

many governments in Eastern Europe are already the same size as some in Western Europe, even though their income levels are lower. In only 7 of 24 countries in Eastern Europe, governments spent in 2010 less than 40 percent of GDP. For the other 17, government size ranged between 40 percent and 50 percent of GDP, similar to spending levels in richer countries such as Canada, Germany, Norway, and the United States. Bosnia and Herzegovina, Hungary, Montenegro, Slovenia, and Ukraine stand out as countries with the largest excess spending. Since the crisis boosted government spending relative to economic activity more in advanced Europe than in emerging Europe, these comparisons were even starker before the crisis.

Big governments come with slower growth

The standard way to isolate the impact of government size on growth from the impact of other variables is econometric analysis. A large economic literature explores the link between government size and economic growth, as reviewed in Bergh and Henrekson (2011), Barrios and Schaechter (2008), and Pitlik and Schratzenstaller (2011). Although many studies find a negative relationship between government size and growth, no consensus has emerged on whether big government is harmful to growth. The failure to establish robust findings is not unusual. The inherent difficulties of empirical growth studies, along with the importance of the subject, have led to a busy research area called growth econometrics (Durlauf, Kourtellos, and Tan 2008; Durlauf, Johnson, and Temple 2005).

A practitioner of growth econometrics confronts four difficulties. First, the data are poor. Consistent national accounts data are available only since 1960, and only for some 100 countries. Data series for the countries from Eastern Europe start only in the mid-1990s. Second, there is “model uncertainty” because growth theories are not explicit about the salient determinants of growth. Third, macroeconomic analysis cannot exploit randomized trials as an investigation tool, making it difficult to establish causality. Fourth, growth econometrics has struggled to reconcile the desire to uncover common growth patterns across countries with the need to account for country-specific features as well as differences at different stages of countries’ growth processes (Solow 1994; Eberhardt and Teal 2011).

For this chapter, we provide new econometric evidence on the impact of government size on growth using a panel of advanced and emerging economies since 1995. As estimates can be biased due to problems of omitted variables, endogeneity, or measurement errors, it is necessary to rely on a broad range of estimators. Depending on data availability and specification, the regressions in annex 1 report findings on 25–152 countries.

The results show a robust inverse relationship between initial government size and subsequent growth in Europe, but not worldwide. The parameter estimates differ in size and significance, which is not surprising given the host of estimation issues. They suggest that a 10 percentage point increase in initial government spending as a share of GDP in Europe is associated with a reduction in annual real per capita GDP growth of around 0.6–0.9 percentage points a year (table A7.2). The estimates are roughly in line with those from panel regressions on advanced economies in the EU15 and OECD countries for periods

Box 7.3: Europe's tax burden is caused by high labor and indirect taxes—in spite of low corporate taxes

Evaluating the impact of a country's tax system on growth is no less a job than figuring out how public expenditures influence growth. This report does not attempt this task. Still, since taxation is central for growth and public finances, it does include a brief discussion. After all, taxes are the principal source of financing for public expenditures and the impact of an expansion of a particular government program depends always on how it is financed.

Overall, Europe's tax system is less growth-friendly than those of Anglo-Saxon countries and Japan because of a high tax burden and heavy reliance on labor taxes, but it is more growth-friendly because of low corporate tax rates and greater reliance on indirect taxes (Pitlik and Schratzenstaller 2011).

- Europe's tax take is high. This is especially true for the north and center, but even the EU12 countries in 2004–08 collected more taxes as a share of GDP than the Anglo-Saxon countries or the Republic of Korea. This is a concern, as high taxes are often a drag on growth. However, they are also often good for fiscal balances: fiscal deficits tend to be lower in countries with a high tax-to-GDP ratio.
- High personal income taxes are one reason why Western European countries collect high tax revenues. In addition, social security contributions are often high, giving rise to big marginal and average income tax wedges. So overall, labor gets taxed heavily. In contrast, many countries in Eastern Europe undertook reforms to reduce, simplify, and unify personal income tax rates, and their top personal income tax rates are now often lower than in Anglo-Saxon countries. Most studies find that workers with decent skills do not respond strongly to high labor taxes, but unskilled workers are discouraged from taking up formal work or working regular hours. High income taxes might also inhibit the development of markets that offer home-produced services such as restaurants and personal services, as work at home becomes more attractive.
- European countries—especially the EU12—stand out in taxing goods and services more heavily than Anglo-Saxon countries and Japan. Many European countries rely on value-added tax (VAT) as the main indirect tax. Along with property taxes, VAT is often considered among the taxes least harmful for growth. Since VAT taxes only consumption, it encourages exports. And as it is imposed on the whole production chain, it does not distort production, distribution, or sales choices. In addition, many European countries impose sizable excise taxes on products such as tobacco, alcohol, and gasoline. Since their consumption can lead to bad health or bad air, such taxes not only generate revenues but may also improve society's welfare as people cut back on these products in response to taxation. Property taxes in Europe tend to be less important than goods and services taxes, at least outside the center.
- Although European countries leverage high personal income taxes and indirect taxes, corporate income taxes are generally low. Why do some European countries levy high taxes on labor and low taxes on capital? The answer is that, as globalization showed up the mobility of capital and the immobility of labor, the efficiency costs of taxing capital heavily quickly became apparent. In the late 1980s, Scandinavian countries began introducing dual tax systems, which combine low and uniform taxation of capital income with a higher and progressive taxation of labor income. Indeed, corporate income tax rates have been cut around the globe in the last few decades, although fiscal concerns during the global crisis might have halted the trend for now.

from 1960 or 1970 to 1995 or 2005 (Bergh and Henrekson 2010 and 2011). This is by no means obvious. After all, our regressions cover a different and shorter period, and relate to a more varied group of countries. Among the 43 European countries, 18–24 countries were low- or middle-income economies in 1995–2010.

A few points need emphasis:

- In a race between the importance of initial per capita income and government size for growth, the former wins hands down. Growth declines with higher initial income both in Europe and the world.
- The estimates for government size are consistently negative for Europe, but less so for the global sample. They are significant and negative for Europe ten times, but only three times for the world sample.
- The results hold for two different time periods. Including all 16 years over the period 1995–2010 seems logical. But the global crisis led to a collapse in output in most countries, which inflated government size even without increases in spending programs. This is a case of reverse causality: a decline in growth leads to bigger government size, not the other way around. But the same analysis using data for 1995–2006 broadly confirms the findings for the whole period.

- There can be threshold effects of government size, where size starts to matter only after it reaches a crushing mass. While the choice of a threshold for what constitutes “big government” is arbitrary, this chapter uses 40 percent of GDP, which is close to the average government size in high-income countries in 1995–2010.³ Tanzi and Schuknecht (2000), for example, suggest this as the upper limit for sufficient public spending. The results provide support for a threshold effect. The impact of government size on growth is negative for the countries with initial government spending of 40 percent of GDP or more, but positive (and mostly insignificant) for countries with smaller government sizes. The same pattern holds for the world sample. This might explain why government size is harmful for growth in Europe but not elsewhere. Median government expenditures over the last decade and a half were 26 percent of GDP in the world, but 43 percent of GDP in Europe.
- Parameter estimates can be sensitive to the selection of variables. Sala-i-Martin, Doppelhofer, and Miller (2004) have used the method of Bayesian averaging of classical estimates (BACE) to find out which combination of these variables explains economic growth best. BACE uses all possible combinations and generates average coefficients for each variable, weighted by the goodness-of-fit of each regression, as well as inclusion probabilities. Our goal is more modest: to find out whether government size is one of the variables among the set of nine explanatory variables that contributes to a high explanatory power of the regression model. This implies running more than 500 regressions. The coefficient on government size is negative in both Europe and the world, but larger in absolute terms in Europe. The inclusion probabilities are in excess of 90 percent for Europe, but below 33 percent for the world. This confirms our findings of a robust negative relationship between initial government size and growth in Europe, but not in the world sample.
- Government revenues can be studied as alternative measures of government size. Bergh and Karlsson (2010) argue that looking at tax revenues is one way to address concerns about reverse causality. Tax revenues as a share of GDP tend to increase during booms and decline during recessions (table A7.3). This makes it less likely that the causality runs from higher growth to lower government size. Since tax revenue data are harder to come by, total revenues have to be used rather than tax revenues. (For the sample of EU and OECD countries, tax revenues make up about 85 percent of overall revenues.) The results suggest that large public revenues come with slower growth (box 7.3).

Social transfers hinder growth—and public investments help

Some types of public spending increase growth, others reduce it (for example, Lucas 1988; Barro 1990; Barro and Sala-i-Martin 1992; Gemmell, Kneller, and Sanz 2011). But the literature fails to agree on which categories of public spending are likely to be growth-friendly. Consensus is hard to come by because the growth impact of public spending is tied to a range of factors. Public spending programs can be executed well or poorly, and may work well in some stages of development but not others. High government consumption can reflect well-paid public servants who provide vital services to people

and businesses, or it can be a sign of bloated and ineffective bureaucracies. Whether government spending turns out to boost or dampen growth depends also on the way it is financed. In short, public spending's impact on growth depends on institutional, financial, and economic factors (Bayraktar and Moreno-Dodson 2010).

Keeping these caveats in mind, we must ask: do social transfers hinder growth in Europe? Governments are big in Europe mainly due to high social transfers, and big governments are a drag on growth. The question is whether this is because of high social transfers. The answer seems to be that it is. The regression results for Europe, using the same approach as outlined earlier, show a consistently negative effect of social transfers on growth, even though the coefficients vary in size and significance (table A7.4). The result is confirmed through BACE regressions. High social transfers might well be the negative link from government size to growth in Europe.

A sizable economic literature argues that, unlike social transfers, public investment more often than not supports growth. Over the last decade and a half, public investment was higher in Eastern than Western Europe, as a share both of GDP and of total public spending, reflecting three factors. Since the east is more capital-scarce than the west, the return on investment is likely to be higher there. Also, capital flows downhill in Europe, enabling emerging economies to boost investment. Finally, the EU's structural funds allowed prospective and new member states to increase public investment. So, while the evidence is less clear-cut than for social transfers, it suggests that public investment is more likely to help than hinder growth in Europe.

Bumblebees can fly

Big government is associated with slower growth in Europe. But the estimations discussed above pick up only the average patterns across Europe, and there are clearly countries that manage to combine big government with healthy growth. To return to the example at the start of this chapter, Sweden has managed to grow richer with big government, just as a bumblebee seems to defy the laws of aerodynamics. Sweden is not alone. In fact, the role of government has increased since the end of World War II in many countries, even during the "golden age" of European growth from the 1950s to the early 1970s. As market economies became richer, governments grew bigger. Government spending as a share of GDP among the G7 countries doubled from about 20 percent in 1950 to more than 40 percent in 2010. Big governments might be more commonly associated with paper reshuffling and red tape rather than the frictionless machinery imagined by Max Weber (Gerth and Mills 1946). Yet the persistent rise in government size suggests a deliberate choice of societies to expand government.

The fiscal footprint of governments through taxation and spending is only one feature of government. A growing literature explores the role of government more generally. This research comes under different names, including quality of government, good government, governance, government capacity, or institutions. Institutional economists point out that the accumulation of physical, human, and intellectual capital—emphasized by neoclassical and endogenous

growth theories as drivers of growth—are only proximate causes of growth. Institutions, along with geography, culture, and trust, are possible fundamental causes of growth that can explain why some countries fail to accumulate these forms of capital while others put them to good use and grow.

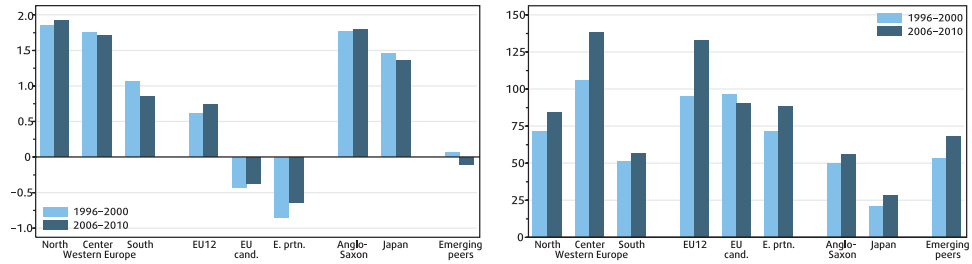
The five dimensions of government quality

Poorly run governments result in improperly functioning markets, and well-run governments can make up at least part of any negative effects of big government on growth. Does this happen in Europe? It appears it does. To answer this question, the relationship between government size and the quality of government in Europe and the world are contrasted. The approach of La Porta and others (1999) is adapted to establish whether government size is systematically correlated with quality of government, after considering economic, political, and geographic factors. Five government responsibilities are assessed: regulator of the private sector, facilitator of economic openness, manager of its resources, enabler of voice and accountability, and enabler and provider of public goods.

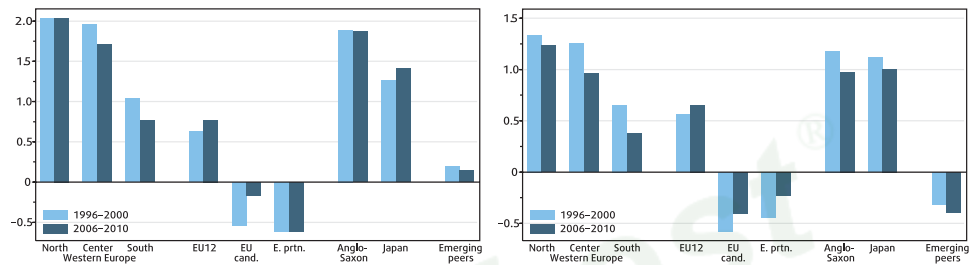
- Establishing well-defined property rights and ensuring a functioning legal system is a core responsibility of government. Since the work of Adam Smith in the eighteenth century, the protection and enforcement of property rights and contracts has been seen as a precondition for the operation of markets and economic specialization.
- Openness brings competition and pressures to improve productivity (Doucouliagos and Ulubasoglu 2006; Dreher 2006). It gives countries access to large, fast-growing markets that allow them to diversify and upgrade their products. Openness channels knowledge and technology through production networks, foreign direct investment, and learning from competitors. As chapter 2 discussed, Europe's growth is also in good measure due to trade. Countries took their export-to-GDP share from 28 percent in 1970 to 54 percent in 2009 in Western Europe, and from 36 percent in 1995 to 49 percent in 2009 in Eastern Europe.
- The government can run more or less efficient bureaucracies. With governments commanding around 40–50 percent of GDP, productivity in the public sector, while hard to measure, is a key driver of growth. Managing civil servants well, keeping a cap on the public sector wage bill, and borrowing tools from the private sector to run services efficiently are all important to keep the public sector lean and productive.
- Voice and accountability capture important aspects of European countries. Citizens' voice in society and participation in politics connect them to politicians and policymakers who represent government. Elections and informed voting can make political commitments more credible and produce better outcomes. In addition, better information, thorough public disclosure, citizen-based budget analysis, service benchmarking, and program impact assessments and an active independent media can strengthen voice and accountability (World Bank 2004).

Figure 7.10: Quality of government declines from north to south and west to east

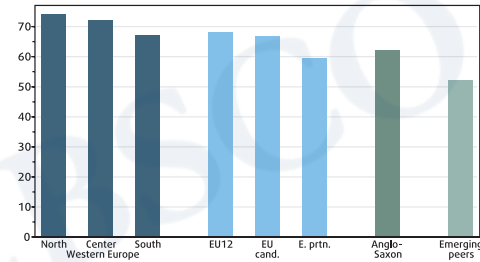
(rule of law (left) and trade openness (right) [exports and imports as percentage of GDP], median, 1996–2000 and 2006–10)



(government effectiveness (left) and political stability (right), median, 1996–2000 and 2006–10)



(income equality (100 – Gini coefficient), median, 2000–06)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: World Bank staff calculations, based on Worldwide Governance Indicators (Kaufmann, Kraay, and Mastruzzi 2010); IMF WEO; and UNU-WIDER 2008.

- Ensuring the supply of public goods such as health care or education is another responsibility of government, whether as provider, financier, or regulator.

The quality of government varies considerably across Europe. Figure 7.10 shows one illustrative indicator for each of the five dimensions. In Western Europe, the south does worse than the north or center in level, and, from the late 1990s to the late 2000s, in change. In Eastern Europe, the EU12 countries stand out as the best performers. Indeed, even though their per capita income is still only about three-quarters of the south's, they match the south on several indicators.

The dimensions of government quality are interlinked. For example, voice and accountability, along with social trust, makes public programs accessible for lower-income households (Lindert 2004). Combined with a progressive tax system, this heavily reduces income inequality. OECD figures, for example,

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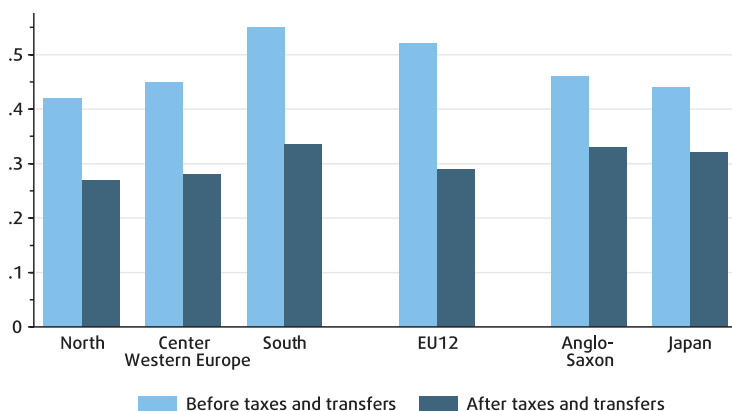


Figure 7.11: Governments reduce inequality more in Europe

(Gini coefficients of income inequality before and after taxes and transfers for mid-2000s)

Source: OECD Income Distribution and Poverty Database.

suggest that the impact of Europe's public spending and taxation is more redistributive than in the Anglo-Saxon countries or Japan (figure 7.11; see figure 1.15 in chapter 1). As a result, the income distribution (after taxes and transfers) is more equal in the north, the center, and the EU12 (not in the south) than in the Anglo-Saxon countries and Japan. Atkinson, Piketty, and Saez (2011) argue that this greater equality is also related to Europe's greater ability to ensure that households at the top of the income distribution contribute adequately to government finances. For example, while the share of the top 1 percent of households in total after-tax earnings remained unchanged over the last four decades at about 11 percent in Germany, it increased from 9 percent to 20 percent in the United States.

Big, high-quality government

A fairly consistent pattern emerges from the analysis in this chapter. Big government is systematically correlated with better quality of government, with two exceptions: collective wage bargaining and tax rates. This holds both for the world sample and for Europe. It holds also for all five dimensions of government quality. And it holds in most cases, even when we control for basic economic, political, and geographic determinants of institutions (table A7.6).

- Big government is associated with better enforcement of property rights, better regulation, and more independent judiciaries in both the world sample and Europe. Big governments come with more centralized collective bargaining, though there is no correlation with dismissal cost of workers in Europe. In addition, while tax compliance costs are not related to government size, income tax rates are higher in countries with big government. Clearly, for both labor markets and taxes, it is necessary to look at how systems work as a whole, country by country.
- Big government is related to economic globalization elsewhere, but not in Europe. Tariffs go up with government size generally, but not in Europe, perhaps because of the EU's common external tariff. In Europe, countries' trade shares are not related to government size.

Box 7.4: Nordic social protection programs seem to be different

Nordic countries stand out for large spending on social protection outside pensions. This includes support for child care and women's careers as well as active labor market policies. Generous social benefits lead to high taxes and large tax wedges, which might undermine growth. But the Nordic countries have streamlined their welfare systems and reduced incentive costs over the last two decades, while maintaining comprehensive insurance against economic, social, and health risks.

For jobs, the system combines flexibility for firms with security for workers, to facilitate structural change and job creation. A worker whose living standards are protected through

a social welfare system has to worry less about losing his or her job. By protecting workers and not jobs, governments can foster job creation and destruction and keep the economy productive. Job search assistance is individualized and provided with light bureaucracy.

Investment in skills and careers of mothers can also help job creation and income growth. Women will find it easier to combine family and work with a publicly funded infrastructure of affordable and quality child care, generous parental leave, and options for part-time work. Part-time work is encouraged, allowing women to combine family and work, and social

benefits are prorated for part-time work.

Since entitlement to programs does not depend on income, universalist programs ensure that low-income earners can improve their income by taking up work. They help to keep administrative costs down because targeted benefit entitlement is hard to determine. They also benefit from strong political support. At the same time, the recipient of social benefits has to meet certain obligations, including welfare-to-work elements.

Source: Aiginger 2004; Kielos 2009; Rodrik, Subramanian, and Trebbi 2004.

- Big government is related to effective government, better control of corruption, and small informal economies in both the world as a whole and in Europe. Low informality means, for example, a larger tax base, which in turn makes it easier to fund big government without imposing high taxes. These correlations also hold when controlling for other institutional determinants.
- Big government goes with stronger institutionalized democracy, more voice and accountability, and greater political stability. This holds in the world and Europe, with and without additional covariates.
- Big government does well with public goods. It is correlated with higher years of schooling, lower infant mortality, longer healthy life expectancy, and more equality in both the world and Europe. The relationship remains significant with the exception of schooling in Europe when controlling for other determinants.

Social trust makes for "big government lite"

Countries with efficient courts, open and deregulated economies, and impartial, honest, and accountable public administrations find it easier to combine big government with growth and well-being. Yet, efficient, high-quality government is a fairly recent phenomenon, limited to some high-income countries. For most countries for much of their history, governance was drenched in endemic corruption, patronage, and abuse of power.

But given the importance of the right institutions for well-being, how is it that some societies maintain institutions that perpetuate economic failure? Turning bad governance into good governance could well require more than just a technical fix or a political push; it needs, rather, a profound change in institutions. Yet, such change takes time, as the seeds for strong institutions in some countries go back at least to the nineteenth century. And there is likely to be resistance to change. Acemoglu, Johnson, and Robinson (2005) argue that different institutions not only have different implications for economic growth,

but also for the distribution of the rewards from growth across different groups. Those groups that command the largest resources will push for economic and political institutions favorable to their interest, thus perpetuating their hold on power.

There is another factor, beyond profound institutional change, that matters. Developing good institutions may well be easier in countries with high social trust, where people are less worried about others taking advantage of the system. They abide by the rules not because of enforcement but social trust. Low welfare fraud and tax evasion allow the public sector to function more efficiently. And while social trust does not stop governments from becoming too big, it can raise the threshold at which big government becomes a drag on growth and well-being.⁴

As social trust facilitates good institutions, and big government often relies on good institutions, is big government also correlated with strong social trust? We extend the regression specification used in the last section to look at this issue using World Values Survey data (table A7.7). We find, indeed, that big government tends to be correlated with high social trust, though the coefficients are not always significant, especially when we control for other institutional determinants. Big government is associated with more trust in other people, more tolerance of diversity, the opinion that government should take more responsibility, and the view that claiming benefits is justified (box 7.4). So strong quality of government and social trust go a long way toward explaining how a country like Sweden manages to grow fast with big government (box 7.5).

Of course, even in countries with strong social trust and good quality of government, governments can be too big. But strong institutions help countries to undertake successful fiscal consolidation. For example, in 1993, Sweden's economy was in recession and the public finances in dire straits. General government expenditures reached a record high of 72 percent of GDP, and the fiscal deficit ran at over 12 percent of GDP. Sweden put together a strong fiscal adjustment package to meet the EU Maastricht criteria. The program was successful: growth returned quickly and the fiscal balance turned positive within five years.

Box 7.5: The north performs better than predicted in the models, and the south and the EU candidate countries worse

We have looked at Europe as a whole in our analyses of growth, quality of government, and trust. For example, we assumed that the growth model is the same across the west and east, or the north and south. Yet, to paraphrase a remark from the econometrician Harberger (1987): What do Greece, Sweden, and Ukraine have in common that merits their being put in the same regression analysis? This point is especially valid in the current context where we try to analyze why countries like

Sweden can defy the growth moderation coming from big government.

One way to address this point would be to estimate country-specific models. Values of parameter, and not just variables, could then vary from one country to another. However, the tradeoff would be that we lose the insights from unveiling common characteristics across a group of countries. In addition, time series for individual countries, especially in Eastern

Europe, are simply too short for meaningful analysis. Instead, we use a simpler approach: we illustrate the regional differences by the differences in how well our models predict actual values of growth, quality of government, and trust. The pattern is fairly uniform: the north does better than predicted by our models for all indicators; the south does worse for all indicators; and the EU candidate countries do worse on all indicators except trust.

Other Northern European countries have carried out similar reforms since the early 1990s, building on a long tradition of quality in public service:

Many of the northern European countries that started to develop encompassing welfare states during the first half of the twentieth century had successfully increased their quality of government during the preceding century. For example, during the nineteenth century Bavaria, Prussia, Britain, Denmark, and Sweden carried out large-scale changes in their government institutions that did away with systemic corruption and pervasive patronage and introduced impartial (meritocratic) systems for recruiting civil servants and implementing public policies. (Rothstein 2011, p. 126)

Doing more with less

With governments financially squeezed for a long time to come, making public sectors work better has become a main motivation for public finance reforms. Looking for ways to reduce fiscal imbalances and to lower public spending, governments in Europe and elsewhere are seeking ways to improve the efficiency of the public sector. Standard policy prescriptions include making budget processes more responsive, reforming management practices, improving information and accessibility through e-government, using market signals for publicly provided goods, and enlisting the private sector and communities to deliver services.

Collaboration with others can take many forms: transferring revenues to subnational governments and mandating service provision; contracting with commercial companies to supply public goods; and entering public-private partnerships to finance, build, and operate infrastructure projects and other public projects. If done well, such reforms can reduce public bureaucracy and increase the productivity of services by introducing practices from the private sector. If done poorly, they can lead to high transaction costs and replace public with private red tape—without improving services. Ultimately, high-quality government is needed to outsource well, too. Outsourcing, whether directly to the end user or for government inputs, amounted to 10 percent of GDP in OECD member countries in 2009. The Netherlands, the leader, outsourced almost twice that.

With public wages absorbing about one-quarter of total government spending, reining in public sector pay is a potentially powerful instrument for improving public sector efficiency (Clements and others 2010). Indeed, the north and the center (and Japan) managed to keep a cap on public wages relative to GDP after the mid-1990s, when public sector wages rose in other regions, though higher public sector pay there rarely translated into better public services.

