceeds amounting to more than EUR 100 billion.

At the national level, the growth agenda will require a major increase in productive investments, further reforms to make the labor market more flexible, and targeted support for innovation. An EU investment program that provides EUR 20 billion p.a. as seed money can help prepare the ground for more private investments. To reach the target of additional investments of EUR 140 billion p.a. in 2017 in the peripheral countries, Germany will have to shoulder the largest share of financing such an EU program. Assuming Germany puts up 50 to 60 percent of the EUR 20 billion p.a. mentioned, the cost incurred would be up to EUR 12 billion p.a. (3 to 4 percent of the current federal budget). Through such a program, the eurozone can avoid the trap of becoming a permanent “transfer union” and, instead, use its potential to evolve into a dynamic “transformation union.”

Renewing Germany’s industry structure

In recent years, the German economy has benefited from strong export-driven growth, especially in the three pivotal industries chemicals, automotive, and machinery. The German economy is open to the world and thoroughly integrated into international value chains, and German companies have made a number of smart moves: they concentrate on premium and high-tech segments, supply exactly the products in demand by emerging economies, can build on an established global presence, and have succeeded in negotiating internationally competitive wages.

At the same time, Germany’s export-based economic model faces a number of challenges: emerging economies have meanwhile brought forth their own technologically advanced competitors who are entering market segments where German companies have traditionally been strong; low productivity gains in recent years jeopardize German industry’s

² “Peripheral countries” refers to the five eurozone countries Greece, Ireland, Italy, Portugal, and Spain.

competitiveness; the aging of society is reducing the number of workers; and imbalances in the eurozone's current accounts raise questions about the viability of the German export-based economic model.

Despite these risks, Germany can increase its competitiveness by sustainably strengthening its proven model for success. Specifically, Germany needs to increase productivity in its most important industries while maintaining their innovativeness and, at the same time, shift its industry structure to increase the share of new growth segments that create significantly higher value per capita. In the medium and long term, such a change in industry mix will deliver higher growth rates.

In total, our model calculations indicate that, by 2025, German industry can increase exports by more than 80 percent. Maximizing exports is not an end in itself – through strong integration with the global economy, exports can remain a central growth engine for the German economy. The main contributor will be continually rising demand from emerging economies for German products in the automotive, machinery, and chemicals industries (up to 2025, import growth in the manufacturing sector of the BRIC countries – Brazil, Russia, India, and China – is expected to be +220 percent and worldwide +110 percent).

Although our model shows exports rising significantly, the German current accounts surplus of 6 percent is likely to decline to a level of 2 to 4 percent of GDP. There are several reasons for this: Germany will increasingly import intermediate inputs as a result of the increasing import intensity of German production, raw materials prices will continue to rise, industry modernization will require substantial investments, and domestic consumption will also increase on the basis of wage gains in the context of productivity improvements.

As in the past, German companies will continue to make direct investments in foreign countries, particularly in the most important growth markets. Such capital outflows are typically followed by the export of intermediate goods and services from Germany. In the long term, the profits from these capital exports will offset the decline in domestic value added and thus contribute to securing continuing prosperity.

Transforming the energy sector

For Germany, establishing an environmentally sustainable, economically viable, and reliable supply of energy is a key challenge that must be mastered. Otherwise, the opportunities outlined above may be lost. At the moment, the cards on the energy and raw materials markets are being reshuffled – for example, as a result of the boom in shale gas, which has given the US a major gas price advantage and thus a competitive edge on world markets. In this new game, Germany faces the dual challenge of carrying out its ambitious plans for the energy turnaround and achieving the best-possible balance of environmental sustainability, economic viability, and security of supply. To reach this combined goal, Germany's initiatives in the energy sector need to be optimized as a whole – both to limit cost

increases and to ensure security of supply. To this end, the expansion of solar photovoltaic systems is to be limited, the power transmission grid expanded, and conventional power plants maintained to provide sufficient reliably available (“firm, dispatchable”) capacity.

In the longer term, an optimal energy policy will require an integrated perspective at the European level to ensure that renewable energy sources are tapped at the most effective locations (e.g., wind power along the Atlantic coast, solar power in southern Europe) and that the energy can be transmitted to the points of consumption via an appropriately dimensioned transmission grid.

German industry’s energy cost disadvantage, especially in the energy-intensive industries, should also be reduced – for instance, by using the most efficient mix given renewables targets and CO₂ prices (including maintaining lignite-fired power plants and possibly also developing shale gas reserves). Ultimately, more energy efficiency in households and in business will reduce the demand for energy, which should translate into savings of up to EUR 53 billion p.a. in 2020.

For Germany’s key industries – chemicals, automotive, and machinery – the changes on the energy markets present risks but also opportunities. In chemicals, energy costs are equivalent to 15 percent of the industry’s gross value added. To keep value creation and jobs in Germany, it will be crucial for chemicals companies to offset the energy cost disadvantage. The competitive gap is especially wide versus the US due to its exploitation of shale gas. At the same time, opportunities will arise in the marketplace as companies develop new materials and products for greater energy efficiency, for renewable-energy generation, and for the extraction and use of shale gas reserves. Compared with chemicals, the automotive and machinery industries are better off: value creation in these sectors depends less directly on energy, so they are less exposed to energy price risks. Disadvantages could still arise as a result of increasing pressure on their supplier industries and customer segments. On the other hand, Germany’s leading industries also have opportunities to grow by developing and marketing new, more energy-efficient products and production equipment.

Overcoming the shortage of skilled workers

Germany’s key industries owe much of their economic success to having a well-educated workforce. Going forward, if productivity improvements can be boosted to 2.2 percent p.a., Germany can achieve a per capita GDP growth rate of 2.3 percent p.a. only by overcoming a shortage of around 4 million skilled employees³ by 2025. However, if productivity improves at a slower rate of 1.4 percent p.a., the employee gap in 2025 will be about 6.5 million. This makes productivity improvement a crucial lever in addressing the shortage of skilled workers – especially with regard to the public sector.

Germany can activate additional skilled workers through selective immigration policies, by increasing women's participation rate, reintegrating retirees, and possibly also by moderately lengthening the work week (via collective bargaining agreements or on a voluntary basis). These initiatives taken together can potentially bring up to 4.5 million additional employees into the workforce. A further 0.9 to 3.0 million could be added through appropriate changes in education and training programs, for example, by aligning schoolwork and vocational training more closely with the requirements of the labor market, further reforming university curricula, and increasing the share of graduates in the STEM subjects – science, technology, engineering, and mathematics.

These goals are ambitious and achieving them will be a herculean task. In the volatile world, there will certainly also be setbacks. But the effort is worth making – for the people in Europe.



1. Context:

An anchor of stability confronting new challenges

Since overcoming economic slowdown in the 1990s, Germany has significantly strengthened its economic performance and resilience. Although unnoticed by many, the German economy has grown faster than both the European economy as a whole and the US. From 2005 to 2011, gross domestic product (GDP) in real terms grew on average at a rate of 1.6 percent p.a. in Germany, at 1.0 percent p.a. in Europe, and at 0.9 percent p.a. in the US. This growth enabled Germany to cope more successfully with the banking and financial crisis in 2008/2009 than most other countries and withstand the subsequent euro and sovereign debt crisis. This success can be attributed to a number of factors that fall into three groups: structural advantages, favorable political conditions, and a positive environment.

Structural advantages

Germany has benefited from its diversified economic structure and comparatively large manufacturing sector. The German economy encompasses large corporations as well as flexible medium-sized companies, many of which are active internationally and thus enjoy economies of scale. Due to Germany's high export intensity, the country participates heavily in global economic development, which is more dynamic than in Europe, and helps to diversify economic risk. German industry also demonstrates a high degree of innovativeness – in the latest IMD World Competitiveness Yearbook 2012, Germany ranks third in the Scientific Infrastructure category, an indicator of a country's innovative capabilities.⁴

Market opportunities have increasingly expanded in the world's developing economies with their growing populations and rising prosperity. The demand of these fast-growing markets is complementary to the innovative and advanced products supplied by German industry. As a result, in the past ten years, Germany's total goods exports to the BRIC countries Brazil, Russia, India, and China have grown by 13.3 percent p.a. on average – which makes the BRIC countries the fastest-growing export market of any of the world's market regions.

A further success factor is Germany's highly qualified workforce. Employees receive a good education, for example in effective apprenticeship systems that combine hands-on company-specific training and secondary school or university curriculum into what is known as the “dual educational system.” Furthermore, labor relations in Germany are largely constructive. In the past decade, this led to restrained wage agreements that were appropriate to the economic situation.

⁴ Following the US in first place and Japan in second place; International Institute for Management Development (2012).

Policy framework

Germany's structural success factors have been reinforced by the policy framework, including the "Agenda 2010" reforms enacted in 2003. They made the labor market more flexible by modifying rules for working short hours, raising the income limit for mini-jobs, and reducing nonwage labor costs. The consolidation of longer-term unemployment benefits and welfare payments reduced benefits, which increased the incentive to search for and accept work, and reduced public spending on benefits.

Two stimulus packages introduced by the government in 2008 and 2009 made a significant contribution to dealing successfully with the drop in demand in the real economy. Tax breaks stimulated domestic consumption and a package of specific measures supported key industries. The extension of the rules for working short hours prevented widespread layoffs and thus the loss of valuable know-how.

Positive environment

Germany has also benefited from the tailwind of a positive environment. The value of the euro has helped to keep German products competitive.⁵ Furthermore, in comparison with other countries, the effects of the 2007/08 financial crisis were milder. While Germany's economic structure meant that the immediate drop in demand was higher than in other countries, there were no price bubbles in the real-estate market or for other assets. The banking crisis ran its course less severely, hitting only the comparatively few banks that had invested heavily in structured products. The robust constitution of Germany's real economy allowed a rapid recovery from the crisis.

New challenges

Germany can also benefit from these factors in the future. However, the German economy's favorable competitive position and thus its role as Europe's growth engine and anchor of stability are increasingly at risk. From our work with clients, four major challenges have emerged for "Germany in Europe":

- The euro and sovereign debt crisis is the most urgent challenge. German companies suffer not only from a recessionary outlook in a number of export markets in the euro-zone but also from the general uncertainty created by the crisis. Both hold risks for the company performance – and in many cases make a "wait-and-see" approach appear more attractive than investing.

5 As the eurozone as a currency area has a balanced current account vis-à-vis the rest of the world, the upward pressure of Germany's current account surplus put on the euro was offset by the trade deficits of the partner countries. Furthermore, exchange rate fluctuation has tended to decrease, which increases planning certainty.

The euro and sovereign debt crisis has laid bare the institutional weaknesses of the currency union. Low interest rates led to the formation of asset bubbles that masked the need to reform public finance. Some countries and households lived beyond their means. Emergency rescue efforts have prevented the breakup of the eurozone by overcoming the acute liquidity bottlenecks of the countries most severely affected. However, more sustained action is required. To return to prosperity, public debt ratios have to be brought back to sustainable levels.

- Germany's industry structure and export model are in need of renewal. Technologically advanced competitors from emerging economies are entering German companies' traditional market strongholds. China, in particular, is increasingly building its own industrial base. In addition, productivity in Germany is growing more slowly than in important competitor countries. A further challenge is that maintaining competitiveness requires continuously excellent performance in research and development and its commercialization.
- On the global energy markets, clear shifts in supply and demand (e.g., due to the shale gas boom and, possibly, a shale oil boom in the US) threaten the competitiveness of German companies, especially compared with the US. In addition, the political decision in Germany to transform the energy sector will impose further costs on consumers and companies, and also puts the return on future investments at risk. This hits the chemicals industry particularly hard, as it faces the double impact of rising prices for raw materials (natural gas) and for electricity. The security of the energy supply is also becoming more and more of a pivotal factor for the German economy due to the more difficult balance between generation and consumption.
- Demographic changes in Germany are leading to a severe shortage of skilled employees. Although the situation has been foreseeable for some time, insufficient corrective action has been taken. Consequently, the skills gap will act as a brake on growth.

If these challenges are not dealt with rigorously, Germany and Europe face the potential threat of a "lost decade," similar to the situation that has beset Japan for more than 20 years (*see Text box 1*).

The "lost decade" in Japan: A cautionary example

Text box 1

Until 1990, Japan had a dynamic, growing economy with high trade surpluses. Since the mid-1950s, Japan had enjoyed a long period of vigorous growth (between 1956 and 1990, the average real GDP growth rate was 6.7 percent p.a.) and very low unemployment (between 2 and 3 percent). At the same time, Japan was criticized for constant trade surpluses as a result of exchange rate manipulation intended to devalue the yen.⁶

⁶ Appreciation of the yen as a result of the Plaza agreement of 1985 between France, West Germany, Japan, the UK, and the US with the objective of devaluing the US dollar versus the other national currencies.

In response to international pressure (the yen-dollar agreement of 1984), Japan liberalized its financial market, accepted an appreciation of the yen, and stimulated domestic demand, primarily via a very expansive monetary policy. This encouraged a credit boom, which then led to the real-estate and stock market bubble in the second half of the 1980s. In 1989 and 1990, in an effort to counteract the overheating of asset prices and rising inflation, the Bank of Japan raised the key interest rate, and the real-estate and stock exchange bubble burst.

Japan's growth came to a halt and productivity improvement thus created a gap between potential and actual production that triggered deflation starting in 1995.

In the two decades since the asset bubble burst, Japan has pulled three levers to try to overcome its economic malaise: bank restructuring, monetary policy, and fiscal policy measures.

- In retrospect, the worst mistake was the extremely slow restructuring of the banking sector. After the bubble burst in 1990/1991, nonperforming loans created major problems for the banking sector. However, accounting rules allowed for slow write-downs of the nonperforming loans. As a result, the **restructuring of the banking sector** got off to a very slow start. Recapitalizations and carve-outs into bad banks did not begin until 1995 and only got under way on a large scale as of 1998. Furthermore, takeovers of distressed banks led to a sharp consolidation in the banking sector and thus to cost reduction. It took until 2005 to declare the problem of nonperforming loans solved.
- **Monetary policy measures** were reactive and slow. The central bank discount rate was reduced over a period of five years to 0.5 percent. In 1999, the Bank of Japan officially implemented a zero-interest-rate policy and, in 2001, quantitative easing. However, the positive effect of loose monetary policy on the real economy was limited. This was because the additional liquidity created by the central bank was initially only enough to compensate for the sharp contraction of the interbank market in response to the loss of confidence. The real economy was hamstrung by high overcapacities and weak revenue growth, and thus lacked attractive investment opportunities. Finally, the uncertain outlook and the need to deleverage led businesses and households to increase their savings rate – cementing the underutilization of the economy and making deflation chronic.
- Since 1992, the Japanese government has attempted to stimulate the domestic economy by issuing new **fiscal policy measures** on a nearly annual basis, sometimes undermined by contradictory policies. While the economy would have been even weaker without these measures, they still failed to put Japan back on the growth track – in part, also owing to significant deficits and rigidities in Japan's economic structure. In 2012, the government issued two further multibillion economic

stimulus packages. Similar measures and stagnating tax receipts had increased the ratio of public debt to GDP to more than 230 percent in 2011. From a capital markets' perspective, this is tolerable only because of the large share of bonds held domestically (*Exhibit 1*).

Since the bursting of the Japanese asset price bubble, public debt has increased and the economy has stagnated

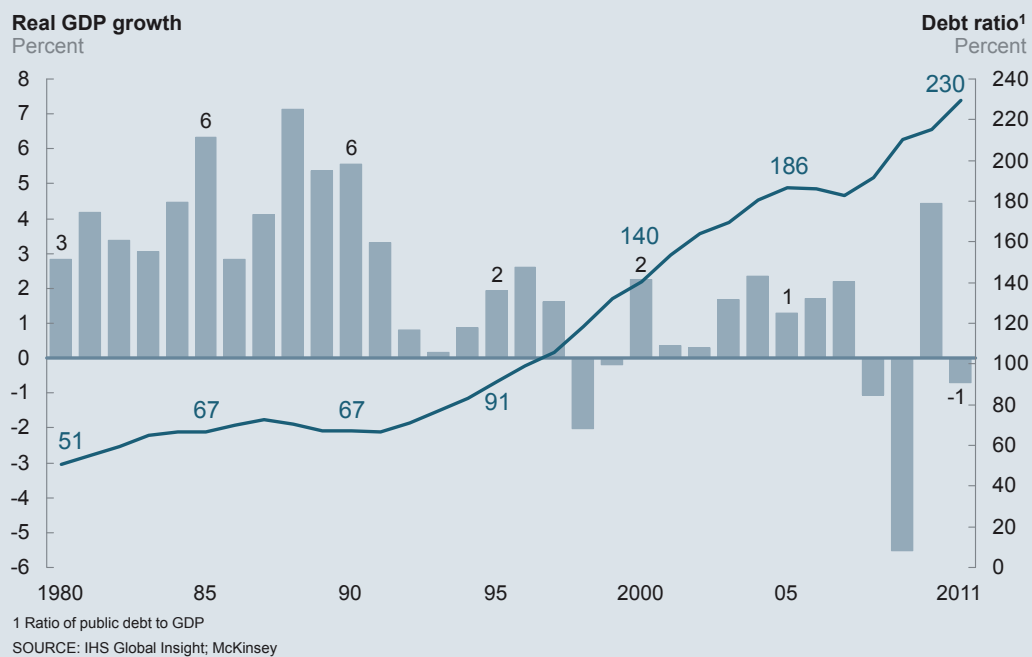


Exhibit 1

As a cautionary example, Japan's situation shows that restrained monetary and fiscal policies cannot stabilize and sustainably reverse a negative economic trend. However, this is essential to create the conditions for real long-term growth driven by the private sector. Hence the first lesson of Japan's lost decade is to implement stabilization measures quickly, on a scale large enough to be effective, and in combination with structural reforms. The second lesson in the event of such a crisis is to restructure the banking sector rapidly with active government support to keep the monetary system functioning and to limit the slowdown effect on the real economy.

The euro and sovereign debt crisis, renewing industry structures, energy sector transformation, and overcoming the shortage of skilled labor – these are key challenges that Germany must master. Interdependencies have to be taken into account when developing a consistent strategy. The European transformation union sketched out in the following pages implies and supports an internationally open, export-oriented business model – and not only in Germany. A pan-European energy policy is an essential component, as is the harmonization of labor markets, since balancing labor supply and demand will succeed far more effectively at the European level.

Rigorous and coordinated action by all stakeholders is called for. By working together, business, politics, and society can create the opportunity for Germany to make the coming years a successful “golden” decade.



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2. Euro and sovereign debt crisis: A transformation union, not a transfer union

Germany has tied its economic fate to that of its European neighbors in the belief that only an integrated Europe can succeed at a global level and guarantee prosperity in the long term. The political and economic vitality of the eurozone is therefore critical for Germany. This chapter focuses on the challenges faced by the eurozone and presents possible solutions. The crisis is not over. While the liquidity challenges facing the countries using the euro are largely resolved, structural issues for most eurozone countries remain. Comprehensive efforts on national and European Union levels are now necessary to move away from short-termed crisis management towards a program for economic growth.

The eurozone's persistent structural problems

In the first ten years of the currency union from 1999 to 2010, all the eurozone countries profited from the euro,⁷ through a combination of intensified trade in the eurozone, scale and scope advantages, and unusually low interest rates. Still, the euro project was saddled from the beginning with design flaws. The euro eliminated nominal exchange rates as an adjustment mechanism. Given varying economic cycles and regional structural imbalances, eurozone countries would have benefited from greater wage and price flexibility, higher labor mobility and/or a system of temporary transfer payments within the eurozone. In fact, however, wages increased in the peripheral countries⁸, without a corresponding rise in productivity. None of the alternative adjustment mechanisms were activated.

The architects of the single currency hoped that disciplined fiscal policy would reduce imbalances and allow economies to converge. In practice, the majority of member states, including Germany, broke rules designed to safeguard stability in the currency union. At the same time, investors waived country-specific risk premiums, perhaps because many believed Article 125 of the Maastricht Treaty (the “no bailout” clause) would not be enforced. This created an illusion of cheap money, with low interest rates masking the need for sustainable public finances and causing the real-estate and financial markets to balloon in some countries. Consequently, productivity and current account balances drifted apart.

The bursting of the bubble led to sharp economic contraction and eventually the recapitalization of many banks, provided by governments at severe cost to public budgets. In the aftermath, higher interest expenses, lower tax receipts, increased social insurance expenditure and diverse economic stimulus programs helped push debt levels higher. The result

⁷ McKinsey & Company (2012g).

⁸ In this text, the peripheral countries is used as a shorthand term for the euro member countries Greece, Ireland, Italy, Portugal, and Spain.

was that public debt ratios soon exceeded levels considered reasonable by capital markets, leading in 2011 and 2012 to a liquidity crisis in many countries and solvency crisis in some.

There has been clear progress ...

Securing liquidity in the peripheral countries and avoiding an uncontrolled breakup of the eurozone has in the recent period become the primary task of European institutions and governments, working alongside the IMF. They launched national consolidation programs, international rescue funds⁹ and monetary interventions¹⁰ aimed at containing the crisis and stabilizing the eurozone. There have been some initial successes and, while the financial sector remains unstable in Cyprus, Greece, Ireland, Slovenia, and Spain, confidence is growing that the eurozone will remain intact. In a medical analogy, the symptoms have disappeared but it is not yet clear whether the underlying illness has been cured.

Initial signs of economic adjustment, the recovery of public finances and eurozone reforms include:

- Greece, Ireland, Italy, Portugal, and Spain reduced their aggregate deficit from EUR 260 billion in 2010 to about EUR 150 billion in 2012 – and a further reduction is expected (*Exhibit 2*). This success can be largely attributed to drastic spending cuts, totaling about EUR 106 billion, and additional tax revenues of EUR 39 billion, which more than offset the EUR 37 billion cost of current account deficits, higher interest rates and declines in GDP. A comparable deficit reduction has not occurred in other euro countries, and there is a long way to go before public budgets stabilize and deficits are brought under control across the eurozone.
- Current account balance differences have narrowed across the eurozone: the peripheral countries have reduced deficits while core countries have posted smaller surpluses. Spain's current account deficit, for example, fell between 2010 and 2012 from 4.5 to 2.0 percent, while Germany's current account surplus fell from 6.0 to 5.4 percent. In France, on the other hand, the current account deficit rose, creating an additional need for structural adjustment.
- The difference between various eurozone bond yields has declined and capital is again flowing to the peripheral countries. In January 2013, yields on Spanish and Italian 10-year government bonds were down from their peaks of 6.8 percent (Spain, August 2012) and 7.1 percent (Italy, December 2011) to 5.1 percent and 4.2 percent respectively. The yield on the German 10-year Bund is around 1.6 percent.
- To strengthen the institutions in the euro area, the European Council, European Commission, Eurogroup, and ECB have agreed on the "Quadrige Plans."¹¹ En route to

⁹ Initially in the temporary form of the European Financial Stability Facility (EFSF) and then through the permanent European Stability Mechanism (ESM).