More recently, in response to the global crisis, many countries have imposed nominal freezes or cuts in employees' remuneration and hiring, or have streamlined bonuses and allowances. Such actions can be important to shore up macroeconomic stability by lowering the wage bill. More systemic changes are also often needed, however, including rationalizing the size and structure of the public sector, strengthening payroll systems, and tightening the link between pay and performance. While they take longer to implement, if done

Box 7.6: Private social spending is low in Western Europe, especially the south

Public and private expenditures are to some degree substitutes. For public services, families pay taxes and social security contributions to the government. For private services, households pay fees to the private school or health center. Of course, families might be able to select their preferred type of service in a better way and to hold the service provider accountable in the private sector. Nevertheless, the impact on family income

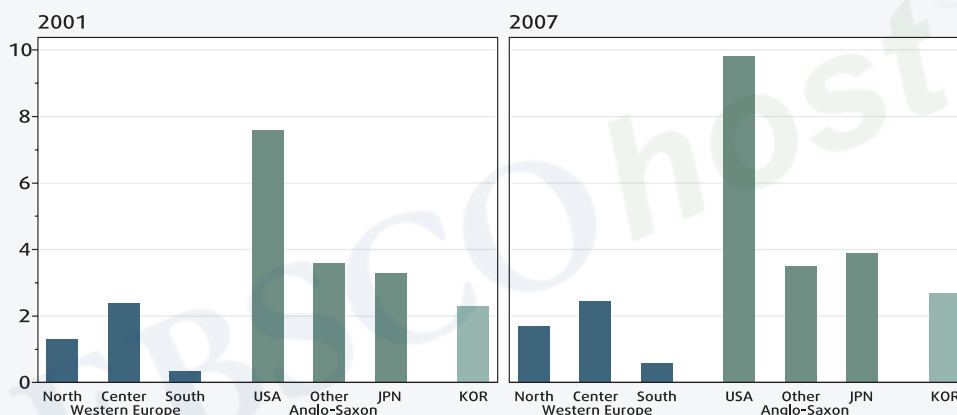
might be similar, whether the school or health center is public or private. Indeed, once one accounts for private health insurance, the U.S. tax burden is no longer far below Western European levels.

Accounting for private social expenditures gives a better picture of the national resources invested in social sectors. The Organisation for Economic Co-operation and Development

presents numbers for private social spending by 26 member countries for 2007 (box figure 1). The United States stands out in its heavy and increasing reliance on private social spending. But Western Europe also lags the other Anglo-Saxon countries, as well as Japan and the Republic of Korea. In Western Europe, private social spending matters least for the south and most for the center.

Box figure 1: Private social spending for OECD countries, 2001 and 2007

(percentage of GDP)



Source: Adema and Ladaïque 2009; and OECD Social Expenditure Database.

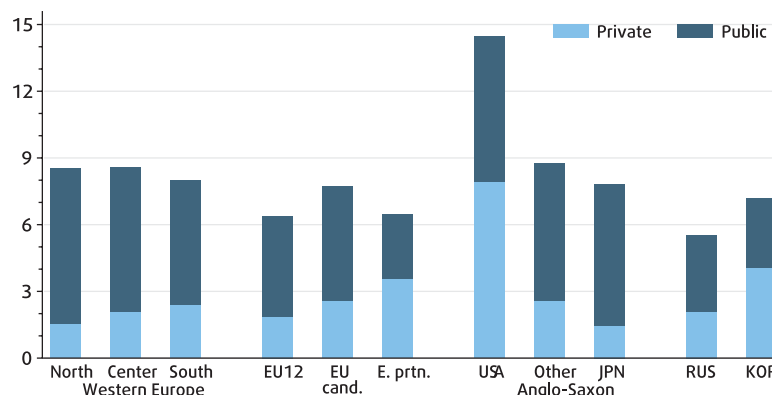
well, systemic reforms can make the adjustments sustainable and give a boost to public sector efficiency.

Measuring public sector performance is hard

Making the public sector work better might well be harder than doing the same thing for the private sector. Let us take the case of civil servants. Improving their incentives to perform well through bonus payments is difficult without good measures of what they produce. Yet, public sector outputs are often indivisible and their production function is unknown. And since the output of civil servants is hard to define and seldom priced in markets, it is intrinsically hard to measure their productivity and to reward them according to their contribution to output. Because putting a value on the output of governments is difficult, national accounts therefore typically assume that the value of that output is simply equal to the total cost of the input. This implies that larger public spending translates one for one into larger output, rendering investigations of public sector productivity based on national accounts data meaningless.

Figure 7.12: Private spending makes the United States the biggest health care spender in the world

(private and public health spending, percentage of GDP 1995-2009)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: World Bank staff calculations, based on WHO Global Health Expenditure Database.

The issue is not just about measuring output. The uncertainty about public sector output might make it easier for bureaucracies to appropriate some of the surplus that otherwise would belong to taxpayers, at least as long as politicians and citizens cannot exercise appropriate control.

Although measuring government output is tricky, economists often adopt a methodology originally designed for firms. Taking education and health as examples, the idea is to relate the amount of public resources to outputs and outcomes, such as education enrollment rates or life expectancy. The results show that differences in performance and efficiency across countries are substantial; that there is no systematic link from more government spending to higher efficiency; and that public sector efficiency relates systematically to income levels, institutional factors, and demographic trends (Hauer and Kyobe 2010; Tanzi and Schuknecht 1997 and 2000; Alfonso, Schuknecht, and Tanzi 2005; Afonso, Schuknecht, and Tanzi (2010); Mandl, Dierx, and Ilzkovitz 2008; Estache, Gonzalez, and Trujillo 2007).

Analyzing public sector performance and efficiency is not easy. In particular, the link between public spending and social outcomes is often tenuous. Public spending is only one among many factors explaining public sector performance, including a host of economic, social, and institutional variables. In addition, comparing public expenditure ratios across countries assumes that public sectors have a homogenous production function. Nevertheless, these attempts to measure public sector performance serve a purpose. Comparisons of the performance of public sectors are inevitable, so this is best done in a rigid and transparent fashion rather than using more or less ad hoc approaches.

The following sections present three ways to analyze public sector performance. First, we link public spending on education and health to secondary school enrollment rates and maternal mortality ratios. Then, we illustrate potential inefficiencies in education using examples from Eastern Europe. Finally, we discuss how governments have adjusted spending on pensions and other social transfers in response to population aging.

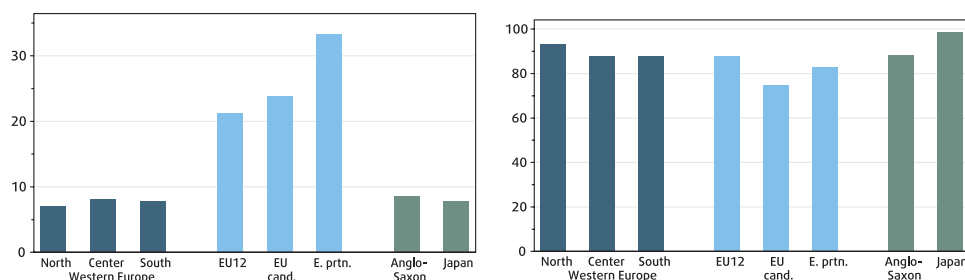


Figure 7.13: Western Europe has good health and education outcomes

(maternal mortality ratios (left) and net secondary enrollment rates (right), 1995-2009)

Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: World Bank staff calculations, based on data from WHO and UNESCO.

Public spending is more effective for health care than education

Health and education absorb sizable amounts of Europe's public spending in social sectors, although public health spending is higher in Anglo-Saxon countries and Japan than in Western Europe. Eastern Europe spends less on public health, despite the fact that eastern partnership and especially EU candidate countries have increased their spending in the last decade. The north leads education spending in Western Europe, and the EU12 countries in Eastern Europe. Anglo-Saxon countries spend almost as much as the north, while Japan spends less than the center and the south. Despite shrinking school cohorts, EU candidate and eastern partnership countries raised education spending over the decade. Taking health and education together, Anglo-Saxon countries spent as much as or more than Western European countries, even though they rely more on private spending than Western Europe (box 7.6).

In Europe, private health spending is highest in the eastern partnership countries (figure 7.12).

How effective are public resources in improving health and education outcomes? It is illustrative to compare the impact of government spending on maternal mortality ratios and net secondary enrollment rates. The maternal mortality ratio—the number of maternal deaths per 100,000 live births—is

Box 7.7: Randomized public health, Oregon

In 2004, Oregon closed its public health insurance program for low-income people for lack of public funds. By 2008, it had enough resources for 10,000 people. Because 90,000 people were on the waiting list, a lottery was used to select the people who can apply.

Analyzing the impact of public health insurance on people's health, Finkelstein and others (2011) write: "This lottery provides a

unique opportunity to gauge the effects of expanding access to public health insurance on the health care use, financial strain, and health of low-income adults using a randomized controlled design. In the year after random assignment, the treatment group selected by the lottery was about 25 percentage points more likely to have insurance than the control group that was not selected. We find that in this first year, the treatment group had

substantively and statistically significantly higher health care utilization (including primary and preventive care as well as hospitalizations), lower out-of-pocket medical expenditures and medical debt (including fewer bills sent to collection), and better self-reported physical and mental health than the control group" (from abstract).

Source: Finkelstein and others 2011.

often used as a measure of the quality of health care, and is correlated with infant and under-five mortality rates. The net secondary enrollment rate provides a measure of the extent to which the population eligible to participate in secondary education is actually enrolled. Net rates are a more precise measure of participation than gross rates as they exclude over-age and under-age children. However, enrollment rates do not measure the quality of education and learning achievements. The analysis contrasts the impact of public spending on health and education outcomes as measured by these two indicators. This exercise is merely suggestive, as a proper consideration of health and education would require a more disaggregated look at inputs and outputs for a range of outcomes.

Figure 7.13 shows the geographic variation of the performance measures. Maternal mortality ratios are far lower, and net secondary enrollment rates somewhat higher, in Western than Eastern Europe. As a measure of the quality of government, we use the commonly used International Country Risk Guide indicator averaged over the dimensions of corruption, law and order, and quality of bureaucracy. We interpret this indicator as a broad measure of government effectiveness. As we saw earlier, quality of government declines in Europe as we move north to south and west to east.

How does the impact of public spending vary across the two outcome measures? (The regression results are summarized in table A7.8). For maternal mortality, a 1 percent increase in government spending leads to a 1 percent reduction in the maternal mortality ratio. By contrast, we find that the elasticity of public spending on education with net secondary enrollment rates is only 0.2, suggesting that spending on health is effective than on education. Similarly, analyzing 114 countries over 1980–2004, Hauner and Kyobe (2010) argue that the link from more public spending to better performance is more tenuous in health than in education.

What might account for these differences between the two sectors? One interpretation is that public spending is more effective in promoting good health care than good education because of the different nature of the services. In particular, infrastructure and equipment play a bigger role in health than education. In addition, there is a fundamental difference between health and education in most countries: education is delivered by the public sector; health is purchased by the public sector even though it owns some of the institutions. For all its problems, health may have been far more effectively privatized than education as far as provision is concerned (except at tertiary level).

Furthermore, the public sector seems better able than the private sector to control costs for health care and to give access to a broad spectrum of people without any major loss in the quality of services, when one contrasts the experience of the United States with that in other countries (box 7.7). A final interpretation would be not so much about why public health spending works, but why public education spending does not. One aspect is that private spending might be better able to substitute for public spending in education. Another aspect is that public education systems might suffer from inefficiencies. The next section illustrates these inefficiencies in three countries.

Identifying inefficiencies in government spending: three examples

Europe has made great achievements in the education sector, and education has made a vast contribution to growth and prosperity over the last half century. In the early 1960s, only the privileged benefited from higher education, while today about one in three young adults has a tertiary degree (OECD 2011a). While there are many good things to say about education, this section presents three examples of inefficient government spending on education and highlights policy responses aimed at improving sector efficiency that have been suggested in recent World Bank reports.

Moldova: adjusting the school network to changing demographics. Like many of its neighbors, the country has experienced a steady population decline in the past two decades. Lower birthrates combined with high levels of emigration have also led to a sharp aging of the population—particularly in rural areas—resulting in 43 percent fewer students in Moldova’s schools over this period. But the school network has failed to adjust to the demographic changes: the number of teachers employed in 2009 was the same as in 2003, while the number of schools was virtually unchanged from 1994. The average school now enrolls 160 fewer students than it did in the early 1990s, with student–teacher ratios dropping from 14.5 in 2003 to 10.4 in 2009.

Shrinking schools and classes have caused education to become a drain on public resources, its spending surpassing 9 percent of GDP by 2009. Recent work at the World Bank examined the expenditures in Moldova’s general education subsector and identified fiscal savings from optimizing the country’s school network. The government will have to do a lot: increase class and school sizes in rural areas by consolidating and closing underutilized schools; raise class sizes in large schools by consolidating small classes; implement nationwide per student financing of general education; and overhaul the legislative framework governing education to allow for a more efficient use of resources in line with actual needs, instead of ensuring compliance with outdated norms.

The fiscal savings resulting from the proposed reforms—estimated to exceed 7 percent of the general education budget—can then be used to improve the quality of education by investing in infrastructure, teacher training, technology, learning materials, and so on.

Poland: aligning spending with results in a decentralized education system.

Poland’s education reforms are considered a great success. By restructuring schooling, deferring tracking in secondary education, launching curriculum reform, and boosting school autonomy, between 2000 and 2009, Poland rose from below to above the OECD average in the OECD Programme for International Student Assessment reading scores.

Not all aspects of the reform have worked equally well. The decentralization reforms of the 1990s devolved responsibility for managing primary and secondary education to local governments (Rodriguez and Herbst 2011). In primary education (grades 1–6) most direct financing decisions are now made by the municipality (gmina), allowing for wide variations in funding and other inputs for primary schools across the country’s more than 2,000 municipalities.

Given the high degree of discretion in municipalities' decisions on how—and how much—to invest in primary education, one may ask whether municipalities that spend more per student receive a higher return on this investment in the form of better educational outcomes than similar municipalities with lower levels of spending. It seems not. Recent World Bank analysis found no relationship between municipal spending on primary education and grade 6 test scores when municipalities' demographic and socioeconomic characteristics were taken into account.

This finding raises another question: Why do some communities get less from spending on education than seemingly similar but more “efficient” communities? For a possible explanation, consider two rural communities. The village of Rutka-Tartak spent less than half as much per student as did Tarłów village, yet its students scored significantly higher on the national grade 6 exam. The two municipalities are similar—population density, household structure, adult education levels, and so forth—yet one community seems to be “more efficient” in converting inputs proxied by spending per student into outcomes, as measured by standardized test scores.

The difference in unit costs between Tarłów and Rutka-Tartak is explained in large part by the difference in average class sizes across the two municipalities. While one municipality groups students, on average, in classes of 24, the other has smaller classes of 15 students. Smaller classes increase unit costs but do not appear to contribute to improving education outcomes. In short, this suggests that some of Tarłów's resources could be saved with little impact on the quality of education of its primary schools.

Armenia: protecting equity while ensuring quality of rural schools. A major concern in deciding how to allocate public resources in education arises from the goal of ensuring adequate access to high-quality education for all children. The focus is often on protecting access for vulnerable children, such as those from households with poor or less educated parents or in remote rural areas. In Armenia, the government's policy of providing equal access to education is manifest in a large network of small rural schools that allows virtually all students to attend school in their village—Armenia averages one school per village. The question is: While this raises the unit costs of education, does it foster equality by providing high-quality education to vulnerable students?

Sadly, no. The government's policy of maintaining a vast network of small rural schools is not only fiscally inefficient but also fails to provide high-quality education to the target student population. The average allocation per student under the country's per capita financing formula is nearly three times as high in the smallest schools as the national average. By itself, this is not surprising given the financing formula's generous fixed per school component and the government's commitment to funding schools in even the smallest villages. But more detailed analysis revealed a persistent gap in student achievement between urban and rural schools and between large and small schools. Of the students who took the university entrance exam at the end of the 2009/10 academic year, those attending the smallest schools were almost 20 percentage points less likely to pass. These students were also less likely to take the unified

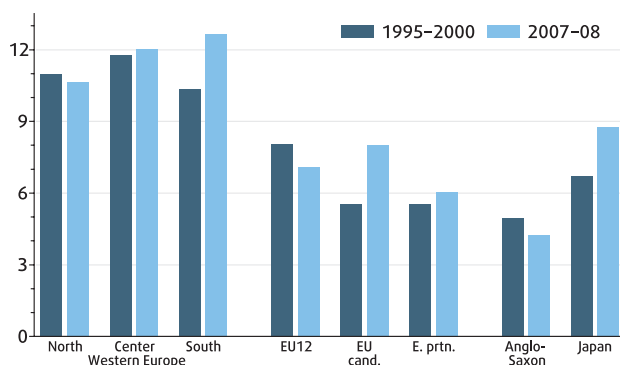


Figure 7.14: The south spends more on pensions than others

(public pensions, percentage of GDP, 1995-2000 and 2007-08)

Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.
Source: World Bank staff calculations, based on Eurostat, and OECD Pensions Statistics.

entrance exam. After controlling for a variety of demographic, socioeconomic, and geographic characteristics of the communities where these schools are located, it was still the case that the achievement gap between small and large schools remained.

The inability to ensure equal quality of education for rural students undermines the rationale for spending heavily on maintaining small schools in the more than 800 villages. The World Bank study recommended that the government consider shifting its focus from providing access to a school building in every village to ensuring access to high-quality education for every student. Potential measures include assessing the quality of education provided by rural schools, adjusting the per capita financing formula, addressing the low quality of teaching in rural areas, and finding better ways of providing education to students in rural areas by, for example, forming fewer "hub schools" for groups of villages. With more informed analysis and a willingness to experiment, equity and efficiency in public service provision need not be conflicting objectives.

These three country examples illustrate how inefficiencies in government spending can be caused. One is the public sector's inability to adjust spending patterns to shifting demographic trends (Moldova). Another (Poland) is that devolving spending decisions to local governments creates a laboratory that can illustrate the impact of different resource allocation decisions on results in otherwise similar municipalities. The challenge is for municipalities to learn from each other and adopt winning solutions. And last (Armenia), government policies that seek to improve equity at the expense of efficiency may achieve neither without proper evaluation of the policies' outcomes.

Aging and social transfers

An aging population puts pressure on pension systems. But who bears the costs? Is it the working-age population who have to pay more taxes or to face cuts in family benefits imposed by the politically powerful elderly? Or does the burden fall on the elderly through less generous pensions?

Population aging in the last three decades is almost a global phenomenon, but to different degrees in different regions. Taking 1980 as the benchmark and the

Box 7.8: Some countries have managed to reform pensions in spite of a growing elderly population

Australia, a leader in pension reforms, has a near-universal system of mandatorily funded employer pensions. In the late 1990s, Canada raised the contribution rate for the public pension system well above current costs to build up a large trust fund for the future. Germany, Japan, and Sweden have all indexed their public pensions system, at least partly, to changes in longevity. Germany has also taken steps to encourage funded private pensions.

Italy began in the early 1990s to adopt reforms to scale back benefits, though with long transition periods. The Netherlands has a large, nearly universal, and fully funded occupational pension system, allowing the public pension system to be relatively modest. In the late 1990s, Sweden introduced a new system of national defined contribution accounts along with a mandatory system of personal retirement accounts. Many countries

are cutting back expensive early-retirement options. The United States has a modest public pension system thanks to a large funded private system and a young population.

On the basis of median voter models, Razin, Sadek, and Swagel (2002) and Galasso and Profeta (2004) argue that aging could either increase or decrease the size of social welfare depending on whether the political effect or the economic effect dominates. Population aging makes the median voter older, and hence increases that person's demand for social welfare spending (the political effect). Aging also leads, however, to a higher tax burden on the median voter as the share of the old-age population increases, and this could reduce the median voter's preference for social spending (the economic effect). Empirical analysis suggests that population aging is linked to higher social spending. Disney (2007),

for example, uses fixed-effect panel analysis to show that demographic aging is associated with a larger welfare state using data from 21 Organisation for Economic Co-operation and Development (OECD) countries for the 1970s to the 1990s.

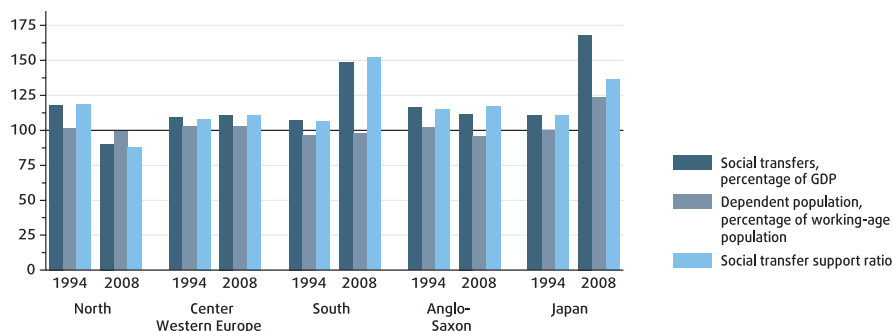
Using similar data and an error-correction specification, Sanz and Velázquez (2007) establish that aging is the main driving force in the growth of government spending. Likewise, Tepe and Vanhuyse (2009 and 2010) analyze OECD countries from 1980 to the early 2000s and find that population aging drives up pension spending, but not health spending or welfare programs for families and the unemployed. In addition, Capretta (2007) and Meier and Werding (2010) find that the increase in aggregate spending on pensions is mitigated by reductions in the generosity of benefits.

old-age dependency ratio as the indicator, it was most rapid in Japan and the Republic of Korea. In Europe, it was fastest in the EU candidate countries, the eastern partnership countries, and the south. Populations in the north and the center aged relatively little. But the regions started at different points. Despite rapid aging, Korea and Eastern Europe still have fairly young populations. In 2009, for each person age 65 or older there were seven working-age persons in Korea, but only three in Japan. In Europe, there were more than five working-age persons in EU candidate and eastern partnership countries, but only fewer than four in the south.

The trends in public pension spending since the mid-1990s also reveal notable differences across regions. As a share of GDP, public pension spending increased in the south, the EU candidate countries, and Japan, but decreased in the north, the EU12, and the Anglo-Saxon group (figure 7.14).

Comparing the trends in public pensions spending with population aging gives us a way to assess whether spending on public pensions is driven mainly by demographics or also changes in generosity and coverage. A good indicator is the pension support ratio (Lindert 2004), which is the public pension per elderly person relative to GDP per worker or, alternatively, the ratio of the share of public pensions in GDP relative to the share of elderly in the working-age population. This section looks first at OECD countries over 1980–2007, and then extends the analysis to Eastern Europe for 2000–2007/08. A similar approach is used to look at changes in social transfers.

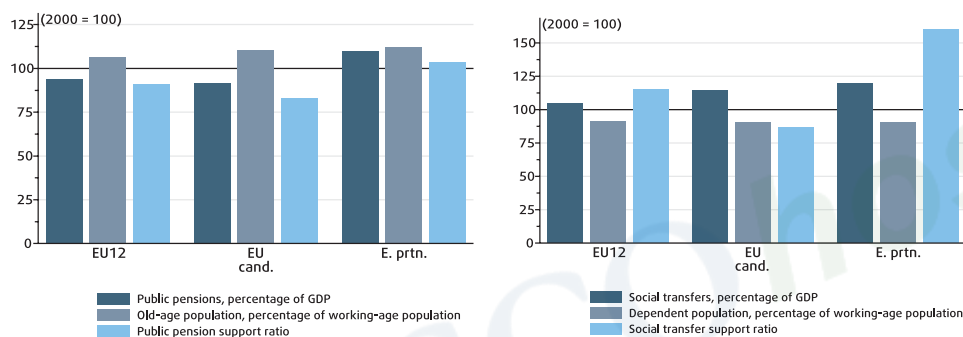
For a group of 20 OECD countries, we find that pension payments increased over and above aging pressures only in the south, especially in Greece and Portugal. In other regions, pension payments increased in line with the rising share of the elderly in the working-age population (the north and Japan) or even declined due to a tightening of generosity (the center and Anglo-Saxon).



Source: World Bank staff calculations, based on Eurostat; OECD National Accounts Statistics; and WDI.

Figure 7.15: The burden of social transfers grew most in the south

(trends in social transfers, 1994 and 2008, 1990 = 100)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: World Bank staff calculations, based on Eurostat; and WDI.

Figure 7.16: The eastern partnership countries increased social transfers the most

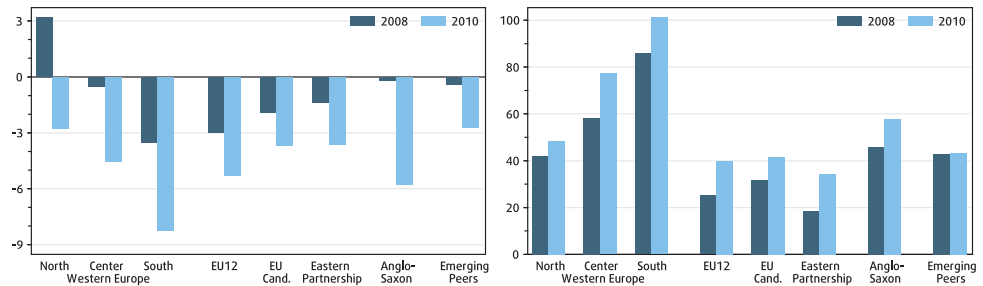
(trends in pensions and social transfers, 2007/08, Eastern Europe)

In addition, there is a notable shift in pension policy in the mid-1990s in the north and the center. Up to the mid-1990s, public pension pressures tended to increase over and above population aging partly due to policies to encourage early retirement. In response to the economic recession and rise in unemployment in the early 1980s, some countries encouraged early retirement of workers because rigid labor laws made it difficult for enterprises to lay off workers. By contrast, with growth and income convergence with other EU countries, the south responded to rising expectations of its populations in the 1990s by adopting the former social benefit norms that the north and the center were beginning to tighten.

There is a remarkably consistent pattern in the links between aging and spending (table A7.9). In 1980–94, for all OECD countries as well as just the European OECD countries, a 1 percent increase in the old-age dependency ratio triggered roughly a 1 percent increase in public pensions as a share of GDP. In other words, the pension support ratio remained constant, as public pension spending increased in line with population aging. In 1995–2007, the elasticity of the old-age dependency ratio for public pension payments was less than unity. Furthermore, it was smaller for European OECD countries (around 0.6–0.7) than for all OECD countries (around 0.8–0.9). In other words, the pension support ratio declined. Countries reduced the generosity of pension payments to limit the rise in public pensions as population aging became more pressing. Led by the north and the center, pension reforms helped mitigate the fiscal impact of population aging. These findings confirm the results in the literature (box 7.8).

Figure 7.17 Public debt rose everywhere during the crisis except in the emerging peers

(fiscal balances (left) and gross public debt (right), percentage of GDP, 2008 and 2010)



Note: "EU cand." refers to EU candidate countries.

Source: World Bank staff calculations, based on IMF WEO.

A slight modification allows a similar assessment for social transfers (table A7.10). Since social transfers include various family, child, and unemployment benefits, the dependent population has to be redefined to include the elderly, the population under 15 years old, and the unemployed. As before, we relate this dependent population to the working-age population. Of course, such analysis is simplistic, as the link between demography and social transfers is more complicated. For example, social transfers include social assistance—not just unemployment benefits but also payments linked to sickness, disability, and maternity.

Figure 7.15 shows the trends in social transfer indicators relative to 1990 for the 19 OECD countries with data. In 1990–94, social transfer payments grew faster than the dependency ratio in all regions. After 1994, the social transfer support ratio improved substantially in the north, and deteriorated in the south and Japan. Regression analysis confirms this pattern, even though the coefficients are seldom significant. Including all countries with data from 1980, we find that the elasticity of the dependency ratio for social transfer payments declined after 1994, and more so in Europe than for the whole OECD sample.