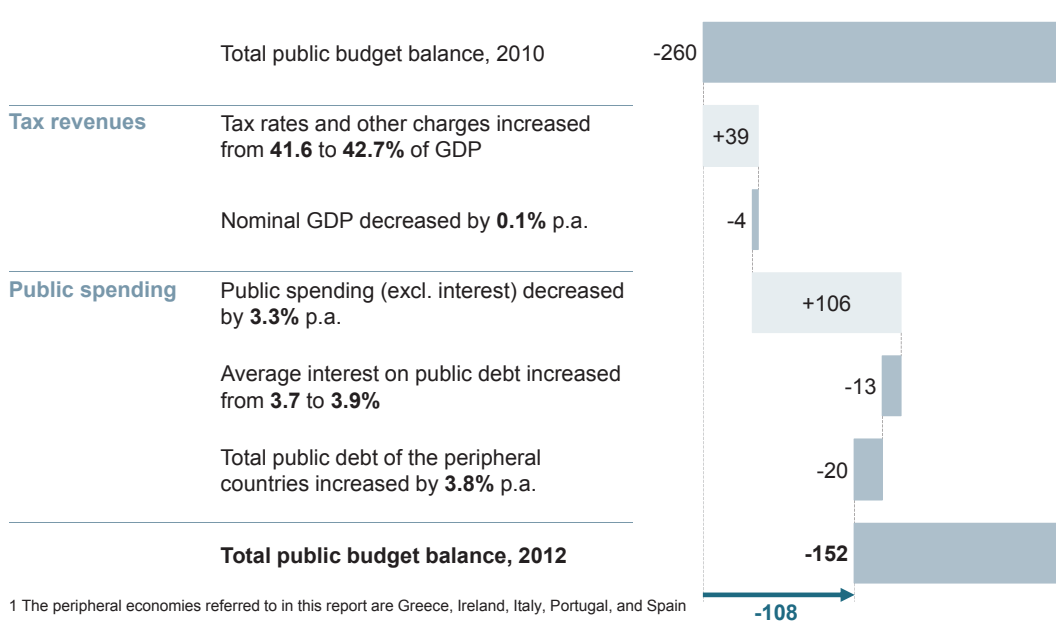
¹⁰ Provision of long-term refinancing operations (LTROs), fully allocated at fixed interest rates and the option of conditional country-specific interventions, also known as Outright Monetary Transactions (OMTs), which have not yet been employed.

¹¹ Van Rompuy (2012).

Since 2010, the eurozone's peripheral countries¹ have managed to reduce their public deficits by EUR 108 billion – but balanced budgets are still far off

Cumulative public balances in the peripheral countries (nominal)

EUR billions



¹ The peripheral economies referred to in this report are Greece, Ireland, Italy, Portugal, and Spain
 SOURCE: IMF; McKinsey

Exhibit 2

political union, these call for more legislative and executive decision making authority at a European level. Among other points, a fiscal union, the cornerstone of which has already been put in place in the Fiscal Pact, is to be accompanied by fiscal transfers among the eurozone members. In addition, a banking union has been launched through the Single Supervisory Mechanism (SSM), the Capital Requirements Regulation and Directive, and the option for direct bank recapitalization through the European Stability Mechanism.¹²

Although the measures taken and first steps towards economic adjustment have calmed markets, they are likely only to have bought the eurozone some time. Individual member states and European institutions must take further steps to address not only the symptoms but also the causes of the crisis. If the current stabilization is not seized as an opportunity for reform, further crises loom in the years ahead.

... but no sustainable improvement so far

In general terms, the primary task for governments and regulators is to redesign the eurozone as a functioning currency union. That means more structural reforms and building greater confidence in policymakers' ability to implement adequate economic measures. If those can be achieved, the eurozone will attract the investment it needs.

¹² McKinsey & Company (2012b).

In many countries, a return to the strong pre-crisis years is not possible, because circumstances have changed and some of the most important sectors that drove growth from 2000 to 2007 offer less potential for the future:

- The turbogrowth seen especially in Spain, Ireland, and Greece in the early 2000s was a result of unique circumstances, e.g., the sharp drop in interest rates following the launch of the European Economic and Monetary Union (EMU).
- The construction and real-estate sector, financial services, and the public sector made major contributions to economic growth in many European economies. However, they are not likely to serve as growth engines any time soon. The financial industry will need years to work off the burdens from credit defaults and adjust to the new regulatory framework that the defaults triggered. In real estate, vacancy rates have soared, and a good standard of infrastructure projects is already in place. Moreover, governments must consolidate public budgets (*Exhibit 3*).

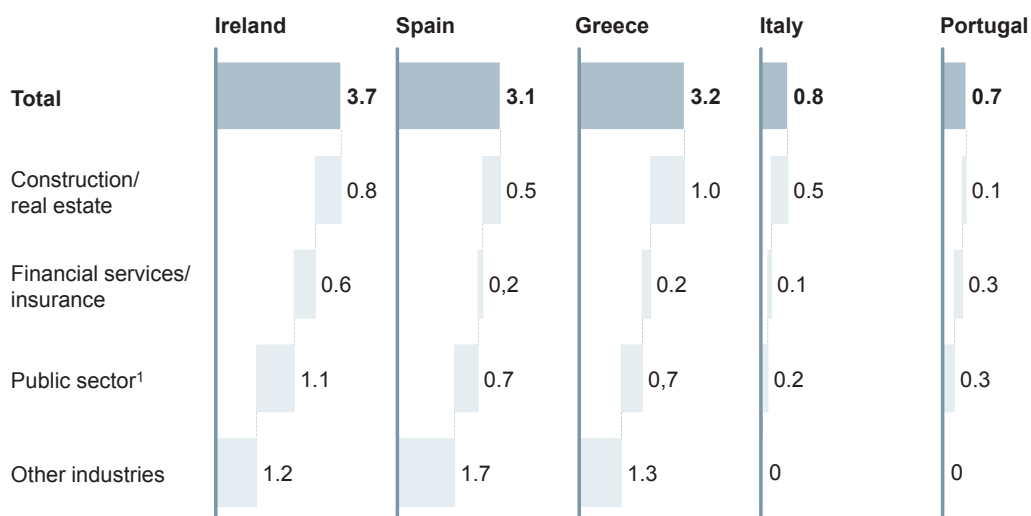
Without structural changes, weaker eurozone economies will not have returned to pre-crisis output by 2017, meaning they will lose more than a decade economically (*see also Text box 1 on Japan's lost decade in Chapter 1*).

As a consequence of the existing problems and the enormous uncertainty regarding the future course of the crisis and recovery, economic development in nearly all peripheral countries is currently subdued at best. Investment in the peripheral countries fell to an

Before the crisis, only a few industries served as growth engines

Average share of annual real GDP growth (2001 to 2008)

Percent



¹ Definitions from the classification system *Systematik der Wirtschaftszweige* (Nace Rev. 2): general public administration; healthcare; education; culture; social work; and economic development, policymaking, and supervision

SOURCE: IMF; Eurostat; McKinsey

all-time low in 2012.¹³ Companies, for example, are taking a wait-and-see approach, particularly given restricted access to external financing. Minor stimulus is expected from private consumption, which has been paralyzed as a result of unemployment and falling incomes. Indeed, diverse austerity programs increase the risk of further economic contraction. Public-sector consumption is also under pressure: in the peripheral countries between 2010 and 2012 public debt ratios rose from a total of just under 100 percent to more than 115 percent, and despite the IMF's optimistic growth scenarios a further increase is imminent in four of the five peripheral economies.

Possible approach – a stabilization and growth program

Efforts to reduce public debt levels face multiple economic obstacles (*see Text box 2*). In our view, therefore, only a combination of further consolidation and, in particular, growth-stimulating measures can stabilize the currency union and ensure a return to prosperity. Austerity programs have already been formulated, but they must be implemented and in some cases extended. Growth-promoting efforts, however, have been largely neglected, despite the fact that they have the most potential to fuel growth. Other approaches, such as higher inflation (*see Text box 3*), debt restructuring, or debt mutualization are unlikely to be the answer to the challenges facing European economies.

Public debt: Creating the institutional and structural prerequisites for debt reduction

Text box 2

Even after overcoming the liquidity crisis in the peripheral countries, the eurozone continues to face a severe public debt problem. High levels of indebtedness limit freedom of action, hamper growth and place a burden on future generations. For these reasons, reducing public debt to sustainable levels is an important political objective.

Though much discussed, higher inflation is no solution (*see Text box 3*). The attempt to reduce the debt ratio by increasing public revenue or decreasing public spending will, in the short term, slow economic growth (*see Text box 5*) and is potentially counterproductive in countries with weak growth dynamics.

Each eurozone government must find its way between inflation and deflation when reducing debt. The European institutions can influence this by setting targets and supporting states temporarily. With national authority over public balances in place, mutualization of debt is not an option – it requires a balance between liability and responsibility that only far-reaching fiscal reforms or even a European federation would create.

13 McKinsey & Company (2012d).

In this report, we concentrate on reduction of the public debt ratio, as this has the most relevance for solving the euro and sovereign debt crisis. Reduction of household debt also has a major role to play in any return to sustainable growth. Our detailed analysis of the development of the level of indebtedness of the state, private households, and companies is provided in the publication “Debt and deleveraging: Uneven progress on the path to growth.”¹⁴

Budget consolidation

To return the eurozone to a stable path and restore the confidence of citizens and capital markets, the consolidation of public budgets must continue. We see three levers for this:¹⁵

- **Reducing public spending.** This applies above all for countries in which the public sector is unduly large. Here it is particularly useful to rethink the scope of public activities and take steps to increase the efficiency of public administration.
- **Increasing public revenue.** Action here should focus on fighting tax evasion and enforcing existing taxes. In addition, a more effective taxation system, for example, with a broader tax base and fewer loopholes, can increase tax revenues significantly.
- **Selling public assets.** The sale of ownership stakes in companies will not only reduce public debt on a onetime basis, but can also lead to efficiency gains. Many examples, including postal services and telecommunications, show that privatized state-owned companies offer customer-friendlier services at lower cost and demonstrate that increased competition triggers innovation dynamics.

Text box 3

The inflation effect: Deliberately inflating the economy or tolerating higher inflation rates holds considerable risks

To many people, higher rates of inflation in the eurozone seem to be a possible way out of the debt crisis. On the face of it, tolerating a higher inflation rate for several years does appear capable of significantly reducing real debt ratios.

However, the conditions for inflation-based debt reduction are not in place in the eurozone. In fact it will only work when it comes as a surprise. And even then it has only a onetime effect on the outstanding principal, and the effect critically depends on the aver-

¹⁴ McKinsey Global Institute (2012).

¹⁵ In this connection, it should be noted that the influence of consolidation measures on reducing the level of debt depends on the fiscal multiplier, which can differ by country and concrete situation (see Text box 5).

age maturity of government bonds. In addition, higher inflation has significant negative effects on the real economy and future monetary policy. Governments should therefore not attempt to convince central banks to pursue inflationary policies.

- Higher inflation feeds expectations of inflation. As a consequence, investors demand a risk premium on new debt in the form of higher interest rates. It also becomes difficult and expensive to return to lower inflation rates, which requires a highly restrictive monetary policy with all of its negative effects on growth (as could be observed in the early 1980s in the US).
- Inflation leads to redistribution effects by hurting households that have nominally fixed claims. It hurts most citizens, especially the middle class, because savings and current income, such as pensions, lose value. Because of these redistribution effects, high inflation can lead to severe societal imbalances.
- Uncertainty regarding real returns on investment reduces the savings rate, meaning companies invest less due to the reduced provision and higher cost of capital. Higher inflation also increases the volatility of the amount of capital available. The resulting uncertainty makes it more difficult to plan.
- Finally, higher inflation can cost central bankers their reputation and credibility – central bankers' most important capital as guardians of monetary stability. Their compromised credibility makes meeting future monetary policy objectives more expensive.

Growth stimulus

The consolidation of public finances alone will not suffice. Overcoming the crisis sustainably requires a growth and investment program. The core of this program should consist of three measures:

- **Investment.** The future growth potential of the eurozone depends on investments made today. They should mostly come from the private sector, but selective public stimulus can help. This is illustrated by positive experience with past programs (e.g., via KfW and EIB).
- **Labor market reforms.** The crisis will only be over when unemployment is at a reasonably low level, a goal that makes labor market reforms essential. Greater flexibility is required to remove barriers to hiring new employees. In addition, wage increases should be kept within the bounds of productivity increases, so countries do not lose competitiveness.
- **Innovation.** It is only as an innovator that Europe will be able to defend and increase its prosperity. This makes it especially important to promote research and development as well as training and continuing education.

Unlike growth and consolidation, partial debt defaults (“haircuts”) and the mutualization of debt offer no solution to structural problems.

Debt restructuring to reduce the public debt burden will undermine the trust of private investors in the eurozone as a whole. Countries that default on (parts) of sovereign debt might be successful in restoring public finances in the short term, but would be unable to return to the capital markets for some time. Restructuring is therefore only a remedy of last resort and comes into play only when a country’s ability to service its debt is exhausted (*see Text box 4*).

Text box 4

Haircut for Greek bond holders: Shift in creditor structure moves the risk into the public sector

In March 2012, private creditors agreed to swap a large share of their Greek bond holdings for short-term EFSF notes and new long-term Greek bonds, and waived 53.5 percent of their claims. However, the swap did not result in a substantial reduction of the debt ratio. According to the IMF it will increase from 165.4 percent (2011) to 170.7 percent (2012e).

- For the debt ratio, the bond swap merely meant a reduction in debt of approximately 50 percent of GDP because 42 percent of the bonds were already held by public-sector institutions, such as the ECB or the EFSF – and they did not take part in the debt restructuring.
- At the same time, the debt ratio increased by about 30 percentage points, as a large share of the privately held bonds were in the possession of Greek social insurance funds and banks that had to be recapitalized after the exchange program using public funds (from the EU and IMF).
- On top of that came new debt amounting to 25 percent of GDP, which Greece had to borrow from the EFSF and the IMF to finance its high primary deficit.

In the final analysis, the debts merely moved from private creditors to public ones, which at year-end 2012 held around 75 percent of Greek government bonds. Should further debt relief become necessary, the public sector must bear the main burden, be it via a nominal haircut or lower interest rates.

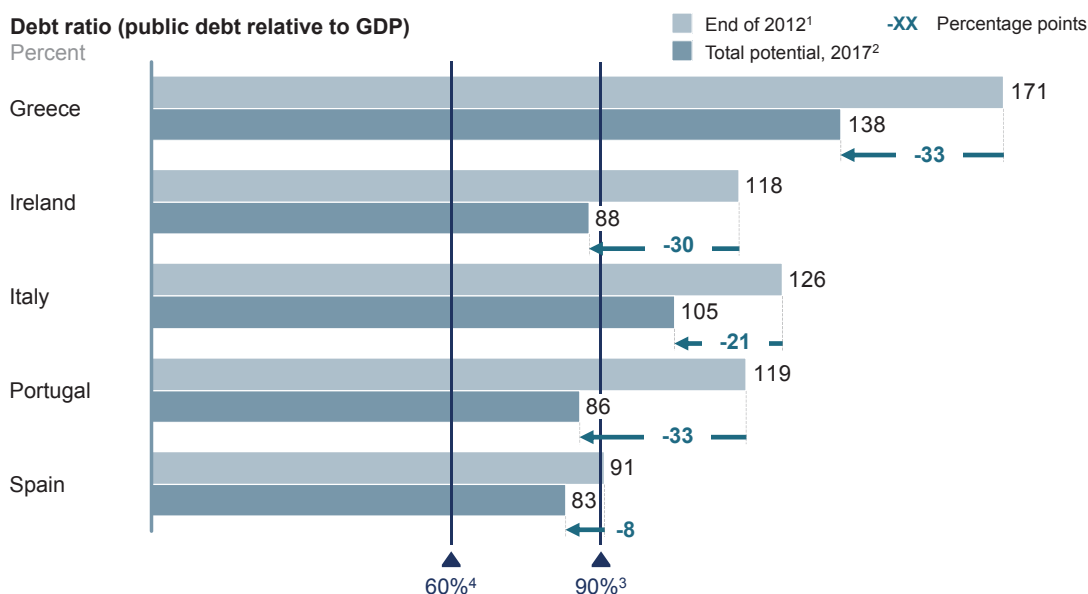
Debt mutualization – for example, through Eurobonds – would shut out the capital markets as a corrective mechanism for unsound budgetary policy and reduce pressure on the peripheral countries to reform. It would store up problems for the future, as it would undermine or break the necessary link between decision making authority and accountability.

In short, in our view only a combination of budget consolidation and growth stimulation can bring the crisis to an end. Both should be initiated as quickly as possible and require further efforts on the part of the countries affected. There are a number of examples in Europe of successful structural transformations following a severe economic crisis. Finland, for example, succeeded in the early 1990s – after the banking crisis and loss of the Soviet Union as an export market – in stabilizing its economy and making structural reforms at the same time.¹⁶

Attainable deficit targets for peripheral countries

On the basis of work by national expert commissions¹⁷ and multilateral institutions¹⁸ as well as our own analysis,¹⁹ we have drafted an ambitious agenda for the development of Europe’s crisis-rocked countries. In what follows, we show what the individual countries can achieve in the next five years if they consolidate their budgets and systematically drive reforms that foster growth. To this end, we have calculated the potential for these two bundles of measures for Greece, Ireland, Italy, Portugal, and Spain, using comparisons with other euro countries and historical examples. Our modeling shows that the proposed reform package could reduce the debt ratio in Ireland, Portugal, and Spain to less than 90 percent of GDP²⁰ by 2017 (*Exhibit 4*).

The peripheral economies have considerable potential to reduce public debt



1 IMF projection
 2 Total potential calculated by the IMF and McKinsey’s calculation
 3 Threshold above which economic growth tends to slow (Reinhart/Rogoff, 2010)
 4 Target of the European Stability and Growth Pact (Maastricht criteria)
 SOURCE: IMF; McKinsey

Exhibit 4

16 Bank of Finland (1993); Finnish Ministry of Finance (1998).
 17 Gallois (2012).
 18 OECD (2012a); European Commission (2010a, 2010b); Monti (2010); Van Rompuy (2012).
 19 McKinsey & Company (2012c; 2011a; 2011b; 2010a).
 20 According to Reinhart/Rogoff (2010), this level of debt marks the threshold above which debt has a negative influence on economic growth.

To calculate the consolidation and growth potential, we used a top-down approach, taking into account successful examples from all over Europe. The starting point was the October 2012 IMF scenarios for economic development up to 2017 and the underlying assumptions about austerity programs and growth reforms.²¹ To this we added further austerity measures and potential effects of growth reforms drawn from successful models throughout Europe. In doing so, we distinguished between additional consolidation as a result of spending cuts or revenue increases, sales of public assets, increases in investment as a share of GDP, labor market reform, and increases in R&D investment. Finally, we calculated the effects of these measures on GDP growth and public budgets in 2017, taking into account secondary effects.

Our analysis shows that it is generally possible to achieve a structurally balanced budget and stimulate economic growth at the same time.

- The peripheral countries could reduce their public debt in the next five years by about EUR 235 billion – or 7.5 percent of their combined GDP in 2012. That should reduce perceived default risks and hence bond yields. At the same time, the countries could strengthen their economies. Assuming reforms are implemented, we estimate their GDP growth potential to be about EUR 370 billion between 2012 and 2017, higher than the IMF’s current scenarios.
- The programs we propose in the following sections will result in significant improvements in individual countries. While the IMF foresees debt reduction in Greece of only 18 percentage points by 2017, our model indicates that Greece could cut its debt by up to 33 percentage points. Portugal, Ireland, and Italy also have substantial potential for consolidation at 33, 30, and 22 percentage points respectively. In Spain, on the other hand, the potential cut amounts to only 8 percentage points, given Spain’s high budget deficit, which is likely to result in debt rising in the next several years. If the peripheral countries succeed in realizing these potential debt reductions, they will meet the deficit target set out in the “Treaty on the Functioning of the Union,” namely 3 percent by 2017.²²
- The bundle of measures presented here would put the peripheral countries back on track to stability and growth. That is a compelling difference compared with the programs put forward to date. By 2017, the economy in Ireland could grow by a nominal 4.5 percent p.a., and in Greece, Portugal, and Spain by 2.5 to 2.7 percent. In Italy the economy could grow by 1.7 percent. These growth rates are higher than those in the IMF’s current scenarios because most of the additional initiatives proposed will promote growth (the one exception is Italy, which has the largest potential for further savings efforts).

Of course, hard work will be necessary to achieve these results. They depend on politicians and citizens in the peripheral states taking resolute action. Success also depends on the eco-

²¹ International Monetary Fund (2012c).

²² European Union (2010).

conomic health of the world economy. Nonetheless, the estimates illustrate potential benefits from an ambitious growth agenda.

Savings initiatives: Necessary but measured

To regain trust, governments must bring budgets back to sustainable positions, by implementing expenditure cuts and/or tax increases. Investors must be convinced that the peripheral countries are operating within their means and are able to service their debts. This in turn will ensure access to the capital markets. As comprehensive austerity measures have already been implemented and will initially have a negative effect on overall output, there is little or no room for further consolidation alongside the rigorous execution of these initiatives. The structural problems of the peripheral countries cannot be solved with the austerity lever alone.

The extensive consolidation efforts in the peripheral countries are having a salutary effect on public finances. According to current IMF scenarios, however, the current consolidation plans will not be enough for all countries to achieve the target formulated in the Fiscal Pact²³, which is a “structurally balanced budget” by 2017 (*Exhibit 5*). It will therefore be critical to bolster the implementation of measures already approved with additional action.

According to IMF scenarios, the peripheral countries will not reach the main stability targets through budget consolidation alone

Stability targets status 2017

- Cannot be reached
 - Can be reached under certain circumstances¹
 - Can be reached
- 20xx Year in which target will be reached

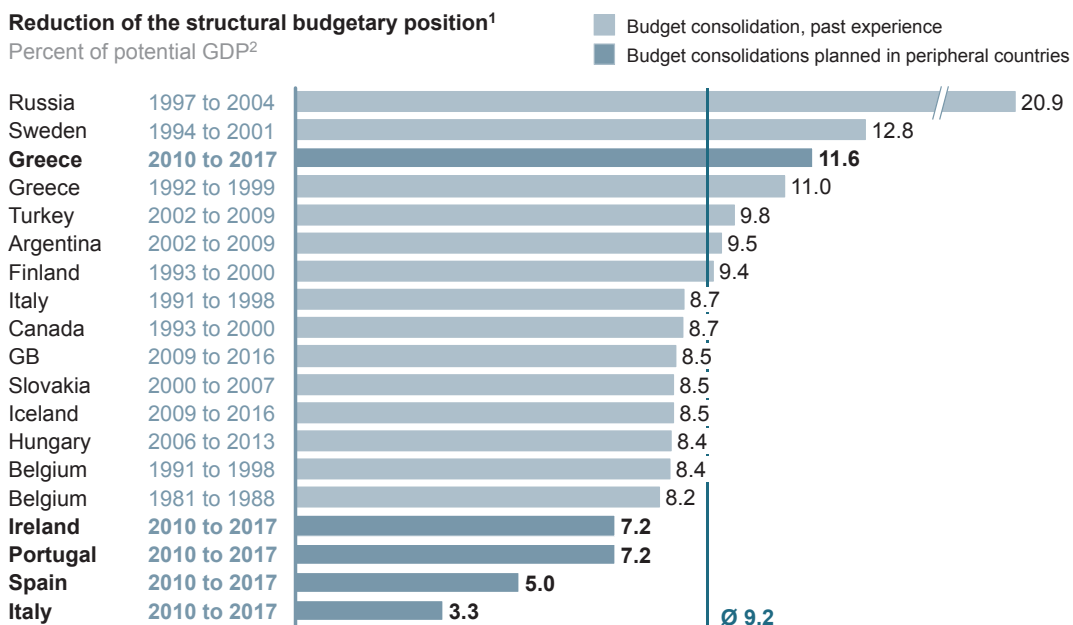
	Maastricht criteria		Fiscal Pact	
	Debt ratio of max. 60%	Debt ratio reduction	Public deficit of max. 3%	Structurally balanced budget ²
Greece	■	■ 2014	■ 2015	■ 2016
Ireland	■	■ 2014	■ 2015	■
Italy	■	■ 2014	■ 2012	■ 2015
Portugal	■	■ 2014	■ 2014	■
Spain	■	■ 2017	■ 2017	■

¹ Prerequisite: either the debt ratio is 10 percentage points below the forecast or the deficit is 1 percentage point below the forecast
² The “structurally balanced budgetary position” is defined as the cyclically adjusted budget and does not contain one-off or other temporary measures
 SOURCE: IMF; European Commission; Eurostat; media reports; McKinsey

²³ European Union (2012).

In some countries, consolidation measures are already quite drastic, and further measures could lead to conflicts that undermine the reform efforts as a whole. In comparison with the average of earlier comprehensive consolidation programs (savings of 9.2 percent of potential GDP over a period of eight years), Greece's program is especially striking, with its plans to save 11.6 percent in the period from 2009 to 2017 (*Exhibit 6*). For this reason and in terms of political feasibility we see no further room for austerity in Greece beyond the efforts already planned.

Greece's consolidation program is among the most ambitious undertaken in the past 20 years in industrialized countries



¹ The structural budgetary position is net of one-off and other temporary effects; changes result from governments' discretionary actions
² The potential GDP is the result of the long-term GDP trend (likewise structurally adjusted)

SOURCE: IMF; McKinsey

Exhibit 6

Depending on the social welfare model and public-sector footprint, we see only limited additional opportunities in the other countries for further measures to reduce public spending or increase taxation rates. Our estimate of the potential is based on historical examples. It takes into account austerity measures already announced, and assumes, in view of the negative effects of such measures on the real economy (depending on the fiscal multiplier, *see Text box 5*) and administrative constraints, countries can improve their budget balance by a maximum of 1.5 to 2.5 percent of GDP p.a.

The effect of fiscal multipliers

Text box 5

A fiscal multiplier indicates how severely a change in public spending influences gross domestic product and thus quantifies the effect of fiscal policy measures on the real economy.²⁴ A multiplier of 1 means that cutting public spending by EUR 1 will reduce GDP by EUR 1. Thus, the lower the multiplier, the less an austerity policy (tax hikes, spending cuts) will hurt GDP.

According to data from the European Commission, in “normal times,” the multipliers for ongoing budget consolidations in Europe (excluding Greece) are between 0 and 0.7. In view of the magnitude of the current crisis and the extensive austerity programs that the peripheral countries have already implemented, our model uses a fiscal multiplier of 1.0 for both spending cuts and tax hikes. One reason for the higher than usual multiplier is that central banks cannot use monetary policy to soften the consequences of austerity programs.

The estimate of 1.0 is conservative. It expresses the view that higher consolidation efforts are likely to be counterproductive. In this, we agree with other current studies. For example, the IMF concludes in its October 2012 World Economic Outlook that the multiplier is currently considerably higher than the historic average (i.e., at 0.9 or more) and has consequently corrected its growth expectations downwards.²⁵

We expect further consolidation to be limited and targeted at areas in which austerity measures will have little or no slowdown effect on the economy, i.e., will barely reduce private investment and private consumption.

Asset sales: A onetime opportunity to reduce debt

While austerity measures and growth reforms will turn around budgets and gradually reduce debt, a focused sale of state-owned assets can bring about onetime reductions of the debt ratio (by 1.1 percent in Italy and up to 12.6 percent in Portugal). However, there is currently little or no demand for many such assets (particularly given concerns that the country in question could exit the eurozone). Hence these would currently fail to yield an “appropriate” price and should not be sold until after the economy has recovered.

The most promising category for raising funds are “financial assets” that are sufficiently liquid to be sold rapidly. In total, the volume of these publicly owned financial assets is

²⁴ For our purposes, we do not distinguish here between the multipliers of various austerity measures, as academic opinion is divided over which type of measure – tax increases or spending cuts – has a higher impact. Alesina and Perotti, for example, argue that public spending is generally not very efficient, so cutting it will not do any major damage; see Alesina/Perotti (1995), Alesina/Favero/Giavazzi (2012). The IMF, on the other hand, has concluded that tax increases come partly at the expense of private savings, so raising taxes will have no major influence on consumer spending; see Spillimbergo/Symansky/Schindler (2009).

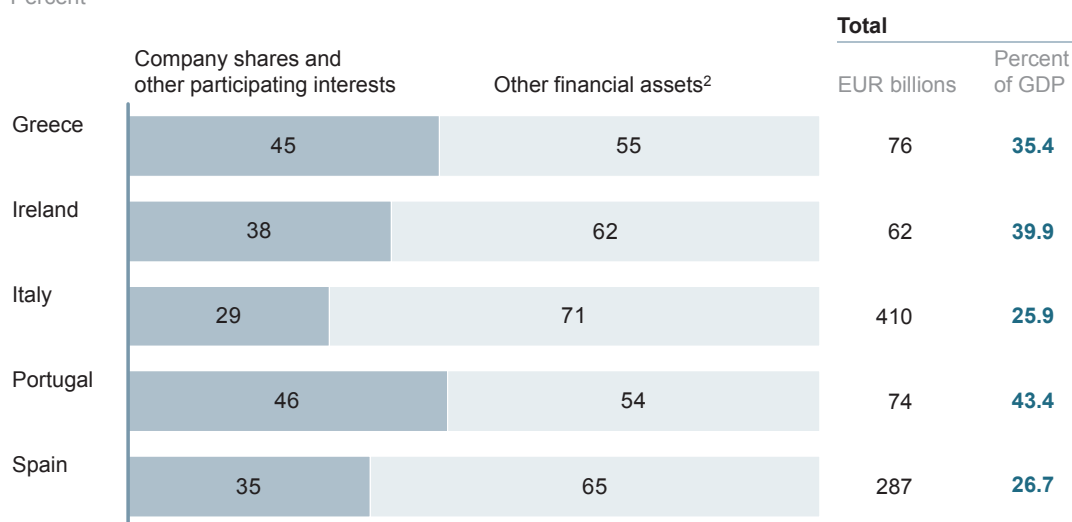
²⁵ International Monetary Fund (2012c).

enormous; ranging from 26 percent of GDP in Italy to 43 percent in Portugal. A large share (29 to 46 percent) of these assets are equity stakes in companies. Assuming gradual reductions of financial assets to 25 percent of GDP, i.e., roughly the level in Italy today, the peripheral countries could generate proceeds amounting to EUR 100 billion by 2017 (*Exhibit 7*).

The peripheral countries have substantial financial assets, especially financial stakes in companies

Composition of public financial assets¹, 2011

Percent



¹ Nonfinancial assets (e.g., real estate) are not systematically recorded, can have additional significance though

² Comprises reserves in own currency, foreign currency reserves, credit and securities, gold

SOURCE: IMF; Eurostat; McKinsey

Exhibit 7

The privatization of state-owned enterprises also demonstrates political will to promote competition – another important signal to investors. Many successful privatizations throughout Europe confirm that such sales increase productivity, allow companies to grow and prosper, and lead to better prices and service levels for customers.

To be sure, the sale of public assets cannot solve the fundamental structural problems of the peripheral countries, because such privatization efforts are onetime events. However, in some countries, assets sales, despite the restrictions mentioned, will reduce debt ratios and interest payments significantly.

Growth programs: Central lever for stabilization and recovery

Compared with consolidation, growth programs have played only a subordinate role in efforts to resolve the euro and sovereign debt crisis. It has taken some time for the European Commission, the IMF, and national governments to recognize the need for such

programs, but in 2012 the European Commission presented a concept for an overarching industrial policy to set the direction for a strong and diversified industrial basis for Europe.²⁶

Supply-side reforms that improve competitiveness, coupled with investment support programs, could contribute materially to overcoming the debt crisis by spurring growth. In light of successful reforms that fostered growth in various European countries, the next five years hold significant potential to reduce the debt ratio by between 9 percentage points (Ireland) and 15.5 percentage points (Greece).

In view of the deep-seated problems in the peripheral countries, returning to solid growth will not be easy. For the most part, the demand side is likely to remain very weak for some time, as both the public sector and households curtail spending. It would make little sense in any case for governments to try to stimulate demand simply by investing in next-best public works projects, given the high level of infrastructure already in place in Europe. Therefore, the focus should be on improving conditions on the supply side. Here, governments can build on three reliable growth drivers: improving the investment climate for private enterprises, reforming the labor markets and increasing investment in research and development.

Some countries in Europe have demonstrated how to proceed to promote private-sector investment (attractive framework conditions for companies in Ireland and Slovakia), reform labor markets (Agenda 2010 in Germany), and promote innovations (high R&D spending in Finland and Estonia). From these successful examples, we have derived starting points for governments. Useful target values for these dimensions are included in European Commission proposals (*see Text box 6*).

Economic indicators: What targets should be the yardstick for recovery?

Text box 6

In the European Stability and Growth Pact and the Fiscal Pact, the progress made by countries towards lasting stability is assessed using specific debt and deficit targets. The public debt ratio should not exceed 60 percent; in the medium term, the euro countries should achieve a budget that is structurally (i.e., measured at mid-cycle) balanced (Fiscal Pact). In view of the current debt situation in the eurozone, a debt ratio of 60 percent in the medium term seems unrealistic for some countries. The sustainability of a country's debt level depends on the ratio of interest payments to primary surpluses. We therefore focus on three targets: reduce the debt ratio if it exceeds 60 percent, keep the budget deficit under 3 percent and achieve a structurally balanced budget as of 2017.

In order to monitor progress in the real economy, which is often more relevant to citizens/taxpayers, we have adapted the approach proposed by the European Commission,

26 European Commission (2012).

using several indicators to track the growth effects of government policy measures. These indicators should be tracked like budget targets and should have similar weights in the discussion about comprehensive national reform programs. Each indicator is tied to a growth driver and we refer to them as EHCIs (Economic Health Control Indicators).

- Capital: investment at a level of 23 percent of GDP (as specified in the European Commission's new industrial policy²⁷)
- Labor markets: employment rate of 75 percent among people aged 20 to 64 (as set out in the Europe 2020 indicators²⁸)
- Innovation: total public and private R&D investment as a share of GDP of 3 percent (as targeted by Europe 2020 indicators).

The Commission's concept for a new industrial policy calls for investment to increase to 23 percent of GDP. This target level is based on an estimate of the expenditure necessary to sustainably increase productivity and is slightly above the pre-crisis level. Such (private) investments can be fostered by easing access to capital and simplifying regulation in the manufacturing sector. Because investment ratios differ across countries, the investment gap – and thus growth potential – varies significantly from country to country. For the peripheral countries, we see substantial additional investment potential that will increase over time and in 2017 reach about EUR 140 billion more than the IMF's estimates (*Exhibit 8*).

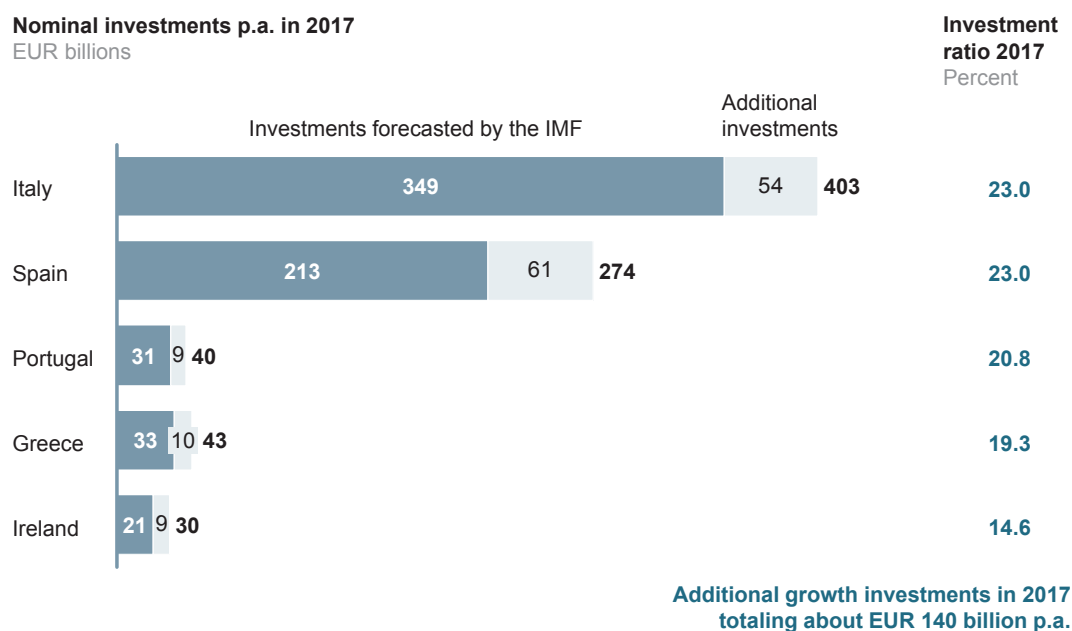
These investments can principally come from four sources: the state, private households, domestic companies, and foreign direct investments. In times of budget cuts, state investments are unlikely to increase appreciably, and the same applies for private households in the peripheral countries. Therefore, the lion's share of investment must come from business, which because of the prevailing economic uncertainty has accumulated large cash reserves.

According to our calculations, Italy and Spain should be able to reach the European Commission's proposed investment level of 23 percent of GDP by 2017. For Portugal (20.8 percent), Greece (19.3 percent) and Ireland (14.6 percent) the targets are lower because these countries are starting from a much lower level. The investments should boost GDP in the peripheral countries significantly and therefore lower the debt load. Closing the investment gap can reduce the public debt ratio in Greece by 2017 by more than 7 percentage points. Spain may reduce its debt ratio by 8 percentage points – above all by triggering investment in local and business-related services.

²⁷ European Commission (2010a).

²⁸ European Commission (2010b).

Moving investment rates closer to the commission's 23% target will require additional investments of EUR 140 billion in 2017



SOURCE: IMF; European Commission; McKinsey

Exhibit 8

In order to improve the climate for private investment, we propose seed financing as part of an EU investment program (e.g., set up by the European Investment Bank). According to our calculations, between 2013 and 2017 the program could require public contributions of EUR 20 billion p.a. This money should be used to support, for example, the investment projects of small and medium-sized companies and public-private partnerships.

An important lever to improve the employment situation is labor market reform; for example by ending the major differences between temporary and permanent contracts (as in Spain's dual labor market), promoting self-employment through start-up centers or small-business credit programs, more flexible employment protection regulations and selective recruitment of experienced workers from abroad. As a basis for the estimated impact, we drew on the wide variety of reforms compiled and analyzed by the OECD²⁹ and two much-discussed examples: "Flexicurity"³⁰ in Denmark and "Agenda 2010" in Germany. The EU's agenda for Europe 2020 also includes the target of achieving a 75 percent employment rate for people aged 20 to 64.³¹ As there is a certain time lag before labor market reforms take effect, while the employment rate today in some countries is very low (58.2 percent in Greece, 61.8 percent in Spain), most of the peripheral countries will not achieve this target by 2017. Nevertheless, a clear reduction of the debt ratio is possible with the help of labor market reforms – in Greece it could be as much as 6.6 percentage points lower by 2017.

29 OECD (2012a).

30 Danish labor market reform in the 1990s to increase the flexibility on the labor market while increasing job security.

31 European Commission (2010b).

Other countries could also profit; only Ireland's labor market is already so flexible that there is little room left for improvement.

The Europe 2020 objectives also provide for higher spending on research and development to increase competitiveness. The target set here (3 percent of GDP) seems reasonable but is far higher than current allocations, e.g., in Greece (0.6 percent in 2007) or Ireland (1.8 percent in 2010). An increase by at least 0.2 percentage points p.a. seems plausible.³² However, this growth rate is too slow for most of the peripheral countries to reach the 3 percent target by 2017. The resulting growth effects would also likely only occur gradually. More investment in research and development could reduce the debt ratio in Greece by 2017 by more than 1 percentage point, but the levels described are unlikely to reduce debt ratios in other countries in the short term. Despite limited potential in the short to medium term, improvement in innovation will be of decisive significance to increase competitiveness in the longer term.

With the help of comprehensive reform programs, including savings measures, privatizations and above all reforms that promote growth and innovation, all of the peripheral countries could reach the deficit targets of the Stability and Growth Pact and the Fiscal Pact by 2017. The debt ratios can be reduced by more than the IMF's projections for 2017: by 29.3 percentage points in Portugal, 21.0 in Ireland, 18.5 in Spain, 15.6 in Italy and 15.5 in Greece (*Exhibit 9*).

All the peripheral countries have the potential to reduce their debt ratios by more than the IMF's projections for 2017

Reduction of debt ratio by 2017 by more than foreseen in IMF projections¹					
Percentage points					
Debt reduction	Greece	Ireland	Italy	Portugal	Spain
Reduced public spending	0 ²	0	4.1	1.6	2.1
Higher tax rate	0 ²	2.8	0	1.8	2.3
Selling public assets ³	0 ²	9.2	1.1	12.6	2.3
Growth stimulus					
Higher investment	7.7	7.6	6.4	9.0	8.0
Labor market reforms	6.6	1.2	3.2	3.7	3.6
Higher R&D spending ⁴	1.2	0.2	0.8	0.6	0.2
Total potential	15.5	21.0	15.6	29.3	18.5

¹ Bold indicates the 2 levers with the highest potential per country

² Action not taken because Greece's extremely high debt ratio means that, with a multiplier of 1.0, the effect is negative

³ Privatization of equity stakes and other participating interests in companies

⁴ Strongest effect does not occur until year 5

SOURCE: IMF; Eurostat; McKinsey

Exhibit 9

Still, the main levers for achieving these debt ratios differ among individual countries. While in all countries we see more potential for growth stimulus than direct measures to reduce debt, there are differences in detail. In Ireland, with its flexible labor market, for example, efforts to stimulate investment have the greatest potential. Regarding debt reduction, Spain and Italy could achieve a lot with further austerity measures, whereas Portugal and Ireland could reduce their debt substantially by selling state-owned assets. Greece is a special case: here we see no direct debt reduction in addition to IMF projections either through budget consolidation or asset sales.

Greece is also the only country that will not achieve a sustainable debt ratio by 2017 – even with far-reaching reforms the ratio can only be brought down to about 138 percent at best. Up to 2017, Greece is unlikely to get independent access to financial markets. Public-sector creditors (who hold about 75 percent of the debt) will either have to extend the maturity of credit at a low interest rate or write off part of the outstanding debt. An additional haircut to public debt currently appears to be the most likely way to get Greece's debt down to an acceptable level, always provided that the country also systematically implements measures for budget consolidation.

Germany's economic and political role

The eurozone can only overcome the current crisis if Germany, as the largest European economy, accepts a central role in the development and financing of a coherent growth strategy. In particular, Germany should set a good example in securing growth and implementing further supply-side reforms at home. In addition, Germany should become accustomed to the idea of contributing, especially through investment, to the recovery of the euro periphery. German companies in particular could participate in the growth potential that the crisis-rocked countries currently offer. Those investments would support stabilization and benefit from rising demand in the future.

Despite comprehensive reforms in the past, what is needed now is further reform of the product and labor markets in Germany, in order to increase productivity and competitiveness. This is necessary primarily because some factors that fostered Germany's current success will cease to exist in the medium term:

- As the periphery recovers, the euro will likely appreciate. Consequently, the German economy will begin to feel negative exchange rate effects and, if no further reforms are initiated, will lose competitiveness compared with countries outside the eurozone.
- Germany's export industries were in outstanding shape in recent years to satisfy demand from developing countries, and above all China. However, this position has to be fought for and re-won on a constant basis (*see Chapter 3, "Industry structure"*).
- In the past, good infrastructure contributed to Germany's economic success. Currently, however, Germany is neglecting its infrastructure and investing less in power

lines, roads, and railway track than is needed to maintain them.³³ This will weaken its competitive position in the medium term.

A true stabilization and growth program thus encompasses not only measures for the peripheral countries, but also has three important reform implications for Germany:

1. Further structural reforms and an improved investment climate are required in order to secure the productivity and value creation potential of the German economy and enable innovation. A starting point for further reform efforts are the measures outlined for the peripheral countries. In other words, through corresponding efforts in budget consolidation, privatization, investment, labor market reform, and R&D spending, Germany could significantly reduce its public debt ratio by 2017. While the IMF scenarios for Germany foresee a reduction of the debt ratio to 73.7 percent of GDP, we consider a larger reduction of the ratio attainable. According to our calculations, additional investment, privatization and spending reductions would be especially effective. The federal government is not expected to undertake any drastic savings programs in the short term, in order not to push the eurozone into a deeper recession. However, there is still great potential that Germany can and should tap in the medium term.
2. In addition to expertise, Germany is called upon to provide financial support to help improve the economic and employment situation in Greece, Italy, Ireland, Portugal, and Spain. To achieve the target of increasing overall investment in these countries by an additional EUR 140 billion p.a. (and given the difficult situation in other euro countries), Germany will have to shoulder a large share of the seed financing of EUR 20 billion p.a. from 2013 to 2017. Assuming Germany puts up 50 to 60 percent, it would have to bear a cost of up to EUR 12 billion p.a. (3 to 4 percent of the current federal budget).
3. German politicians and policymakers can catalyze reform at the European level in line with the measures described. In particular, with a view to the European institutions and the peripheral countries that currently dominate the discussion, Germany should formulate a concrete vision for the future development of the eurozone.

In this way, Germany can actively contribute to sustainably putting the eurozone back on track to growth.



3. Industry structure: Renewing Germany's successful model

In the past decade, Germany has profited from strong international demand for its products and thus has been able to reinforce its position as an open economy thoroughly integrated into world markets. The fast-growing emerging markets have contributed mightily to this trend, and will become even more important for Germany in future: imports in the BRIC countries will grow by some 220 percent by 2025, fuelled by the purchasing power of an additional billion consumers. To take advantage of these opportunities, however, German industry will need to increase its productivity, concentrate on new, fast-growing industries, and attract sufficient numbers of skilled workers in a context of demographic change.

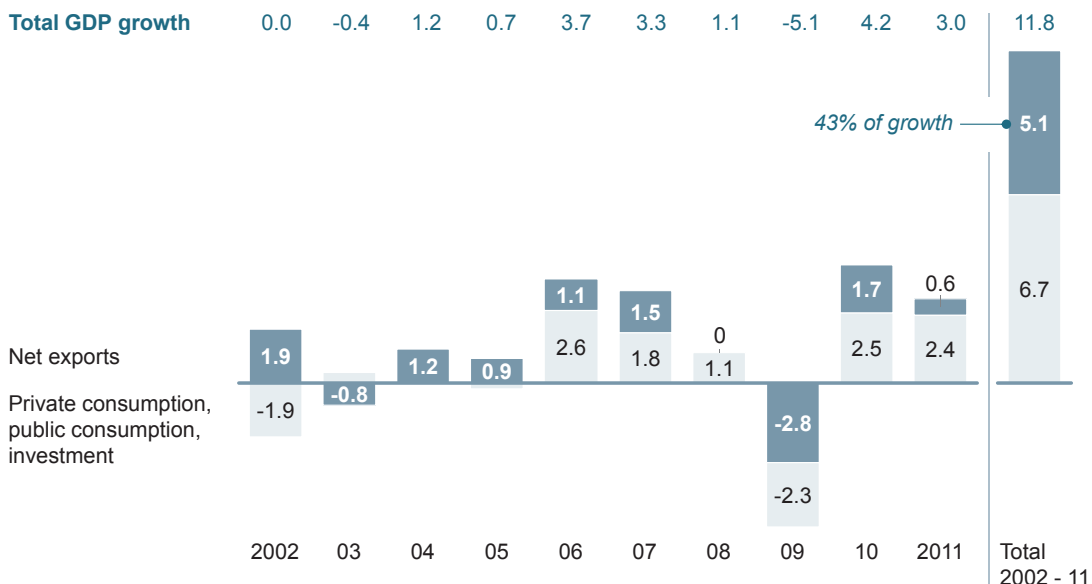
Strong exports, high-performance companies, sought-after products

Germany's current economic success would be inconceivable without strong exports. About 40 percent of the country's economic growth in the past ten years is due to exports (Exhibit 10). Over the same period, the number of jobs that depend directly or indirectly on exports increased from 8 million to around 10 million – one in four employees in Germany owes his or her job directly or indirectly to Germany's export model.

In the past decade, net exports accounted for well over 40% of Germany's GDP growth

Contribution to real GDP growth in Germany, 2002 - 11

Percentage points



SOURCE: German Federal Office for Statistics; McKinsey

Germany also stands out in international comparisons. In absolute terms, it ranks third in exports after the US and China. If one measures exports on a per capita basis, Germany, at EUR 16,000, is significantly ahead of other major developed economies (such as the UK at EUR 9,000).