The discussion so far has looked only at OECD countries. The data also permit a review of the changes in pension payments and social transfers in Eastern Europe since 2000. Some of these countries carried out pension reforms by modifying pay-as-you-go systems into multipillar systems (figure 7.16). These include Hungary and Poland in the 1990s, and Bulgaria, Estonia, Latvia,

Box 7.9: Debt and growth

Reinhart and Rogoff (2010) analyze the relationship of growth and debt for 44 countries over about 200 years. They sum up their main findings as follows:

First, the relationship between government debt and real GDP growth is weak for debt-to-GDP ratios below 90 percent of GDP. Above the threshold of 90 percent, median growth rates fall by 1 percent, and average growth falls considerably more. The threshold for

public debt is similar in advanced and emerging economies and applies for both the post-World War II period and as far back as the data permit (often well into the 1800s).

Second, emerging markets face lower thresholds for total external debt (public and private)—which is usually denominated in a foreign currency. When total external debt reaches 60 percent of GDP, annual growth declines about 2 percent; for higher levels,

growth rates are roughly cut in half.

Third, there is no apparent contemporaneous link between inflation and public debt levels for the advanced countries as a group (some countries, such as the United States, have experienced higher inflation when debt-to-GDP is high). The story is entirely different for emerging markets, where inflation rises sharply as debt increases.

Source: Reinhart and Rogoff 2010.

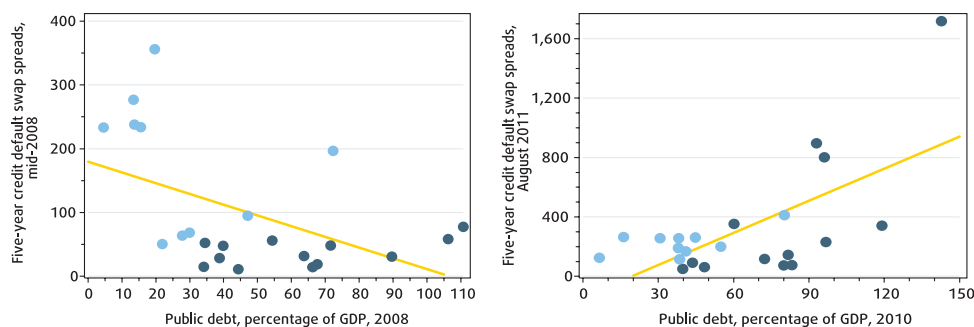


Figure 7.18: Markets have learned to look at fiscal vulnerabilities

(five-year credit default swap spreads and public debt, mid-2008 and August 2011)

Note: Dark blue dots represent EU15 countries, and light blue EU12 economies.

Source: Eurostat; and Bloomberg.

Lithuania, Romania, and the Slovak Republic in the 2000s. These reforms moderated the impact of population aging on public finances. But eastern partnership countries lag their European peers in these reforms. In addition, they also expanded social transfers faster than increases in the dependency ratio, as they appear to have responded to the expectations of people to meet the social standards of Western Europe. Naturally, Western European countries can be more generous; they can mobilize resources for social programs more easily, possibly with smaller disincentive effects on work.

Getting the fiscal house in order

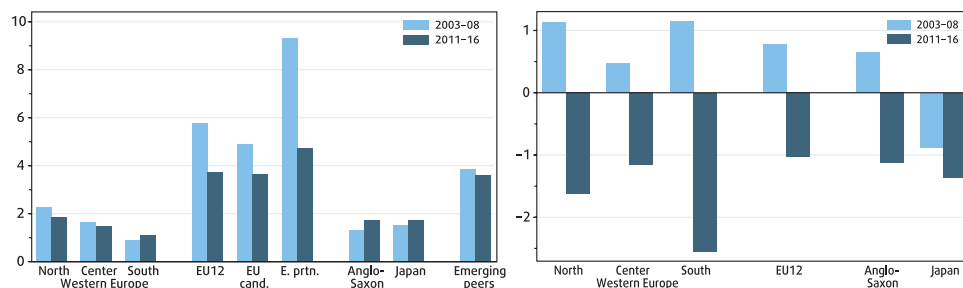
With the economic recovery losing steam three years after the Lehman crisis broke, governments in Europe would like to focus on creating jobs and generating growth. Instead, they are confronted with a public debt crisis. In many countries, putting the fiscal house in order has become the main preoccupation of policymakers for five reasons: the size of government, fiscal deficits, and public debt have risen due to the economic crisis, boosting the scale of the fiscal challenge; learning from the crisis, financial markets have turned their attention to potential fiscal vulnerabilities; the postcrisis growth prospects look uncertain, making fiscal adjustment more difficult; population aging will accelerate in the coming decades; and restoring the ability of fiscal policy to respond will help prepare for future crises.

A bigger fiscal challenge

Even without the crisis, governments in Europe already had large public sectors. During the crisis, government expenditures increased even further. In 2010, expenditures reached more than 50 percent of GDP in Western Europe and 42 percent of GDP in Eastern Europe, the highest in a decade and a half. The crisis also led to an unprecedented peacetime deterioration in fiscal balances as the revenue base collapsed, GDP contracted, and government spending rose to stabilize the economy and mitigate social impacts. The median general government deficit jumped from 0.5 percent of GDP in 2008 to 4.7 percent in 2010 for Western Europe and from 2 percent to 4.2 percent in Eastern Europe (figure 7.17).

Figure 7.19: The biggest declines in growth will be in Europe

(growth (left), percent, 2003–08 versus 2011–16; output gap (right), percentage of GDP, 2003–08 versus 2011–16)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: World Bank staff calculations, based on IMF WEO.

In Western Europe, the increase in deficits was the largest in the north. Nevertheless, the 2010 fiscal deficits of the north remained among the lowest in Europe, as this region had run fiscal surpluses before the crisis. By contrast, the already weak fiscal position of the south deteriorated further. In Eastern Europe, the deterioration in fiscal deficits was less striking and similar across the three groups, as governments were less active in supporting domestic demand and stabilizing the banking system.

The large increases in fiscal deficits—and to a lesser extent governments' acquisition of unhealthy banks' financial assets—sharply raised public debt-to-GDP ratios. The median general government debt increased from 57 percent of GDP in 2008 to 74 percent of GDP in 2010 in Western Europe. Of 18 countries in Western Europe, 5 had public debt-to-GDP ratios higher than 90 percent in 2010 (box 7.9). Public debt ratios increased from 25 percent of GDP in 2008 to 39 percent in 2010 in Eastern Europe. Of the 25 countries in Eastern Europe, 11 had debt above 40 percent of GDP. High public debt ratios put pressure on real interest rates and dampened growth prospects. International evidence suggests, for example, that a 10 percentage point increase in the public debt-to-GDP ratio leads to a rise in long-term interest rates of 30–50 basis points, and a slowdown in growth of 0.15 percentage points a year (Kumar and Woo 2010).

For most countries, the increase in public debt has not triggered increases in public debt service burdens because of low interest rates. However, markets pay close attention to fiscal deficits and public debt burdens and so, though government bond spreads in the European Union bore little relation to public debt before the crisis, bond spreads are now rising with higher public debt (figure 7.18). The recurrent volatility in euro area markets is a reminder of how quickly doubts over fiscal solvency can trigger a loss of confidence in financial markets. Government financing needs are expected to stay high in the coming years in view of high fiscal deficits and large maturing debts. The supply of government bonds could increase further in high-income countries once central banks unwind extraordinary monetary policies.

Strong growth could make debt problems fade in importance, as investors care about the debt burden relative to GDP. Yet the prospects for a strong rebound are feeble. Even before the latest slowdown in the economic recovery, International Monetary Fund (IMF) growth projections from April 2011 suggested that growth in Europe will decline from before the crisis (figure 7.19). The

Box 7.10: Improving regional development policies—follow the Irish

Regional development is again coming to the forefront of debates in the European Union and the Organisation for Economic Co-operation and Development (OECD). This time, these policies are being debated in different economic conditions than before the global economic crisis of 2008–09. OECD economies now face weak growth prospects, with weakened fiscal balances. Regional development efforts will have to contend with more pressing national growth imperatives, and there will be greater pressure to be more frugal with national fiscal resources.

Some countries have done better than others in using EU cohesion funds. Box table 1 shows three progressively more successful approaches to regional development in Europe, only a little simplistically called the Italian, Iberian, and Irish models.

The experience of Ireland is especially educational. Between 1977 and 2008, Ireland's GDP per capita grew from less than 75 percent of the EU average to more than 125 percent. Despite the crisis, Ireland remains among the 10 countries with the highest per capita income in the world. What is behind Ireland's success? Among other things, a sensible regional development policy for a small economy.

Since joining the European Union in 1973, Ireland received approximately €17 billion in EU Structural and Cohesion Funds through

the end of 2003. In the first two rounds of EU funding, the entire country was classified as an Objective One area. Between 1993 and 2003, cohesion funds supported 120 infrastructure projects at the cost of about €2 billion. The choice of projects was based on a national development plan, which focused on investments in economic infrastructure that stimulated national economic growth. The Irish invested aggressively in education and training and general public services in all of Ireland to create a good business climate countrywide. Today, Ireland is one of the top 10 countries for doing business. Infrastructure improvements were more selective. These included investments in leading regions and in connecting leading and lagging areas, such as the M50 (Dublin Ring Road), M1 (Dublin-Belfast), and improvements in others. With its business-friendly policies and good logistics, Ireland has become a popular destination for American firms and European workers.

Contrast the Irish approach to cohesion funds with the "Iberian approach." Ireland's rapid convergence toward the incomes of Europe's leaders was accompanied by a rising spatial concentration of economic activity. Compared with the other cohesion countries—Greece, Portugal, and Spain—Ireland's economic concentration rose much more. But its per capita income grew much faster too. In 1977, Greece, Ireland, and Spain had per capita incomes of about \$9,000; Portugal's was

\$6,000. By 2002, Portugal had an income of \$11,000, and Greece and Spain close to \$15,000. Ireland's per capita income had risen to \$27,500.

Today, almost all regions in the new member states of the European Union qualify for EU financial support. They should consider using the funds for international convergence and not—until later stages—for spatially balanced economic growth within their borders. European Union candidates—such as the countries of the former Yugoslavia and Turkey—may also be well advised to be single-minded in using the funds for international convergence and not to try to spread economic activity out too soon.

As the older member states of Western Europe try to find new drivers of growth and greater efficiency in public spending, they too would do well to shift from an overreliance on place-based interventions to a mix of policies that strengthen social services such as education, health care, and general administration everywhere, combined with selective investments in infrastructure to connect leading and lagging regions. In a few cases, place-based interventions such as special incentives to firms to locate in lagging regions might be necessary. But these should be used least and last, and only along with efforts to improve basic social services and connective infrastructure.

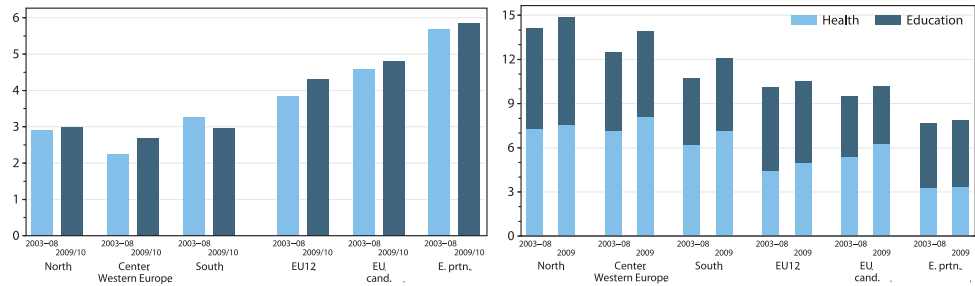
Box table 1: Three approaches to Regional Development in Europe

	"Italian" Model	"Iberian" Model	"Irish" Model
Rationale	Bring jobs to people	Bring jobs to people and enable them to access product markets	Prepare people to get jobs wherever they are
Objective	Bring economic activity from leading to lagging regions	Facilitate access of producers in lagging regions to markets in leading regions	Integrate lagging and leading regions
Instruments	Emphasize spatially targeted Interventions	Emphasize Interventions and connective Infrastructure	Emphasize Institutions and connective Infrastructure

economic expansion of 2003–08 was fueled by large capital inflows, rapid credit expansion and, in some countries, rising current account deficits and fiscal expansion. By contrast, growth in 2011–16 is set to remain weak, as households and governments reduce their debt, banks deleverage their balance sheets, and investors remain cautious about risks. In Western European countries and their peers, actual output could stay below an economy's capacity to produce goods and services for years to come, even though the crisis may have lowered

Figure 7.20: Spending on investment, education, and health was protected during the crisis

(public investment (left), and health and education spending (right), percentage of GDP, 2003–08 and 2009/10)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries.

Source: World Bank staff calculations, based on Eurostat; OECD National Accounts Statistics; and WDI.

potential output in many countries. Eastern Europe is likely to see the sharpest slowdown. Weak growth in turn implies that tax collection will be sluggish and public expenditure pressures elevated. This will make it difficult to rein in fiscal deficits and decrease public debt.

Besides, the population is aging faster. By 2040, there will be only two working-age people for each elderly person in Southern Europe, against five to one in 1980. The ratios are only slightly higher for the other regions in Europe. Population aging tends to dampen growth. Other things being equal, a country with a large share of elderly people and children is likely to grow slower than a country with a large share of working-age people. The link is pretty straightforward: as workers age, they cut back on hours worked or retire. Declining hours and lower labor participation reduce labor supply, which in turn cuts growth. In addition, the skill composition of workers may worsen, as older workers tend to have more obsolete skills than younger workers. This can affect growth even more.

Aging not only undermines growth but also makes it hard to improve public finances. Aging is a direct cost driver for public finances, especially for pensions and health. Looking at the G7 countries over 1960–2007, Cottarelli and Schaechter (2010) find that health and pensions accounted for 80 percent of the increase in primary government spending as a share of potential GDP. This reflects population aging, along with other factors such as increases in coverage and generosity of social security plans as well as advances in technology to prolong people's lives.

While the scale of the fiscal challenge is large, a key lesson from the crisis is that it is essential to use the good times to improve fiscal balances. Fiscal policy played a central stabilizing role during the crisis (Blanchard, Dell'Ariccia, and Mauro 2010). Monetary policy had reached its limits through low interest rates and quantitative easing in stimulating the economy. At the same time, the usual concerns about mistiming the fiscal stimulus were less pressing as it became clear early on that the crisis would be long-lasting. Hence fiscal policy became the main policy tool to support domestic demand in some countries, though others could not rely on fiscal policy because they entered the crisis with weak fiscal balances and high public debt. Indeed, some economies ran

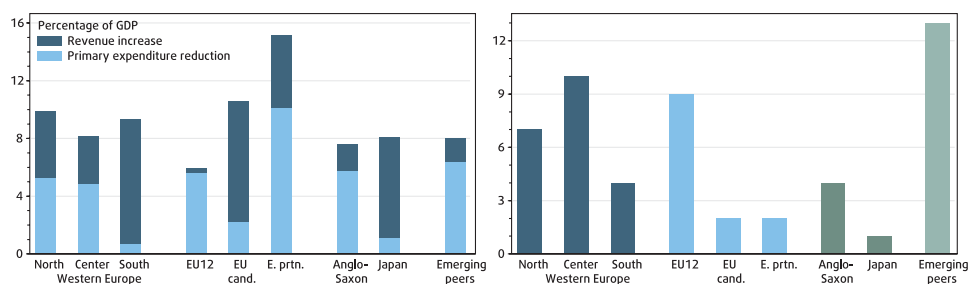


Figure 7.21: Large fiscal adjustments are not unusual

(size, percentage of GDP (left), number of large fiscal adjustments (right))

Note: The figure includes fiscal consolidations over at least three years that reduced the cyclically-adjusted primary balance by 5 percent of GDP or more.

Source: Abbas and others 2010.

procyclical fiscal policies driven by consumption booms and had to cut spending and increase taxes in spite of large recessions. The implication is that in order to prepare for the next crisis, many countries have to reduce public debt to below precrisis levels.

Bringing about a sizable fiscal adjustment

Governments in Europe have to implement fiscal consolidation strategies that ensure that the economic recovery translates into improved fiscal positions. Most countries have started to implement bold entitlement reforms in response to fiscal pressures, while safeguarding core social spending (Bornhorst and others 2010). An encouraging feature of the fiscal adjustments to date is that countries succeeded in protecting or even increasing outlays for public investments in 2009 and 2010, apart from the south, as well as public education and health spending in 2009 (figure 7.20). In Eastern Europe, access to structural funds or preaccession assistance played a vital stabilizing role, and can be used to improve growth prospects. But their use will have to be rethought; the experience in southern Italy and the original “cohesion countries”—Greece, Ireland, Portugal, and Spain—should be reassessed in deciding how these funds can best be used to foster economic growth and convergence (box 7.10).

In 2011, countries envisaged sizable reductions in fiscal deficits and public debt over the coming years. The pace and the structure of the fiscal adjustment vary, reflecting primarily the differences in initial fiscal positions, prospects, and market pressures. Countries with larger fiscal deficits and public debt levels are planning larger fiscal adjustments. Countries facing high unemployment rates tend to plan for less ambitious fiscal adjustment, to limit additional short-term costs that arise from frontloaded fiscal retrenchment. Countries facing higher borrowing costs tend to plan larger adjustments in the near future. For some countries, frontloaded fiscal consolidation can ensure access to markets and the ability to finance deficits at reasonable rates.

International experience shows that successful fiscal consolidations share common features (Gray, Lane, and Varoudakis 2007; Clements, Perry and Toro 2010; Blanchard and Cottarelli 2010). First, a fiscal consolidation strategy is crucial to shore up confidence in fiscal sustainability. Indeed, when markets lack

confidence in the government's commitment to achieve the needed primary surpluses, a vicious cycle could emerge. Markets could demand higher risk premiums to hold public debt, worsening public debt dynamics further.

Second, laying out a clear timeline for fiscal measures can be a way to square the need to shore up sluggish private demand and give public support today with the urgency to inspire confidence in financial markets in sustainable long-term fiscal balances. It might also be easier to phase in structural reform over time, as this allows people and businesses to adjust to the new circumstances.

Third, while fiscal consolidation can involve a mix of expenditure and revenue measures (figure 7.21), many countries would need to reduce expenditures. Coming into the recent crisis, many countries had poor structural primary fiscal balances, reflecting the lack of progress in public expenditure reforms, generous spending, and weak public expenditure controls. If well done, fiscal consolidation does not simply make across-the-board cuts. Instead, it focuses on areas where there is little value for money. Entitlement reforms are often part of such structural adjustments, as they are central to strengthening long-term fiscal positions. Indeed, successful fiscal adjustments rely on reducing transfers and wages more than investments in physical and human capital, which are crucial for strengthening an economy's growth potential (Tsibouris and others 2006). Such measures have to be balanced with the objective of maintaining effective provision of public services to poor and vulnerable families, also because such reforms are more sustainable. Revenue measures can also help to make the fiscal adjustment fairer.

Finally, fiscal institutions can make commitments to reducing debt-to-GDP ratios more credible. Medium-term budgetary frameworks, an effective budget process, and independent fiscal agencies that monitor policy design and implementation all make fiscal policy more effective. For example, fiscal rules that limit public expenditure increases during an economic upturn could, with multiyear and performance-based budgeting, contribute to sustainable fiscal finances over the long term. Many EU-12 countries have moved in this direction. In addition, the European Council has decided to strengthen economic governance to increase fiscal discipline, broaden economic surveillance, and deepen coordination.

Large adjustments are needed

Public debt ratios are a good reference point for establishing longer-term fiscal adjustment needs. We build on the analysis and methodology of the IMF Fiscal Monitors to assess the size of the required adjustment in Europe, along with possible options for reforms in pensions, health, and education. Western Europe and its peers are assumed to reduce debt to 60 percent of GDP by 2030, and Eastern Europe and its peers to 40 percent—for both groups, roughly precrisis levels. The debt threshold is lower for Eastern Europe, as financial markets have lower tolerance levels for public debt in emerging economies; their revenue bases might be more volatile; and public debt is shorter-term, more likely to be held by foreigners, or denominated in foreign currency. The assumption is that countries will meet these targets exclusively through improvements in their primary balances.

Table 7.1: Illustrative adjustment needs by 2030, median, percentage of GDP

	IMF projections, 2010			Illustrative fiscal adjustment to achieve debt target in 2030					
	Gross debt	PB	CAPB	CAPB in 2020–2030	Required adjustment in PB between 2010 and 2020	Required adjustment in CAPB between 2010 and 2020	Required adjustment in CAPB between 2010 and 2020 including pensions	Required adjustment in CAPB between 2010 and 2020 including pensions and health	Required adjustment in CAPB between 2010 and 2020 including pensions, health, and education
Western Europe	73.6	-2.8	-0.6	1.9	4.7	2.5	3.4	6.1	5.8
North	48.4	-2.5	0.0	0.7	3.2	0.7	1.2	4.3	3.6
Center	77.2	-2.2	-0.9	1.9	4.1	2.8	5.4	8.7	8.3
South	101.2	-3.9	-3.1	4.0	7.8	7.0	8.6	11.1	10.9
Eastern Europe	39.5	-3.3	-2.8	0.4	3.7	3.2	-	-	-
EU12	39.7	-4.0	-1.9	0.9	4.9	2.8	2.2	3.7	3.7
EU cand.	40.9	-2.9	-2.9	0.5	3.4	3.4	-	-	-
E. prtn.	34.4	-2.6	-2.8	0.3	2.9	3.0	-	-	-
Anglo-Saxon peers	84.0	-4.9	-4.2	0.9	5.8	5.1	6.3	8.4	-
Anglo-Saxon	57.8	-4.9	-4.1	0.7	5.6	4.8	6.2	8.7	-
Japan	220.3	-8.4	-6.7	6.6	15.0	13.3	13.1	14.1	-
Emerging peers	42.7	-1.0	-1.1	0.5	1.5	1.6	2.6	3.7	-

Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries. PB and CAPB mean primary balance and cyclically-adjusted primary balance, respectively. The numbers in the last three columns include the fiscal impact of aging in pensions, health, and education. They are missing for EU candidate and eastern partnership countries due to lack of data. Source: Calculations by staff of the Institute for Structural Research in Poland and the World Bank, based on IMF WEO.

A large and sustained improvement in fiscal balances is necessary to bring public debt in Europe to prudent levels. Table 7.1 presents the results:

- In Western Europe, the median required improvement in the primary balances is close to 5 percent of GDP. The south faces the largest adjustment (8 percent of GDP). Adjustment needs are lower in Eastern Europe (3.7 percent of GDP), though they are close to 5 percent of GDP for the EU12 countries.
- These numbers do not factor in the improvement in the fiscal balances from the recovery. On that basis, the required adjustment goes down to 2.5 percent of GDP for Western Europe and 3.2 percent for Eastern Europe.
- Countries have already adopted measures to improve fiscal deficits. Taking into account the fiscal impact of consolidation plans announced by spring 2011 for the next five years, the additional average adjustment need goes down to 0.1 percent of GDP for Western Europe and 0.4 percent for Eastern Europe, net of the impact of trends affecting entitlement spending after 2016 (figure 7.22). Implementing the fiscal adjustment path over the next five years would go a long way to put public finances on a sustainable footing.

Figure 7.22: Illustrative adjustment needs

(median, percentage of GDP)

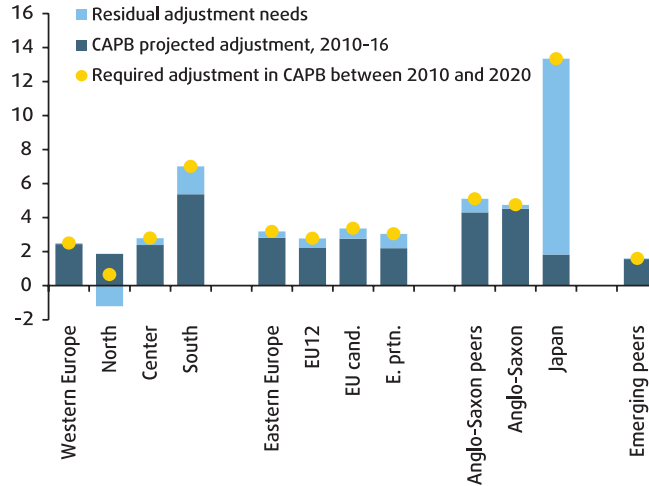
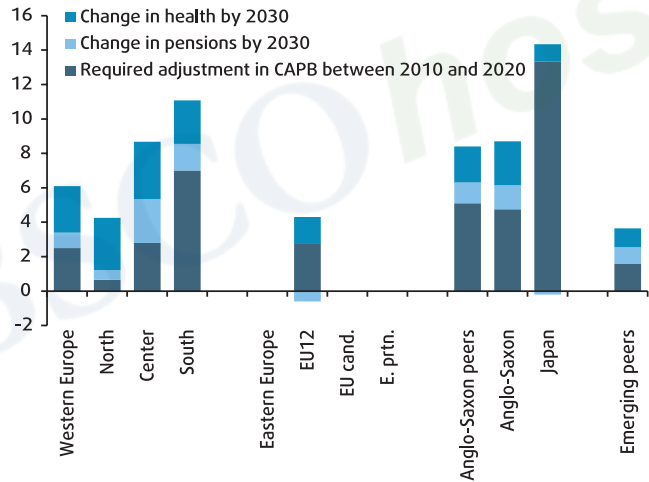


Figure 7.23: Illustrative adjustment needs and projected increase in health and pension expenditures

(median, percentage of GDP)



Note: "EU cand." refers to EU candidate countries and "E. prtn." refers to EU eastern partnership countries. CAPB means cyclically-adjusted primary balance.
 Source: Calculations by staff of the Institute for Structural Research in Poland and the World Bank, based on IMF WEO.

Box 7.11: Changes in behavior and policies enable countries to adjust to aging

Pessimism about Europe’s ability to meet economic challenges in the light of population aging may be unwarranted. One reason this concern may be misplaced is that the rise in life expectancy is not foremost an economic problem but a boon to people’s well-being. Also, age accounting, while useful as a benchmark, is also likely to overstate the impact of aging on growth and fiscal outcomes for two reasons: people change their behavior, and policymakers change policies. As people

age, they are likely to work in later years. A rise in healthy life expectancy enables people to work productively for more years, without reducing the number of years in retirement. In addition, as people realize they might live longer, they tend to increase their savings at working ages to fund consumption in old age. The reduced fertility that adds to the shift toward older populations also means that more women can enter the labor force. Policy

is crucial to support these changes in behavior. In particular, there should be no incentives for early retirement, as in an extreme form of a mandatory retirement age. Other measures include flexible old-age pension arrangements, legal efforts to ensure that employers do not discriminate against older workers, lifelong learning programs, investments in old-age health, and policies encouraging migration.
 Source: Bloom, Canning, and Fink 2008.