The most important German export products are motor vehicles and automotive components, machinery, and chemical and pharmaceutical products. Each of these categories contributes between 13 and 15 percent to Germany’s total exports. The main sales destinations are the EU-15 countries (48 percent of German exports in 2011), followed by the rest of the EU (12 percent), the BRICs (11 percent) and Japan and the US (8 percent in total). However, in individual industries, the numbers differ significantly from these averages – for example, the share of German machinery exports to the BRIC countries is 21 percent, thanks to the increasing plant engineering and construction activity in those countries. Overall, the BRICs are becoming increasingly important for Germany as customers – exports to the BRICs grew at a rate of 13 percent p.a. from 2001 to 2011. By contrast, exports to other countries grew only slightly over the same period – by 3.7 percent p.a. to the EU-15 and by 0.9 percent p.a. to Japan and the US (taken together) (*Exhibit 11*).

Across all industries, the EU-15 are Germany’s most important export partners – but the strongest growth came from exporting goods to the BRIC countries

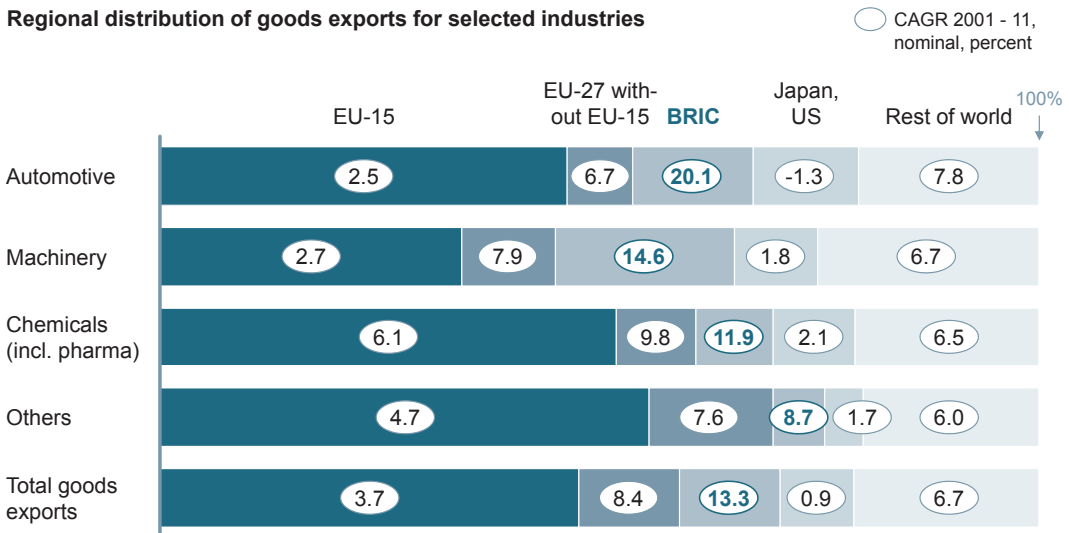


Exhibit 11 SOURCE: German Federal Office for Statistics; McKinsey

Germany’s successful track record in exports can be attributed primarily to four factors: excellent premium products, a suitable product offering, worldwide presence, and competitive wage costs.

Excellent premium products

German exports are often in the premium segment: their outstanding quality, technical perfection, and superior total cost of ownership attract buyers. The result is not only high sales, but also strong customer loyalty: Chinese car buyers, for example, are especially loyal to German automobile brands. In McKinsey's Premium Car Survey 2012, 71 percent of the Chinese buyers of German car brands said that their next purchase would also be a German brand.³⁴ The equivalent figures for Japanese and American brands were 21 and 6 percent respectively. Further, Germany's strength in the premium segment brings with it the advantage that competition is based on the product, not the price. This makes it easier to support the comparatively high wage level in Germany; in addition, it puts barriers in the way of possible competitors, given the required knowledge in development and production. A prerequisite for this premium orientation is high-powered research and development (R&D). Accordingly, German firms and government spent around 2.8 percent of GDP on R&D in 2011 – significantly above the eurozone average of 2.1 percent, albeit less than highly innovative countries such as South Korea (4.0 percent), Japan (3.4 percent), and the US (2.9 percent).

Suitable product offering

Germany's strengths in the automotive industry, machinery manufacturing, and chemicals and pharmaceuticals production are especially well suited to the demand structure of fast-growing markets. Across these industries, Germany's exports to the BRIC countries between 2001 and 2011 increased by roughly as much as the BRICs' imports in total:

- Machinery: German exports grew by 15 percent from 2001 to 2011, while BRIC imports grew by 16 percent
- Automotive: German exports grew by 21 percent, while BRIC imports grew by 24 percent
- Chemicals/pharmaceuticals: German exports grew by 12 percent, while BRIC imports grew by 15 percent.

Demand for these categories of goods will continue to expand in the BRIC countries – offering further opportunities for German exporters.

Worldwide presence

Many German companies have branch offices and/or strong partners abroad, particularly in emerging markets, and often make significant foreign direct investment (FDI)

³⁴ McKinsey & Company (2012f).

in these markets. Between 2002 and 2011, the total value of German FDI³⁵ increased by 7 percent p.a., with particularly rapid growth in China (20 percent p.a.) and India (22 percent p.a.). Increased investment has led to increased employment: in 1995, 8 percent of the total employee base of German companies worked outside of Germany; by 2010, this figure had increased to 14 percent. In manufacturing, the share increased from 20 to 31 percent over the same period.

One example of the German industry's worldwide presence can be seen in the Chinese city of Taicang, northwest of Shanghai, where more than 180 German companies in various industries have set up shop. These companies work closely together on initiatives of common interest, including establishing German schools and healthcare services.

Such investments in other countries have a positive effect on German exports and Germany's gross value creation, because inputs and services from Germany (e.g., machines to equip a factory or components for products) are used in the factories of German companies abroad. For example, Germany's exports of automotive components to China increased by 23 percent p.a. between 2002 and 2011. In addition, FDI has improved German companies' competitiveness, allowing them to profit from the lower average costs of the global value chain.

Competitive wage costs

Wages and nonwage labor costs in Germany are at a competitive level, especially measured against other EU countries; this is attributable mainly to "wage discipline" in collective bargaining. Germany's wage costs per employee in the manufacturing sector increased by 17 percent between 2000 and 2010 – compared to 66 percent in the UK, 34 percent in France, and 26 percent in Italy. This is also reflected in unit labor costs, which are more relevant to competitiveness and which take into account productivity changes. Germany's unit labor costs increased by only 2 percent between 2000 and 2010, compared to 22 percent in the UK, 11 percent in France, and 37 percent in Italy.

New competition on the rise

Germany has thus made many smart moves and has the opportunity to build on its strengths in the coming years. But it is by no means assured that exports will continue to make the level of contribution to Germany's growth that they have in the recent past – indeed, there are several concurrent developments underway that will put the German export model to the test. These include fiercer global competition driven by new competitors from developing countries; declining impact of the levers that have underpinned German competitiveness to date; the ongoing reduction in the size of the German workforce; and current account imbalances in the eurozone.

35 Defined as the total stock of investment in a given year, rather than the new investment during that year.

Perhaps the greatest disruption that Germany faces is from competitors based in developing countries. Not only do these companies have lower-cost production operations, but they are also catching up with established companies in industrialized countries in terms of technology and quality. They are using three main strategies to do so:

- **Acquiring technologies through takeovers.** For example, the Chinese company Sany recently purchased the German concrete pump manufacturer Putzmeister. The same pattern can be seen in the acquisition of Volvo by the Chinese automotive company Geely, and of Jaguar by India-based Tata.
- **Learning in joint ventures or partnerships.** By collaborating with established players, companies from developing countries can learn about their partners' processes and production methods. China has been especially successful in knowledge transfer. For high-speed trains, for example, China demanded knowledge sharing in its very first import contracts. As a result, Chinese companies' share of the domestic high-speed train market rose from zero in 2004 to nearly 100 percent in 2010. (That said, Chinese trains will continue to need many components made by Western manufacturers.)
- **Building capabilities with the help of Western service providers.** The Chinese automobile manufacturer Great Wall, for example, engaged international engineering firms to develop low-cost processes and standards. In this way it was soon able to provide attractive models to meet the high demand for inexpensive vehicles.

Intensifying global competition is also making itself apparent in imports in the BRIC countries. As discussed above, German companies generally remain successful in those markets – but they have lost market share in industries such as IT, electronics, and medical equipment. Between 2001 and 2011, BRIC imports overall increased by 20 percent p.a., twice as fast as German exports to the BRICs. However, there are huge differences between these industries: While German exports of medical equipment to the BRIC countries did fairly well over this period and grew by 17 percent p.a., they did not keep pace with BRIC imports in this category, which increased by 27 percent p.a. In IT and consumer electronics, the gap was considerably wider: German exports to the BRICs hardly grew (+2 and -2 percent p.a., respectively) during a period in which BRIC imports increased by 18 and 25 percent p.a., respectively. These differences also reflect Germany's relative strength across these industries.

So far, German companies have maintained their competitiveness on the cost side mostly through low wage agreements in collective bargaining in Germany, together with the buildup of capacities in low-cost countries. However, both these levers will soon only be of limited use. The first – wage restraint – will become increasingly difficult as skilled staff becomes scarce on the labor market. The second lever – building capacities abroad – will diminish in effectiveness as wages rise in the BRIC countries. The new Chinese government, for example, intends to double economic wealth within ten years – which will likely involve significant wage increases.

An additional challenge stems from Germany's considerable export surpluses, which imply current account deficits in the eurozone and other developed countries. These global current account balances are often criticized as causing financial as well as political tensions (*see Text box 7*). Maximizing export revenues should therefore not be an end in itself. Instead, the goal should be to maximize value creation and hence income – through sales at home as well as internationally. In this regard, it is worth distinguishing between the macroeconomic outlook, which sees foreign trade surpluses above a certain level as problematic in the long term, and the microeconomic perspective of the individual company – to whom it makes little difference whether goods and services are sold domestically or internationally. For companies, borders are not especially relevant. Indeed, our analysis shows that despite rising export volumes the current account surplus will decrease. This is because the increased international division of labor implies global sourcing of German exporters and rising wages in Germany will fuel import volumes (*see section “Exports as development engine”*).

One further factor exerts pressure on value added and exports: demographics. Without countermeasures, Germany's potential labor force will shrink by 9.4 percent by 2025 (*see Chapter 5, “Skilled labor shortage”*).

Text box 7

The two sides of current account imbalances: Problems for countries with deficits or surpluses, but also a solution for an aging society

Within the eurozone, national current account balances differ considerably. While Germany has run a nearly constant surplus of 6 percent of GDP for years now, important southern European countries have run a deficit since the launch of the euro – in 2011 the figures were: 12 percent for Greece, -7 percent for Portugal, and -4 percent for Spain.

What does this mean? At the simplest level, a current account surplus occurs when a country exports more goods and services abroad than it imports.³⁶

The current account surplus implies the build-up of a corresponding net foreign asset position (i.e., a capital export). If this situation persists, the country's net foreign assets – the amount it is owed from abroad – grow each year. The same logic applies in reverse for a country with a current account deficit – the country builds up debts in other countries. Current account balances can grow over time into net debt or net asset positions that are not sustainable, particularly when the corrective mechanism of an exchange rate is lacking.³⁷ Both persistent deficits and surpluses can create problems for countries:

³⁶ Also included in the current account: the balance of a country's income (earned and unearned) from foreign sources and the balance of unilateral transfers into the country (e.g., as gifts).

³⁷ Flexible exchange rates can prevent unsustainable debt positions from building up. In principle, trade surpluses always create pressure for the surplus-holding country's currency to appreciate, which limits price competitiveness of its exports and thus works to curtail or reduce surpluses. However, exchange rates are also influenced by many other factors, such that it is nearly impossible to prevent imbalances from occurring.

- For countries with deficits, the capital imports associated with current account deficits increase the country's indebtedness to foreign countries. They thus become more dependent on investor confidence in their country's creditworthiness. Additionally, these capital imports can lead to inflation in fixed assets (e.g., in the real-estate market) – which, in turn, favors a problematic expansion of the banking system (e.g., due to extensive granting of real-estate loans). If the mounting debt raises doubts about the country's ability to repay it, the country then faces significant increases in interest rates or financing bottlenecks.
- For countries with surpluses, problems can occur if doubt arises about the debtor countries' ability to pay. Payment delays, write-downs, and credit defaults may then occur – with all the domino effects that they can trigger. Furthermore, the funds that make up the capital exports are not available for domestic consumption and investment.

Within Europe's political and financial systems, these imbalances can also create tensions – for example, when members of the eurozone discuss transfers and interventions by the European Central Bank.

Sustainable capital exports can be desirable from a national/macroeconomic perspective. An aging society such as Germany's has an interest in acquiring claims to future payments as an appropriate provision for future costs (e.g., retirement). This conduct is referred to in economic terms as intertemporal consumption smoothing. Today's capital goods exports can help to offset the negative impact from a reduced labor force potential: Germans can either claim and dispose of their investments abroad or draw returns on capital from the relevant foreign countries. However, excessive current account surpluses create the danger that such payables are exposed to substantial currency risk. This is why a country should be interested in having a balanced trade position over time.

Productivity and young growth industries

Over the past decade, Germany has succeeded in securing its competitiveness through high-quality products, technology leadership, and restrained wage policy. Excellent products and outstanding technology must be central pillars of our growth over the next decade as well. To master the challenges outlined by 2025, Germany will have to tackle four challenges at once: increase productivity, concentrate on fast-growing industries, master demographic change, and improve the business environment. Each of these tasks makes a specific contribution to Germany's future growth.

Increase productivity

Germany's pivotal industries today will remain the main engines of the economy over the next decade, as new industries will only begin contributing significantly to economic growth in the medium to long term. Companies in these pivotal industries must

maintain their innovativeness and increase productivity, as international competition will continue to intensify – and in productivity improvement Germany lags behind competitors such as the US and Japan. The necessary productivity gains³⁸ fall into three categories:

- Increase systems productivity and process innovation
- Concentrate on high-value-adding functions
- Develop and expand premium and advanced technology segments.

If Germany implements the measures needed to deliver these gains, it can add 1.9 percentage points to per capita GDP growth by 2025.

Increase systems productivity and process innovations. Systems productivity is one of Germany's clear-cut strengths. It entails collaboration between companies, industrial customers, suppliers, and research institutes in order to generate network effects. Such collaboration will need to become even more intensive in the years ahead – both within industry clusters in Germany, and through German companies making greater use of their globally interconnected value chains to increase productivity. For example, companies can adjust their global footprint to regional strengths, and can also make greater use of knowledge from their international sites within Germany. Furthermore, German companies should invest more in true process innovations, such as by increasing the degree of automation and digitization of process flows in production, logistics, and product development. These steps can save up to 30 percent of a company's storage costs.³⁹ If all of these efforts are successful, Germany could increase its average rate of productivity growth, from 1.4 today to 1.7 percent in future, and with it per capita GDP growth.

Concentrate on high-value-adding functions. Productivity will also rise when more employees perform tasks with a higher value added. In manufacturing, for example, the share of staff who perform highly skilled work should increase from 60 percent (2011) to just under 70 percent (2025). That could mean that fewer employees are staffed on production, but more in production-related services such as maintenance, repairs, and operations (MRO), R&D, purchasing, marketing and sales, and aftersales. Achieving this, however, will require the right conditions to be in place for investment in high value-adding functions – including a sufficient supply of skilled technicians and engineers. The German pharma industry has set a model to emulate: in 2011, it employed 29,000 low-skill workers – 6,000 fewer than in 1995. At the same time, the number of skilled employees increased from 75,000 to 132,000. Our model suggests that, by concentrating on high-value-adding functions, Germany can increase productivity and per capita GDP growth by 0.1 percentage points.

38 Chapter 5, "Skilled labor shortage," discusses an overall productivity gap of 2.2 percent. This figure is the result of the 1.9 percentage points described here added to the 0.3 percent from strengthening Germany's industry structure. This 0.3 point increase reflects the higher value added per employee in the growth industries that Germany should shift into and influences GDP growth. It is thus an indirect productivity increase.

39 McKinsey & Company (2011c).

Develop and expand premium and advanced technology segments. Germany also has clear strengths as a producer of premium and technology products, but here again there is untapped potential for improvement – especially in supplying fast-growing markets in the emerging economies. If companies redouble their efforts in R&D, the share of staff in the premium and technology segment in manufacturing can grow by up to 10 percentage points. As premium and high-tech products ensure a very high value added per employee, this would boost productivity and raise per capita GDP in the model calculation by 0.1 percentage points. The value added of the premium segment is consistently higher than in the volume segments – nearly 70 percent higher in the automotive industry, for example.

Such productivity increases would create headroom for pay increases – provided such agreements reflect the need to maintain international competitiveness. If productivity goes up markedly, wage increases make macroeconomic sense because they strengthen domestic demand and have a positive impact on the reduction of current account imbalances.

Concentrate on fast-growing industries

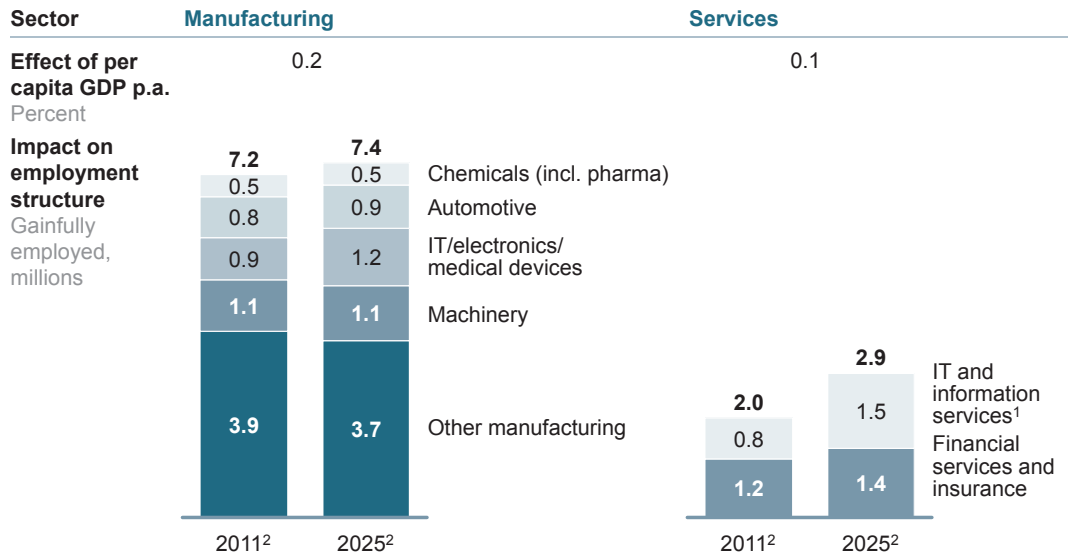
The second task is to strengthen Germany's industry structure in the direction of high-growth industries with a high per capita value added. This can enable additional per capita GDP growth of up to 0.3 percentage points (*Exhibit 12*). Opportunities in this regard can be found both in manufacturing and the services sectors.⁴⁰

Manufacturing sector. Here Germany should concentrate mainly on areas with high value added, specifically by means of targeted R&D investments in the main areas of high growth. This can increase per capita GDP growth by 0.2 percentage points in the model calculation. Four subsectors hold particular promise:

- In the **IT, electronics, and medical equipment** sectors, the number of employees could be increased by about one third, from 0.9 to 1.2 million. The prerequisites for this growth include progress in medical technology and biotechnology. Stronger commitment to these sectors will also be important if Germany is to reverse its declining market shares in these sectors in the BRIC countries.
- If Germany's **machinery manufacturers** can perpetuate their successful track records and participate in emerging markets' growing machinery imports, employment in this sector could be increased slightly (from 1.06 to 1.14 million). The demand for high-quality automation solutions will increase sharply due to rising personnel costs and the further industry growth. Demand for German products could also be increased if companies make greater use of technology trends that are relevant across industries, such as Big Data und radio frequency identification (RFID), to build com-

⁴⁰ See also the 50 high-growth areas discussed in the McKinsey publication "Willkommen in der volatilen Welt" ("Welcome to the volatile world"); McKinsey & Company (2010c).

Expansion of future high-growth industries and strong value-generating service sectors will increase per capita GDP growth by 0.3% p.a.



1 Incl. telecommunications

2 Chart shows only subsectors in which employment increases

SOURCE: German Federal Office for Statistics; McKinsey

Exhibit 12

petitive advantage. The starting situation is a good one, as Germany is home to many technology leaders in a wide array of segments.

- The **automotive industry** can also slightly increase employment (from 0.84 to 0.90 million) – among other things by sustaining strong demand in the premium segment in emerging economies, technological progress in optimizing internal combustion engines, electrification of the drivetrain, active security equipment, and systems for active or passive data transfer. The development assumptions here presuppose that German companies can also take and expand premium positions in the new technology segments. Growth will also be supported by demand for environment-related solutions. In view of ever more stringent emissions regulations and high fuel prices, German companies can play to their strengths in fuel consumption and emissions. Furthermore, because of their premium positioning, they are less affected by overcapacities in the European market. Nevertheless, it will be a real challenge for the German automotive engineering industry to realize the above opportunities in full.
- In the **chemicals and pharmaceuticals industry** the number of employees will remain at around 0.5 million people – as a result of trends that cancel each other out. On the one hand, there are significant opportunities: the aging of society and progress in basic research hold considerable potential for the pharmaceuticals industry. The chemicals industry can profit to some extent from the transformation of the energy sector, for example, in the area of insulating materials, storage technologies for e-vehicles, and carbon fiber for lightweight body construction and wind power applications.

On the other hand, Germany's high energy costs will have a negative impact on the energy-intensive chemicals industry and will tend to dampen employment (*see Chapter 4, "Energy transformation"*).

In total, these employment effects will increase the share of people working in the German manufacturing sector from 17.3 to 18.1 percent of Germany's total employment.

Service sector. A change in Germany's industry mix is worth striving for in services, too – in the direction of subsectors with high value added. This will require better general conditions and more active management of industry- and topic-focused clusters. A rapid development of important growth areas, for example eHealth, eGovernment, and IT network infrastructure, would support this evolution.

The start-up scene, especially in IT and the Internet, can contribute to strengthening Germany's industry structure with new workplaces and value added – particularly if it has access to well-designed business support and sufficient capital (e.g., via business angels). With these conditions in place, the number of employees in the IT and information services industries could increase by more than 80 percent: from 0.8 to 1.5 million. Meeting this ambitious goal will require the right general framework conditions on the government side, highly qualified IT developers, and a good portion of enterprising spirit. The development assumed here increases per capita GDP growth in the model calculation by 0.1 percentage points.