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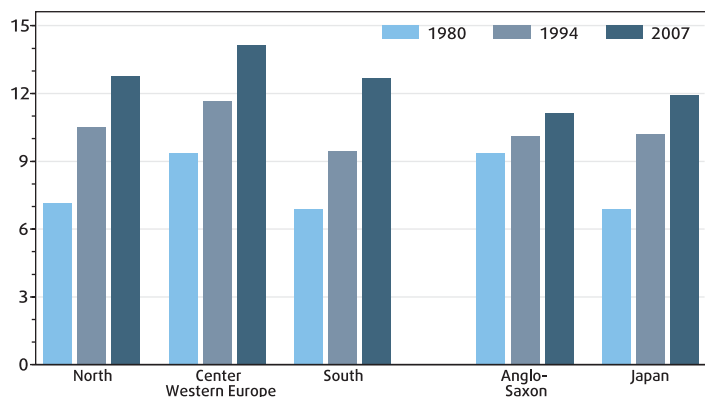


Figure 7.24: Pensions are more generous in Western Europe than elsewhere

(real public pensions per elderly person, thousand US\$ PPP, 1980, 1994, and 2007)

Source: World Bank Social Protection database.

- Adjustment needs increase with population aging. Assuming unchanged policies, expenditures on health and pensions are likely to increase the needed fiscal adjustment by close to 3.6 percent of GDP in Western Europe and 0.9 percent in the EU12 (figure 7.23). Public spending on health care alone is expected to contribute most to the spending increases. In Western Europe and the EU12, almost three-quarters of the increase in age-related spending is due to health expenditures. Overall, accounting for the fiscal costs of aging in health, pensions, and education, the required adjustment in 2010–20 increases to 6 percent of GDP for Western Europe and 3.7 percent of GDP for the EU12.

Structural reforms are necessary to deal with the long-term fiscal challenges in Europe arising from precrisis weaknesses, the debt overhang from the crisis, and pressures from population aging. They are also needed to reinvigorate growth. Higher growth can help countries reduce the size of required fiscal adjustment. For example, our simulations suggest that boosting growth by 1 percentage point throughout 2011–30 would lower the required correction in cyclically adjusted primary balances by 0.6 percent of GDP in Western Europe and 0.4 percent in Eastern Europe. As the population adjusts to the tough economic reality, aided by the right policies, Europe might find out that the adjustment is easier to make than now imagined (box 7.11).

Reforming public pensions

Large spending on pensions is the main reason why governments are bigger in Europe than elsewhere. Public pensions are high relative to those in Anglo-Saxon countries and Japan (figure 7.24). This holds especially for the center, but also for the north and the south. Similarly, gross pension replacement rates are high in Europe (see figure 1.14 in chapter 1). High public spending on pensions, combined with moderate spending on education and health, suggests that governments favor the elderly over the young and working-age generation, desiring long-term growth prospects. This indicates that there is room for further savings on public pensions, especially as private pensions become more important in providing incomes to the elderly. European OECD countries have succeeded in reducing pension generosity in response to population aging

Box 7.12: Reversal of private pension pillars

Many countries in Eastern Europe have overhauled their pension systems during the last 15 years. Fourteen countries introduced a second private pillar to complement the first (mandatory unfunded) pillar. The second pillar is typically mandatory (workers are required to participate), funded (pensions are paid from a fund accumulated from contributions), and with defined contributions (pension benefits are determined by the assets accumulated for a person's pension). Countries often combine the first and second pillars with a third, voluntary privately funded pillar.

In response to the crisis, however, several countries reduced funding for the second pillar (box table 1).

Countries backtracked on reforms for three reasons. First, the crisis has underlined the importance of making sure that first-pillar benefits can be financed. Contributions to the first pillar have taken a hit with lower wages and higher unemployment. For example, while the first pillar was originally targeted to run a surplus from 2012, Poland feared the first pillar might remain in deficit until 2060. At the same time, it has become harder for government to be a backstop for deficits in pension systems.

Second, the introduction of second pillar pensions makes it more difficult for countries to comply with the EU Stability and Growth Pact. To support the buildup of second pillar funds, governments run higher fiscal deficits and accumulate more public debt during the transition phase. While this comes at the benefit of improved long-term fiscal balances, the Stability and Growth Pact's fiscal deficit and public debt criteria do not take this into account sufficiently. In addition, financial markets worry more about explicit than implicit debt.

Third, while the reforms might take more time to bear fruits because as the size of second pillars is in many countries still modest, the second pillar systems have not always performed as hoped. Private pillars generated decent rates of return before the crisis. Countries with second pillar pension systems also tend to look better in terms of long-term sustainability, though this mostly reflects that they were more active in lowering pension benefits under the first pillar. Yet, it is clear that expectations proved too optimistic. Governments have had to subsidize the buildup of funds for the second pillar more than expected.

Poland's finances illustrate these points. Due to the crisis, the fiscal cost rose to 1.5 to 2 percent of GDP in 2000–10 instead of the predicted 0 to 1 percent of GDP. The transition costs have turned out to be higher in part because of worse than anticipated trends in the economy (weaker growth), demography (sharper drop in fertility, larger emigration), and labor market (lower rise in formal employment). In addition, individuals have responded less well to incentives to increase savings for old age than expected. Private savings have been almost entirely offset by public dissaving. The public support of the second pillars was financed through public debt issues of about 15 percent of GDP, while private pension assets amounted to about 16 percent of GDP by end-2010.

Many countries in Eastern Europe are set to make further adjustments in their pension systems. Most countries require further adjustments to their first pillar regimes; others are considering reversing or modifying their second pillar regimes; still others are considering introducing new second pillar systems. All of them would be well advised to

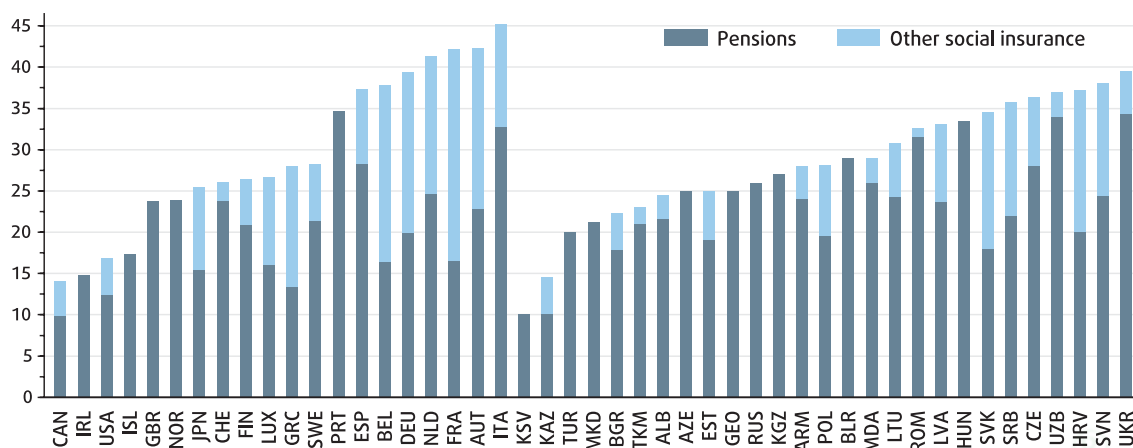
consider some lessons of the recent reforms:

- Abrupt changes lead to instability and can undermine the credibility of pension systems and the trust in government.
- The fiscal effects of reversals are often negligible, as they trade off improvements in the short run with deteriorations in the long run in headline fiscal balances.
- The reversal of second pillar regimes should be no excuse to delay addressing structural problems, whether in the area of pensions or elsewhere. Many countries should raise the retirement age, rationalize special schemes and disability benefits, move from wage- to inflation-indexation of pension benefits, and improve the regulation of private pension funds.
- Countries like Chile and Sweden have managed to get benefits from second pillar pensions. Countries in Eastern Europe considering second pillars should think carefully whether they will be able to replicate these successes. This involves looking at economic, distributional, and institutional aspects. Institutional prerequisites include a sustainable first pillar system, sound macroeconomic policies, adequate supervision and regulation of the financial sector, administrative capacity to manage individual accounts, and the political institutions to prevent undue political interference with the second pillar over generations.

Source: Barr 2010; Barr and Diamond 2008; OECD 2011b; Soto, Clements, and Eich 2011; Velculescu 2011; World Bank 2010a.

Box table 1: Recent measures to reduce contributions to the second pillar

Country	Measure
Estonia	Temporary suspension of contribution (4 percent)
Hungary	Permanent diversion of contribution to first pillar; second pillar changed from mandatory to voluntary
Latvia	Temporary reduction of contribution from 10 percent to 2 percent
Lithuania	Temporary reduction of contribution from 5.5 percent to 2 percent
Poland	Reduction of contribution from 7.3 percent to 2.3 percent from May 2011; increase to 3.5 percent by 2017



Source: World Bank Social Protection database.

since the early 1990s, even though the elderly are a political force. And many countries in the EU12 have adopted pension reforms to mitigate the impact of aging on public finances (box 7.12).

As pension systems become more and more unsustainable, some governments show a propensity to push certain entitlements in the (noncontributory) social assistance area, while preserving eligibility and benefit formulas. For example, when the pension system went into deficit in 2005 in Romania, entitlements financed from social security contributions, such as farmers' pensions and paid parental leave, were shifted to the general budget and are now tax-financed. These moves only created the illusion of restoring fiscal sustainability of the pension system. They also maintained a regressive benefit (parental leave) that paid high benefits for long periods to middle- and high-income parents, keeping them out of the labor market for about two years, while denying such benefits to parents from low-income households. When former pension benefits have to be shed, governments are well advised to design them using the objectives for good safety net programs, including restricting them to the most needy.

Increasing longevity and lower fertility put increasing pressure on pension systems. Following the European Commission methodology, without policy change, pension expenditures would increase by 1.1 percent of GDP by 2030 in Western Europe, and decline by 0.3 percent of GDP in the EU12. In Western Europe, the challenge is largest in the center but moderate in the north. The required savings are not huge. For example, the pension reforms introduced in Finland, Germany, Italy, Spain, and Sweden in 1995–2005 should reduce public pension expenditures by more than 2 percent of GDP by 2030 (Clements, Perry, and Toro 2010).

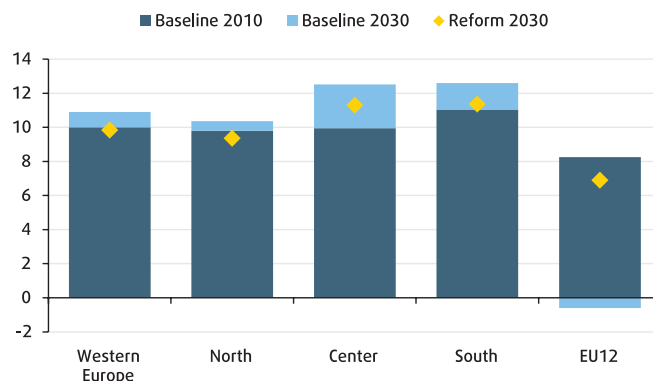
As people get older, pension benefits cannot simply keep up with workers' incomes. These pressures are visible in both public and private pension plans, where actuarial changes are making systems less generous. Whatever the system, prolonging the retirement phase means that for a given return on savings, retirement benefits have to shrink relative to wages earned during the

Figure 7.25: Social insurance contribution rates in Europe are often high

(contribution rates of pensions and social insurance, percentage of gross earnings, latest data)

Figure 7.26: Raising the retirement age helps stabilize pension spending

(projected increase in pension expenditures and impact of pension reforms, medians, percentage of GDP)



Source: Calculations by staff of the Institute for Structural Research in Poland and the World Bank.

working life. Making the pension system more sustainable involves moderating the increase in the ratio of retirement to working life or moderating the ratio of pension benefits relative to wages (or a combination). As pension contributions in Europe are already high, the second option mainly involves reducing the generosity of pension benefits (figure 7.25).

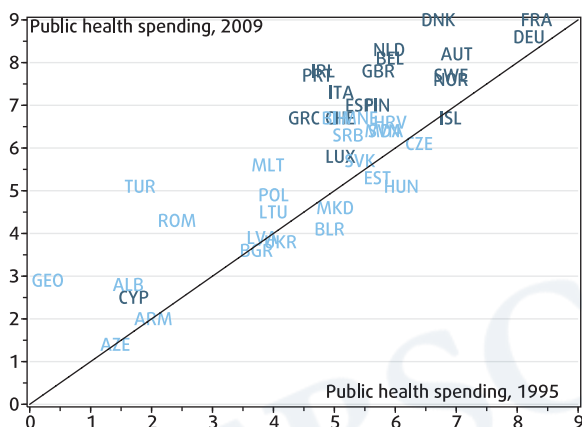
Encouraging people to work longer would involve a combination of raising the statutory retirement age, penalizing early retirement, and removing legal or other impediments for people age 50 or older to get a job. Changes in indexation formulas from a combination of wage growth and inflation to inflation only is one way to adjust pension benefits, especially for countries in Eastern Europe. Such reforms have been implemented in Japan, the Republic of Korea, and Sweden; others should consider them too.

Alternatively, countries can focus public pension systems on the low-income elderly. Canada, the Netherlands, and New Zealand combine low public pension spending with low old-age poverty because their public pension systems are relatively redistributive. This approach can work well when countries succeed in encouraging people to compensate for lower public pensions with higher savings through private pensions (OECD 2011b).

As an illustration, one can look at the impact of raising the effective retirement age (for example, increasing the employment rate among those of working age) and increasing the statutory retirement age (for example, increasing the employment rate of the elderly) by 5 percent (figure 7.25). For the EU12, this is equivalent to increases of three years in the effective and statutory retirement ages, resulting in longer working lives by six years. Of course, increases in the statutory retirement age do not lead to one-to-one increases in working lives. Instead, governments have to work on measures on both the supply side (strengthening incentives to work) and demand side (ensuring that there are jobs for the elderly) to make this happen. These reforms would keep public pension expenditures at 2010's level in Western Europe. The EU12 countries would reduce outlays for public pensions from more than 8 percent of GDP in 2010 to less than 7 percent in 2030. Such reforms would also be good for economic recovery. As people's future income increases, they are likely to scale up today's consumption (figure 7.26).

Reforming public health

Europe's public health spending is still moderate and most health outcomes are impressive. While some countries in Eastern Europe are struggling to overcome the challenges of the past—including heavy hospital infrastructure, overreliance on inpatient and specialized care, and neglect of preventive care—the problems of public health systems lie foremost in the future. Health care expenditures around the world tend to rise faster than incomes, and Europe, where median public health spending increased from 5.2 percent of GDP in 1995 to 6.4 percent in 2009 (figure 7.27), is no exception.



Source: Eurostat; and OECD Social Expenditure Database.

Figure 7.27: Public health spending has increased faster than GDP

(public health spending in Europe, percentage of GDP, 1995 and 2009)

Box 7.13: Long-term care policies for older populations in new member states and Croatia

The new EU member states and Croatia are facing rapidly aging populations. In 2025, more than 20 percent of Bulgarians will be age 65 or older, up from just 13 percent in 1990, and the average Slovene will be 47 years old, among the oldest in the world. One consequence of these demographic changes is the expected increase in demand among the older population for long-term care (LTC). LTC services refer to the organization and delivery of a broad range of services and assistance to people who are limited in their ability to live independently over an extended period.

Experience from Organisation for Economic Co-operation and Development (OECD) countries shows that LTC is expensive and generates a financial burden for individuals and households. Much financial uncertainty surrounds future LTC expenditures, and private LTC insurance systems are underdeveloped. Increasing good practice in OECD countries means promoting a policy of universal

coverage. Yet if countries are to adopt such policies—given the growing size of the older population and growing dependency ratios—they must closely examine the policies' fiscal sustainability.

Thus the key policy challenge facing new EU member states and Croatia is how to balance the twin objectives of fair financing (where those in need can afford LTC) with fiscal sustainability. Governments can meet this challenge in four ways:

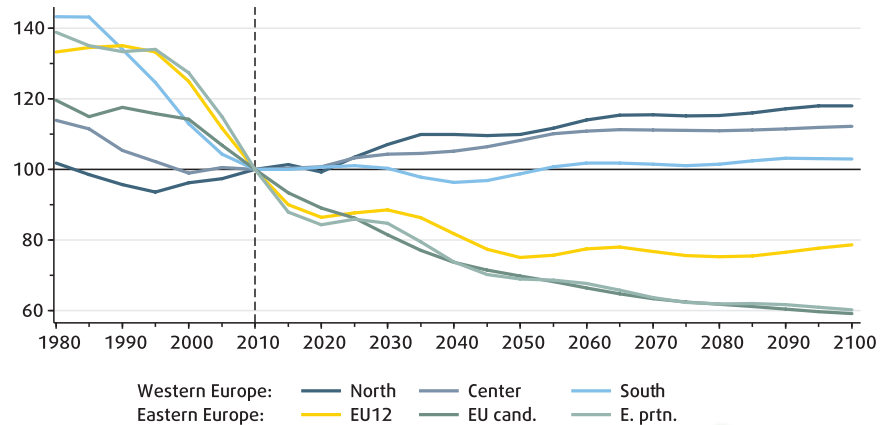
- Develop a policy for universal LTC financing based on the concept of intergenerational fiscal sustainability. Use actuarial and other financial models to cost out the revenue and expenditure implications of expanding universal LTC coverage. Identify the appropriate package and identify the role of supplementary LTC coverage through other instruments.

- Do not expand LTC coverage on an inefficient base but use LTC financing to control demand for services and channel it toward the right types of services (home-based with care coordination and conversion of hospitals into community centers and not LTC institutions).
- Think about how to leverage LTC service-delivery reforms and encourage private provision. (This depends heavily on LTC financing policies and the overall regulatory environment.)
- Develop a strong evidence base on LTC financing and provision. As part of developing an LTC policy, begin monitoring LTC expenditures to learn whether they pose a burden on households or how households are coping with them during old age. Build a database on coverage of LTC services and trends over time.

Source: World Bank 2010b.

Figure 7.28: Young cohorts are shrinking in Eastern Europe

(population ages 5–24, 1980–2100, 2010 = 100)



Source: UN 2011.

Based on historical trends, unit costs of health treatment grow 1 percentage point faster than GDP per capita. This leads to increases in public health spending of 2.7 percent of GDP in Western Europe and 1.5 percent in the EU12 by 2030. Further costs pressures could arise from faster technology adoption and imitation. For the EU12, this could imply that public health spending increases by as much as 3.5 percent of GDP by 2030.

The challenge is how to manage the pressures that lead to escalating costs and expenditures without undermining many countries' generally sound health-system performance. After all, reducing public health spending in a bad way can ultimately undermine important health policy goals or simply defer spending. Governments are striving to control cost escalation while preserving the public sector's crucial role in providing good health care.

One major pressure point is spending on long-term care services (box 7.13). A recent IMF cross-country analysis concluded that international experience offers various options to control the growth of public health spending (Clements, Perry, and Toro 2010). They include pushing through with provider payment reforms using case-based payment or global budgets rather than fee for service, strengthening evaluations of the cost-effectiveness of medical treatments and technology, implementing health information technology to increase the efficiency of service delivery, and increasing patient cost-sharing to encourage patients to go to the doctor only when needed. At the same time, the most sustainable way to control health spending over the decades is to ensure value for money, though sometimes this might mean investing more upfront (OECD 2010).

Reforming public education

Population aging puts upward pressures on the costs of public pensions and public health, but also provides an opportunity for fiscal saving in education. The population age 5–24 years changes little in 2010–30 in Western Europe but

is set to decline by about 15 percent in Eastern Europe (figure 7.28), where many countries maintain too many schools, and are failing to consolidate schools and reduce teaching staff in line with shrinking student numbers.

Other problems are Europe-wide, including disappointing learning achievements in international assessments for some countries and minority groups, graduation of pupils and students without the skills needed by industry and other employers, little lifelong learning, and poor information on learning outcomes. Supporting education and training systems that serve the needs of the economy is one of the important roles of a high-quality government. Some European countries start focusing on technical skills too early in a student's career, leaving graduates ready for their first job but possibly without enough generic skills to be retrained into a different field later. Other European countries now have sophisticated adult education and training systems in place; others have barely started. With aging populations, it is essential to have options, incentives (for workers and firms), and quality assurance mechanisms; and these systems cannot be built overnight.

Following the methodology of the European Commission, we project public expenditures on education to change little in 2030 relative to 2010. Median expenditures on education would decline by 0.3 percent of GDP in Western Europe, and remain unchanged in the EU12 countries. Adjusting the number of education personnel in line with the changes in the number of students would generate sizable fiscal gains. Education spending would decrease by 1.1 percent of GDP in the EU12 countries, 0.7 percent in the south, 0.3 percent in the north, and 0.1 percent in the center.⁵ Such saving could either be used to invest in education quality, or pay off public debt and reduce the size of government.

Make government more efficient, or make it smaller

Governments in Europe generate plenty of reasons to worry. When big, they hamper growth. The crisis has made governments even bigger, and countries are struggling to reassure nervous financial markets in the face of large fiscal imbalances and rising public debt. These concerns are weighing on growth. The recovery has relied on public support and the global upturn rather than domestic investment and FDI. Population aging further dampens the outlook, as labor gets scarcer and demand for public services stronger.

Reform is an unrelenting task for all governments, but some governments need more—and more urgent—reforms than others. The south does poorly on key dimensions compared with the rest of Western Europe and, increasingly, with countries in Eastern Europe:

- Although the south still has somewhat smaller government than the center and the north, government size has been increasing in the south over the last decade and a half. Efforts to consolidate government spending weakened in Europe during the boom years before the global financial crisis in 2008-09. But spending on pensions and social transfers rose far more in the south than in the rest of Western Europe. The south spends more than the north or center when taxes are factored in on the social sector as a share of GDP.

- Europe has been an economic convergence machine, helping poorer countries to catch up to richer economies. Yet even though the forces of convergence should have translated into faster growth in the south, growth in the south has been slower than in the north and the center over the last decade and a half. One reason for the south's poor growth is that quality of government is worse than elsewhere. The south has fallen further behind the north and the center in quality of government, even though its public sector wage bills expanded.
- Oversized government, moderate growth, weak institutions, and a rapidly aging population give rise to large fiscal imbalances. And it is the south that faces the largest fiscal adjustment in coming decades.

For Eastern Europe, the differences across countries are less striking than for Western Europe. Nevertheless, taking the EU candidate countries as an example, the need for substantial reform is evident:

- Although the EU candidate countries are poorer than the EU12 countries, their government size (measured as government spending as a share of GDP) is about the same. Size declined in the EU12 from the mid-1990s to the late 2000s, but increased in the candidate countries. Spending on pensions, health, and education as a share of GDP is higher in the candidate countries than in the EU12 and eastern partnership countries.
- The candidate countries have seen less convergence in living standards than the rest of Eastern Europe, even though they are poorer than the EU12 countries. One reason is that many of the candidate countries have benefited less from trade integration since the late 1990s than the EU12 countries. The other reason, more pertinent for this chapter, is that candidate countries lag the new member states of the EU in quality of government, and the gap has been widening over the last decade.
- Candidate countries have weaker fiscal balances than EU12 or eastern partnership countries, and face a larger longer-term fiscal adjustment to stabilize public debt.

Such an array of difficulties makes it easy to give in to pessimism. But there are also good reasons to be optimistic.

First, Europe has repeatedly shown a capacity to reform. The list of countries that have succeeded in bringing about large improvements in their fiscal balances since the 1980s is long, though the advances have not always been sustained.⁶ But soon we might be able to talk about sustained fiscal consolidation in countries like Estonia, Ireland, or Latvia. Indeed, public finance reform might be easier today than in the past, largely because the crisis has convinced more people of its urgency, even if some countries' large public debt originates in the private sector. Many countries are lowering public benefits, reducing salaries, and increasing working hours. Countries like France, Greece, Italy, Portugal, Spain, and the United Kingdom have recently adopted fiscal reforms whose scope and size might have been unthinkable just a few years ago.

Second, to ensure prosperity and well-being, well-run governments can make an enormous difference. With public sectors accounting for half of domestic output, making sure that government works better can help spur productivity and innovation in the economy. Absorbing lessons from other countries about what works (and what does not), countries can make the bureaucracy leaner, fiscal institutions more reliable, public services more competitive, tax administration more effective, and citizens more informed through electronic government.

Third, Europe has demonstrated that it can adjust public finances to population aging. In Western Europe, many countries have altered pension parameters to put a lid on public pension spending as elderly cohorts started to grow. In Eastern Europe, countries such as Estonia, Poland, and the Slovak Republic revamped their pension programs so that they have sound system finances. As pensions remain fairly generous in Europe, many countries still have room to advance pension reforms as population aging accelerates. Countries also need to address education and health with equal urgency. Cost escalation in health care—driven by increased demand from rising incomes and by new, high technology-related health procedures—is the main risk to fiscal sustainability. Countries in Eastern Europe can learn from their neighbors to the west about how to adjust spending on teachers in line with demographic trends.

Fourth, beyond putting public finances in order, Europe can do much to improve trade, finance, enterprises, innovation, and labor. Lifting growth even a little over the coming decade can cut the size of the required fiscal adjustments. Faster growth increases tax revenues and can also lower government spending on social programs as earnings increase, on unemployment benefits as jobs become more plentiful, and on servicing public debt as markets charge lower interest on government bonds. A well-run welfare state can help make this happen—its safety net allows people to take risks and invest in their business ideas without worrying about their families' health insurance or children's education if plans go awry.

There is no one "best" government form and size. Some societies care more about strong growth, others more about inclusive growth. Countries have diverse institutions, histories, and politics, which make governments different in more ways than size. Each country has to decide what type of government it wants and how it wants to reform what it has. Northern Europe outperforms much of the rest of Europe on many fronts, including growth, public services, equity, and quality of government. Northern Europeans have found that these benefits come with big government but with many individual responsibilities: they have higher labor force participation rates, they stay engaged in the formal economy despite having to pay high taxes, they have enabled women to combine work and family, they have provided enterprises with the economic freedom needed to compete globally—undertaking sweeping economic reforms when necessary—and they maintain high levels of social trust.



Doing all this is not easy. It might be more feasible for most countries to keep government small until the institutional and social prerequisites of “big government lite” are put in place. All the countries in Southern Europe, many in Eastern Europe, and even some in Western Europe should keep the main point of this chapter in mind: without high quality of public services and social programs, big government will be a heavy burden and become a drag on economic growth. With poor economic growth prospects, even reasonably sized governments inevitably become an unbearable burden.

Answers to questions on page 353

- Governments in Europe spend about 10 percent of GDP more than their peers, and this is almost entirely because they spend more on social protection.
- Controlling for other differences, European economies with government spending greater than 40 percent of GDP have had much lower growth rates during the last 15 years.
- Countries like Sweden have big governments, but they deliver high-quality social services, make it easy for citizens and enterprises to comply with taxes and regulations, and have high levels of social trust.
- Countries where government works have made their bureaucracies leaner, fiscal institutions more reliable, public services competitive, tax administration effective, and citizens more empowered.
- To respond to market pressures and aging populations, almost every country in Europe must make big fiscal adjustments to reduce public debt to precrisis levels.