Master demographic change

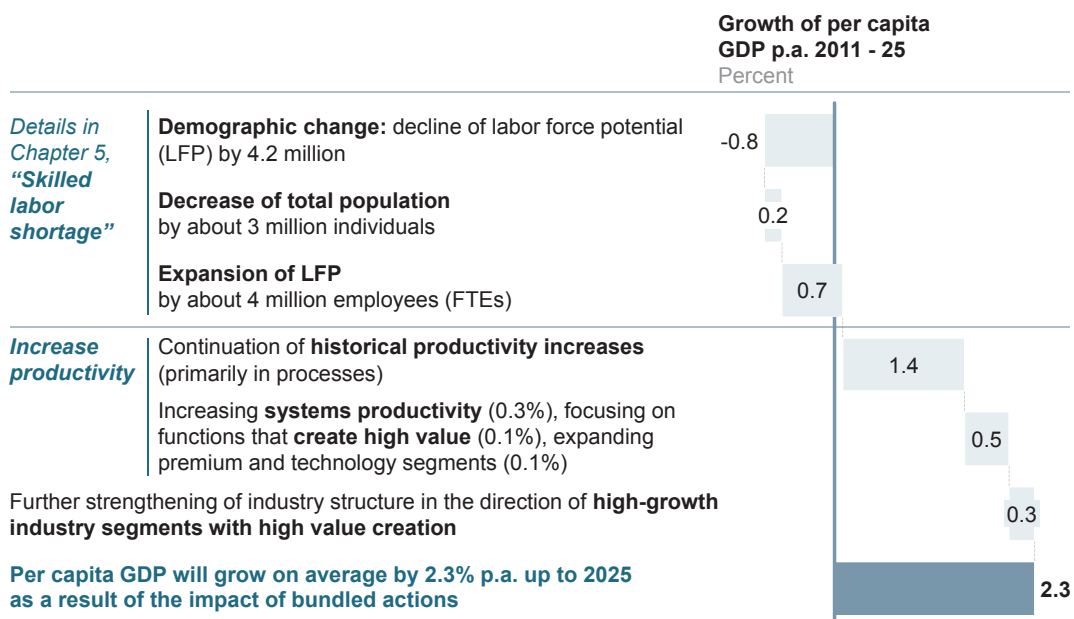
As the third task, it will be necessary to compensate for the expected decline in labor force potential (LFP) of 4.2 million by 2025, as this would reduce GDP per capita growth by 0.8 percentage points. This decrease will only be partly offset by the overall decrease of the population (+0.2 percentage points of GDP per capita p.a.). In Chapter 5, "Skilled labor shortage," recommendations are discussed in detail on how to increase labor force potential; if implemented, these would increase the LFP by around 4 million and have a positive impact of 0.7 percentage points of GDP per capita growth p.a. The combined effects of population trends and of addressing the skilled labor shortage would increase GDP growth per capita by +0.1 percentage points p.a.

Improve general business conditions

Of all of the challenges, shifting towards new growth segments with high value added will take time. On the one hand, this could provide a major boost to exports and GDP; on the other hand, significant GDP effects will not materialize for 5 to 10 years. Therefore, political leaders should provide active support here – not through industrial policy interventions in economic structures but rather by improving the overall business environment. For example, the following measures, which build on previous McKinsey publications, can be taken:

- Top-notch research needs more support. Germany's prosperity is built on the performance of its well-educated workers in the past century, in particular its natural scientists and engineers. As Germany has no structural advantages (natural resources, privileged geographic position, etc.), the sole source of further growth is the innovativeness of the workforce. Germany should therefore make every effort to remain at the forefront of technological progress and, importantly, its commercialization.
- Schools, businesses, and universities must prepare a sufficient number of graduates with the qualifications needed to migrate into faster-growing sectors (*see Chapter 5, "Skilled labor shortage"*).
- The climate for innovation and entrepreneurship must continue to improve: Germany needs strong growth clusters, easier access to capital for start-ups, and more funding for research into industry-relevant trends (e.g., digitized value chains and Big Data).
- Infrastructure (above all, transportation, energy, and the fiber optics network) must be expanded further. Currently, only 2 percent of the households in Germany are connected with the fiber optics network; in the US, this figure already stands at 6 percent and in South Korea at more than 50 percent.
- The administrative framework must also be enhanced in order to increase Germany's attractiveness as a location for business investment (e.g., through efficient administrative processes and fair international competition).

By increasing productivity and continuously strengthening its industry structure, Germany could lift per capita GDP growth to 2.3% p.a. by 2025



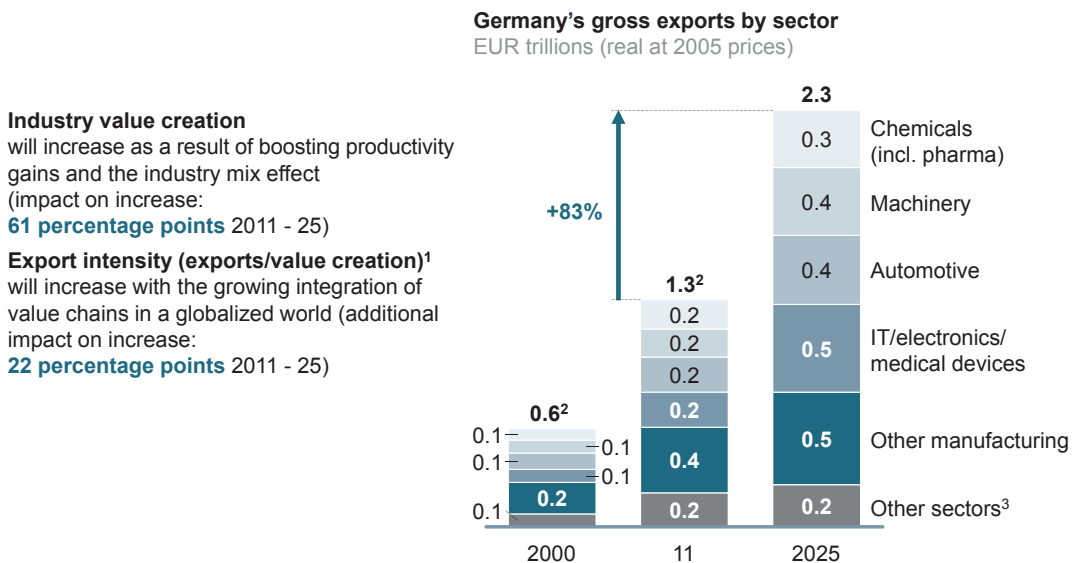
Exports as development engine

According to our model calculations, by capturing the potential of the four tasks outlined above, Germany can achieve a total per capita GDP growth rate of 2.3 percent p.a., or 2.1 percent p.a. of the total GDP, by 2025 (*Exhibit 13*). This rate of increase would be 0.5 percentage points higher than the figures for the years from 1999 to 2008 (i.e., without the influence of the financial crisis) and roughly at the same rate of GDP growth as the US during the relatively successful era of 1995 to 2005. This growth trajectory represents the upper limit of the development opportunities – without taking into account possible macroeconomic discontinuities on a larger scale – and therefore does not represent a projection or forecast. This perspective does, however, point to the actions required. When designing the action program, precautions should be taken to strengthen its resilience to possible disruptive change.

Our model calculation also shows that successful execution of the above-mentioned tasks will increase exports by more than 80 percent, and by 90 percent in manufacturing. Exports will thus remain a central growth engine for Germany as an open economy that is thoroughly integrated into international value chains.

About 60 percentage points of the export increase in our model can be attributed to productivity gains and to the development of the industry structure alone. The remaining 20 percentage points are based on increasing export intensity – more will be exported per euro of value created in Germany, as a result of increasing global connectivity and further global differentiation and specialization of the value chains (*Exhibit 14*).

In the model, Germany's gross exports will increase by 83% by 2025



¹ Industry-specific indicator for the level of an economy's foreign trade interdependencies

² Due to rounding, this figure is not equal the sum of the individual numbers

³ Exports of services, agricultural products, and energy

SOURCE: IHS Global Insight; McKinsey

As a consequence of the developments sketched out here, the ratio of exports to GDP in Germany will increase from 50 percent (2011) to 68 percent (2025). Exports will thus become increasingly important not only in absolute terms, but also relative to GDP. The increase to 68 percent does imply an unusually intense international interconnectedness for a country of this size. However, Germany is already an exceptional case, especially because of its tight-knit integration into the EU. This further increase would reflect the expected trends towards increasing global interconnectedness.

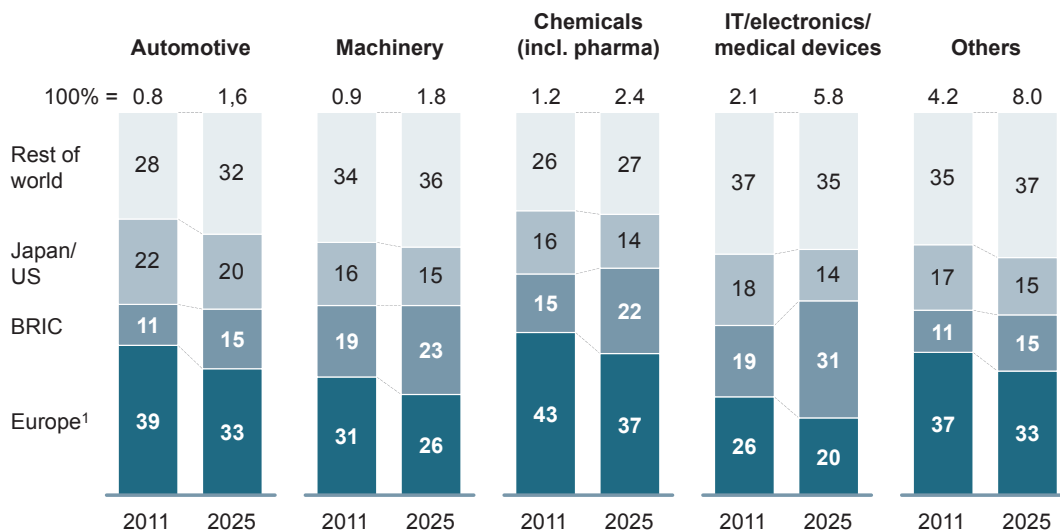
Germany's growing exports will find the greatest concentration of buyers in the fast-growth emerging economies. By 2025, the manufacturing sector can expect an import growth of 110 percent worldwide; in the BRIC countries, this growth may even reach 220 percent. China's rising prosperity alone will give companies access to more than one billion potential new consumers – including, as a result of increasing urbanization, around 350 million new city dwellers. These urban consumers will create opportunities through direct demand (e.g., for cars, IT, and electronic equipment), but also through indirect demand effects (e.g., for machinery, chemicals and pharmaceuticals, and medical equipment).

The magnitude of this growth surge in the emerging economies can be gauged by the forecasts for value creation in the manufacturing sector. In the BRIC countries, manufacturing will grow at a rate of around 7.1 percent p.a. between 2011 and 2025. In Europe (excluding Germany), on the other hand, it will grow by only 1.9 percent p.a., in Japan and the US together by 2.5 percent p.a., and in the rest of the world by 4.0 percent p.a. The

European markets will lose importance as importers, whereas the significance of the BRIC markets will increase

Manufacturing sector imports worldwide (excluding Germany)

EUR trillions (real at 2005 prices)



¹ Excluding Germany. Western Europe: Austria, Belgium, Denmark, Finland, France, GB, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Sweden, Spain, Switzerland, Turkey; Eastern Europe: Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Ukraine

fastest-growing subsectors will be IT, electronics, and medical devices (+8.9 percent p.a.) and machinery manufacturing (+8.0 percent p.a.). Consequently, the BRIC countries' share of global imports will increase. In machinery, for example, the BRIC share will rise from 19 to 23 percent, whereas Europe's share (excluding Germany) will fall from 31 to 26 percent. Here, again, the figures for the IT, electronics, and medical devices sectors are particularly striking: the BRIC share of imports will jump from 19 to 31 percent, whereas Europe's share will drop from 26 to 20 percent (*Exhibit 15*).

The growth trajectory outlined above assumes that strong growth will continue in Germany's pivotal industries. However, disruptive changes on the demand side as a result of technological advances could rock the very foundations of entire industries. Some years ago, digitization caused such a disruption in the printing machine industry in Germany, which is home to the industry's world market leaders. If such trends affect the automotive industry in a similar way, perhaps unleashed by climate change or environmental protection issues in important customer markets (e.g., smog in Beijing in the winter of 2012/2013), or increasing traffic congestion in metropolitan areas, they would stand in the way of strong growth for some time to come.



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4. Energy transformation: Options for more efficiency and security of supply

There was a time when energy costs were merely one of many elements making up a country's or industry's production factor costs. Today, however, changes in global energy markets influence the competitiveness of industries, countries, and regions. As a country that is comparatively poor in natural resources but rich in industry, Germany is particularly affected by such developments. Moreover, with its decision to transform the energy sector, Germany has undertaken a unique and complex task: one that could open up a new pioneering role for it and provide many new and exciting perspectives but one that could also make the German economy more vulnerable to possible disruptions in the market.

The growth scenario described in Chapter 3, "Industry structure," assumes that Germany's pivotal industries will have an affordable and secure supply of energy. Fulfilling this prerequisite in the medium and long term, however, will require a significant effort all across the "energy sector triangle" of objectives, which includes environmental sustainability, economic efficiency, and security of supply. The focus of Germany's transformation of the energy sector to date has rested on the criterion of environmental sustainability: renewable energy sources have been given high priority and the bridgehead to carbon-free generation of electricity has been initiated. This can be seen in the very extensive expansion of renewable energies that has increased their share of gross electricity production from 14.5 percent in 2008 to 21.9 percent in 2012.⁴¹ Going forward, the government will need to ensure that the two other aspects, economic efficiency (and thus competitiveness) and security of supply, are also accorded the same attention. This is the only way to ensure that the transformation of the energy sector is a success story, and that German industry is able to seize the new opportunities.

Energy prices as a key competitive factor for industries and economies

The developments of global energy market prices vary by region depending on the type of energy used. While hard coal, crude oil, and natural gas (in liquefied form for transport) are global commodities and their prices are thus basically the same apart from a few exceptions in the Middle East, the markets for CO₂ emission rights and electric power differ by region. A pricing system for CO₂ emission rights, for example, currently exists practically only in Europe; for the rest of the world, CO₂ emissions are not associated with additional costs.⁴² Gas prices in Europe at more than USD 10/mmbtu⁴³ are currently more than double the price in the US, where gas now trades at less than USD 4/mmbtu.⁴⁴ In the future, liquefied natural gas (LNG) will play more of a role than it already does today as

41 Working Group on Energy Balances/AG Energiebilanzen (2012).

42 Several further smaller CO₂ emissions markets exist or are in planning, e.g., in Australia, New Zealand, California, and Tokyo.

43 Million British Thermal Units; 1 mmbtu \approx 293 kWh, USD 10/mmbtu \approx Cent 3.4/kWh.

44 Prices based on wholesale prices, e.g., Title Transfer Facility (TTF) for Europe and Henry Hub for the US.

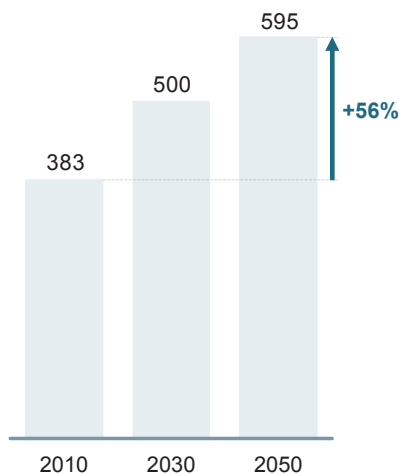
a link or connector. The transport costs for LNG between the US and Germany are about USD 4/mmbtu. The regional price differences for natural gas, hard coal, and CO₂ emission rights also influence the fuel cost and thus the price of the electricity produced – although other factors do also play a role, such as the regional availability of lignite (soft coal) and renewable energy sources.

For the foreseeable future, energy prices will tend to remain high and may even increase since global energy demand is growing strongly and energy supply continues to remain tight. By 2030, demand is expected to increase by about 30 percent, and by more than 50 percent by 2050. The reasons are population growth – worldwide, the population is projected to increase by 30 percent by 2050 – and rising prosperity, as average per capita GDP is expected to rise by around 160 percent by 2050. Clear-cut advances in energy efficiency like those achieved in the past will compensate for only a small part of this increase (*Exhibit 16*).⁴⁵

Global energy demand is increasing strongly

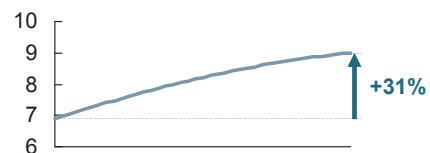
Worldwide energy demand

Billions of British Thermal Units (BTU)¹

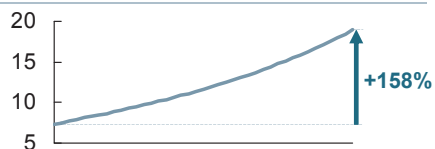


Demand drivers

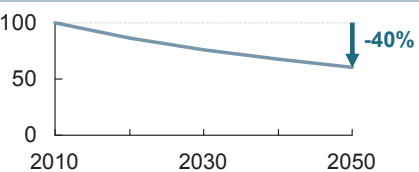
World population
Billions



GDP per capita
USD thousands,
real at 2005 prices



Energy demand as a consequence of increased energy efficiency
Percent



¹ BTU is a unit of energy equaling around 1,055 Joule
SOURCE: McKinsey

Exhibit 16

Demand for all forms of energy will grow, but growth rates will differ. The demand for electricity will increase especially fast with the “electrification” of the world’s economies; by 2050, it is expected to double. Demand for oil, on the other hand, is projected to grow more slowly than GDP on balance, but is unlikely to completely decouple from GDP growth.

Energy price increases will be dampened as production of unconventional oil and gas develops, especially in the US. The “shale gas boom” may cushion possible bottlenecks. In the US, the shale gas reserves that are technically accessible for extraction and production are estimated to amount to more than 24 trillion cubic meters, worldwide to more than 180 trillion cubic meters.⁴⁶ Since 2002, US shale gas production has expanded massively: by the end of 2007, it had expanded by about a factor of 8 to reach approximately 800 kboed⁴⁷. By the end of 2011, production had increased by a factor of 30, reaching 3,000 kboed.⁴⁸ This shale gas “revolution” has allowed US gas prices to fall by half in the past five years.

A comparable technological and economic breakthrough in extracting oil from shale and shale sands is possible. However, in terms of the extraction costs and volumes, the outlook remains uncertain, as experience with shale oil is currently still limited. Nevertheless, vigorous growth is also already evident for shale oil: between 2006 and 2012, production increased in the US by a factor of 12 and reached approximately 1,200 kboed (by comparison, oil consumption per day in the US in 2011 was 18,900 kboed)⁴⁹.

The International Energy Agency (IEA) currently assumes that, up to 2020, the oil price will remain above USD 100/bbl. The shale gas and shale oil revolutions – in combination with a further expansion of deep sea drilling – could dampen prices and lead to oil price scenarios of less than USD 80/bbl.⁵⁰ Globally falling oil prices would slow the price increase for gas – especially in Europe, where gas prices are partly linked to the oil price.

Even if the two shale revolutions counteract price increases in the oil and gas markets worldwide, the US still stands to benefit substantially. It has prospect of becoming independent of gas imports and of remaining so until at least 2030. US gas prices could stay low for the long term – at approximately USD 4 to 5/mmbtu – with corresponding effects on electricity prices for US industries and households. The use of shale gas and the absence of a price for CO₂ emissions give the US an important advantage over Europe: electricity prices for European industrial customers are already approximately 125 percent higher than the prices in the US. For gas, the corresponding price difference is more than 300 percent.⁵¹

In Germany and the rest of Europe, shale gas production does not yet play any major role. Although shale gas reserves exist, the geological and geographic conditions in Europe are more unfavorable than in the US and would make for costly extraction and production. Furthermore, the search for shale gas reserves is already a controversial topic among politicians and in the public.

46 Energy Information Administration (2011).

47 Kilo Barrel Oil Equivalent per Day.

48 HPDI (2013).

49 Energy Information Agency (2012).

50 International Energy Agency (2012).

51 Enerdata (2012).

Implications for Germany's key export industries

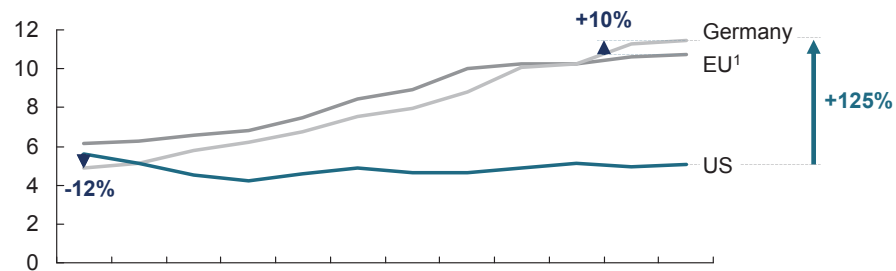
In Germany, energy prices (including taxes) are high even by European standards. The gas price for industrial customers in 2012 was approximately between 5 and 10 percent, and the electricity price approximately 10 percent above EU levels.⁵² For many years, industrial customers paid lower prices for electricity than the EU average. Since 2010, however, the prices for electricity in Germany have been above average. When compared with the US, the price differences are even greater: there, industrial customers pay only half as much for electricity as they would in Germany (*Exhibit 17*).

Higher energy costs for industrial customers in Germany and Europe create competitive disadvantages compared with companies in the US

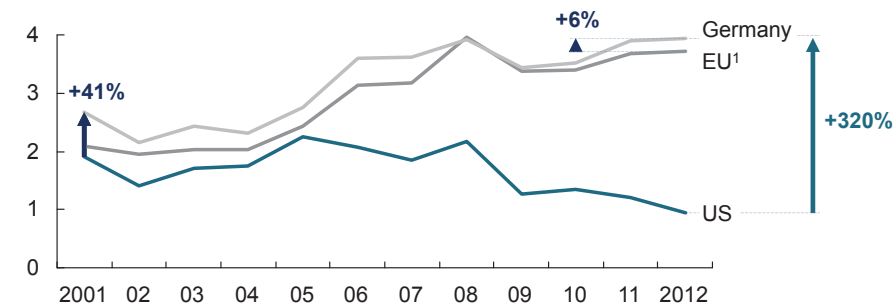
Average industry prices, incl. taxes

Euro cents/kWh

Electricity price



Gas price



¹ The 2012 figures for Europe have not yet been published, hence based on estimates

SOURCE: Enerdata; McKinsey

Exhibit 17

The transformation of Germany's energy sector increases the complexity of the tasks ahead since the expansion of renewable energy sources has proceeded largely unchallenged in terms of costs and security of supply. It is now time to redress the balance among the objectives of environmental sustainability, economic efficiency, and security of supply in order not to give too much weight to one of the elements.

The transformation of the energy sector has so far incurred far too much expense and not been well coordinated. Apart from certain exceptions among the energy-intensive industries, most businesses and households will bear the brunt of this, not only in terms of higher wholesale prices, but also by having to pay a higher share of taxes and levies as

⁵² Enerdata (2013).

compared with their US counterparts. This poses economic risks. Structural changes in the generation, distribution, and consumption of energy also pose risks to ensuring the security of electric power supply.

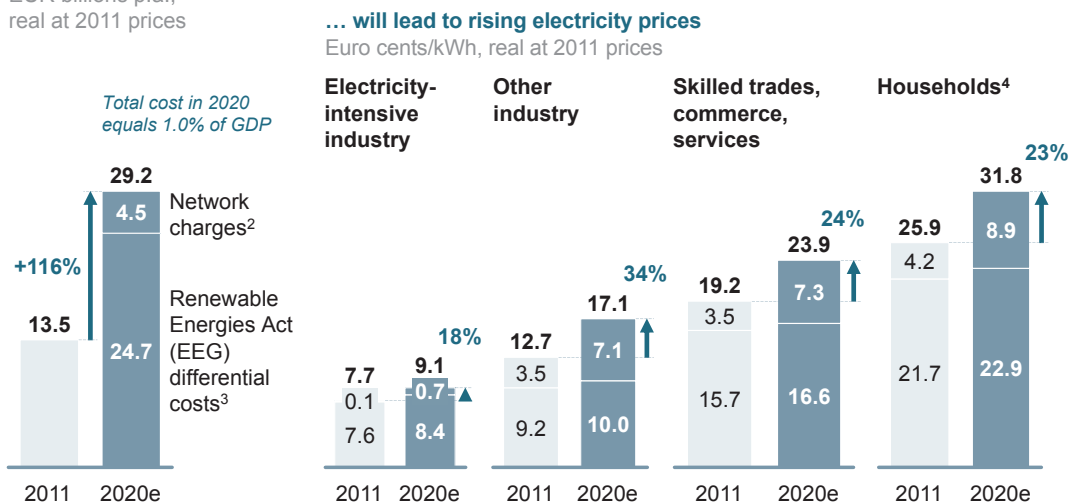
Economic efficiency: Having higher energy prices than not only the rest of Europe but the rest of the world will jeopardize Germany’s economic growth and decrease the competitiveness of German industry. For instance, an electricity price cut is currently not foreseeable in Germany – on the contrary: what is already clearly foreseeable is that renewable energies will mean additional costs of around EUR 160 billion by 2020 and EUR 345 billion by 2030, assuming that existing renewables installations are permitted to continue operating. These costs will have to be shouldered by consumers. The costs of transforming the energy sector in Germany will likely more than double by 2020 versus 2011 – rising from approximately EUR 13.5 billion to about EUR 29 billion p.a., primarily as a result of additional costs for renewable sources of energy (solar photovoltaics, off-shore wind), and the transmission and distribution grid.

Private households will bear the brunt of the costs of the energy sector transformation. After the latest price increases in January 2013, they now pay around 40 to 50 percent more for electricity than the EU average. By 2020, all energy customer segments can expect a further (real) electricity price hike compared with 2011: for private households, an additional 23 percent; for skilled trades, commerce, and services, an additional 24 percent; for normal industrial companies, an additional 34 percent; and for energy-intensive industries, if the current regulation is retained, an additional 18 percent (*Exhibit 18*).

The costs of transforming the energy sector will increase electricity prices for all electricity customers

The costs of transforming the energy sector¹ ...

EUR billions p.a.,
real at 2011 prices



1 Analysis is confined to additional costs due to transformation of the electric power generation sector (expansion of renewable energies and networks)
 2 Increase in network charges before 2011 due to transformation of the energy sector not included
 3 Difference between EEG payment and wholesale value of EEG electricity (EEG: Renewable Energies Act)
 4 Incl. VAT

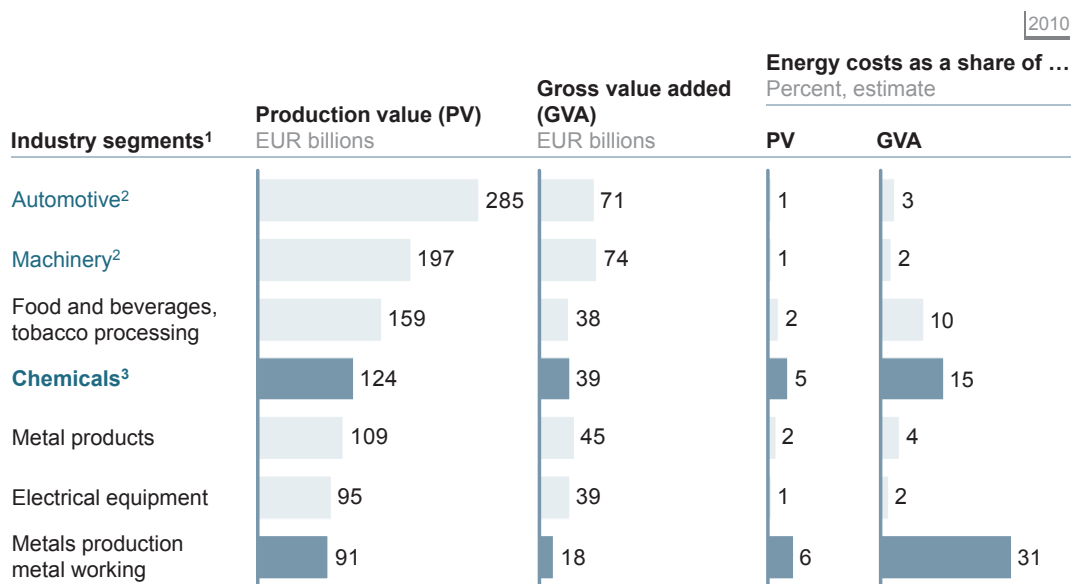
SOURCE: German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety; McKinsey

There are frequent calls to extend the levy charged under the German Renewable Energy Act (EEG) to include electricity-intensive industries. However, doing so would hurt the economy by putting these important industries at an immense disadvantage. Although the price of electricity would fall for households by 7 percent; for skilled trades, commerce, and services customers by 8 percent; and for normal industrial customers by 11 percent, the price for energy-intensive companies would rise by 50 percent. As these industries compete internationally and cannot pass such cost increases on to customers, the price hike would mean an average loss on earnings before interest and taxes (EBIT) of 60 percent – a blow that would threaten the very survival of many of these companies.

The US has become visibly more competitive in the past two to three years, especially as a result of the shale gas boom. Low energy costs in combination with a business-friendly climate are leading more and more energy-intensive companies (e.g., in the chemicals industry) – including German – to invest in the US. They often tend to invest in existing sites than in new locations, for example, in China.

Among Germany's industry segments, the **chemicals industry**, in which energy costs account for a 15 percent share of gross value creation, has been particularly hard hit by the price increase – not only due to its very energy-intensive high-temperature and high-pressure processes, but also because oil and gas are needed as raw materials in production (*Exhibit 19*). These “feedstocks” are very difficult to reduce through efficiency initiatives and, so far, only limited renewables-based substitutes have been found.

The competitiveness of the chemicals industry and metal production is especially dependent on energy costs



¹ Selected industry segments in manufacturing sector: the 7 segments shown are those with the highest production value. Energy also represents a high share of costs in other industries (such as glass, ceramics, and paper and paperboard), but these have a relatively low production value in Germany

² One of the 3 key industries in Germany: automotive, machinery, chemicals

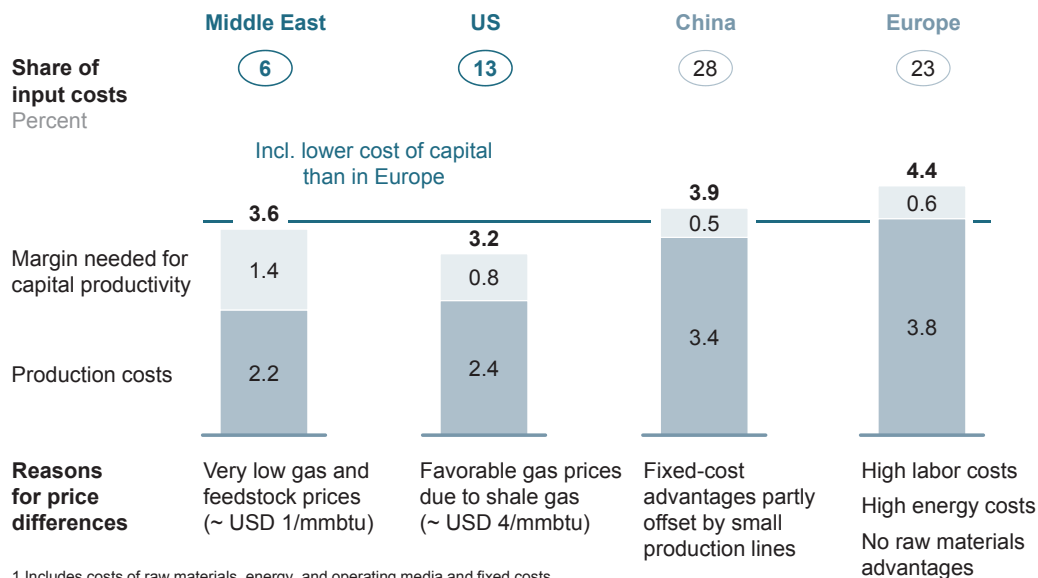
³ Key industry with the highest share of energy costs

Building chemical production sites in the Middle East, the US, and China is already less expensive than current costs in Europe

Average cost position of various regions for the production of organic molecules, 2013; example: niche product, petrochemicals¹

INDICATIVE

'000 USD/t



¹ Includes costs of raw materials, energy, and operating media and fixed costs

SOURCE: CMAI (2012); SRI (2012); ICIS (2012); McKinsey

Exhibit 20

Already today, the full costs of new investments in petrochemicals, e.g., in the Middle East and the US, are lower than the operating costs of German plants. The costs of typical petrochemical products such as methylmethacrylate are as much as 40 percent higher in Germany, and for basic chemicals such as ethylene as much as 60 percent above those in the US. Compared with the Middle East, the price differences are even greater (Exhibit 20).⁵³

The cost advantage due to the US shale gas boom has increased investment in the country. Following the period of 2000 to 2010 in which the US petrochemicals industry posted no growth, the chemicals industry there is now experiencing a renaissance, with a growth surge that also extends to downstream industry segments. As a result, the American Chemistry Council reports that, by as early as 2015, additional investments in the US chemicals industry are expected to be in the range of EUR 12 billion and, by 2020, substantially more. In the US, capacities for common petrochemicals are projected to grow at a rate of 1.3 percent p.a. between 2010 and 2020, while in Germany they are stagnating, with some even falling.⁵⁴

Due to high energy prices, many German companies are already thinking about moving production operations abroad since further investment in the domestic chemicals industry is much less attractive. Alongside energy and feedstock costs, other factors also play

⁵³ CMAI (2012); SRI (2012); ICIS (2012); McKinsey & Company (2012h).

⁵⁴ Tecnon (2012).

a role, such as a generally low cost level in the world's growth regions and, in particular, lower capital intensity and market proximity in China.

The German **steel industry** is also directly at risk due to rising energy prices. While it is true that the energy necessary for integrated production of crude steel can largely be recovered from blast-furnace gas, risks are emerging for later steps in production, such as rolling and coating, and for steel produced using the electric arc furnace route. In these areas, ending the exemptions under the current regulations for energy-intensive companies, e.g., reduction/exemption from the EEG levy, electricity tax, and grid use fees, would lead to severe competitive disadvantages. Indeed, if exceptions were to be completely abolished, initial modeling shows that some companies' profitability would plummet, putting them in the red.

Germany's "showcase industries," **automotive and machinery**, which rank first and second in German industry measured by production value and number of employees, are less directly affected by high energy costs – these costs account for only 3 and 2 percent respectively of these industries' gross value added. Nevertheless, they are vulnerable to several other risks: the high cost pressure on their supplier industries, some of which are energy intensive (especially metals production), could trigger migrations. The situation is similar for the customer base, especially in machinery. The value chains in both automotive and machinery are highly integrated – if components of these chains are moved to other geographies because of energy costs, this could threaten the existing business models.

For all three key industries – chemicals, automotive, and machinery – the changes in the energy landscape will also generate new opportunities (*see Chapter 3, "Industry structure"*). The chemicals industry, for instance, will be able to exploit new sales opportunities by developing new materials and products, such as, lightweight materials, insulation materials, and battery technology. While in the automotive and machinery industries, the greatest opportunities lie in developing new highly energy-efficient vehicles and equipment (*see also the section "A balanced energy policy" in this chapter*).

Security of supply: For decades, the security of the electric power supply in Germany attained top rankings in international comparisons; it was and is an advantage in the competition among regions. The latest publicly available numbers, from April 2010, too, show Germany as being in Europe's top-ranked group with an average of only 15 minutes p.a. of unscheduled outages, whereas failure times in other European countries such as France, the UK, Italy, and Spain are four to six times higher, at 60 to 90 minutes p.a. In the meantime, however, risks are appearing on the horizon; they are the result mainly of the switch from conventional electricity generation, which offers capacity that can be controlled in the short term (quickly and reliably rerouted or "dispatched"), to renewable sources of energy (e.g., wind, solar), which are available only intermittently. At present, the fluctuating availability of renewable energy sources cannot be made more constant by storage technologies – or at least not economically efficiently enough to be attractive to investors. In the course of the transformation of the energy sector in Germany, some nuclear power plants have been shut down, and some conventional power plants are no longer profitable:

10 to 20 gigawatts (GW) of Germany's conventional power plant fleet is operating today at the profit-or-loss borderline.⁵⁵

In a recent survey of industrial customers conducted by the German Association of the Energy and Power Industry (VIK), 80 percent expressed satisfaction with the quality of electric power supply. However, 40 percent of the companies expect it to deteriorate in the next five years, with a corresponding effect on their willingness to invest.⁵⁶

The European Network of Transmission System Operators for Electricity (ENTSO-E) also sees signs that the security of supply is deteriorating.⁵⁷ For the winter of 2012/13, it found a negative reserve capacity of -0.2 percent. This means that for short periods, peak demand for electricity in Germany could exceed the power available. In an extreme case, imports could even be required, such as on a cold, cloudy winter day with little or no wind, when only limited amounts of energy can be produced from wind and sunlight.

A "cold reserve" in the form of contractually committed conventional power plants in southern Germany and Austria was set up in 2001 in order to strengthen the security of the power supply; it was used on 10 days in the winter of 2011/12. In the meantime, the cold reserve, the price of which is passed on to consumers, has been increased to 2.5 GW.⁵⁸

Along with secure generation, the transmission grid and distribution networks play an all-important role in ensuring the security of supply, particularly in view of the increasing use of renewable sources of energy – given that the generating and consuming regions are often far apart. The expansion of these networks has proceeded very slowly, however. At year-end 2012, of a total 345 km of new lines planned, only 249 km had actually been completed. Of the 24 network projects listed in the Energy Line Expansion Act (EnLAG), the Federal Network Agency reports that currently 16 are experiencing delays, in some cases of up to seven years.

Along with making sure there is sufficient firm, dispatchable capacity from existing power plants, achieving rapid progress on the network projects without further delay is another critical lever to ensure the security of supply. However, grid expansion will remain a persistent challenge into the medium term as well. In the meantime, it is vital to establish a better Germany-wide balance of the volatile generation of power from renewables and to bridge the geographic distance between the points of generation and consumption. Moreover, power plants that have firm, dispatchable capacity should not be shut down too quickly (and similar ones under construction must be brought on line). Advances in demand management and storage technology can likewise play a stabilizing role.

55 In 2011, this equaled around 10 to 20 percent of the power plant capacity of coal, oil, and nuclear power; see German Federal Ministry of Economics and Technology/Bundesministerium für Wirtschaft und Technologie (2013b).

56 Bier (2012).

57 European Network of Transmission System Operators for Electricity (2012).

58 German Federal Ministry of Economics and Technology/Bundesministerium für Wirtschaft und Technologie (2013a).

A balanced energy policy

It is crucial to reestablish a balance in the triangle of energy sector objectives – environmental sustainability, economic efficiency, and security of supply – and to align action in all three areas more closely. Economic efficiency and security of supply need more attention to prevent the foreseeable risks from turning into real disadvantages and to make the transformation of the energy sector a success story for Germany.

The to dos:

Curtail cost increases. Restoring a balanced emphasis to the three objectives for power generation should help avoid further price increases. Specifically, a balanced energy policy means: limit the growth of solar photovoltaics to the targeted level, connect existing offshore wind parks to the grid, and focus further investment on energy efficiency and onshore wind. Compared with other ways of reducing CO₂ emissions, investments in energy efficiency and onshore wind are comparatively low cost and the local value added is relatively high because the equipment can be manufactured in Germany and the work of making households and small businesses more energy efficient can be carried out by local skilled trades firms.

Beyond this, more alignment is urgently needed at the European level to make sure that renewable power plants are built at optimal locations (e.g., wind power units along the Atlantic coast, solar power in southern Europe) and that progress along the coordinated pan-European grid expansion effort does not lose momentum. If this does not happen at the European level or happens too slowly, Germany should pursue bilateral agreements and action plans, for example, with Spain, the UK, Switzerland, or Norway. In the long run, such agreements could merge into a pan-European solution coordinated by the EU. Compared with continuing along the current path, a European agreement could save about EUR 360 billion by 2050 in Germany alone.⁵⁹

Increase network stability and security of supply. Fast and efficient grid expansion is required, especially of the high-priority projects such as the Thuringia power bridge, which will bring wind power from the north to consumption centers in southern Germany. This is an especially important connection to allow for the shutdown of the Grafenrheinfeld nuclear power plant in 2015. Roughly estimated, the investments required to expand the grid by 2022 will likely amount to between EUR 30 and 50 billion.⁶⁰

Adjustments will also be needed in the regulation of the electricity market. Given the volatility of the feed-ins from renewables-based generation, firm dispatchable capacities (flexible and backup) have a high value for system stability. To maintain or expand these capacities, regulation needs to be modified so that the market sends reliable price signals as a basis for robust investment decisions. This could be accomplished, for example, by

⁵⁹ McKinsey & Company (2010b).

⁶⁰ German Federal Network Agency (2012); German Association of Energy and Water Industries/Bundesverband der Energie- und Wasserwirtschaft e.V. (2011); German Energy Agency (2010).

strengthening the balancing energy market, creating a market specifically for buying and selling flexible capacities that are not part of the existing wholesale market, or by setting up a strategic reserve (with the Federal Network Agency as the contractor). Current forms of support for renewable energy sources could also be improved – as another step in designing a sustainable electricity market for the future. For example, making renewable generators responsible for the cost of their balancing would give them an incentive to improve the quality of their feed-in forecasts. This could allow even the less flexible power plants (e.g., those with longer start-up times) to be deployed.

These improvements could be supplemented by allowing providers of flexible demand management solutions (e.g., smart-meter-based solutions) to participate in all parts of the electricity market in order to reduce the overall demand for flexible capacities.

Carefully intervene in power plant parks. Undoing the exit from nuclear power is not an option. Having said that, abandoning domestic fuels, such as lignite, too quickly would simply intensify the effects of the nuclear phase-out, create severe technical problems for the German electricity network, and increase prices further. In fact, exiting from lignite-fired power plants would drive up the wholesale price – by approximately another 5 percent with the shutdown of the 300-megawatt units and by more than 10 percent if the 600-megawatt units are shut down as well. This exit would also worsen the import-export balance by approximately 45 terawatt hours (TWh).

Seize opportunities to make the transformation of the energy sector a success story for Germany. If Germany succeeds in transforming the energy sector while taking a balanced approach to environmental sustainability, economic efficiency, and security of supply, it will be rewarded with substantial new opportunities. First, the country will be less dependent on fuel imports – increased energy efficiency and a large share of renewables in the generation mix could decrease imports by 24 percent, from 0.98 kWh/EUR GDP⁶¹ in 2010 to 0.75 kWh/EUR GDP in 2020. Second, further linkages among German companies and their value chains and the overall integration of energy efficiency and renewable energies into the industry structure should help defend and even strengthen German technology leadership in these areas – thereby supporting Germany as the “land of innovation.” In that case, the energy-efficiency sector could create up to 850,000 new jobs in Germany by 2020.⁶²

Third, energy-efficiency initiatives in Germany at both the household and industry levels have the potential to save EUR 53 billion p.a. from 2020 onwards (*Exhibit 21*), which could also translate into greater competitiveness. The chemicals industry, for example, can contribute in many areas to help reach the greenhouse gas abatement targets and make use of new raw materials reserves. This would enable chemicals companies to enter new markets, for example, for insulation materials, storage technologies electric vehicles, and carbon fiber for lightweight construction and wind power. The shale gas boom in the US and potentially other countries, such as China, is another opportunity for the chemicals

61 Ratio of fossil primary energy imports in kWh to gross domestic product in euros.

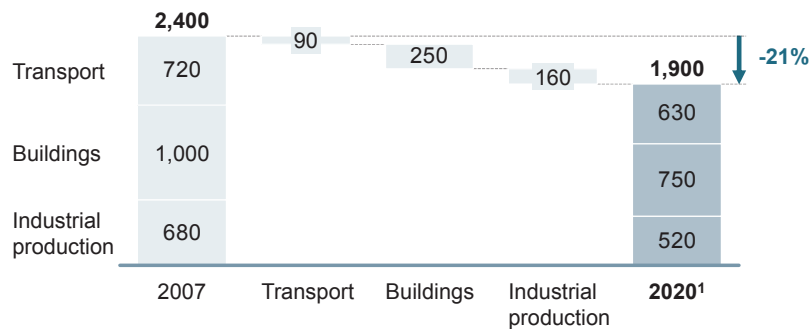
62 McKinsey & Company (2009).

industry as a supplier of exploration chemicals, a market that, at growth rates of 10 per cent p.a., will reach a volume of more than EUR 5 billion in 2015.⁶³

By increasing energy efficiency, businesses and households could reduce their energy costs by EUR 53 billion p.a. from 2020 onwards

Energy consumption in Germany

TWh p.a.



Energy cost savings
EUR billions p.a.

Transport	13	21	7	41
-----------	----	----	---	-----------

Additional savings by German companies abroad
EUR billions p.a.

Transport	9	0	3	12
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Total savings potential from 2020 onwards: EUR 53 billion

Exhibit 21

¹ To better illustrate the savings potential, the same usage behavior and the same economic performance as in 2007 were assumed
SOURCE: McKinsey (2009)

Transforming the energy sector in Germany is a pioneering effort. It will require not only strong resolve, but also the stamina to complete an arduous multi-year journey. It will be important that the effort is well thought through with close attention given to every aspect of this most important journey. Proper design and optimal coordination will be crucial when dealing with the many interdependencies that exist between the various aspects of the transformation itself and achieving the objectives of environmental sustainability, economic efficiency, and security of supply even-handedly, i.e., without favoring one of the objectives above the other two. With this approach, the transformation of the energy sector should be a success story that opens up new vistas for Germany, its companies, and employees.

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5. Skilled labor shortage: Reserves for future growth

It is well understood that Germany's supply of well-educated employees is likely to fall significantly in coming years as a result of demographic change. This poses a potential threat to the country's economic performance, making it more difficult to achieve the targeted per capita GDP growth rate of 2.3 percent p.a.⁶⁴ Nonetheless, there are a number of potential solutions. These range from increasing the participation rate of women in the workplace, to attracting more well-qualified immigrants, to intensifying integration with other European labor markets. All these measures and concerted efforts by all stakeholders will be necessary to close the supply-side gap.

Despite the muted growth rate in Europe as a whole, the German labor market remains robust. The Federal Employment Agency reported in December 2012 that unemployment increased by just 60,000 over the previous year, to ~ 2.84 million, whereas the number of employed rose by 400,000 to 29.4 million.

Integrating Europe's fragmented labor markets

Outside Germany, the state of Europe's labor markets is generally less positive, with only a few other countries, such as Norway, the Netherlands, and Luxembourg reporting unemployment levels comparable to those of Germany. As in Germany, these countries also have a high number of job vacancies, especially for skilled workers. In contrast, in southern Europe, in countries such as Greece, Italy, and Spain, the economic and financial crisis has severely impacted labor markets. Spain, for example, is struggling with an unemployment rate of 26.6 percent and youth unemployment of more than 50 percent (as of November 2012) – placing Spain last in the OECD ranking (*Exhibit 22*).

It might be expected that in the presence of a single European market any major differences in unemployment rates and job vacancy rates would be ironed out as national labor markets “clear” across borders. This function necessarily plays an even more significant role given the use of a single currency. In the absence of variable exchange rates between countries in the eurozone, the differences in economic power could be compensated for – at least in part – by employee mobility, as people go where the jobs are available. However, Europe has yet to achieve the level of mobility between countries necessary to achieve such clearing. This is evidenced, for example, by the fact that while the domestic migration rate in the US is 2.8 percent, that in the EU is only 0.18 percent.

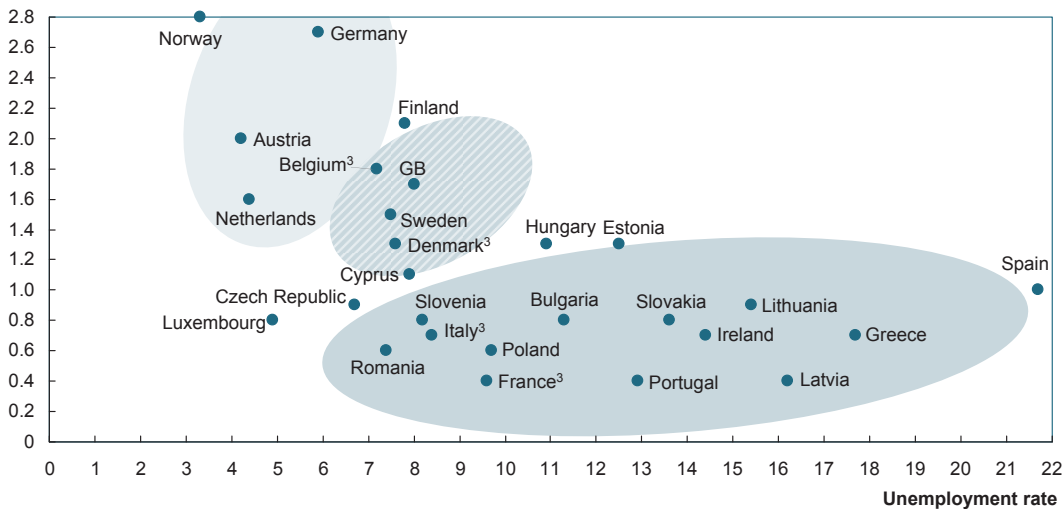
64 See Chapter 3, “Industry structure.”