Chapter 7: Annexes

Table A7.1: Political institutions influence government size

(OLS regression results on the logarithm of government size, 1995–2009)

Variables	(1)	(2)	(3)	(4)
Log per capita GDP PPP				.27 (8.9)
Log public debt (percentage of GDP)		.10 (10.8)	.08 (9.4)	.08 (8.3)
Log trade openness (percentage of GDP)		-.08 (5.4)	-.05 (4.0)	-.05 (3.6)
Log old-age dependency ratio			.09 (1.4)	.12 (1.9)
Log unemployment rate			.10 (9.0)	.09 (8.1)
Fractionalization				.06 (2.5)
Federalism				.04 (2.7)
Electoral system				-.07 (4.2)
Bicameralism				.01 (0.9)
Constitutional design				-.06 (2.8)
Western Europe				
Center	-.09 (2.0)	-.07 (2.5)	-.09 (3.5)	-.10 (3.3)
South	-.012 (2.3)	-.018 (5.7)	-.021 (6.8)	-.019 (5.8)
Eastern Europe				
EU12	-.020 (4.8)	-.007 (2.6)	-.010 (3.5)	-.007 (2.3)
Accession	-.027 (5.9)	-.015 (4.7)	-.024 (6.6)	-.023 (6.2)
Eastern partnerships	-.067 (14.2)	-.019 (4.7)	-.011 (2.6)	-.011 (0.2)
Anglo-Saxon and Japan	-.027 (5.8)	-.033 (10.8)	-.032 (11.0)	-.025 (7.1)
Emerging peers	-.065 (17.2)	-.057 (20.9)	-.056 (20.9)	-.048 (14.1)
Constant	3.9 (76.7)	3.27 (37.4)	2.1 (7.1)	2.1 (7.1)
Year controls	Yes	Yes	Yes	Yes
R squared	0.42	0.68	0.71	0.73
Number of observations	1,023	833	808	800

Note: Western Europe North is omitted. t-statistics in parentheses. OLS refers to ordinary least squares.

Source: World Bank staff calculations.

Table A7.2: Regression Results for Growth and Initial Government Expenditures, 1995 to 2010

Variables	(1) OLS	(2) OLS	(3) Pooled OLS	(4) Robust regression
1. World 1995 to 2010				
Government size	-0.0003	-0.0003	-0.0001	0.0001
Real per capita income	-0.0000**	-0.0000***	-0.0000***	-0.0000***
Number of observations	152	106	399	399
Adjusted R squared	0.0123	0.2703	0.2095	0.2337
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
2. World 1995 to 2006				
Government size			-0.0001	0.0002
Real per capita income			-0.0000***	-0.0000***
Number of observations			301	301
Adjusted R squared			0.1992	0.2199
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
3. World 1995 to 2006 and government size more than 40 percent of GDP				
Government size			-0.0009*	-0.0005
Real per capita income			-0.0000***	-0.0000***
Number of observations			78	76
Adjusted R squared			0.3476	0.4163
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
4. World 1995 to 2006 and government size less than or equal to 40 percent of GDP				
Government size			0.0001	0.0004
Real per capita income			-0.0000***	-0.0000***
Number of observations			223	223
Adjusted R squared			0.1968	0.1797
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
5. Europe 1995 to 2010				
Government size	-0.0016***	-0.0009**	-0.0007**	-0.0004*
Real per capita income	-0.0000**	-0.0000***	-0.0000***	-0.0000***
Number of observations	42	33	124	124
Adjusted R squared	0.3978	0.6701	0.5350	0.6023
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
6. Europe 1995 to 2006				
Government size			-0.0010*	-0.0004
Real per capita income			-0.0000***	-0.0000***
Number of observations			91	91
Adjusted R squared			0.3955	0.5176
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
7. Europe 1995 to 2006 and government size more than 40 percent of GDP				
Government size			-0.0014**	-0.0011**
Real per capita income			-0.0000***	-0.0000***
Number of observations			66	65
Adjusted R squared			0.3586	0.4698
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
8. Europe 1995 to 2006 and government size less than or equal to 40 percent of GDP				
Government size			0.0022	0.0028*
Real per capita income			0.0000	0.0000
Number of observations			25	25
Adjusted R squared			0.5438	0.5750
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: The rows government size and real per capita income show parameter estimates except for the last column. Standard errors are heteroskedasticity and country-specific autocorrelation consistent. Except for (1), the regressions also include these additional right-hand side variables: years of schooling, inflation, trade openness, old-age dependency ratio, terms of trade growth, quality of regulation, and rule of law. All regressors are initial values. Regressions (1) and (2) are cross-sectional regressions. Regressions (3) to (8) are four-year period panels. Regressions (3), (4), (6), (7), and (8) also include time-fixed effects. The null hypothesis of the Arellano-

(5) BE	(6) FE	(7) SGMM	(8) BACE, BE	
			Coefficient	Including probability
-0.0003 -0.0000*** 399 0.2039	-0.0003 -0.0000*** 399 0.3120	0.0011** -0.0000* 399 0.0550 0.0740	-0.0005 -0.000001 399	0.2822 0.2067
-0.0001 -0.0000*** 301 0.1971	-0.0004 -0.0000* 301 0.2695	0.0013 -0.0000** 301 0.4920 0.4970	-0.0002 -0.000001 301	0.0000 0.9997
-0.0013* -0.0000*** 78 0.4335	-0.0012 -0.0000** 78 0.2221	-0.0017* -0.0000** 78 0.5360 0.6000	-0.0015 -0.000002 78	0.0000 0.9959
0.0003 -0.0000*** 223 0.1798	-0.0003 0.0000 223 0.2238	0.0004 -0.0000* 223 0.3080 0.4030	-0.0001 -0.000001 223	0.0319 0.9659
-0.0004 -0.0000* 124 0.3235	-0.0006 -0.0000** 124 0.5876	-0.0017** -0.0000* 124 0.5090 0.8700	-0.0006 -0.000001 124	1.0000 0.9455
-0.0008* -0.0000*** 91 0.5761	-0.0002 -0.000001 91 0.5640	-0.0006 -0.000001 91 0.4420 0.1890	-0.0009 -0.000001 91	0.9996 0.9994
-0.0023** -0.0000*** 66 0.5015	-0.0006 -0.000001 66 0.3305	-0.0010 -0.000001 66 0.7980 0.2970	-0.0022 -0.000002 66	0.9408 0.9882
0.0000 0.0000 25 0.7984	0.0001 -0.0000* 25 0.8906	0.0071 0.0000 25 0.5360 0.9900	-0.0005 0.0966 25	0.0000 0.9598

Bond AR(2) test is that the first-differenced errors exhibit no second-order serial correlation. The null hypothesis of the Hansen J-statistics is that the instruments are not correlated with the residuals. The prior mean model size in the BACE regressions is 3. For the estimation methods, OLS, BE, FE, SGMM, and BACE refer to ordinary least squares, between effects, fixed effects, system GMM (generalized method of moments), and Bayesian averaging of classical estimates, respectively. Source: World Bank staff calculations.

Table A7.3: Regression results for growth and initial government revenues in Europe, 1995–2010

Variables	(1) OLS	(2) OLS	(3) Pooled OLS	(4) Robust regression
Europe 1995 to 2010				
Government size	-0.0003	-0.0005	-0.0007	-0.0001
Real per capita income	-0.0000**	-0.0000**	-0.0000***	-0.0000**
Number of observations	42	33	124	124
Adjusted R squared	0.2944	0.6253	0.5363	0.6033
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
Europe 1995 to 2006				
Government size			-0.0009	-0.0001
Real per capita income			-0.0000***	-0.0000***
Number of observations			91	91
Adjusted R squared			0.4109	0.5259
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				

Table A7.4: Regression results for growth and initial social transfer spending in Europe, 1995–2010

Variables	(1) OLS	(2) OLS	(3) Pooled OLS	(4) Robust regression
Europe 1995 to 2010				
Government size	-0.0023	-0.0003	-0.0011**	-0.0005
Real per capita income	-0.0000**	-0.0000*	-0.0000***	-0.0000**
Number of observations	42	33	127	127
Adjusted R squared	0.3307	0.6017	0.5487	0.5934
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
Europe 1995 to 2006				
Government size	-0.0023	-0.0003	-0.0017**	-0.0008**
Real per capita income	-0.0000**	-0.0000*	-0.0000***	-0.0000***
Number of observations	42	33	94	94
Adjusted R squared	0.3307	0.6017	0.4497	0.5262
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				

Table A7.5: Regression results for growth and average public investment spending in Europe, 1995–2010

Variables	(1) OLS	(2) OLS	(3) Pooled OLS	(4) Robust regression
Europe 1995 to 2010				
Government size	0.0101**	0.0033	0.0011	0.0009
Real per capita income	-0.0000***	-0.0000*	-0.0000**	-0.0000**
Number of observations	42	33	126	126
Adjusted R squared	0.4341	0.6170	0.5646	0.5901
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				
Europe 1995 to 2006				
Government size	0.0101**	0.0033	0.0035	0.0036**
Real per capita income	-0.0000***	-0.0000*	-0.0000**	-0.0000***
Number of observations	42	33	93	93
Adjusted R squared	0.4341	0.617	0.4494	0.5268
Arellano-Bond AR(2) test (p value)				
Hansen J-statistics (p value)				

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: See note for table A7.2.

Source: World Bank staff calculations.

(5) BE	(6) FE	(7) SGMM	(8) BACE, BE	
			Coefficient	Including probability
-0.0008*	-0.0003	-0.0023**	-0.0009	0.9979
-0.0000*	-0.0000**	0.00000	-0.000001	0.9933
124	124	124	124	
0.4210	0.6011			
		0.63		
		0.46		
-0.0010**	0.0002	-0.0008	-0.0008	0.0272
-0.0000**	-0.000001	-0.000001	-0.000001	0.9588
91	91	91	91	
0.6132	0.5775			
		0.221		
		0.206		

(5) BE	(6) FE	(7) SGMM	(8) BACE, BE	
			Coefficient	Including probability
-0.0007	-0.0022	-0.0029**	-0.0010	0.9982
-0.0000	-0.0000**	-0.0000	-0.0000007	0.6956
127	127	127		
0.3425	0.5900			
		0.215		
		0.621		
-0.0012	-0.0039	-0.0044	-0.0017	1.0000
-0.0000**	0.00000	0.00000	-0.000001	0.7850
94	94	94		
0.5012	0.4585			
		0.674		
		0.577		

(5) BE	(6) FE	(7) SGMM	(8) BACE, BE	
			Coefficient	Including probability
0.0010	-0.0016	-0.0069	0.0023	0.9998
-0.0000	-0.0000**	-0.0000	-0.0000006	0.8710
126	126	126		
0.4185	0.6007			
		0.452		
		0.597		
0.0017	0.0109***	-0.0139	0.0007	0.2223
-0.0000	-0.0000**	-0.0000**	-0.000001	0.8522
93	93	93		
0.5072	0.5215			
		0.836		
		0.859		

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: See note for table A7.2.

Source: World Bank staff calculations.

Table A7.6: Regression results of quality of government on initial government size

	(1) World	(2) Europe	(3) World	(4) Europe	(5) World	(6) Europe
1. Enabler of private sector						
Indicator	Rule of law		Regulation		Indep. judiciary	
Source	WB Governance		WB Governance		Henisz Polcon	
Bivariate regression						
Coefficient	0.05	0.06	0.04	0.05	0.02	0.02
Robust t-statistics	7.80***	7.42***	5.67***	5.46***	6.44***	4.26***
Number of observations	167	43	166	43	160	42
Adjusted R square	0.34	0.38	0.25	0.38	0.21	0.25
Multivariate regression						
Coefficient	0.03	0.03	0.02	0.02	0.01	0.02
Robust t-statistics	4.20***	2.57**	2.51**	1.85*	3.05***	1.73*
Number of observations	155	41	155	41	151	40
Adjusted R square	0.56	0.79	0.44	0.61	0.35	0.24
2. Enabler of economic globalization						
Indicator	Free trade		Econ. globalization		Tariff rate	
Source	Fraser Institute		KOF Index		Fraser Institute	
Bivariate regression						
Coefficient	0.96	0.63	0.04	0.04	-0.16	0.01
Robust t-statistics	8.39***	3.78***	4.46***	2.90***	5.03***	0.31
Number of observations	133	41	120	34	138	42
Adjusted R square	0.34	0.25	0.15	0.15	0.12	-0.02
Multivariate regression						
Coefficient	0.59	0.29	0.03	0.04	-0.12	0.02
Robust t-statistics	3.32***	1.45	2.16**	1.62	2.18**	0.36
Number of observations	128	39	115	34	131	40
Adjusted R square	0.41	0.37	0.15	0.31	0.2	-0.08
3. Efficient administrator						
Indicator	Gov. effectiveness		Control of corrupt.		Formal economy	
Source	WB Governance		WB Governance		Schneider	
Bivariate regression						
Coefficient	0.05	0.06	0.05	0.07	0.52	0.88
Robust t-statistics	7.05***	6.19***	8.37***	6.54***	6.50***	5.79***
Number of observations	167	43	166	43	145	40
Adjusted R square	0.31	0.36	0.35	0.35	0.23	0.47
Multivariate regression						
Coefficient	0.03	0.02	0.03	0.02	0.35	0.46
Robust t-statistics	3.64***	1.79*	4.74***	2.73***	3.48***	3.27***
Number of observations	155	41	155	41	141	40
Adjusted R square	0.53	0.76	0.55	0.82	0.36	0.73
4. Enabler of voice and accountability						
Indicator	Instit. democracy		Voice and account.		Political stability	
Source	Polity IV		WB Governance		WB Governance	
Bivariate regression						
Coefficient	0.11	0.17	0.04	0.06	0.04	0.04
Robust t-statistics	4.06***	3.69***	5.37***	6.43***	7.28***	4.64***
Number of observations	155	39	167	43	167	43
Adjusted R square	0.11	0.52	0.22	0.53	0.28	0.31
Multivariate regression						
Coefficient	0.08	0.17	0.02	0.04	0.03	0.02
Robust t-statistics	2.03**	3.16***	2.48**	3.09***	4.18***	2.27**
Number of observations	146	37	155	41	155	41
Adjusted R square	0.2	0.51	0.38	0.69	0.33	0.51

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: The quality of government indicators are 2003–08/9 averages. Higher values indicate higher quality of government. The multivariate regressions also include these additional right-hand side variables: 1995 to 2002 average per capita income and the time-invariant variables ethno-linguistic fragmentation, French legal origin, socialist legal origin, and distance to Brussels.

(7) World	(8) Europe	(9) World	(10) Europe	(11) World	(12) Europe	(13) World	(14) Europe
Dismissal cost WB Doing Bus.		Centr. collect. bar. Glob. Compet. Rep.		Tax compl. cost WB Doing Bus.		Top mar. tax rate Fraser Institute	
0.08	0.02	-0.03	-0.09	0.04	0.06	-0.06	-0.17
3.90***	0.46	3.00***	4.11***	2.92***	1.85*	3.15***	5.13***
133	41	122	42	135	41	125	42
0.08	-0.02	0.07	0.22	0.03	0.05	0.08	0.46
0.05	0.00	-0.03	-0.06	0.01	0.01	-0.04	-0.12
1.58	0.05	1.94*	2.22**	0.39	0.22	1.65	3.30***
127	39	116	40	129	39	118	40
0.11	0.07	0.23	0.47	0.12	0.24	0.19	0.49
Trade openness Penn World Table							
0.74	0.25						
1.92*	0.53						
167	43						
0.02	-0.02						
-0.07	-0.6						
0.18	0.83						
155	41						
0.07	0.12						

Source: World Bank staff calculations.

Table A7.7: OLS regression results of people's values on initial government size

	(1) World	(2) Europe	(3) World	(4) Europe	(5) World	(6) Europe	(7) World	(8) Europe
	Trust other people		Tolerance of diversity		Gov. more responsib.		Claiming benefits	
Bivariate regression								
Coefficient	0.01	0.01	0.02	0.04	0.01	0.05	-0.02	0
Robust t-statistics	2.89***	2.44**	4.04***	6.95***	1.03	4.72***	2.82***	0.07
Number of observations	56	20	52	20	56	20	55	20
Adjusted R square	0.16	0.24	0.18	0.49	0	0.39	0.1	-0.06
Multivariate regression								
Coefficient	0.00	0.00	0.02	0.02	0.02	0.03	-0.02	0.04
Robust t-statistics	1.53	0.46	2.71***	2.64**	0.84	1.82*	1.36	2.18**
Number of observations	53	19	49	19	53	19	52	19
Adjusted R square	0.34	0.66	0.28	0.82	0.04	0.51	0.09	0.01

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: OLS refers to ordinary least squares. See note for table A7.6.

Source: World Bank staff calculations, based on World Values Survey (waves 2004 to 2008).

Table A7.8: Public spending helps improve health, spending on public schooling is less effective

(regression results for public spending in health and education, 1995–2009)

Maternal Mortality Ratio

Ln Government Spending (% of GDP)	-0.99 (5.1)
Ln Private Spending (% of GDP)	-0.09 (1.9)
Ln Age Dependency	1.2 (6.1)
Government Quality	-0.43 (3.0)
Economic Controls (Openness, Debt Ratio)	YES
Political Institutions (Electoral System)	YES
Year Dummies	YES
Geo-group Dummies	YES
R2	0.83
No. Observations	819
First Stage R2	0.68
Sargan	chi2(1) .4368(p=0.51)

Net Secondary Enrollment Rates

Ln Government Spending (% of GDP)	.22 (3.3)
Ln Age Dependency	-0.05 (0.6)
Government Quality	.09 (1.2)
Economic Controls (Openness, Debt Ratio)	YES
Year Dummies	YES
Geo-group Dummies	YES
R2	0.54
No. Observations	378
First Stage R2	0.59
Sargan	Chi2(4) 5.961(p=0.20)
First Stage R2	0.68
Sargan	chi2(1) .4368(p=0.51)

Note: Instruments used are debt ratio in logs, federal structures in political institutions. t-statistics in parentheses.

Source: World Bank staff calculations.

Table A7.9: Regression results for log public pensions as a share of GDP

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	RE	FE	OLS	RE	FE
	1980-1994			1995-2007		
OECD						
Log Old Age Dep. Ratio	0.9956***	0.9880**	0.9956*	0.8276***	0.8925***	0.8276***
Log PC GDP PPP	-0.2431***	-0.23930	-0.2431	-0.1392***	-0.1506**	-0.1392*
GDP Growth	-0.0082***	-0.0083***	-0.0082***	-0.0147***	-0.0154***	-0.0147**
Inflation Rate	-0.0081***	-0.0081**	-0.0081**	-0.0178***	-0.0176***	-0.0178***
Democracy Index	0.0512	0.0471**	0.0512*	0.0046	-0.0029	0.0046
Number of observations	266	266	266	260	260	260
Adjusted R squared	0.9314		0.1845	0.9809		0.3176
OECD Europe						
Log Old Age Dep. Ratio	1.0042***	0.9335	1.0042	0.6151***	0.7046**	0.6151
Log PC GDP PPP	-0.2580***	-0.2426	-0.258000	-0.0815**	-0.095200	-0.0815
GDP Growth	-0.0097**	-0.0101***	-0.0097**	-0.0157***	-0.0167***	-0.0157**
Inflation Rate	-0.0110***	-0.0110***	-0.0110***	-0.0210***	-0.0207***	-0.0210***
Democracy Index	0.0456	0.0409	0.0456	0.0099	0.0037	0.0099
Number of observations	196	196	196	195	195	195
Adjusted R squared	0.9130		0.1787	0.9812		0.218

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: The estimates are from a regression of the logarithm of public pensions as a share of GDP on the logarithm of the old-age dependency ratio, along with other controls. They include basic economic characteristics (GDP growth, per capita income, and the inflation rate) and a democracy index to capture any impact of elderly voters on pension entitlements. The regressions are run as pooled ordinary least squares (OLS), random effects (RE), and fixed effects (FE). In addition, we run separate regressions for 1980-94 and 1995-2007; as well as for the whole OECD group, including Australia, Canada, New Zealand, and the United States, and for the European OECD countries only.

Source: World Bank staff calculations.

Table A7.10: Regression Results for Log Social Transfers as a share of GDP

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	RE	FE	OLS	RE	FE
	1980-1994			1995-2007		
OECD						
Log Dependency Ratio	2.0234**	1.5682	2.0234	1.1568***	1.1589***	1.1568**
Log PC GDP PPP	0.2885	0.24970	0.2885	-0.00560	-0.0075000	-0.0056
GDP Growth	-0.0087**	-0.0080***	-0.0087***	-0.0135***	-0.0137**	-0.0135**
Inflation Rate	-0.0185**	-0.0187*	-0.0185*	-0.0219***	-0.0221***	-0.0219***
Democracy Index		-0.2191**		-0.0062	-0.0109	-0.0062
Number of observations	92	92	92	247	247	247
Adjusted R squared	0.9578		0.4014	0.9455		0.2591
OECD Europe						
Log Dependency Ratio	1.9568**	1.3012	1.9568	0.7310***	0.7351	0.7310
Log PC GDP PPP	0.3568	0.325	0.356800	-0.049000	-0.050400	-0.0490
GDP Growth	-0.0071	-0.0065**	-0.0071**	-0.0140***	-0.0143*	-0.014
Inflation Rate	-0.0182*	-0.0179	-0.0182	-0.0297***	-0.0300***	-0.0297***
Democracy Index	0.1638*	-0.1334		-0.0114	-0.0155	-0.0114
Number of observations	67	67	67	182	182	182
Adjusted R squared	0.9458		0.3747	0.9253		0.1827

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Note: Dependent population includes population less than 15 years old, more than 64 years old, and the unemployed. For the estimation methods, OLS, RE, and FE refer to ordinary least squares, random effects, and fixed effects, respectively.

Source: World Bank staff calculations.

Notes

- 1 The United States does not have a European-style welfare state for, no doubt, related reasons. Most Americans seem to believe that redistribution favors minorities; they believe that the country is an open and fair society, so poverty is self-inflicted; and, probably because of these beliefs, political institutions, marked by a pluralist system and strong courts that traditionally consider private property more important than public interest, limit the scope of government (Alesina, Glaeser, and Sacerdote 2001).
- 2 The economic and social factors are as expected—except trade openness, which reduces government size. This could be because of the sample, which includes successful emerging economies with small governments and open economies.
- 3 Reinhardt and Rogoff 2011, (pp 31-34) defend their use of the 90 percent of GDP public debt threshold as follows: “Anyone who has done any work with data is well aware that mapping a vague concept, such as ‘high debt’ or ‘over-valued’ exchange rates to a workable definition for interpreting the existing facts and informing the discussion requires making arbitrary judgments about where to draw lines. ... We do not pretend to argue that growth will be normal at 89 percent and subpar at 91 percent debt/GDP any more than a car crash is unlikely at 54mph and near certain at 56mph. However, mapping the theoretical notion of ‘vulnerability regions’ to bad outcomes involves defining thresholds, just as traffic signs in the US specify 55mph”.
- 4 A number of empirical studies find that social trust matters for strong institutions and growth. Knack and Keefer (1997) show that higher trust in strangers is correlated with better government performance. Nannestad (2008) and Jensen and Svendsen (2011) argue that social trust makes social welfare systems more sustainable. Aghion and others (2010) find that low trust leads voters to demand government regulation. This is because detailed regulation disciplines bureaucrats, and because voters prefer state control to private sector corruption. Similarly, Bergh and Bjørnskov (2011) show that countries with strong social trust have lower business and credit market regulations. Bjørnskov (2009) finds that a 10 percentage point increase in social trust is associated with an increase of 0.5 percentage point in the annual real growth rate.
- 5 The size of the fiscal saving depends on several assumptions, including the trends in enrollment rates and labor market participation rates, and physical infrastructure. Drawing on a more cautious set of assumptions, World Bank simulations find that potential saving amounts to 0.4 percent of GDP for the new member states and Croatia.
- 6 Austria, Belgium, Bulgaria, Cyprus, Denmark, Estonia, Finland, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Portugal, Romania, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, Ukraine, and the United Kingdom.

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Spotlight Two

Greening Europe's growth

Europe's success in adopting an environmentally sustainable growth model depends on companies developing cutting-edge products, generating jobs at home, and competing successfully abroad. Gamesa, a Spanish wind turbine manufacturer, is considered a European green growth success story.¹ Founded in 1976, the company moved into wind energy in 1994, and within 10 years it became the world's second-largest turbine maker. Gamesa's experience shows how growth comes with both opportunities and challenges.



Emissions

Past to 1990

Present to 2008

Future to 2030

The maps show per capita CO₂ emissions from fuel combustion. 1990 and 2008 data by country are from the International Energy Agency's World Energy Outlook 2010. The 2030 map is based on an IEA scenario that limits atmospheric CO₂ concentrations to 450 parts per million (ppm), consistent with a global temperature increase of 2 degrees centigrade.



Very high



High



Medium



Low

Three points stand out:

First, Europe’s production is greening thanks to popular policies.² Consumption is becoming cleaner too, but less than one might think. Structural change plays an important role in these shifts. In much of Europe, the rise of high-tech companies making green products contrasts with an overall decline in manufacturing. Between 2000 and 2010, the manufacturing employment share in Spain dropped about 20 percent, while imports of consumer goods from China increased eightfold. Polluting industries left, reducing local emissions, but emissions embedded in products imported from China rose. Spain’s net emissions imports increased almost fivefold between 1998 and 2008, similar to those of many other European countries (figure S2.1). For a truly green economic model, Europe needs even cleaner production, but it also needs cleaner consumption.

Second, green policies and investments will create growth opportunities for European countries, but not all countries will benefit equally. Ambitious national and EU policies, motivated by environmental and job-creation objectives, encouraged Gamesa to enter the wind turbine business. These policies created a large home market for Gamesa’s products, which also helped enter export markets. By the mid-2000s, Gamesa had created more than 5,000 jobs, most of them in Spain. Besides Spain, Denmark and Germany were Europe’s main wind turbine manufacturers, together accounting for more than half of global production by 2007. These countries used incentives to create domestic demand and develop research and innovation capacity. As national green policies expand in Europe, will many countries see growth and jobs benefits? Or will such benefits be confined to a small group of early market leaders?

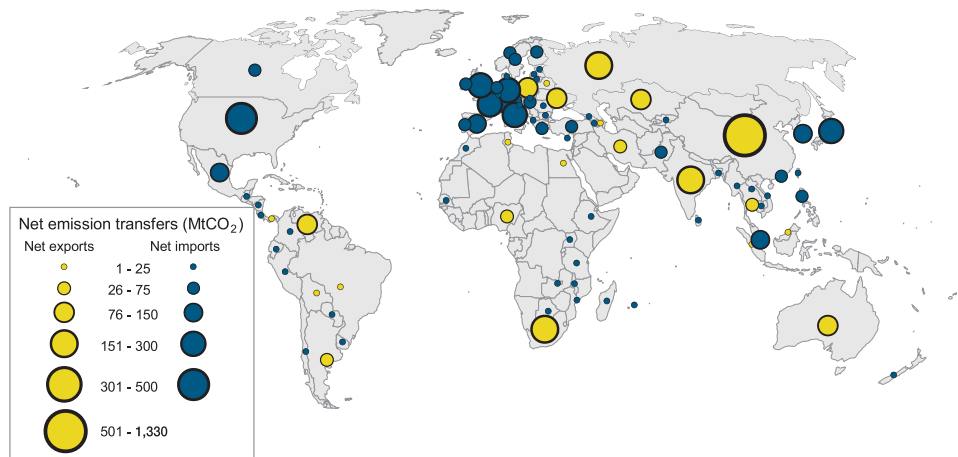
Third, some economic benefits of EU green policies will leak outside the European Union. This leakage is expected and should be welcomed. Addressing global environment imperatives requires that many countries contribute, especially the world’s largest economies: the European Union, the United States, and China. Gamesa’s experience is illustrative. In 2005, Gamesa held a third of the Chinese wind turbine market. Five years later, its market share was down

Figure S2.1: Europe is the world’s largest importer of carbon dioxide

(net carbon dioxide emission transfers [territorial minus consumption emissions], 2008)

Note: MtCO₂ = million tons of carbon dioxide.