The European labor market remains imbalanced – despite partly high unemployment and numerous vacant positions

Labor market in EU member states, 2011¹

Percent

Vacancy rate²



¹ Relative position of most countries 2008 to 11 largely constant

² Vacancy rate = number of unfilled jobs ÷ number of jobs in total

³ Data from 2010

SOURCE: Eurostat; McKinsey

Exhibit 22

As a result of this imbalance between national labor markets, the EU⁶⁵ incurred macro-economic costs of approximately EUR 674 billion in 2012. This sum comprises:

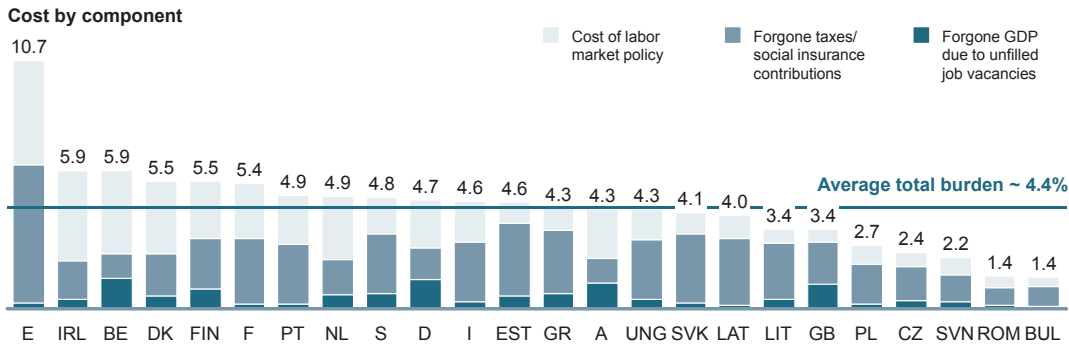
- EUR 273 billion incurred as the direct cost of unemployment, i.e., the costs of labor market administration and unemployment benefit payments.
- EUR 310 billion incurred as indirect costs, in the form of forgone social insurance contributions and taxes.
- EUR 91 billion attributed to lost economic performance resulting from unfilled job vacancies.

Exhibit 23 shows the cost of this labor market imbalance for individual European countries measured as a percentage of GDP. While the major costs for countries such as Spain, Ireland, and France are incurred from unemployment, those for Germany, Finland, and the UK arise from the lack of skilled workers required to fill job vacancies. Germany, incurring a cost of around 4.7 percent of national GDP, is at the midpoint in this range.

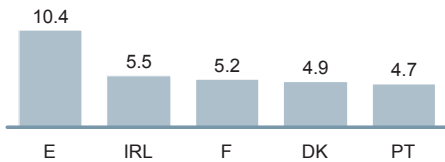
⁶⁵ This refers to the EU-27 – excluding Luxembourg, Malta, and Cyprus.

The imbalance on the labor market generates high macroeconomic costs

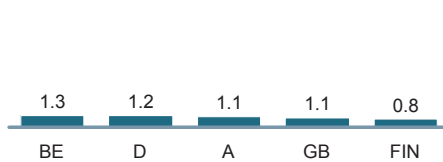
Percent of GDP



Top 5 countries by cost of unemployment¹



Cost of shortage of skilled workers²



¹ Total of spending on labor market policy and lost taxes and social insurance contributions
² Forgone GDP due to unfilled job vacancies

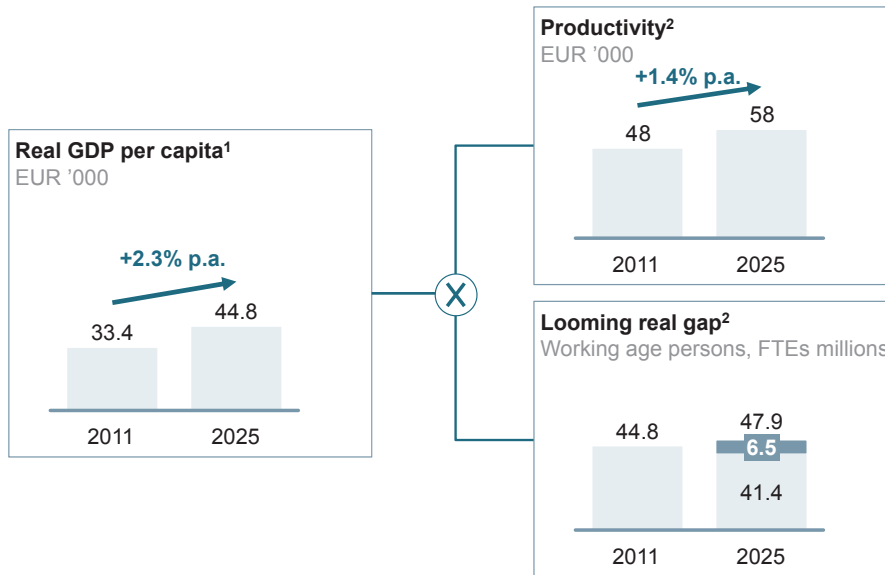
SOURCE: Eurostat; IHS Global Insight; Prognos; McKinsey

Exhibit 23

While Germany can be satisfied that it has a low level of unemployment compared with the European average, its high job vacancy rate is a major cause for concern. Germany's output is already an estimated 1 percent lower than the level possible if sufficient skilled labor were available. This problem is likely to become more acute in the period up to 2025 as demographic changes continue to decrease the supply of skilled labor. The lack of skilled workers is a particular threat to specific industries, regions, and occupations. The shortage of skilled workers will be especially acute, for example, in the machinery and automotive industries, as well as in chemicals and electrical engineering. In healthcare and social services, where labor is already scarce, the situation will continue to worsen. In the public sector, entire occupational categories are threatened by the impact of an aging workforce, for example, those of vocational school teachers, city planners, and construction engineers.

How large this gap between the supply and demand for skilled labor becomes depends primarily on the future rate of growth and productivity increases. For Germany to achieve the target of a per capita GDP growth rate of 2.3 percent p.a., equating to a total GDP growth rate of approximately 2.1 percent p.a., it will need an additional 6.5 million employees by 2025. This assumes that productivity continues to increase at a rate of 1.4 percent p.a. – the present long-term average (*Exhibit 24*). Even with greater productivity gains, it will be possible to offset only part of this gap: for instance, if the economy were to step up its productivity growth by one and a half times, to approximately 2.2 percent p.a., there would still be a gap of around four million skilled employees by 2025.

For per capita GDP to grow by 2.3% p.a., Germany will need about 6.5 million additional employees by 2025



¹ Assuming constant per capita GDP growth of 2.3% p.a.

² Employee potential, i.e., population of working age effectively available to the labor market; takes into account population scenario 1 of the German Federal Office for Statistics (birth rate of 1.4 children per woman and a net immigration increase of 100,000 as of 2014), working age range: 20 to 65, and hidden reserve of 17%

Exhibit 24

SOURCE: German Federal Office for Statistics; McKinsey

If the skilled worker gap cannot be closed, Germany runs the risk of losing a significant share of its prosperity. Assuming a productivity improvement rate of 1.4 percent a year, GDP in 2030 would be approximately EUR 517 billion lower than the level that could have been possible if there were an adequate supply of skilled workers.

An aging workforce and wage increases

The current demographic trend presents other well-understood challenges to the labor market, both in the public sector and in the private sector. Over the next 10 years, the public sector faces having to replace almost one in four of its employees due to retirement. In the private sector, certain industries are competing for scarce talent by paying more. However, this is not a viable long-term solution.

The aging public sector

The public sector⁶⁶ currently employs 4.6 million people, which corresponds to around 11.5 percent of all employees in Germany. Over the coming 10 years it will lose approximately one million employees due to retirement – i.e., just under a quarter of the staff will need to be replaced.

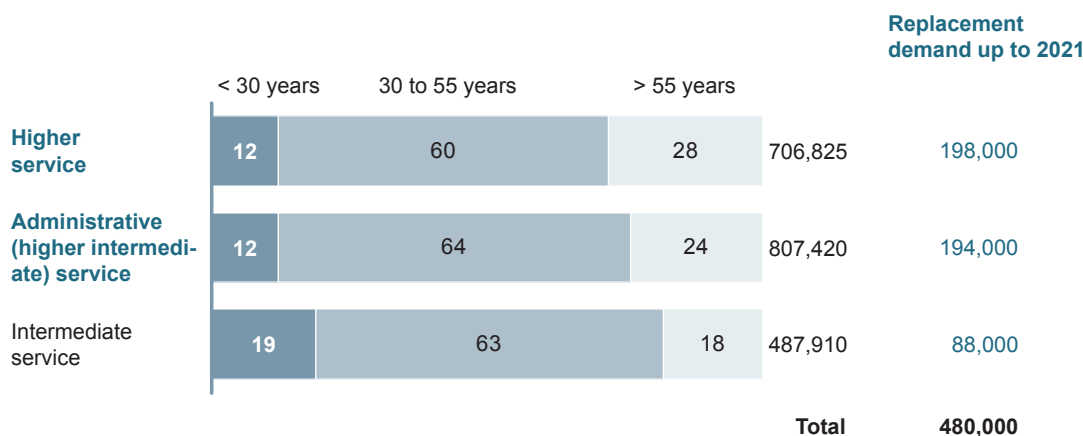
⁶⁶ Core administrations at federal, state (Bundesländer), and municipal levels.

Within this total, the higher professional civil service grades will be the most affected, especially at the higher and higher intermediate levels (höherer and gehobener Dienst). In the federal states, for example, 480,000 civil servants (24 percent) will reach retirement by 2021. Of these, about 200,000 are at the higher level and nearly 200,000 at the higher intermediate level (or comparable collectively bargained pay grades for employees who are not civil servants). Only around 90,000 are in the intermediate and primary service levels. The implication is that by 2021, at the latest, the states alone will require approximately 200,000 individuals with university degrees, plus a further 200,000 with degrees from a technical college or university of applied sciences (Fachhochschulabschluss) – that is, if the present structures and processes are not redesigned to be much more efficient (*Exhibit 25*).

At the state (Länder) level, the German public sector has a disproportionate number of older managers and skilled workers

State-level employment in public sector

Civil servants and employees, FTEs, percent, by age (2011)



SOURCE: German Federal Office for Statistics; McKinsey

Exhibit 25

In fact, it will not be possible to solve the staffing problem with replacements alone. State-level budgets are too strained for such a solution – the average personnel-cost ratio already amounts to 41 percent of the current budgets. In addition, the debt brake built into Germany’s Basic Law will restrict the states’ freedom of action, largely preventing such an option.

Ad hoc solutions are unsustainable

The impact of the present demographic shift is increasing steadily year on year, but because it widens the gap between labor supply and demand only gradually, it is both tempting and natural for companies to seek ad hoc solutions. Certain industries, such

as automotive and chemicals, for instance, have resorted to raising pay levels in order to secure the skilled workers they require in key occupations.

This impact is seen clearly in industries that are key to Germany's export model where, between 2008 and 2012, average pay increases were well above the national average. While pay in all industries increased by an average of 2.7 percent over this period, average pay in the chemicals and process engineering industries increased by 3.7 percent p.a., pay in medical technology by 3.5 percent p.a., and pay in the automotive industry by 3.3 percent p.a. Certain functions saw particularly large increases: IT executives in the chemicals and process engineering industries, for example, received an average pay increase of 4.7 percent a year, while those in medical technology were awarded an increase of 4.9 percent a year (*Exhibit 26*).

The approach to date to compensate for the shortage of skilled workers via higher salaries is not viable in the future

Annual salary increase depending on occupational group, 2008 to 2012

Percent

Occupational group	Industry segment				Average for manufacturing ¹
	Automotive	Chemicals, process eng.	Consumer goods, incl. durables	Medical technology	
Production					
Manager	2.3	3.2	4.0	3.2	2.6
Engineer	2.9	3.0	1.9	2.6	2.6
Technician	2.4	3.5	3.3	3.7	2.9
R&D					
Manager	2.8	2.7	3.7	3.6	2.4
Employee	2.9	2.8	2.9	3.7	2.0
IT					
Manager	3.1	4.5	3.1	4.9	2.9
Developer	3.3	2.8	3.6	2.9	2.3
System administrator	2.0	2.5	1.4	3.0	2.1
Average²	3.3	3.7	3.0	3.5	2.7

- Above-average salary development in key industry segments of the export model
- Above-average increases primarily among executives in total and IT
- Remuneration model weakens competitiveness

¹ Average of 10 industries in manufacturing sector (plus pharmaceuticals, machinery, plant engineering, aerospace, energy, and electronics engineering)

² Average of all occupational groups except top management (includes additionally sales/marketing, finance, and human resources)

SOURCE: Wirtschaftswoche (2008, 2012); McKinsey

Exhibit 26

The risks of continuing with this approach are obvious: if the increase in factor costs is higher than the productivity increases achieved, such pay increases will weaken company competitiveness. A sustainable strategy for managing the skilled labor shortage is needed that integrates wage increases and productivity gains.

Levers for rebalancing labor supply and demand

Though the demographic trends indicate the likely scenario of a widening gap between the supply and demand of skilled workers, there is no inevitability about this. If corrective action is taken quickly, the problem can be resolved and the gap bridged. This requires the

key stakeholders to agree on two sets of complementary actions. On the one hand, it will be necessary to make use of the national and transnational opportunities to increase the supply of skilled workers. On the other, it will be necessary to reduce demand for skilled workers in the public sector by undertaking fundamental modernization measures.

Increasing the supply of skilled workers

Germany will need to look beyond its own borders to resolve the forthcoming skills shortage. However, at this point Germany has yet to activate all of its own reserves and to exploit the full potential of the following levers:

- **Encourage women's participation in the workforce.** Greater participation of women holds the potential for adding 0.7 to 2.1 million full-time equivalent employees (FTEs) by 2025. To enable more women to work outside the home on a full-time basis, action is required to improve the compatibility of work and family life with the introduction of life-phase-oriented work models.
- **Reintegrate older employees.** Bringing (early) retirees back into the labor market and increasing the rate of employment of people over 55 years of age could potentially add an extra 0.5 to 1.2 million skilled FTEs by 2025. The prerequisites for achieving this include attaching greater value to the contribution of older employees and providing incentives for people to remain in the workforce longer. This could encompass, for example, flexible transition into the state-run pension program.
- **Activate long-term unemployed.** There are currently around two million long-term unemployed in Germany. Encouraging the participation of this group could potentially add 0.1 to 0.2 million skilled FTEs. Because this is not a large number, the efforts in this area are probably best focused on ensuring that as few as possible of those currently unemployed remain so in the long term.
- **Encourage controlled immigration of skilled workers.** Increasing controlled immigration of skilled workers, for example, by intensifying efforts to attract foreign university students, could potentially add 0.4 to 1.0 million FTEs. To achieve this, Germany needs to make itself attractive for the best and brightest, providing an authentic welcome to such guests.
- **Increase the qualification rate.** By reducing the number of students who drop out of school, vocational training, or university before qualifying, Germany would increase the share of skilled workers in the total labor pool. This could potentially add approximately 0.5 to 1.9 million FTEs.
- **Increase weekly working hours.** Increasing the working hours of full-time employees by two hours a week (on a voluntarily basis or through collective bargaining) would add the equivalent of approximately 0.4 to 1.1 million FTEs.

If Germany is to find another 6.5 million skilled employees by 2025, it will need to tap the full potential of all these levers. This will mean, for example, that the employment rate for women and those over 55 in Germany will need to be lifted to the level of the best in Europe.

The scale and nature of this challenge has been recognized by the German Federal Employment Agency, which outlined a plan of action in its 2011 publication, “BA-Perspektive 2025: Fachkräfte für Deutschland.” This describes what all the key stakeholders, including the government – at the federal, state, and municipal levels – employers, employees, and other stakeholders need to do in order to tap the existing potential. Following its publication, the first direction-setting steps have already been taken: including legislative changes, such as establishing a right to child care, promoting lifelong work time accounts and flexible entry into retirement, and lowering the hurdles to the recognition of foreign educational degrees.

In addition to its legislative work, the Federal Ministry of Labor and Social Affairs has also launched two initiatives entitled “Skilled labor at the regional level” and “Skilled workers innovation office.” The Ministry is in the process of linking up 456 regional and local networks of chambers of commerce (as well as those for various occupations) with unions, regional and local authorities, and the Federal Employment Agency.

Examining the matrix of actions currently being undertaken against the six levers highlighted above shows that additional action is especially required in two areas: increasing cross-border migration and improving qualifications through training.

Increasing cross-border migration – merging national labor markets in the EU

From 1991 onwards there has been an inward flow of around 200,000 individuals a year to Germany (net of emigration), albeit with sharp fluctuations over time. Recent patterns show that immigration has typically been from eastern Europe. Though immigration has reached substantial levels, there has yet to be any attempt at targeting particular groups of skilled workers (*Exhibit 27*).

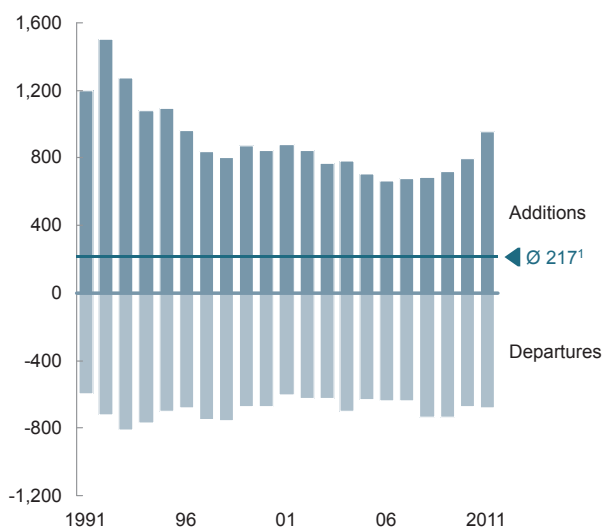
In 2011 and 2012 net immigration increased to approximately 300,000 individuals a year. In these two years an increased percentage of immigrants have come from countries especially hard hit by the euro and sovereign debt crisis. The goal now must be to smoothen this increased flow of qualified workers to Germany. Expanding cross-border mobility among the national labor markets within the EU requires – alongside changes to legislation – that the processes in the various labor market administrations converge. Large-scale corporations can also play a role in improving training to ensure greater cross-border mobility.

Merge approaches in labor market administration. For there to be a fully functioning cross-border European labor market, the market mechanism needs to be underpinned by full information transparency: those seeking work need to know where the job openings are and in which countries, while employers need to be able to examine the profiles of job seekers.

In the past 20 years, Germany has had a net immigration of 200,000 individuals p.a., currently especially from eastern Europe

Migration between Germany and other countries

Number in thousands



Top 5 countries in migration balance by country of origin/destination, 2010

Number in thousands



1 Average annual net migration

2 Largely applicants for asylum

SOURCE: German Federal Office for Statistics; McKinsey

There are several aspects to establishing such transparency. One initial step would be to create a pan-European labor market portal, making such information available in various languages. This information could be supplemented by information on the required qualifications. The General Directorate of Employment, Social Affairs, and Integration of the European Commission has taken a first step towards this by establishing such a portal, to be known as EURES.

Another step would be for the national agencies to further develop a shared set of policies that makes cross-border placements one of their core tasks. This not only requires aligning business processes for the placement of job seekers through cross-border cooperation but, in addition, agreeing upon performance targets and incentive systems for employees.

In addition, the European Union could develop instruments designed to ensure mobility in the labor market. For example, it could support language courses, pay the cost of flights, or offer allowances to individuals with two residences. The recognition of such expenses as tax deductible would also help increase mobility. A long-term objective should be to make claims for social insurance transferable across national borders.

Encouraging large-scale companies to promote employee mobility. Multinational companies are in a special position as employers in being able to draw on recruitment from a variety of national labor markets. Their unique reach makes them well placed to contribute to reconciling differing training systems.

As an example, VW in Spain is creating a training program similar to the dual education system in Germany. This enables it to create a reservoir of skilled workers for its own group of companies. By doing so, VW is in effect “exporting” the quality of the German vocational training system to Spain. This increases employability in Spain, where approximately 48 percent of the potential labor force has only a primary school education (OECD average: 27 percent).

With a similar objective, since 1982, 27 large-scale German companies have jointly operated a vocational school (ASET) in Madrid. Many of its approximately 1,400 graduates are today executives in the participating companies. Internationally active medium-sized companies might also benefit from contemplating similar models of cooperation.

Improving training and qualifications

The provision of high-quality training and qualifications is central to ensuring the continued competitiveness of Germany’s labor market. The country therefore needs to ensure that its entire educational system is top notch.

Reduce share of youth without any credentials. In a knowledge-driven economy, the demand for unskilled labor naturally decreases. In Germany, this demand was approximately 7.1 million hours, or around 12.5 percent of the total demand for labor in 2010. By 2030, it is likely to fall to approximately 5.7 million hours, or 10 percent of total demand.⁶⁷ It is thus no surprise that one out of every two long-term unemployed individuals has no occupational training credentials. An individual’s fate is often already set by the time they leave school.

Two groups in particular often end up without a school-leaving certificate: children from an immigrant background, especially those whose parents belong to the ethnic groups canvassed for “guest workers” a generation or more ago; and special needs students, half of whom do not achieve a school-leaving certificate. Targeted programs should be developed for both these groups. This should include better special education programs and more intensive homework support for children with immigrant backgrounds. Reintegrating special needs students back into the regular school system should also be set as an important national goal. In addition to these two main groups, more needs to be done for schools in eastern Germany, where double the number of students drop out from the lowest-track school type, the Hauptschule, without acquiring any school-leaving qualification (in 2011, 9.7 percent dropped out, compared with 5.0 percent at these schools in western Germany).

Develop and invest in the dual vocational training system. Germany’s vocational training system is highly successful by international standards. As a recent McKinsey study shows, young people in Germany more frequently find a job than in other countries and do so more quickly.⁶⁸ Some 70 percent of young people are able to secure a permanent

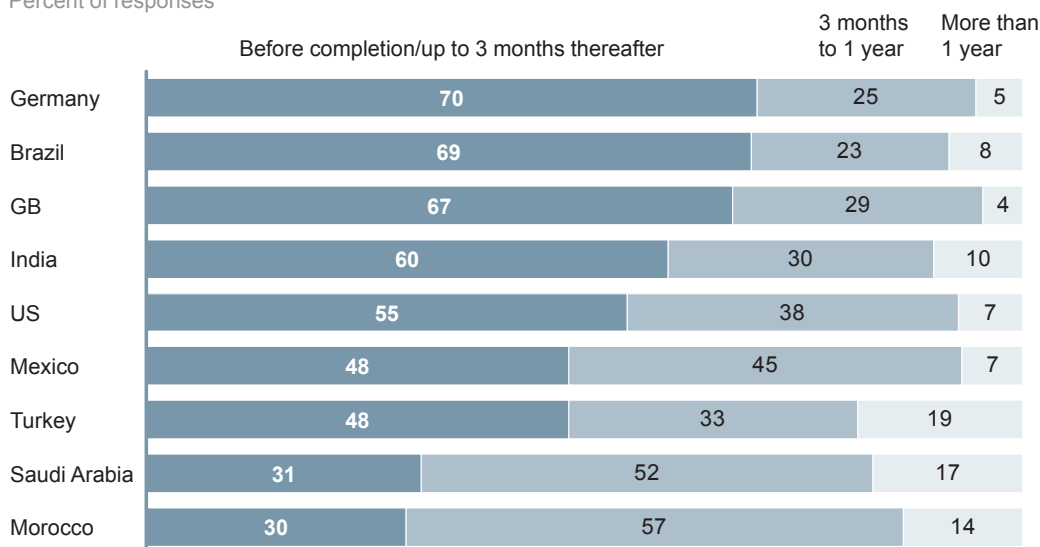
67 Helmrich et al. (2012); Authors Group on Education Reporting/Autorengruppe Bildungsberichterstattung (2010).