Source: World Bank staff, using data from Peters and others (2011).



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to 3 percent. The company entered the Chinese market early, but as green technology became a higher priority for the Chinese government, preferences for domestic industry forced Gamesa to transfer know-how and technology to Chinese suppliers. Some of the policies that helped Gamesa in Spain—including local content requirements and cheap land and credit—now helped Chinese wind turbine manufacturers. Today, some of Gamesa’s products are 95 percent Chinese, and 4 of the 10 largest wind turbine makers in the world are Chinese. Despite its shrinking market share, Gamesa’s Chinese business grew, and the company did not protest Chinese policies. In 2010, Gamesa opened its fifth manufacturing facility in China, from where it now ships equipment to North America. While Gamesa dropped to sixth place among global wind turbine companies, its revenues increased from \$1.7 billion in 2005 to \$3.3 billion in 2009. During this time, globally installed wind energy capacity rose from 60 gigawatts to 160, and by 2010 reached almost 200. Helped by technological progress and economies of scale, the price for wind power dropped about 27 percent.³

Europe’s efforts alone are not enough to tackle global environment problems like climate change. Green technology investments will happen sooner if global innovation and manufacturing networks are mobilized. Europe will not always be able to compete in mass-producing standardized green products. It will need to retain its strength in knowledge-intensive green services and technology and rely on cheaper production in places such as the EU₁₂, the EU candidate and eastern partnership countries, and even in East Asia. If Europe succeeds, its growth model will not just be the best in the world in helping its poorer parts and neighbors prosper, it will also lead the world to a greener future.

The green golden rule

Environmental policies have been essential in Europe since the early 1970s (Hey 2005). They have been outlined in six environmental action programs and formalized in numerous directives.⁴ Early policies focused on local environmental quality: highly visible but mostly reversible environmental problems that could be eliminated or reduced by strict emission and effluent standards, such as air and water quality. More recently, Europe has focused on environmental problems with less visible impacts but nonetheless severe and potentially irreversible effects. Global threats such as climate change, biodiversity loss, and nuclear waste now command Europe’s attention.

This second type of environmental problem poses new challenges. These complex problems resemble other large societal problems, like poverty or public health, with long-term consequences and no easy solutions (Hulme 2009). There is great danger in postponing action until future welfare diminishes and the ability to manage or reverse harmful trends is lost. These long-term threats call for a “green golden rule”—achieve the highest level of growth and welfare that does not diminish future generations’ ability to benefit from environmental goods and services⁵

Considering the welfare of both current and future generations means that environmental policymaking must walk a fine line. Reducing carbon emissions, for instance, costs both firms and consumers. Given the uncertainty about the

effectiveness of policies and the impacts they avoid, determining the level of climate action that reduces emissions enough to avoid future damages without unduly affecting economic growth will be difficult. It implies determining the “optimal” or acceptable level of pollution—a controversial task.

Following the green golden rule, Europe has embarked on an ambitious program to ensure continuing growth with fewer environmental side effects. Policymakers still worry about employment, social stability, and fiscal balances, but protecting natural resources long considered practically free and inexhaustible is now prominent and, in some countries, just as important. If Europe overcomes the significant technical, financial, political, and social barriers to implementing a green economy, it will become a world model—one with lessons for both developed countries that urgently need to reduce their environmental impacts and developing countries that need to achieve higher incomes without excessive environmental degradation.

Greening

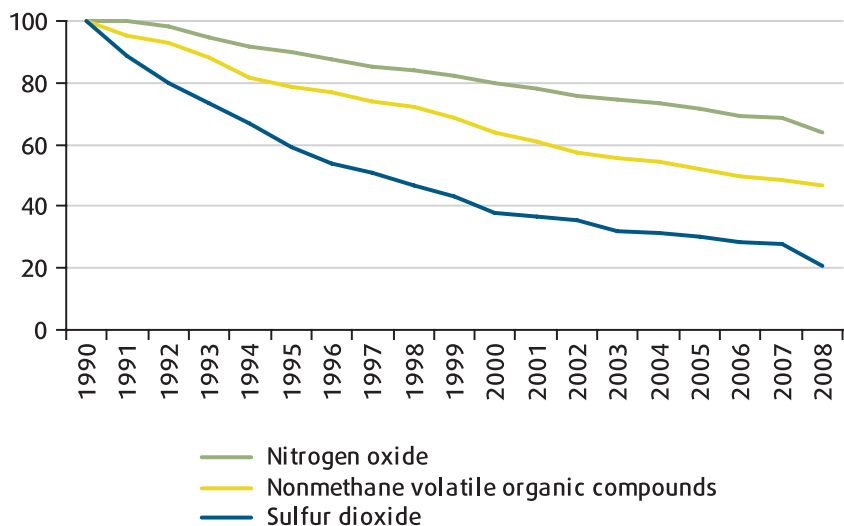
Over the last two decades, Europe has improved environmental quality in many areas and reduced the impacts of its production. Europe measures its environmental progress in climate change, environmental health, nature and biodiversity, and natural resources and waste. Major sources of local air pollution in the EU-15 dropped 30–70 percent over 1990–2008 (figure S2.2). Organic water pollution dropped almost 20 percent since 1998, and fine particulate matter dropped 20 percent on average (European Environment Agency 2010). Despite a commitment to reduce waste generation and materials consumption, both have increased modestly, but far less than economic output. But Europe’s progress on biodiversity conservation has been mixed. It did not reach its goal of halting biodiversity loss by 2010, despite making progress in habitat conservation and introducing biodiversity concerns in sector policies, such as the Common Agricultural Policy.

Figure S2.2: Advanced Europe has cut air pollution in half since 1990

(trends in air pollution in the EU15, 1990–2009, 1990 = 100)

Note: Excluding the United Kingdom (no pre-2000 data).

Source: European Environment Agency 2010.



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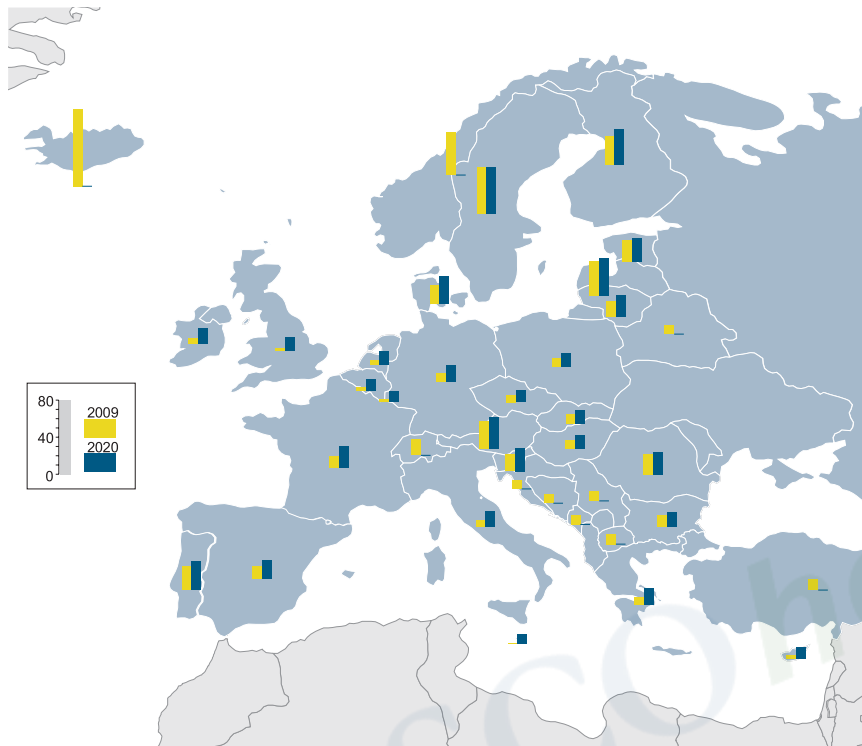


Figure S2.3: Europe's north is leading the push for cleaner energy

(percentage of final energy from renewables in 2009—and the targets for 2020)

Source: REN21 2011.

EU climate policies sometimes veer into micromanagement (a recent directive limits carbon dioxide emissions in producing a ton of toilet paper to no more than 334 kilograms), but they have been effective. While in most parts of the world, greenhouse gas emissions have increased, over 1990–2008 they dropped 7 percent in the EU15 and 11 percent in the EU27, despite a considerable increase in economic activity (European Environment Agency 2010).⁶ Europeans are also using energy more efficiently. Europe's 2008 economic output per unit of energy was twice that in 1990. By further decoupling economic growth from energy use and emissions, the European Union is on track to achieve its climate policy goals for 2020: reduce greenhouse gas emissions 20 percent below 1990 levels, lower primary energy use to 20 percent less than "business as usual," and obtain at least 20 percent of energy from renewable sources. Some member states have already met some goals, for instance on renewable energy (figure S2.3). The targets are more ambitious for 2050, as the European Union aims for an 80 percent reduction in emissions.

These gains have come from popular policies. One instrument for climate action is the European Emission Trading Scheme, introduced in 2005. Despite criticism of the scheme's effectiveness and susceptibility to windfall profits and fraud, industries now know there will be a long-term price on atmospheric carbon emissions. The scheme encouraged private investments in abatement technology and upgrading equipment. Europeans have shown a willingness to share the cost of environmental action. Indeed, 64 percent of EU15 residents believe that protecting the environment should be a priority, even at the

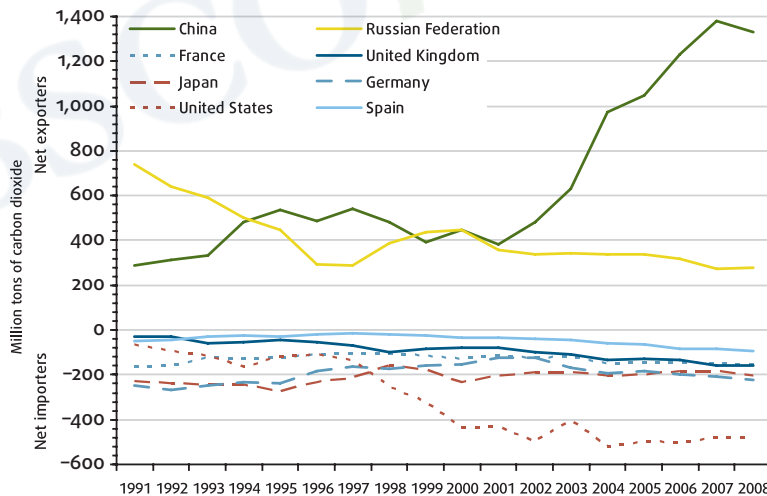
expense of job loss and slower economic growth, compared with 58 percent in the rest of the world (World Values Survey 2005–2008).⁷ Environmental policies can win increased popular support by spreading financial benefits. Many Danish wind turbines are owned by local cooperatives, preempting “not-in-my-backyard” opposition. And feed-in tariffs for renewable electricity generation have been turning home-based solar systems into investment opportunities.

Europe’s progress in reducing local air pollution and the climate impacts of production is substantial, but its gains in shrinking the environmental footprint of consumption are more limited. Lower industrial pollution is due at least in part to major structural economic shifts and trade expansion. As traditional, energy- and emission-intensive economic activities (such as iron and steel manufacturing) became uncompetitive in higher-wage European countries, they moved to other parts of the world, especially Asia. The EU15’s total steel output has stagnated since 1980, when Europe moved into more specialized and cleaner steel production. By contrast, India’s and the Republic of Korea’s output increased some 600 percent, China’s by almost 1,600 percent.⁸ Europe’s environmental dividend reduced local pollution from dirty industries and generally decreased use of local resources, a contrast with the increase in other regions.

Figure S2.4: Western imports, Eastern emissions

(net emission transfers, 1991–2008)

Source: Peters and others 2011.



Sometimes polluting industries quite literally moved to developing countries. In the late 1990s, Chinese companies purchased dozens of German industrial plants and dismantled, shipped, and rebuilt them in China. A Dortmund steel mill, for example, became a 250,000-ton three-dimensional puzzle (Kahn and Landler 2007). Air quality improved in Germany, but the shift increased air pollution in China (Chen, Hong, and Kan 2004).⁹ Many Asian products are made for European markets, leading to rising emissions embedded in imports. Between 1990 and 2008, the United Kingdom’s net imports of carbon dioxide emissions increased from 29 million tons to 159 million tons (figure S2.4). Overall, when considering only carbon dioxide emitted in rich (Kyoto Annex B)

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countries, there has been a 3-percent drop. By contrast, consumption-related emissions in those countries increased 11 percent (Peters and others 2011).¹⁰ China alone has more than tripled its exports of emissions since 2000.

Europe has made progress in greening its production and has led the world in formalizing and implementing regional emission-reduction policies. But more action is needed. Marginal abatement costs will increase as cheaper clean-up solutions are implemented first, and tightening environmental regulations will become politically more difficult, especially at a time of economic uncertainty. Beyond its borders, Europe needs to green its consumption. One approach is to help other countries reduce the environmental impacts of their production while accelerating resource use. The European Union, already providing technical assistance for pollution and emission control, recycling, and other environmental priorities through bilateral and multilateral efforts (including through the World Bank), could do more by supporting European exports of environmental technology and more efficient capital goods to developing-country producers, through export credit guarantees, for example. Measures that encourage green foreign direct investment would help develop domestic environmental technology firms.

A more coercive approach would be to extend the reach of European emission policies to other countries through border tax adjustments (Umweltbundesamt 2009). This would level the playing field for domestic companies, and foreign firms exporting to Europe would then have the same incentives to reduce emissions as do domestic producers. The debate about the inclusion of foreign air carriers in the European Emission Trading Scheme in 2012 shows that this approach is controversial, but it might encourage domestic carbon restrictions so that revenues stay in the exporting country. The European Commission and several European countries contributed to the World Bank-led Partnership for Market Readiness, which helps countries set up carbon markets. The first round of countries includes China, Turkey, and Ukraine.

Green growth

Moving toward a European economy that puts a price on environmental goods and services involves a substantial structural shift. Further reducing local pollution and preventing global environmental problems from severely affecting current and future generations require massive transformations in energy, transport, and housing. Some observers have called for an energy industrial revolution.¹¹ But change of this magnitude is not unprecedented. Both the information technology revolution and the invention of the steam engine triggered upheaval far greater than what one might expect from a green-growth transformation (Fankhauser, Sehlleier, and Stern 2008). An energy industrial revolution will impose costs on some businesses but benefit others. How these costs and benefits are distributed will determine whether green growth will be a broadly accepted economic model in the EU27 and beyond.

Tighter environmental standards will be costly, at least in the short to medium term. Unilaterally internalizing the cost of environmental degradation will render European firms less competitive than firms not subject to strict pollution controls. The money that consumers and firms spend on pollution charges or

energy will not be available to spend or invest elsewhere (though these costs can be partly neutralized through appropriate revenue recycling). Predicting these costs of green policies is difficult. The costs of a proposed carbon cap-and-trade system in the United States, for instance, would range from \$69 to \$808 per household by 2020 (Winchester and others 2010). A study for the European Commission estimated firm-level costs of environmental compliance at 0.25–2 percent of production value (Vercaemst and others 2007). In Poland, the average cost to implement a comprehensive greenhouse gas abatement package is about 1 percent of GDP over 20 years, after which net benefits accrue (World Bank 2011). These costs, though significant, are not enough to explain the exodus of energy-intensive and polluting industries out of Western Europe. High labor costs and other production factors have likely played a larger role. Energy prices are already high, and most EU15 countries moved out of energy- and emission-intensive industries some time ago, such as the United Kingdom, with its 1980s decline in the coal and steel industry. The impact will be larger in Eastern Europe, where economies have not yet completed structural shifts and where national environmental policies are more lenient.

Environmental action comes with costs, but so too does inaction.¹² And sometimes doubted decisions become obvious in retrospect. The automobile industry and many consumers initially rejected catalytic converters as too expensive. But the averted costs of respiratory illnesses and other benefits from reduced urban smog have been significant. With increased production and technical progress, a catalytic converter today is a tiny fraction of the cost of a car. Proponents of stricter environmental standards argue that green policies have sizable growth effects. Vehicle pollution abatement has generated new business opportunities—for example, the global catalytic converter industry is worth \$20 billion today. And because green technologies are less mature, they require more innovation and research and development, which generate high-value jobs. At the lower end, investments in energy efficiency and cleaner energy generate jobs in installation, operation, and maintenance that cannot be outsourced.

The job gains in green industries are not small, though they are as difficult to determine as the costs of environmental regulation. By the late 2000s, the wind energy sector was thought to have generated some 100,000 jobs in Germany, 42,000 in Spain, and 22,000 in Denmark, and for the solar photovoltaic (PV) sector, some 70,000 jobs in Germany and 26,000 in Spain (REN21 2011). European firms are highly competitive in such areas as pollution-abatement technology and solid waste management, and job gains in these sectors are significant as well. Experience shows that policies matter. An ecological tax reform is credited with helping Germany reduce emissions and increase employment. The reform raised the cost of energy, triggering large efficiency gains. The increased revenue was used to reduce nonwage labor costs, which helped create 250,000 jobs (Rayment and others 2009, Iwulski 2011).

Economic gains have been concentrated in a few countries, mostly in the EU15. These countries have had government support, large home markets for green products, and the capacity to take advantage of green growth opportunities (figure S2.5). Denmark, France, Germany, Spain, and the United Kingdom, each accounting for between €5 billion and €15 billion in clean energy technology



sales in 2008, were far ahead of Poland (the leader in Eastern Europe), which had less than €300 million (van der Berg and van der Slot 2009). Figure S2.5 shows a similar pattern in value added from renewable power technologies. The market leaders ensured domestic demand through, among other steps, feed-in tariffs for clean energy and supported technology development. In 2009, Germany alone spent about €64 million on publicly funded research and development for solar PV technology, complementing €163 million in private research (Wissing 2009).⁷³ Employment and economic opportunities also exist in other EU countries. With carbon trading, one would expect abatement investments to flow to EU12 countries, where energy and emission intensities

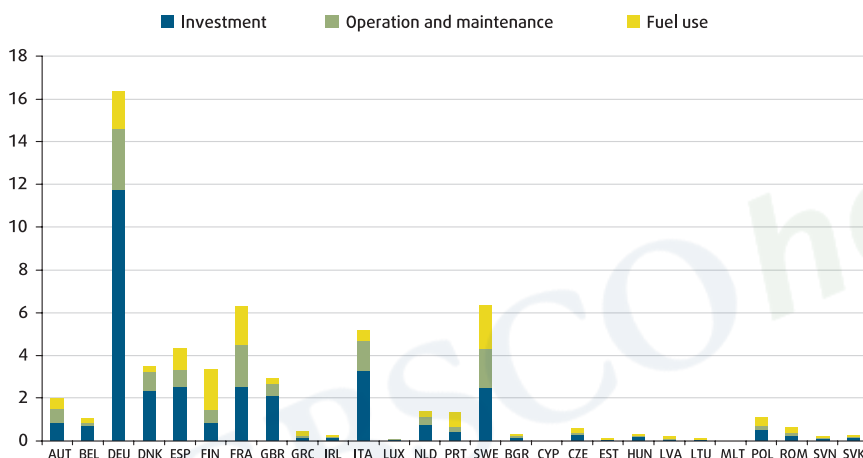


Figure S2.5: Germany, France, Sweden, and Italy have helped business by encouraging renewable energy

(total gross value added induced by renewable energy deployment in 2005, by expenditure category, billion euros)

Source: Ragwitz and others 2009.

remain higher than in the EU15. But the resulting jobs will likely be smaller in number and lower in skill and value added. Examples include manufacturing and assembling green products, upgrading building energy efficiency, and producing biofuel. High-value-added activities, green intellectual property, and earnings from green exports will likely remain concentrated in today's leading green economies.

All EU countries must adhere to the same environmental standards and carbon policy. While all EU countries bear the costs of green growth policies, not all have the structural endowments to take advantage of the opportunities these policies generate. An analogy to the eurozone is illustrative. Countries adopted a common currency without first resolving structural differences. The countries shared the benefits of adopting the euro, such as low interest rates and reduced trade friction. They also faced the constraints imposed by a single currency, but with different structural and economic capabilities to adjust to the loss of monetary flexibility. Over the last several decades, EU interventions (such as the structural funds) have tried to reduce these differences—but with limited success.

A single carbon price has similar advantages and drawbacks. The effectiveness of the European green-growth model—especially in Southern and Eastern Europe—will depend on policy instruments that help countries cope with the

burdens and share the benefits of the transformation to a cleaner economy. Besides external support (through carbon finance, for instance), green growth requires political commitment by countries that, rather than embrace new opportunities, often cling to sunset industries and fossil fuel-based energy systems. Europe missed many of the efficiency gains of the infotech revolution. It will have to be smarter to prosper in the green technology revolution.

Global green growth

Europe is serious about greening its economy. Strong policies opened economic opportunities that European firms like Gamesa were quick to exploit. But in an open economy, the incentives that benefit domestic producers also benefit foreign producers who export to the European market. This increases competition for European firms and implies a leak of taxpayer-funded subsidies and other support. If the goal is to tackle global environmental challenges, however, these leaks will be beneficial even as they make it more difficult for Europe's green enterprises to compete.

By far the biggest barrier to a green transformation is cost. Environmentally friendly technologies are often more expensive than conventional alternatives. For example, electricity from coal-fired power stations costs about \$0.06 per kilowatt hour (kWh), while the price of wind energy ranges between \$0.08 and \$0.14 per kWh. Solar photovoltaic power (PV) costs more than \$0.20 per kWh (REN21 2011). Even where life-cycle costs are lower—as with the new generation of energy-efficient lighting—high initial costs deter consumers. Reducing costs requires research and development, innovation, and economies of scale. With every doubling of production, wind energy is expected to become 15–20 percent cheaper, and solar PV prices to drop 25 percent (Neij 2008). Regulation, taxes and subsidies, and public investments that reduce the price of clean technologies (or increase the cost of dirtier ones) trigger private investment and lead to increased scale. These interventions are justified because they compensate for nonpriced costs incurred by conventional technologies, such as the health effects of air pollution, the loss of such environmental services as natural water filtration, and the damages from a warmer, wetter, more variable climate.¹⁴ The opportunity to get a foothold in emerging markets for green goods also motivates many countries.

Through EU directives and national policies, European countries have made credible commitments to support clean growth. These commitments should encourage investors to risk funding new products that are not profitable according to current market prices. Generous subsidies and tariff guarantees have been effective, helping European leaders emerge in many green technology areas. By the late 2000s, environmental technologies accounted for almost 10 percent of GDP in Germany, and German firms held global market shares of 6–30 percent in key green markets (BMU 2009).¹⁵

Public incentives have worked for European companies, but with open trade they are also attractive to foreign firms. U.S. companies, such as General Electric and smaller high-tech firms, quickly established distribution systems in Europe. As some green technologies move from research labs to mass production, Europe's comparative advantage vanishes and low-cost producers enter the



market. Solar PV panels are an example. Generous feed-in tariffs in Germany, Spain, and other European countries initially benefited domestic firms, even causing a bubble in solar company stocks. This attractive market triggered large investments in production capacity in China. Between 2006 and 2010, China's PV production increased twentyfold, from 400 megawatts to 8,000. During this time, the export share of panels in China never dropped below 94 percent, because the high price and low local subsidies meant that there was almost no domestic market.¹⁶ In wind energy, which is more cost-competitive with conventional sources, Chinese firms have also increased production. Most of the demand so far is domestic, as China deploys the largest installed wind capacity in the world. But that will change as producers increase capacity and eye new markets. European firms, such as Gamesa, should expect more competition.

Europe should welcome these developments. Competition and rising capacity have substantially reduced the prices of some green products. China's solar expansion coincided with a price drop of more than 40 percent,¹⁷ making it cheaper for Europe to reach its "20-20-20" targets (a 20 percent cut in greenhouse gas emissions by 2020, a 20 percent increase in the share of renewable energy, and a 20 percent cut in energy consumption) and creating room for cuts in subsidies. By indirectly contributing to faster price declines, European policies benefit green investments in the rest of the world, accelerating greener industrialization in developing and emerging nations.

The EU27 accounts for just 13 percent of global emissions (International Energy Agency 2010). This share will drop as the populations and economies of other regions grow faster than Europe's. To limit global warming and reduce other global environmental threats, Europe must spread technology and know-how to places where environmental pressures will be most severe. Sharing technology with other regions will also reduce the emissions embedded in European imports. Even if much of the resulting economic activity takes place elsewhere, Europe is positioned to capture a large share of what some expect to be a €3.1 trillion market for green technology by 2020 according to a study by Roland Berger Strategy Consultants in 2007.¹⁸ This will include exports of advanced green-tech products to China, which will require environmental technology investments estimated at 12 percent of GDP. Chinese solar panels, for instance, are produced with machines made in Europe.

Rather than compete on price, Europe should accept that manufacturing and assembly of basic green technology will move to countries with lower factor costs—including perhaps the EU12 and eastern partnership countries. Europe should promote innovative, high-tech companies that create green products and services that are less price-sensitive and less easily reproduced elsewhere. Europe needs "Green Apples"—the green-tech equivalents of an innovative info-tech company. Apple Inc. profits from innovation and design, not from manufacturing. Similarly, European green technology firms should focus on developing and retaining intellectual property and on specialized manufacturing, engineering, and related high-value-added activities. This focus will require support for applied research in Europe that makes the region attractive for non-European companies. Suzlon, a large Indian wind turbine manufacturer, maintains six of its eight research centers in Europe because of Europe's accumulated know-how.

Needed: will, ingenuity, and efficiency

Europe is already the leader in the transition to a greener economy. But environmental impacts, especially greenhouse gas emissions, are still too high per capita to reach global targets. And the picture is even grayer when considering the complete consumption footprint. In recent years, European policies have moved global climate goals forward. But the world's second- and third-largest economies might soon match Europe's green ambitions.

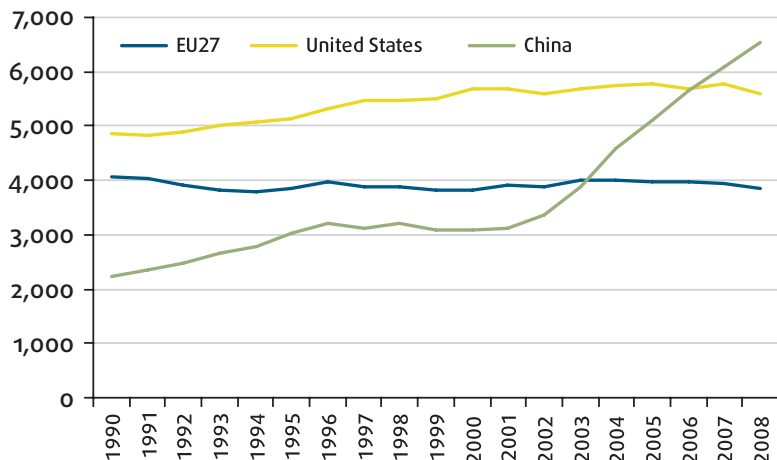
The United States has one of the largest environmental footprints. But it also has the most effective academic research capacity—and huge innovation potential. Much of basic climate-change science and many technical innovations—such as solar, wind, and battery technology—originated in U.S. labs. The United States is strong not only in technical innovation but also in financial and policy innovation. Venture capital funds in the United States channel vast resources to promising firms, including those in green technology. While Europe is strong in process innovation and technological improvement, U.S.-style risk-taking is more likely to lead to the breakthrough technical innovations that many believe are necessary to solve the climate problem.