68 McKinsey & Company (2012a).

Of Germans starting their first job, 70% find work within 3 months of completing an apprenticeship

Survey: time to first permanent job

Percent of responses



SOURCE: McKinsey survey, August to September 2012

Exhibit 28

job during their apprenticeships or other post-secondary training or, at maximum, within three months after completing it. This rate is higher than in all the other countries analyzed (*Exhibit 28*).⁶⁹ Youth unemployment, at 8 percent in Germany, is also less than half the OECD average of approximately 19 percent.

Nevertheless, action is needed here, for despite some institutional cooperation between employers and education providers, the two groups largely live in different worlds within the dual system. Only 43 percent of employers consider entry-level job seekers as suitably primed for the labor market – a rating comparable to that in other countries within the comparison group. By contrast, the ratings of the education providers are much more positive: they believe that around 82 percent of their graduates are prepared for the world of work. This discrepancy in evaluation, which has a direct bearing on the future opportunities of young people, is actually larger than in all other countries in the comparison group (*Exhibit 29*).

A further issue is the increasing age of the vocational school faculty: nearly one in three teachers is currently over 55, and only 3 percent under 30. The overall task thus involves strengthening the existing system and improving its quality, which will include promoting interaction with and among employers and rejuvenating vocational school faculty. Furthermore, the provision of training needs to be constantly updated, both in terms of the

69 The other countries analyzed were the UK, the US, Turkey, Brazil, Mexico, India, Morocco, and Saudi Arabia.

Employers are especially skeptical of the employability of individuals seeking their first job compared with educational institutions

Percentage of people surveyed who rate employability favorably

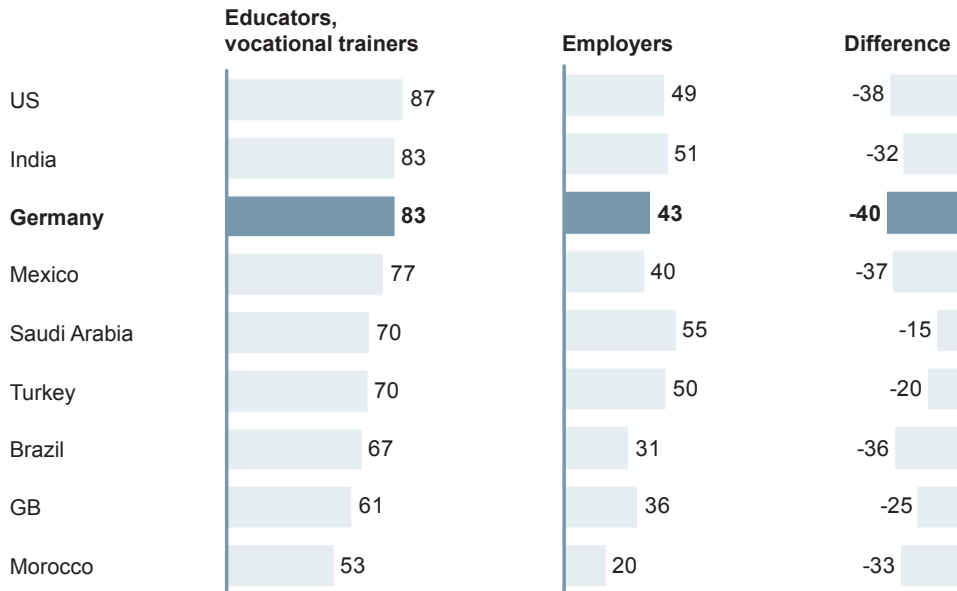


Exhibit 29

SOURCE: McKinsey survey, August to September 2012

occupations and skills offered, and in order to meet the evolving requirements of the modern working world – for example, in terms of new technologies and increasing internationalization. This can be accomplished through further expansion of the dual curricula. (In Germany, the dual system combines vocational training with education as an alternative to undergraduate studies.)

Better prepare university graduates for the working world. In Germany, there are far fewer university graduates (ISCED tertiary levels from bachelor degree upwards) relative to the total population than in most other OECD countries: the share of university students relative to the total workforce in Germany is approximately 25.7 percent. While between 1959 and 2009 this share increased by a mere 7.3 percent in Germany, the increase in South Korea was 56.6 percent and that in Japan 42.0 percent. France and Spain have also registered significantly higher rates of increase over the last 50 years, at 32.7 percent and 30.6 percent respectively.⁷⁰

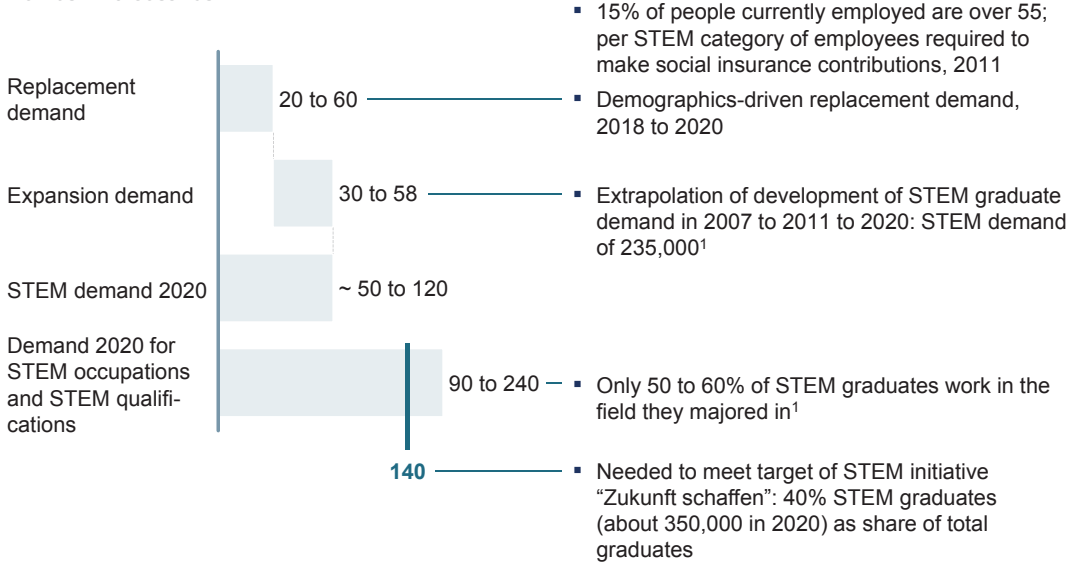
One lever for increasing the share of university graduates without diminishing the dual vocational model is to reduce the rate of university dropouts. The dropout rate has traditionally been between 20 and 30 percent but has increased during the Bologna process, the transition to awarding bachelor's and master's degrees. In bachelor programs at universities, the dropout rate is as high as 35 percent (whereas universities of applied science

70 OECD (2009).

By 2020, the number of STEM graduates should be increased by around 140,000

Demand for STEM graduates, 2020

Number in thousands



¹ According to Germany's Federal Employment Agency, linear extrapolation of the development in STEM demand from 2007 to 2011 indicates a STEM graduate demand in 2020 of 235,000; the Federal Institute for Vocational Education and Training (BIBB) foresees no demand gap up to 2020
 SOURCE: German Federal Employment Agency; IW Köln; Helmrich et al. (2012); Initiative MINT Zukunft schaffen (2011); McKinsey

Exhibit 30

have a 19 percent dropout rate).⁷¹ According to studies by the German University Information System HIS, the main causes, each of which account for one-fifth of all dropouts, are performance problems, financial problems, and lack of motivation. Reducing dropout rates requires a refocusing of the curriculum, particularly for bachelor programs, and introducing measures to boost motivation, such as providing information on the financial return on students' education.

It is also a matter of urgency for Germany to increase the share of students studying the STEM subjects – that is, science, technology, engineering, and mathematics. A structural skilled labor deficit is already visible in these areas: simply in order to replace current skilled employees and to compensate for the demographic changes resulting from the end of the baby boom years, the proportion of STEM students will need to increase markedly (based on the demographic replacement rate, i.e., the ratio of those under 36 to those aged 56 to 65). This is particularly the case for engineers. Germany's current replacement rate, as measured recently by the OECD, is as low as 0.77 in mechanical engineering (i.e., there are only 77 new engineers in the educational pipeline for every 100 existing ones) and 0.88 in electrical engineering. In order to offset the present net reduction of employees with STEM backgrounds, the replacement rate needs to be increased in the medium term to approximately 1.30.⁷² Beyond this, the country needs

⁷¹ German Federal Employment Agency (2011).
⁷² Erdmann/Koppel (2010).

to expand the number of STEM graduates by about 140,000 by 2020 in order to achieve the targeted overall increases in labor productivity and growth rate (*Exhibit 30*).

The first steps in achieving these targets are to increase both absolute enrollments and the share of graduations in STEM subjects. There is particular potential for increasing the proportion of women among STEM students, as noted in the university education report *Hochschulbildungsreport 2020*, recently published by the Association for the Promotion of German Science and Humanities (Stifterverband für die deutsche Wissenschaft) and McKinsey. According to this report, in order to cover demand in 2020, the share of women among science, mathematics, and engineering students should be increased from the current 37 to 41 percent and that in technological sciences from 21 to 26 percent. To accomplish this, interest in STEM subjects needs to be encouraged starting in primary school. A further goal should be to increase the rate of graduation in STEM subjects to 80 percent, from the current levels of 66 percent in science, engineering, and mathematics and 73 percent in technology.

Reducing demand for skilled workers in public administration

The present demographic change poses enormous challenges for public administration in Germany. Many employees at the executive management and professional levels are approaching retirement and will soon need to be replaced. Areas of the administration that will be severely affected include vocational schools, area planning, and construction, as well as staff units in policymaking. At the same time, many German states are understaffed in terms of the next generation. In consequence, within the next few years, many public offices and institutions will suffer acute staff shortages – unless they use this opportunity to thoroughly revise their structures.

The current situation provides the opportunity for the public administration to introduce a comprehensive modernization strategy that will noticeably increase its efficiency. Doing so will also help reduce competition for the shrinking reservoir of well-qualified employees.

Three levers are currently proving their worth elsewhere in Europe in modernizing public administration:

- **Focusing.** The consolidation of certain tasks through shared services is a tried-and-tested way of introducing efficiency gains and reducing personnel requirements. In Denmark, for example, the government realized savings of around 20 percent by introducing shared services. In Germany, Dataport, which has a customer base of over 1,000 politically independent public-sector entities, has shown how public administration entities can jointly perform a number of important functions using standard information and communications technology. Key success factors for this initiative include high quality aspirations, transparency, and careful political management.

- **Digitization.** Moving administrative processes onto online channels can also lead to greater efficiency and effectiveness. Germany currently lags behind a number of other European countries in this regard. For instance, while only 1.5 percent of all job seekers register online in this country, in Finland 85 percent do so. A prerequisite for expanding digital services is to provide citizens with comprehensive information and to ensure that the online services are systematically aligned with the users' needs, are easy to use, and provide simple and readily available user tools.
- **Optimization.** Modernization of procedures and processes can lead to sustainable performance improvements. A comprehensive examination, involving the participation of employees and project managers, will reveal which procedures and processes are well accepted by the users and where the opportunities for improvement lie. Comprehensive modernization can deliver substantial benefits, as seen in Sweden, where the immigration authorities were able to shorten the process for applying for asylum by 75 percent and, in parallel, increase employee productivity by 30 percent. Additional benefits resulting from these improvements included greater enforceability, fewer overturned decisions, and higher employee satisfaction rates.

Any comprehensive modernization program needs to be accompanied by improved human resources management. Public administration has the potential to be even more attractive for the next generation of professionals and executives than it is today. It already offers job security, a good family-life-work balance, and is tasked with protecting the common good. These advantages, when combined with as the introduction of career paths that cross departmental boundaries, provide early opportunities for gaining managerial experience, and flexible lifelong working accounts can make the public sector the career of choice for many.

An important conclusion here is that one impact of the demographic shift upon the labor market will be to turn it into an "employees' market." This poses a tremendous challenge both to the public sector and private employers. Surmounting these challenges successfully will require all stakeholders to adopt a concerted, coordinated approach along the lines outlined above.

For employees, on the other hand, this new situation offers significant opportunities. However, in order to benefit from this environment, individuals will need to be able to make informed decisions, especially at the transition points between school, further education, and the world of work. More transparent information about the opportunities that different choices lead to would help. One example would be to provide labor market data showing the entry-level pay and career opportunities available for different occupational qualifications.

All the evidence shows that it is worthwhile for employees to develop their skills. Each additional year of school increases an employee's attainable income by approximately 9.6 percent. Those who complete vocational training earn around 60 percent more than those who drop out of school, while university graduates earn 80 percent more. Better decisions about education and training will not only help individuals but will also support the overall effort to address the shortage of skilled workers and deal successfully with the challenge of labor market reform in Germany and at the European level.



6. Outlook: A perspective for Germany in 2025

In the previous chapters, we analyzed four challenges to the German economy's continuing growth and outlined possible solutions. Germany must help to overcome the euro and sovereign debt crisis, renew its industry structure and export model, transform its energy sector, and avert the foreseeable skills shortage. We believe that overcoming these four challenges is crucial to the country's future prosperity. While making these recommendations, we remain aware that we all live in a highly volatile world and that these challenges are neither easy to forecast nor the sole drivers of development. Our models and our recommendations should therefore not be taken as a forecast of what will happen, but as likely scenarios.

Among the many other developments, some of which might well prove important over the long term, we would like to briefly touch on three that will undoubtedly have significant global impact:

- **Geopolitical risks.** A new economic and political center of gravity is emerging in Asia – this is now beyond dispute. Nevertheless, the world's growth dynamics and power relationships are far too complicated to allow them to be described in terms of a single US/China/Europe triangle: there are other sources of geopolitical risks and other centers of growth. The consequences of such tensions cannot be predicted: they could even trigger large-scale migration, for example.
- **Management of the earth's resources.** The use of finite raw material reserves, the emission of pollutants, and the as yet unclear consequences of climate change remain additional unsolved challenges. While various climate models do not forecast any dramatic impact of climate change over the next decade, the climate's extremely slow response times also apply to any measures taken to counter global warming. It is therefore vital not to lose sight of potential long-term effects and, as far as possible, to avoid any delays in implementing countermeasures. Germany has decided to transform the energy sector, and the EU has implemented regulations to reduce the use of fossil fuels and counter emissions. Nevertheless, such measures achieve relatively little on a global scale.
- **Global economic trends.** It is generally agreed that one trend currently dominates the world economy: growth is increasingly driven by emerging economies. However, many of the possible consequences of this development are hardly discussed. Many of today's boom regions are building on weak institutional foundations. Their rapid growth is leading to frictions, infrastructure bottlenecks, and large-scale pollution. In addition, despite recent efforts, regulation of the international financial system is still insufficient. More broadly, time and again, the cross-border implications of specific trends continue to be underestimated. For example, the energy situation in North America is currently changing dramatically due to new developments enabled

by technology, such as the shale gas boom, which may be joined by a shale oil boom. If these trends continue, they will have implications not only for the international division of labor but possibly also for geopolitics.

Although developments in these three areas increase both uncertainty and the potential downside risk of discontinuities and crises, experience shows that there is good reason to remain optimistic that large-scale change is possible.

Text box 8

Other transformation experiences: Lessons from German reunification

Germany has already faced a major transformation task in the recent past in the rebuilding of eastern Germany following German reunification. Many people, including politicians, initially thought that this task would be relatively easy to master. However, it subsequently proved to be a challenging and hugely complex effort. The two parts of Germany had evolved in very different ways and in mutual isolation over the intervening decades. Integrating their economic systems into a single state with one currency was expensive, difficult, and time consuming.

Admittedly, making a comparison with Europe's problems today is difficult – at least the EU involves a group of closely integrated market economies rather than two disparate systems. However, in this case as well, the various countries have been moving in different directions in terms of their economic strength and international competitiveness. This divergence became clear at the latest in 2007/2008 when the EU member states had to tackle the financial crisis together and found themselves drifting even further apart. While the task that Europe faces today is smaller than the rebuilding of eastern Germany because the EU's economic systems and performance are more closely matched, the challenge is far greater because we are dealing with a much larger scale and with largely sovereign nation states, despite all integration efforts.

Experience from the rebuilding of eastern Germany does offer several lessons, however:

- **When there is true political and societal consensus, it is possible to overcome major challenges.** Around EUR 1 trillion flowed into eastern Germany during the first 15 years following reunification⁷³ for financing infrastructure, investment in the future, and social insurance and other statutory benefits. This sum is in addition to huge private investments. By way of comparison, Germany currently has an exposure of around EUR 770 billion in the present financial crisis, through the various bailout mechanisms and central banks designed to assist the crisis-rocked countries of the EU – although, of course, we are a long way from reaching the final total; indeed, the EUR 770 billion may not fully tapped. To be sure, rebuilding eastern Germany certainly increased the public debt ratio at the time, some public investments in western

Germany were dropped, and a number of private investments in eastern Germany were misguided. However, none of this caused any fundamental, long-term damage to the German economy as a whole.

- **Appropriate institutional frameworks can foster convergence.** Following German reunification, many workers from eastern Germany took advantage of their newly expanded freedom of movement to migrate to western Germany. While this did not eliminate eastern Germany's high structural unemployment, it certainly helped reduce it. Such migration of labor is doubtless easier within one language area than in multilingual Europe. Nevertheless, the crisis can give new impetus to the previously very low levels of labor mobility in Europe. EU guidelines already provide the framework for this.
- **State interventions should focus on areas with critical mass and development potential.** Such interventions include investment in the underlying infrastructure – not only in steel and concrete, but most of all in institutions, education, research, and healthcare. The development of clusters⁷⁴ can be specifically supported here, either in industry or services. This is easier if the stakeholders can build upon existing strengths and talent pools. Subsidies are only useful in providing the initial stimulus: if private entrepreneurial initiative does not then take over, there is little hope that self-sufficient growth will follow. Unlike eastern Germany in 1990, the physical infrastructure of Europe's crisis-hit countries today is only a secondary problem, at most. In contrast, there are significant deficits in terms of institutional arrangements, in educational and vocational training systems, and in health infrastructure that would benefit from initial, concentrated aid. Furthermore, entrepreneurial seeds can also be nurtured throughout Europe, while carefully avoiding disincentives and “deadweight loss effects,” i.e., inefficient allocation of resources due to government regulations, taxation, monopoly pricing, or externalities.

The rebuilding of eastern Germany is thus no textbook transformation case: the “flourishing landscapes” evoked by then Chancellor Helmut Kohl in 1989 and entrepreneurial spirit took much longer to take root and blossom than initially expected. Nevertheless, for many years, Germany accepted the transfer union, in which the states in eastern Germany depended on payments from western Germany. Such a scenario must be avoided in the eurozone – if only because, in this case, the transfers would be unimaginably high. The lessons learned from German reunification can thus contribute to the success of the European project, especially if we learn as much from its shortcomings as from its successes.

⁷⁴ Economic clusters are areas with high concentrations of companies, research establishments, and other institutions.

Beyond these global trends, the economic future of Germany and Europe also depends on the degree to which we can find answers for issues in areas where the economy, society, and politics overlap, such as:

- Europe’s institutions must change if the euro is to be successful in the long term. This requires laying the groundwork for closer integration, which is first and foremost a political question.
- Polarization of the labor market affects all developed economies: a scarce labor supply at the top, erosion in the middle, precarious structures for less-skilled jobs. What can less-skilled people in the labor force do to earn a living and lead fulfilling lives? Labor market reform and training initiatives are important starting points here. However, we also need to address underlying societal questions that go beyond the pure economic aspects.
- Citizens in many European countries today are discussing the distribution of income and wealth. Performance-based differences are one of the drivers of free-market systems. However, how much inequality can a developed society sustain before its performance and stability begin to suffer? And how can income and wealth be distributed in a way that is acceptable to society, when in times of volatility real growth lags behind historical growth rates for longer periods during low points in the economic cycle?
- The relationship between economics and politics is characterized by fundamental tensions. At the simplest level, some people bemoan life being “reduced to economics” while others deplore “excessive regulation” and intervention. These points of view are not just a matter of values and ideology. They also reflect misalignments between the global economic arena and national or (at most) regional political authorities as well as the difference between ex ante coordination attempts by policymakers and ex post coordination by the market. In the first decades following the Second World War, the social market economy or “Rhine capitalism” offered a persuasive and effective way of managing these tensions. In view of today’s altered requirements, however, a new answer may be needed.



In 2025, Germany and its neighbors remain the growth engine of the European economy. While this Europe is still highly diverse, its members’ greater economic convergence and adherence to clear rules make it more resilient to shocks and centrifugal forces. At the same time, Germany is integrated more strongly than ever into the global economy and remains one of the world’s top export nations. If companies also continuously reinvent themselves, labor market shortages are eliminated, and the transformation of the energy sector is managed in a way that is economically effective, Germany should be fully able to achieve an average growth per capita of 2.3 percent p.a.

This is not to advocate pursuing growth for growth's sake. The traditional notion of economic growth (measured exclusively by GDP) is not a sufficiently comprehensive metric to serve as the only objective of societal and political action. Still, solid economic development is the only way to put the prerequisites in place that will allow a society to achieve other key objectives: mitigating social imbalances and smoothing potential intergenerational tensions, helping to strengthen the structurally weaker European countries, and offering a population that is more and more culturally and linguistically heterogeneous an attractive environment with good employment opportunities.

These goals are definitely ambitious, and it will take a huge effort to get there. In a world of heightened volatility, there will also be crises and setbacks. But the effort is worth making and will have many benefits for the people in Europe.

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Key macroeconomic indicators

Data for 2012 (2011), figures in grey are estimates

	Germany	Eurozone	US	Japan
GDP, EUR billions⁷⁶ Source: World Market Monitor	2,613.2 (2,589.3)	9,370.8 (9,418.4)	11,066.1 (10,830.2)	4,319.1 (4,237.7)
Real GDP growth, % Source: World Market Monitor	0.7 (3.0)	-0.5 (1.5)	2.2 (1.8)	1.9 (-0.5)
Current account balance, % of gross value added Source: World Market Monitor	6.3 (5.7)	1.3 (0.1)	-3.0 (-3.1)	1.0 (2.0)
Industry share, % of gross value added⁷⁷ Source: OECD	– (23.7)	– (18.5)	– (15.9)	– (19.9)
Budget balance, % of GDP Source: World Market Monitor	-0.2 (-0.8)	-3.3 (-4.1)	-7.6 (-9.0)	-10.4 (-11.1)
Public debt, % of GDP Source: IMF WEO 10/2012	83.0 (80.6)	93.6 (88.0)	107.2 (103.5)	236.6 (229.6)
Return on 10-year government bonds, % Source: World Market Monitor	1.6 (2.8)	3.1 (4.3)	1.8 (2.8)	1.0 (1.1)
Inflation (Consumer Price Index), % Source: World Market Monitor	2.0 (2.3)	2.5 (2.7)	2.1 (3.1)	0.0 (-0.3)
Average age, years Source: Eurostat/CIA World Factbook	45.3 (44.6)	– (42.1)	37.1 (36.9)	45.4 (44.8)
Unemployment rate, % Source: World Market Monitor	5.5 (6.0)	11.8 (10.2)	8.1 (9.0)	4.4 (4.6)
Youth unemployment rate (15 to 24 years old), % Source: OECD	8.2 (8.6)	23.2 (21.4)	16.2 (17.3)	8.1 (8.2)

76 2011 prices and exchange rates.

77 2010 data.