Federal climate action in the United States has been inadequate, but state and local policies show American potential. California's air pollution standards have affected car manufacturing globally, and the state's energy policy began decoupling power consumption from growth in the 1970s (Iwulski 2011). Concerns about acid rain in New England spurred the development of a sulfur dioxide allowance trading system, which showed the feasibility of market-based instruments for pollution control. Ten eastern states joined the Regional Greenhouse Gas Initiative, a cap-and-trade mechanism to reduce carbon dioxide emissions from the power sector. Twenty-three states and many local jurisdictions have set quantitative targets to reduce their greenhouse gas emissions, and more than thirty states have adopted renewable energy portfolio standards for utilities (Pew Center on Global Climate Change 2011).

Figure S2.6: China now emits the most carbon dioxide

(total carbon dioxide emissions from energy use in the three largest global economies, million tons of carbon dioxide)

Source: International Energy Agency 2010b.



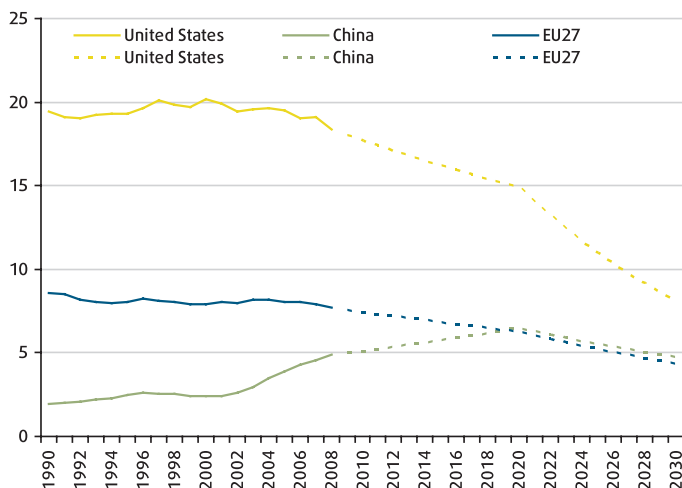


Figure S2.7: But China’s per capita carbon dioxide emissions may not significantly grow beyond the European Union’s

(per capita carbon dioxide emissions from energy use in the three largest global economies, tons of carbon dioxide per capita)

Note: Solid lines show observed per capita emissions, and dotted lines show a per capita emission scenario based on 450 ppm with ambitious mitigation.

Source: World Bank staff calculations based on International Energy Agency (2010) and UN (2011).

The capacity for policy experimentation and implementation at the state and local levels can lead to new, effective, and socially acceptable approaches to environmental management. When successful, innovation spreads quickly and regulatory diversity helps lift standards elsewhere. The “California effect” works even without strong federal action (Vogel 2000). But in the long term, state action cannot substitute for national policies.

China, the world’s largest emitter of greenhouse gases, faces severe problems from air and water pollution. But to further reduce poverty, China’s economy must continue growing—even if double-digit growth rates will become harder to achieve. At current emissions per unit of GDP, China’s economic growth implies that by 2030 the country would account for the entire global emission allowance—30–35 billion tons of carbon dioxide equivalent—that is consistent with the target of keeping Earth’s temperature from rising 2°C higher than preindustrial levels (Stern 2010). China has started tackling this enormous challenge. Aware of its own susceptibility to climate change, the country has embarked on an ambitious domestic greening program. The twelfth Five-Year Plan calls for a 15–17 percent reduction in energy and carbon dioxide intensity by 2015, expansion of wind farms, new solar capacity of more than 5 gigawatts, construction of a smart grid to integrate a larger share of renewables, an emissions cap-and-trade system, and a tax on coal.

China already contributes to global greening by lowering the cost of existing environmental technology, from light bulbs to solar water heaters to wind turbines. All seven strategic industries in the Five-Year Plan move the country from low-end manufacturing to a less resource-intensive economy. And three are explicitly green: new energy, new-materials and new-energy cars, and energy saving and environment protection. China’s huge market for green products will also reduce the price gap between clean and conventional energy and technology. Its goal is to become the world leader in green products like solar panels and electric cars, whose markets must grow if global emission targets are to be reached. China’s environmental impacts will continue to rise. But with strong commitments and better technologies, it could reverse the rapid

growth of emissions (figures S2.6 and S2.7) and reach higher incomes at lower levels of per capita pollution and atmospheric emissions than many of today's industrialized countries.

Europe can help the global environment by continuing to pursue a greener growth model. The region's continuing green growth will improve the quality of life for its current and future citizens, contribute to global sustainability, and offer economic opportunities for European firms. Europe will incur short-term costs, although the implications of failing to deal with long-term global environmental threats are less severe for Europe than other regions. Europe has already dealt with most local pollution and will be less severely affected by global climate change than many other regions.¹⁹ European leadership on environmental action is, therefore, even more remarkable. But despite Europe's leadership, solving the toughest global environmental problems will require all three major economies to accelerate the transition to greener growth and nudge the world forward. Indeed, global green growth requires European political will, American innovation, and Asian efficiency.

Uwe Deichmann contributed this spotlight.

Notes

- 1 Based on Lewis and Wiser (2007), Bradsher (2010), Gamesa annual reports, and market share information from Make Consulting and Emerging Markets Energy Research.
- 2 There are numerous definitions of "green growth" (OECD 2011) or "green economy" (UNEP 2011). This spotlight uses the term "greening" in a broader sense of reducing the environmental impacts of human activity; it uses "green growth" in a narrower sense of recognizing a shift to greater environmental sustainability as an opportunity for growth—through innovation and development of new products and markets. Both terms refer to traditional environmental problems (like water pollution or excessive resource use) as well as climate change.
- 3 Consistent cost estimates for wind power are hard to find. This figure assumes the widely accepted learning rate of 20 percent reduction with a doubling of capacity.
- 4 Refer to the European Commission's website on environment policies for a list of directives, available at ec.europa.eu/environment/policy_en.htm.
- 5 Beltratti, Chichilnisky, and Heal (1995) note that this is "the highest indefinitely maintainable level of instantaneous utility, in a framework where environmental goods are valued in their own rights, i.e., are a source of utility, and are used as inputs to the productive process" (p. 151).
- 6 Part of that decrease was due to industrial restructuring and inefficient socialist-era industries closing.
- 7 In the EU12, just 50 percent agree.
- 8 World Bank staff calculations based on data from the World Steel Association (www.worldsteel.org).
- 9 There appear to be no estimates of displaced industries' contributions to China's local air pollution. But it is likely significant through increased energy demand (much of it from coal) and direct emissions from industrial processes. More recently, China has reduced urban air pollution substantially, including through the World Bank-supported China Air Pollution Management Project.
- 10 Aggregate estimates for EU15 or EU27 are unavailable, because the data set does not allow netting out intra-European trade-induced emissions. Annex B countries are high- and middle-income countries subject to emissions reductions in the Kyoto Protocol, including Russia and Ukraine. See http://unfccc.int/kyoto_protocol/items/3145.php for a list.
- 11 For example, Nicholas Stern (presentation at the High-Level Dialogue on Low Emissions Development Policy Implementation, July 13, 2011, World Bank, Washington, DC. Available at climatechange.worldbank.org/content/climate-change-thinkers-converge-high-level-dialogue-low-emission-development).
- 12 See the extensive literature on the health burden of environmental pollution and the emerging literature on climate change adaptation costs (for instance, World Bank 2010a).
- 13 The private sector figure is for 2008. Globally, spending on clean energy research and development is considered far too low to support the kinds of technological breakthroughs needed to achieve climate goals (World Bank 2010b).
- 14 See, for instance, Gillingham, Newell, and Palmer (2009) for a discussion of market failures in energy efficiency that justify government intervention.
- 15 These markets include energy efficiency, sustainable water, sustainable transport, energy generation, waste management and recycling, and natural resources and efficiency of materials use.
- 16 International Energy Agency 2010c.
- 17 Price data are available on the website of Solarbuzz, an NPD Group Company, at solarbuzz.com/facts-and-figures/retail-price-environment/module-prices.
- 18 Presentation is available at www.rolandberger.com/media/pdf/rb_press/RB_Wirtschaftsfaktor_Umweltschutz_20071127.pdf.
- 19 For evidence of Europe's generally lower climate change risk compared with those of other regions, see Buys and others (2009) and the Climate Change Vulnerability Index released by Maplecroft, available at maplecroft.com/about/news/ccvi.html.

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Chapter 8

Golden Growth

In September 1961, an American professor named Edmund Phelps published a paper that proposed a simple rule for a nation's wealth to grow and provide the highest standard of living for its citizens, present and future.¹ Phelps called it "The Golden Rule" of economic growth. At around the same time, Carl Christian von Weizsäcker, a young German economist, submitted a doctoral dissertation proposing the same tenet.² The golden rule essentially specified how much people had to work, save and invest today so that future generations were at least as well off as they were. The goal was to maximize consumption, but in a way that was economically sustainable. The rule implied that today's generation should consume just enough—no more, no less—that their children would neither pity nor resent them. Phelps' paper cited the work of three economists—from Great Britain, the US, and Australia—but the arguments built also on the insights of, among others, a Dutchman, a Frenchman, and a Hungarian.³

Fifty years later, the golden rule is still "the most basic proposition of optimal growth theory," likely because it is simple enough for people to understand and appealing enough for policymakers to try to implement (Howitt 2007). The rule depends on many things, some that people and policymakers can choose or change more easily than others. It specifies how much goods and services people should consume given how hard they work. It depends on the size of future populations and is influenced by the pace of technological progress. And—though Phelps' paper did not specify this—it is contingent on how much the country could sell and lend to others, and how much it could buy and borrow from them.

- How can Europe make the single market more efficient?
- How can Europe maintain the momentum for regional economic integration?
- What is needed to maintain Europe's global leadership?



Phelps wrote:

"In deciding which growth path is best from its standpoint, a generation will look only at the amount of consumption which each path offers it. ... Under conditions of natural growth, consumption along all these paths grows at the identical rate, g , so that these time paths of consumption cannot cross. Therefore, with resources limited, there must exist some uniformly highest, feasible consumption path. This dominant consumption path offers more consumption at every point in its history than any other natural-growth consumption path. All generations in such a history will naturally prefer this path, whence its corresponding investment ratio, to any lower consumption path. A rigorous demonstration is straightforward" (1961, p. 640).

Incorrect choices meant that the growth path would not be at its optimum, and policymakers could improve the lot of current and future generations by influencing these choices. When consumption was above the optimal level and investment below that guaranteeing optimal consumption in the future, a tax on consumption to fund public investment or catalyze private innovation might help. Financing excessive consumption through foreign borrowing, by contrast, would hurt. If today's consumption came at the cost of tomorrow's environment, a tax on carbon emissions could help ensure a better future. The rule has implications for debates about broader economic welfare, not just economic growth narrowly defined.

Box 8.1: The structural prerequisites of a successful monetary union

The eurozone has lower aggregate fiscal deficits and public debt as a share of GDP than the United States or Japan: as a whole, its current account is near balance. The eurozone's problems are rooted not in aggregate imbalances, but in imbalances among member states.

This report discussed returns to and responsibilities for greater integration in Europe. The policy implications speak directly to the structural prerequisites of successful monetary integration. Chapter 4 revealed how countries in the south failed to keep pace with productivity growth in the rest of Europe after monetary union, in part because of poor business regulation. Whether or not they entered the eurozone at an overvalued rate, their competitiveness problems have since been aggravated by poor policies. Prospective future euro members in the east should take note and fit their business environment for the euro.

Chapter 6 showed that labor mobility is lowest and restrictions on hiring and firing are highest among the same Southern European economies that suffer most from a lack of competitiveness. Economic theory implies that countries with inflexible labor markets will struggle in a monetary union when faced

with external shocks. The consequences of the 2008–09 crisis in the eurozone are now playing out as economists might have predicted. Labor market reforms are thus an important prerequisite for successful euro adoption.

But this report shows that adjustment is possible. Chapter 7 indicated how countries can reduce excessive public debt without compromising the quality of public services. Adjustment is tough, and even the toughest adjustment will not suffice in Greece without an orderly restructuring of public debt. But countries such as Finland, New Zealand, Singapore, and Sweden show that a leaner government contributes to long-term competitiveness.

Europe's current debate over the fiscal union's merits and risks masks the fact that Europe's single market—more than fiscal transfers—is responsible for the convergence in living standards between Europe's richer north and its poorer south, and more recently, between the west and the east. Whatever the solution European leaders arrive at, this feature of the European economic model should not be diluted or distorted.

Crises of confidence in governments' ability to meet debt obligations are not new. What

makes them special in Europe is that as eurozone members, countries cannot print money to meet domestic obligations. The common currency helped these countries during the global financial crisis of 2009; it may be hurting them in the sovereign debt crisis that followed in its wake. The fuzzy boundaries between solvency and liquidity complicate matters, as do concerns about moral hazard if deficit countries are bailed out.

A break-up of the eurozone would be devastating for Europe as well as the world economy (for a summary discussion see Belke 2011). Countries with solvency problems should restructure their debts and close remaining public deficits through fiscal transfers conditioned on structural reforms. Governments have to be ready to intervene to recapitalize some banks, though the experience of Ireland discussed in chapter 3 should deter them from socializing all the losses. Sweden's experience, discussed later in this chapter, shows how to do this better.

Most solutions imply a loss of sovereignty for creditor and debtor countries in Europe. The findings in this book suggest that the benefits of European integration make this a price worth paying.

Phelps and researchers after him have focused on an economy in “steady state,” a term that describes a condition that is neither a crisis nor a bubble. Few countries are in steady state these days. But the problem addressed by this research is as important today as it was in 1961, in the developing world as in the industrialized. And perhaps nowhere are the choices of people and policymakers more important for the economic growth and welfare of future generations than in Europe today.

Appropriately, policymakers are now focused on the crisis in the eurozone. This report does not devote much space to possible remedies, except to point to the structural prerequisites of monetary integration (box 8.1). Europe faces structural challenges that today seem less urgent but may prove more difficult than those that a common currency created: falling populations; faltering productivity, especially in services; unsustainable social spending; and—in some places—a fraying work ethic. When the euro is stabilized, policymakers will ask questions posed by Phelps’ “growthmen”: what must Europe do to grow sustainably again? What changes must be made to the European economic model so that it returns to the golden rules of growth?

This report applies these principles, which economists have developed over the last 50 years, to assess how to make European growth “golden.” The remedies are possible for a part of the world that is intrepid and inclusive. The recent experiences of countries that have succeeded in addressing these problems—in Europe and around the world—offer insights into these remedies. As part of the work commissioned for this report, 32 case studies were compiled, spanning 16 policy areas identified as important for European growth (table 8.1). For each of these policy areas—which range from managing financial inflows from abroad to providing social services at home—the case studies summarize the experience of

Table 8.1: Benchmark countries for selected policies

	Policy area	Selected countries	
		Europe	World
1	Restructuring private debt	Sweden	Korea, Rep.
2	Managing financial foreign direct investment	(EU) Poland	(Non-EU) Croatia
3	Crisis-proofing financial integration	Czech Republic	Canada
4	Increasing value-added	Slovak Republic	Singapore
5	Job creation	Ireland	New Zealand
6	Export generation	Germany	Korea, Rep.
7	R&D policy	Switzerland	United States
8	Tertiary education	United Kingdom	United States
9	Management quality	Sweden	United States
10	Internal mobility	Ireland	United States
11	Labor legislation	Denmark	United States
12	Immigration policies	Sweden; United Kingdom	Canada; United States
13	Social security	Iceland	Japan
14	Social service delivery	Finland	Singapore
15	Reducing public debt	Turkey	New Zealand
16	Green growth policies	Germany	California (US)

Source: Iwulska (2011), available at www.worldbank.org/goldengrowth

a pair of countries, one in Europe and one outside. Europeans should learn from one another, because some countries show how the European economic model can work well. Europeans should also learn from the Americans and Asians, whose governments have been facing similar tests and trials.

More Europe

Not all 45 countries covered by this report are in the European Union, but they share the aspirations summarized in the European Union's growth strategy, Europe 2020: economic development that is smart, sustainable, and inclusive. In seeking all three at once, European aspirations seem higher than those in other parts of the world. Europe's way of life—and its growth ambitions—seem to put a higher premium on combining economic dynamism with environmental sustainability and social cohesion. Some countries in Europe show that achieving these objectives is possible. Europe 2020 is a realistic vision.

To make this vision a reality, Europe's growth model needs to be adjusted, not abandoned. This is the central argument of this report for three main reasons:

- First, Europe has many attractive features that should be preserved. The economic model facilitated economic convergence, which helped 200 million Europeans escape the “middle-income trap” in the two waves of southern and eastern enlargement. Nearly another 100 million in southeastern Europe and Turkey could follow over the coming decade, and perhaps another 75 million in the eastern partnership countries afterward. Vigorous trade and financial flows, and growing exchanges of services and labor—all facilitated by pan-European institutions and infrastructure—enabled this convergence.
- Second, Europe's most innovative economies show that economic dynamism need not be the price for more equal societies with attendant sizable governments. Finland and Sweden show that large governments can be run efficiently. Denmark, Germany, and the Netherlands demonstrate that labor markets offering more security than those in the United States or East Asia need not be inflexible. Ireland and the United Kingdom show that Anglo-Saxon attitudes toward education and enterprise are compatible with the European social market economy. These examples might be exceptional, and for many European countries with weaker institutions, reducing the size of government could be easier than making it more efficient. But European companies compete successfully with their less regulated American or Asian peers, benefiting from the advantages of European integration. And as spotlight two highlights, Europe leads the world in green technologies, thanks to political will and regulatory foresight.
- Third, changes in the European growth model must lead to more Europe rather than less. Strengthening the Single Market for Services would boost Europe's growth, helping also to surmount barriers to world class innovation clusters in Europe, particularly in industries such as ICT, biotechnology, and health equipment and services. A continuing push toward deeper European integration would extend European finance, the benefits of trade, and the credibility of European regulations to emerging markets in the neighborhood. It would spur structural reform in both Europe's economic core and its

periphery, as it will be ever clearer that integration's benefits will accrue disproportionately to countries that make their people and enterprises better suited for a Greater Europe.⁴ As European societies accept and act on the reality of aging populations and demographic decline, Europe's appeal as a caring society will make it more competitive in the global market for talent.

The 45 countries covered by this report have—to differing degrees—three assets: the European Union's single market, momentum for regional integration, and Europe's considerable global economic influence. Europe should play to its strengths by investing in these assets and reaping the returns. Growth will be the natural outcome of measures to do the following:

- Deepen the single market, perhaps the European Union's biggest achievement and its most valuable institution but one which, like the euro, "is unfinished business" (Almunia 2008).
- Expand regional economic integration, a goal with a consensus unprecedented in European history and unequalled in the world today.
- Strengthen Europe's global economic leadership. A region that generates a third of the world's annual output does not have to relinquish this position.

This chapter concludes the report, pulling together the lessons from earlier chapters by matching policy priorities in each principal activity—trade, finance, enterprise, innovation, work, and government—to these three objectives. Chapter 1 shows how these activities are organized uniquely in Europe. To analyze intra-Europe differences in these components of the growth model, chapters 2 through 7 separate them somewhat artificially. Because they are interrelated, however, this chapter recognizes these relations, and collates policy priorities.

This chapter makes explicit what is needed to address the three tasks Europe has to get done: get the most of the service economy; close the two productivity gaps that have opened between the EU15 and the United States, and within the EU15 between the north and the south; and adjust to demographic changes and an aging society. This chapter identifies what needs to be done, using the experience of successful countries in Europe and elsewhere to suggest how these changes can be made. Europeans want growth to be smarter, kinder, and cleaner. It is common sense that to accomplish this, Europe should build on its uncommon strengths—the single market, regional integration, and its global economic heft.

The findings in chapters 2 through 7 identify the most effective measures for reviving and sustaining European growth (table 8.2). To make the single market more efficient, they focus on the trade in services, which requires facilitating the trade in digital services and harmonizing regulations across countries, and labor mobility within the European Union. To realize the benefits of greater European integration, the European Union's existing members and its candidate and neighborhood countries have to expand production networks, attract foreign investment, and better manage financial linkages. They also need to reform public services and labor markets to stay fit for an integrated Europe. To maintain Europe's global leadership it will be necessary to attract global talent, create world class innovation systems, address public sector debt, and reform social welfare systems to make public finances sustainable.

Making the single market more efficient

The single market is one of the European Union's biggest achievements, justifiably called its "crown jewel." Since its introduction in 1992, it has helped make Europe a trade powerhouse. As highlighted in chapter 2, of the \$10 trillion of the global goods trade, \$4.5 trillion involves Europe, more than Asia and North America combined. Europe also accounts for more than half the global trade in services. Although services account for almost three-quarters of total value added, Europe's trade in services is only around \$2.25 trillion, about half of the value of trade in goods. Chapter 2 measures European services trade against that of Canada, a unified national market with two main languages (and where, as in Europe, language barriers limit the tradability of personal and business services). It finds that the services trade could double or triple in the coming decade if barriers resulting from imperfections in the single market are removed.

Facilitate trade in modern services

Chapter 2 shows that the potential for services trade remains most underexploited in modern services, such as finance, communication, licensing, computing and information, and other business services. While Europeans can travel freely, European doctors, architects, and designers cannot freely offer their services outside the country where they obtained their professional license. When Europeans fly across the continent, it matters little which country they purchase the ticket in; but when they telephone or use broadband Internet to communicate with other European countries, the charges for cross-border communication services differ greatly depending on who calls whom. European airspace is open and competitive; Europe's railways are not. Certain digital services such as Spotify or iTunes are not available in every EU member state.

National regulations are insufficiently harmonized across Europe, imposing barriers to services trade. The solution is mutual recognition across the single market. Service providers registered in one EU member state should be allowed to operate across all. Professional and education certificates obtained in one EU country should be recognized in others. Moreover, even when the European Union has hesitantly begun to harmonize services regulations, such as through the Service Directive, implementation has often lagged.

A good example of regulatory harmonization is the European Union's financial market directive, Markets in Financial Instruments Directive, which essentially requires all EU members to recognize banks and nonbank financial institutions licensed in one EU country, allowing the institutions to operate in their home market. But the example of financial services illustrates another policy challenge: the provision of services across borders requires closer coordination between home and host regulators. In the case of multinational banks, the European Union needs mechanisms to decide who bears the cost should they get into trouble. The efficient regulation of services across the single market thus requires European countries to relinquish sovereignty and accept collective liability. What is difficult in finance has yet to be considered in telecommunications, energy, and transport. But the benefits of strengthening the single market in all these services arguably far outweigh the loss of national regulatory authority.

Table 8.2: Europe's imperatives, instruments, and policy priorities

Instrument	Coverage	Imperative		
		Modern services	Productivity growth	Demographic trends
Deepen the single market	EU27	<ul style="list-style-type: none"> · Facilitate trade in digital services · Increase internal labor mobility 		
Widen regional economic integration	Europe 45	<ul style="list-style-type: none"> · Crisis-proof financial flows in Europe 	<ul style="list-style-type: none"> · Facilitate production networks · Align business regulation with a common market · Improve public service delivery 	
Strengthen global economic leadership	Global 70	<ul style="list-style-type: none"> · Address private debt overhang 	<ul style="list-style-type: none"> · Create world class innovation systems · Expand private funding of tertiary education · Reform (external) immigration policies 	<ul style="list-style-type: none"> · Reassess employment-protection laws · Reform social security · Reduce fiscal deficits and public debt

The barriers created by inadequate harmonization of national regulations, which restrict services trade and modern business services, matter already and will bind economic growth even more in the future. According to van Ark, O'Mahony, and Timmer (2008), about two-thirds of Europe's productivity gap relative to the United States can be accounted for by the productivity gap in services. Chapter 2 demonstrates the positive link between the increasing size and sophistication of services trade and economic growth. But many services will remain nontraded, so the emphasis should be on creating the conditions for productivity growth in service sectors. Chapter 4 outlines what needs to be done to unfetter enterprise. And chapter 5 traces Europe's lack of young, highly innovative firms in innovation-intensive sectors (such as ICT, health care, and biotechnology) to market fragmentation and the limited ability of innovators to benefit from the single market's economies of scale. Some estimates put the benefits of completing the single market for digital services alone at 4 percent of the European Union's GDP—or about €500 billion every year.

Increase labor mobility

Labor mobility relates closely to trade in services. Many services require the movement of natural persons, while greater trade in services involves movements of workers within the European Union. While Europeans are half as mobile as Americans, they are not instinctively averse to moving—some such as the Irish are among the most mobile in the world (box 8.2). The young and better educated are more likely to move, and the share of European citizens residing in a country different from the one where they were born has increased by more than 40 percent since 2001.⁵ More can be done.

Language and cultural differences in Europe contribute to natural barriers to greater labor mobility. But there are also policy-induced barriers, most important in the housing market and in social benefits. Most of the old EU member states restrict the movement of workers from new member states, though these restrictions are being gradually relaxed. The recognition of professional certificates is not complete, and some professions still require national licenses. Housing markets in many European countries can be

Box 8.2: Internal mobility: Ireland and the United States

Ireland

The Irish are the most mobile of all Europeans. Internally Dublin is the preferred destination; regionally the United Kingdom; and globally the United States, where more than 10 percent of people claim Irish ancestry. The reasons the Irish are mobile span culture, geography, and labor laws. First, the Irish have reacted to big developments by moving, and their cultural proximity to the United Kingdom and the United States has made them prone to leaving when times are tough. Second, Irish labor laws make it easy for enterprises to hire and fire workers: indices of economic freedom rate Ireland the freest economy in Europe and the fifth freest in the world. Third, the national development strategy—including the use of cohesion funds—has promoted concentration around Dublin and made workers mobile by

investing in their skills. Fourth, Ireland has kept barriers to immigration low. It did not impose quotas on workers from new member states. And the quantity and quality of immigration is high—in 2008 nearly half of all immigrants had tertiary education. The mobility of the Irish will help them deal better with the economic crisis.

United States

Labor mobility is much higher in the United States than in other developed countries. Over the past decade, three times as many Americans moved to find jobs and better lives than Europeans. On average, an American moves 11 times during his or her life. The reasons span culture and policy. The country's culture was built through immigration. Americans consider mobility as an essential ingredient to the pursuit of a better life. It also

reflects policy, as housing and labor market regulations make housing turnover easier than in other countries, allowing workers and employers flexibility. This mobility has direct and indirect costs: young Americans often live far from their families, and workers enjoy fewer protections than those in other developed countries. But they also benefit from the ability to negotiate wages, change employers quickly, and start businesses. Countries seeking to create jobs, nudge people back to work, increase earnings and economic growth, and make their economic structures more flexible should look at how the U.S. policy environment has supported labor mobility.

Source: Iwulska (2011), available at www.worldbank.org/goldengrowth

inefficient, making moving expensive. Zoning restrictions limit the supply of new housing, and the significant protection offered to long-term renters in many European countries segments rental markets, penalizing mobility. The transaction costs of buying or selling a house can be high, while property taxes tend to be low, to the benefit of existing owners.

In addition, despite measures to ensure the portability of social benefits, including pensions and unemployment insurance across the European Union, it is limited in practice because of cumbersome implementation mechanisms, reducing mobility. And generous unemployment benefits in some European countries may discourage workers from seeking jobs in others. Collective bargaining agreements that limit territorial wage differentiation mute signals from the labor market.

Reducing policy-based barriers to mobility is challenging: many Europeans worry that greater mobility will increase competition for scarce jobs. Such fears are misguided. Labor mobility may create new jobs—evidence does not support the idea that there is a fixed amount of labor to be shared among incumbents and newcomers. While greater mobility will make jobs more contestable—potentially creating pressures for those insufficiently skilled to benefit from new economic opportunities—more mobility will largely lead to more and better jobs. Given that Europe's workforce is declining, employers and workers should welcome this. Europeans are generally ready to move; European leaders need to build on this to foster a new social consensus around a more mobile Europe.

Expanding regional economic integration

The story of European trade and financial integration is remarkable. This report celebrates the achievements of economic integration, productivity growth, and increasing global competitiveness among Europe's newest member states in the east. At the same time, chapter 4 notes how the European Union's old members

have not benefited equally from enlargement. Europe's southern economies in particular have failed to make their companies fit for a larger Europe due to poor business regulation. Easy finance masked these shortcomings for a while, but the crisis exposed the risks of a three-speed Europe. European integration needs to be crisis-proofed.

Crisis-proof financial flows in Europe

A unique feature of European integration is the large volume of financial flows from parent banks in Western Europe to subsidiaries in Central and Eastern Europe—a phenomenon we called “financial FDI.”⁶ As chapter 3 shows, financial integration is an enviable opportunity for Europe, but with tail risks. Countries that benefit from this opportunity adopt robust macroprudential regulations to moderate the credit booms that large foreign capital inflows induce. The policy arsenal includes capital and liquidity requirements, well-calibrated risk weights, and constraints on lending growth or forex lending. Regulations can also enhance credit quality by tightening eligibility criteria or loan-to-value and debt-service-to-income ratios. But chapter 3 also highlights the limits of such policies in an integrated financial market, and recommends advancing supranational coordination: supervising financial institutions operating across borders, managing liquidity risks during crises, and setting appropriate prudential regulations tailored to country-specific risks.

Poland, among the European Union, and Croatia, among non-EU countries, show the benefits of a well-managed financial foreign direct investment (FDI). As the result of integration into the international and regional economy, Croatia and Poland experienced large inflows of financial FDI. Poland shows how good regulations and sound macroeconomic management can work with informal ways of keeping currency mismatches in bank lending manageable. Croatia shows the pros and cons of a more rules-based macroprudential regime (box 8.3).

Box 8.3: Managing financial foreign direct investment: Poland and Croatia

Poland

As with any type of capital inflow, governments must balance encouraging financial foreign direct investment and managing macroprudential risks. After joining the European Union in 2004, Poland succeeded in striking this balance. Several factors helped. First, good macroeconomic performance: output has grown for 20 consecutive years, and growth has averaged more than 4 percent since 1991. Inflation was brought down gradually and kept low for more than a decade. Second, Poland's prudential banking sector regulations were relatively sound: capital adequacy trigger ratios are higher than the Basel Accord minimum, and banks must comply with binding liquidity standards. Moreover, Poland was among the region's first to regulate foreign currency lending through Recommendation S in 2006. Third, an informal

yet effective approach to regulation by the central bank: much of the macroprudential regime, such as Recommendation S, was enforced through moral suasion, without automatic punishment mechanisms for noncompliance. This informal approach may have worked because of Poland's generally sound macroeconomic policies.

Croatia

The foreign ownership of banks jumped from 7 percent in 1998 to 90 percent in 2002, remaining around this level since. Credit grew, especially for households. Between 2000 and 2008 household loans grew at an annual average of 23 percent. But with rules-based macroprudential measures, Croatia managed the boom and subsequent crisis of 2008 relatively well. Between 2008 and 2010 banks enjoyed the highest average bank

regulatory capital to risk-weighted assets in the region. The ratio of nonperforming loans to total loans is around 7 percent. What lies behind this performance? Croatia successfully implemented rules-based macroprudential policies. The exchange rate regime largely ruled out the use of monetary policy. Large structural budget deficits reduced the potential for fiscal policy. Croatia's formal prudential policy framework may have made up for weaknesses in macroeconomic management. This approach is not without drawbacks. It is difficult to limit credit expansion effectively and tailor policies to different sectors without creating distortions in the market. Restrictions on bank credit, for example, hampered the expansion of small banks.

Source: Iwulska (2011), available at www.worldbank.org/goldengrowth

Recent developments cast a shadow over the success of financial FDI in Eastern Europe. In shoring up their balance sheets to deal with losses in Southern Europe, some western banks may decide to deleverage sharply or even leave Eastern Europe. Coordination between home and host bank regulators thus remains important. Under the “Vienna Initiative” in 2008–09, a combination of liquidity support from the European Central Bank, moral suasion by regulators, equity and subordinated debt injections, and stabilization facilities by international financial institutions encouraged western banks to stay. Similar efforts may be needed in the future. But the crisis in the eurozone also points to the need for greater supranational financial regulation.

Supranational regulation would not absolve national governments from their responsibility to crisis-proof their economies and protect them from the risks of excessive credit growth. The Czech Republic and Canada built on good macroeconomic management to benefit from financial integration, without suffering from its excesses (box 8.4).

Facilitate production networks and FDI

Chapter 4 shows how success in attracting FDI is correlated with the variation in productivity growth rates across EU12 countries. FDI has been good for Europe’s advanced countries too. Eastern European subsidiaries help their Western European parents remain profitable. Productivity and growth among firms with an international presence were significantly higher in all of the EU-15’s old members. In France, average labor productivity among international firms was \$149,000 against \$70,000 for firms without an international presence, and productivity growth was four times faster. The creation of production networks between east and west following the fall of the Berlin Wall has been a boon to both sides, with Germany, Austria, Sweden, Finland, and their eastern neighbors in the Baltics and among the Visegrad countries (Poland, Hungary, the Czech Republic, the Slovak Republic, and Slovenia) as the biggest winners.

The policies required to attract FDI are well known: efficient regulation and transparent, predictable, and enforceable rules, complemented by public investments in infrastructure and human capital. Yet, many of Europe’s neighbors to the east seem unsure of FDI’s benefits, keen instead to promote their own international champions. Ukrainians, Russians, and Kazakhstanis often point to the lack of domestic business groups of international scale in the new member states as a disadvantage, touting the benefits of home-grown world champions. Evidence suggests otherwise: Europe’s eastern neighbors remain wedded to a commodity-based pattern of comparative advantage. In 1991, Ukraine and Poland started from comparable relative productivity. In 2009, after 20 years of transition, Ukraine’s average productivity in purchasing power parity terms was a third of Poland’s.

Regulate enterprises for a greater European economy

Eastern Europe’s success in attracting FDI and catching up with productivity in the European Union is striking. Similarly striking is the failure of Southern Europe’s enterprises to keep pace with productivity growth in the north and center. Chapter 4 documents the resulting “three-speed union.” The wheels of

Europe's convergence machine ground to a halt in the south at the same time that they turned smoothly in the east. The failure of Greek, Italian, Portuguese, and Spanish firms to benefit from the latest phase of European integration makes their economies uncompetitive, while the possibility of correcting this deficit through devaluation is closed off within the eurozone. Making their companies fit for an enlarged Europe is a priority in the south—not just for their own economies but for the eurozone's economic health.

What is holding southern firms back? Chapter 4 offers two explanations. First, Southern Europe lacks firms of a sufficient size to effectively compete and benefit from European integration. Second, burdensome business regulations keep southern firms small by discouraging investment and growing the shadow economy. Competition from the shadow economy can drag potential value-added leaders down, perpetuating the low productivity equilibrium. This has not prevented job creation in the south. But too many workers in the EU15's south are employed in small enterprises with low average productivity. An average gross output per worker of around \$40,000, including gross profit and depreciation, is not sufficient to attract a college graduate, so many young skilled workers stay away.

The recipe to address the south's productivity gap is straightforward: better regulation and more internationalization. Rigid employment legislation, cumbersome tax systems, and burdensome product market regulations all make Southern Europe uncompetitive. The last decade has seen a large number of countries make significant strides in improving their business climate. Among the European countries that have made the most impressive progress is the Slovak Republic (box 8.5). Countries looking to create value-added leaders might also look to Singapore's experience for designing efficient and effective business regulation.

Box 8.4: Crisis-proofing finance: the Czech Republic and Canada

Czech Republic

Most believe that financial integration with the west made banking systems in emerging Europe more vulnerable to external shocks. Yet, banks in some countries such as the Czech Republic did better than others during the recent global economic crisis. In 2009, Czech banks recorded sound profits: return on equity amounted to 26 percent, and the return of assets stood at 1.5 percent. This resilience reflected timely policy actions, a sound regulatory system, and prudent banking practices. First, the financial sector benefited from a consolidation program that the central bank initiated in the mid-1990s, closing many small banks. Second, the process of financial sector prudential oversight was also consolidated. Since 2005, the Czech central bank has had the authority to oversee all segments of insurance markets and

commercial and investment banking. Third, the banking sector has a strong retail deposit base and benefited from prudent lending practices—nonperforming loans were lower in the Czech Republic than in other Central and Eastern European economies. No country is crisis-proof, but Czech financial sector practices and policies have been a source of stability during the financial crisis.

Canada

Canada's banking sector survived the 2008–09 crisis without a taxpayer-financed bailout, and its banks remained stable and well capitalized. What did Canada do right? First, heading into the crisis, the structure of bank funding was favorable, as banks relied much more on depository funding than wholesale funding. Second, the country has one of the most restrictive capital adequacy standards in the world in risk-weighting, allowable capital

deductions, and definitions of permissible regulatory capital. Third, the structure of the banking system has traditionally made the sector more stable. Heavy regulation and tight restrictions on entry led to a highly concentrated banking system dominated by five large competitors. While this system made the sector less competitive, it also made the sector easier to regulate, limiting the size of the shadow banking sector. Supervisors always face a tradeoff between competitiveness and stability—the “regulator's dilemma.” The performance of the economy before the crisis—annual GDP growth rates ranged between 2 and 4 percent during 1999–2008—and of the banking sector during the crisis suggests that Canada has struck the right balance.

Source: Iwulska (2011), available at www.worldbank.org/goldengrowth

Improve the quality of public services

Many countries in the western Balkans or the eastern neighborhood face the unenviable combination of large and highly inefficient public sectors. The same is true to a different degree in Europe's south and among some core EU member states. Improved public services are key ingredients in the policy mix to make Europe's periphery fit for competition in an integrated market. More efficient public services are also critical for fiscal consolidation and creating fiscal space for public investments. A vast repository of European and global experiences shows how to improve the quality of public services. This report highlights three key lessons.

First, adjusting structures and staffing levels to demographic developments in education and health services can offer a considerable scope for cost savings. For instance, adjusting the number of schools and educational staff to demographic developments could save between 1.1 percent of GDP in the EU12 and 0.7 percent in the south. Resistance from staff, parents, and patients can be overcome if savings are partly reinvested in quality improvements.

Second, improvements in education and health sector outcomes often result from selected public investments, greater autonomy for service providers (in some cases allowing competition between public and private sector providers, even with full public funding), and improved accountability through transparent performance criteria and public monitoring of performance. But country experiences have varied considerably. In Singapore, for instance, quality education outcomes were achieved in a centralized system with close quality monitoring and performance-

Box 8.5: Value-added leaders: the Slovak Republic and Singapore

Slovak Republic

The Slovak Republic is the European value-added leader, increasing value added by 2.8 percent annually between 1995 and 2009. At independence in 1993, Slovak manufacturing was oriented toward heavy industry, but it was able to quickly diversify. First, productivity growth was possible due to employees moving from farms to high-growth manufacturing and services. Second, exporting enterprises in medium- and high-tech manufacturing industries were able to add value through new solutions: Slovak companies produced the second-highest number of export discoveries in chemicals, and third-highest in animal products and raw materials in the region. Third, perhaps the biggest part of the story has been FDI, which grew from negligible amounts in the late 1990s to more than 10 percent of GDP by 2010. Good policies encouraged this investment through a stable macroeconomic environment, targeted tax incentives, and a good business climate—which scored 41st in the World Bank's Doing Business in 2011, including top marks for new business

registration. Fourth, unit labor cost growth has been more moderate in the Slovak Republic than other Central and Eastern European economies: in 2006, the minimum monthly wage in the Slovak Republic was €181, lower than €223 in Poland, €230 in Hungary, and €280 in the Czech Republic. With its flexible factor markets and supportive policy environment, the Slovak Republic may remain a European leader in value added for some years to come.

Singapore

Singapore is a world leader in international trade and investment. A poor country in the early 1970s, it now has the 12th-highest GDP per capita in the world (\$43,324 in current dollars in 2010). Manufacturing's share in GDP rose from 14 percent in 1965 to 24 percent by 1978. In the 1990s and 2000s, manufacturing moved toward high-value-added sectors, and services became more predominant. This change has been the result of a development policy combining a free-market approach with state intervention. Singapore was able to

attract multinational corporations, promoting investment and knowledge transfers as a result of stable macroeconomic conditions, efficient infrastructure services, and a supportive business environment. The country is a research and development center, topping the World Bank's Doing Business rankings in 2010 and 2011. The state invests heavily in education and R&D. In 2007, nearly a quarter of the labor force had a tertiary education. The National University of Singapore was 34th in the Times Higher Education World University 2010 ranking, and Singapore scores in the top three in the TIMSS assessment measuring students' performance in mathematics and science. The Economic Development Board focuses on attracting foreign investment and cooperates with other agencies such as human resources for specific industries. Heavy state intervention can sometimes cause inefficiencies. But Singapore's combination of institutions, infrastructure, and interventions has rapidly augmented its value added.

Source: Iwulka (2011), available at www.worldbank.org/goldengrowth

Box 8.6: Public service delivery: Finland and Singapore

Finland

Finns are well educated, but spend less on education than most other Organisation for Economic Co-operation and Development (OECD) countries. They live healthy lives, on average five years longer than the typical European. In 2010, *Newsweek* named Finland the best country to live in. How does Finland deliver high-quality social services at reasonable cost? The government uses a “citizens as customers” approach that minimizes layers of bureaucracy between users and public decisionmakers. The education system is decentralized, with municipal funding and schools that are responsible for daily management. Students are encouraged to engage in self-assessments and take charge of their learning schedules. Teachers are free to plan their classes and choose textbooks. There are no national tests,

so teachers are responsible for measuring the results. Health care services are lean and decentralized, with municipal governments responsible for their delivery. Since 1990, the government has introduced several measures, such as user charges, to limit public spending on health care. And since 2006, “citizen’s offices” have improved communications between society and government.

Singapore

Singapore delivers high-quality public services at low cost. Government involvement in education and health care produced world-leading systems at public spending well below other high-income economies. Spending on education is less than 3 percent of GDP and health care spending is below 2 percent. The centralized education system produces top outcomes: Singapore scores in the top three in the TIMSS assessment measuring student

performance in mathematics and science, and in 2009 was ranked 6th in the OECD PISA test to assess reading, math, and science (OECD 2010). The government creates strong incentives for performing well in national tests, and plays a direct role in hiring world class teachers. Singapore also has one of the most inclusive and efficient health care systems in the world. The system ensures universal coverage in a cost-effective way through compulsory savings and price caps, with mostly private sector provision. Life expectancy is 81.4 years, and child mortality is one of the lowest among the OECD countries, at just 2.2 deaths per 1,000 live births. Singapore’s efficient and effective systems show that it is possible to have high-quality social services without straining the treasury.

Source: Iwulka (2011), available at www.worldbank.org/goldengrowth

based incentives for teachers and schools (box 8.6). Finland, by contrast, has little centralized quality control, emphasizing community-based accountability and investing in raising the professional recognition and qualification of teachers. In health care, successful quality improvements have typically involved a move toward public contracting with private health care providers, with output-based performance targets and user charges to encourage responsible patient behavior. Health systems are only starting to adjust to the challenges of aging. Europe faces the challenge and opportunity for genuine global leadership in this field.

Third, the quality of public services is generally a function of public sector governance. Lack of trust in the state and a culture of administrative corruption hamper public sector performance in the east and south. Social trust is difficult to create, though in countries such as Estonia aggressive deregulation, administrative simplification, and the use of ICT to facilitate access to administrative services have greatly improved perceptions and performance of the government. The general lesson for countries not endowed with traditions of civic-mindedness and social trust is that government should either be run well or kept small.⁷

Strengthening Europe’s global leadership

In 2010, Germany lost the export world champion title to China. Yet, for a country with a population 13 times smaller than China’s, and 4 times smaller than the United States’, topping the world export table for much of the past decade is a remarkable achievement. It epitomizes Europe’s success as a trade powerhouse. Other countries in Europe such as Austria, Luxembourg, Switzerland, and four Visegrad countries (the Czech Republic, Hungary, Poland, and the Slovak Republic) also do well in exporting. But many European countries have struggled to grow global leaders, and are pressured by their economic ties with dynamic neighbors.

This struggle is most starkly reflected in the imbalances within the eurozone. Europe's laggards need to learn from its export leaders. Europe's prosperity, not reduced competitiveness of its world champions, will require its laggards to become more competitive.

Global export leaders such as Germany and the Republic of Korea have used a common set of ingredients. These include increasing the economy's ability to continually shift toward higher value-added activities and foster trade integration with neighboring countries so as to move fewer skill- and capital-intensive activities offshore. Stable finance (or in Korea's case, rapid private debt resolution) and responsible business and employment regulation have helped. And, in both countries, the profits generated were reinvested in R&D (Iwulska 2011). The need to keep an eye on the long term and adapt to rapidly changing global markets may be the most important lesson for aspiring export champions.

Reassess employment protection legislation

Labor market reform is among the toughest tasks facing such countries as Greece, Italy, Portugal, and Spain. The high cost of hiring and firing makes their economies inflexible, less able to react to shocks. It keeps people not in the labor force out of work, including the young, reducing aggregate productivity and fomenting social protest. Eastern European policymakers should take note. On employment legislation, many countries in the east lag far behind the EU-15's two decades of labor market reform. Lower unemployment, greater worker productivity, and higher labor force participation among the young all lead to more flexible employment legislation, as the experiences of Denmark, Germany, the Netherlands, and others demonstrate. Ideally, these outcomes should be combined with reductions in the tax wedge between gross and net earnings, well-designed unemployment benefits, and active labor market programs.

Box 8.7: Labor legislation: Denmark and the United States

Denmark

Every year, about 20 percent of Danes lose their jobs. But they don't lose their income. Unemployment benefits replace close to two-thirds of their earnings, and the government helps them find work. The arrangement seems to work well. Between 1995 and 2008, unemployment averaged 4.9 percent, compared with 8.5 percent in the rest of the EU15. How does Denmark have both flexibility and security? First, a tradition of productive industrial relations: in the Danish system, labor and trade unions, not the government, pay unemployment benefits. Second, sensible adaptation: the arrangements were reformed in the 1990s after decades of high unemployment. Policies cut job protection, raised unemployment benefit coverage, and strengthened job search assistance and training. Unemployment fell from 10 percent in 1993 to 3.3 percent in 2008, and long-term

unemployment fell from a third of the total to a tenth. Third, generous public spending: Denmark spent 4.5 percent of GDP on labor market programs in 2008, a good year. The Danes have "flexicurity" because of their history, and they can afford it because of participation rates of more than 80 percent. Others who want both flexibility and security should be mindful of this.

United States

Between 1995 and 2010, average unemployment in the United States was 5 percent, about half the eurozone's average of 9.4 percent. Labor participation rates are higher in the United States, anchored by a society that values work, flexibility, and competition. Employees can be hired or fired fairly easily—employment protection in the United States is the lowest in the Organisation for Economic Co-operation and Development

(OECD). Labor taxes are low: the tax wedge on labor of 30 percent is among the lowest in the advanced world. Unemployment benefits are lower than in most European countries while net replacement rates for the long-term unemployed are the second-lowest in the OECD. What are the pros and cons? On the whole, the system succeeds in delivering jobs and productivity growth. Firms and workers have more freedom to negotiate contracts that suit their needs. States and municipalities can add programs that their voters want and their local economies can afford. Countries seeking to promote productive employment would do well to look to the United States for ideas. But the absence of a universal health care system in the United States means that most Americans need a job if they want good health care.

Source: Iwulska (2011), available at www.worldbank.org/goldengrowth

Denmark's "flexicurity" model combines relatively low employment protection with considerable spending on active labor market policies and generous unemployment benefits, achieving a coveted combination of generous social security for workers with flexible labor markets and low unemployment (box 8.7). But these expensive policies rely on the capacity of labor offices to place the unemployed rapidly into sustainable new employment—a tough task during a prolonged economic downturn. The United States has a more traditional model of high labor force participation, achieved through lower employment protection, flexible labor markets, and limited unemployment insurance benefits. Countries in Eastern and Southern Europe will need to decide whether to opt for the expensive but less socially disruptive Danish system or the rougher efficiency of American labor markets. At the moment many have neither.

Address the private debt overhang quickly

While public sector debt is the focus of attention, a private debt overhang might drag down European growth. Chapter 3 shows that Eastern Europe's enterprises and households—which absorbed a big rise in credit in the decade leading up to the 2008–09 crisis—generally are not overleveraged. This is not necessarily true of their counterparts in Southern Europe. And while banks in emerging Europe seem reasonably capitalized and have built adequate reserves against the increase in nonperforming loans, renewed economic uncertainty is cause for concern. A crisis of confidence would strain banking sector balance sheets, potentially causing a flight of deposits from some countries. What should governments do if this happens?

Ireland, which nationalized its banking system and took on all private sector liabilities, tells a cautionary tale. Sweden and the Republic of Korea are better examples (box 8.8). Both quickly recapitalized financial institutions, limited taxpayer liabilities by sharing losses with the private sector, and put corporate debt restructuring frameworks in place to facilitate a rapid workout of nonperforming loans. The synchronized nature of the current instability may require more coordinated approaches to bank recapitalization, particularly for sovereign debt restructuring in the eurozone.

Create world class innovation systems

Germany's success in exporting cars and machine tools to all corners of the world should not distract from the fact that new industries such as ICT, biotech, and health and medical services are likely to play a key role in Europe's growth prospects and international competitiveness. As chapter 5 argues, Europe does not do well in these high-growth, innovation-intensive industries, especially when compared with the United States, the global leader.

Several factors determine the quality of a country's innovation system. They include world class universities, developed venture capital markets, public procurement policies, and regulations that stimulate innovation and maintain strong competition. Denmark, Finland, Sweden, Switzerland, and—to less extent—Germany have copied these features and built innovation systems that compete with the world's best (box 8.9).

Box 8.8: Reducing private debt: Sweden and the Republic of Korea

Sweden

Sweden illustrates how to reduce private sector debt after a crisis. After the crisis in the early 1990s, the government not only revived the economy but also restored the health of household balance sheets. The ratio of debt to disposable income of Swedish households fell from 130 percent in 1989 to 90 percent in 1996. Interest payments were halved from 10 percent of disposable income in 1990 to 5 percent in 1997. The government kept the costs of the bailout low. By 1997, the total bill amounted to only 2 percent of GDP, due to a comprehensive program that was tailored to different classes of financial institutions and realistic about financial sector losses. First, the government quickly recognized these losses. Transparency and true valuations were conditions for government support. Because banks were forced to write down losses, markets received accurate information. The government guaranteed their liabilities or took an ownership stake in the bank. By 1992, the Swedish authorities owned nearly a quarter of bank assets. Second, the government adopted an approach that was sensitive to distinctions among classes of financial institutions. Government assistance was available to not

only Swedish banks but also foreign-owned subsidiaries in the country. And the support's structure and amounts were tailored to the necessities of particular banks or institutions. A special body—the Bank Support Authority—was set up in 1993 to assess the magnitude of the troubled loans, as well as each bank's earning potential in the long run. The actions of the Swedish government show the potential for public policy to address the fallout of a financial crisis, if implemented quickly with an honest recognition of financial sector losses.

Republic of Korea

The Republic of Korea's policies after the 1997–98 crisis show how quick and comprehensive intervention can reduce private sector insolvency and restart growth. Korea's corporate and financial sectors were heavily indebted when the East Asian financial crisis hit. A rapid-debt-reduction program brought the overhang under control. In manufacturing, the debt-to-equity ratio shifted from 396 percent in 1997 to 211 percent in 2000. The share of nonperforming loans fell from more than 8 percent in 1999 to just below 2 percent in 2002. What can other countries learn? First, the policy response was comprehensive. All corporations, large and small, were

included in the government's plan to restore solvency. Under government pressure, the country's largest conglomerates negotiated debt workout programs with the banks. Government intervention led to the rollover of 90 percent of small and medium enterprise loans between July and November 1998, the worst months of the crisis. Nonperforming loans fell in part due to the government's program to recapitalize healthier banks and merge or liquidate insolvent institutions. Second, new statutes allowed banks to go bust. The Korean Asset Management Corporation was created to handle bad loans and prevent "zombie banks." Third, the size of the government's response was proportionate to the crisis: financial sector support amounted to 13 percent of GDP between 1998 and 1999. Fourth, monetary policy managed deflation risks while participation in an International Monetary Fund program and the introduction of central bank independence in 1998 sent strong signals to the markets. Timeliness, broad scope, targeting, and scale of response are all important in dealing with a private debt overhang.

Source: Iwulska (2011), available at www.worldbank.org/goldengrowth

Three basic lessons: first, governments should ensure that the table is properly set; no amount of incentives and targeted policies can compensate for a poor business climate or inadequate infrastructure. Second, public support should work through the market, stimulating private investment, not aim to substitute for market finance when profits are paltry. Finland's matching grant scheme for early innovators, for instance, catalyzed private venture capital funding, and Israel built a venture capital industry with initial injections of public funds and foreign investment. Third, public policy can encourage linkages between innovators and businesses, and help scientists expand their international collaboration—particularly in Eastern Europe, where national R&D institutions need to be thoroughly reformed.

Yet, innovation in Europe's frontrunners is held back by scale; Turku is not Tokyo and Zurich is not San Francisco. European markets for ICT, pharmaceuticals, and health services are not sufficiently integrated. Achieving global leadership in innovation will require more than world class national innovation systems. It will require a Europe-wide approach to create the necessary scale to match America's and Asia's dynamic innovation clusters. A good example of what holds Europe back is the lack of a single European patent, because EU member states cannot agree on the language requirements.⁸ An encouraging example is the pooling of public funding for excellence in scientific research at the European Research Council, with a budget of around €1 billion a year.

Expand private funding of tertiary education

As the tasks performed by Europe's emerging economies grow more sophisticated, and the competition from middle-income countries in Asia intensifies, workforce education becomes ever more important. Europe lags Japan and North America in the share of the workforce with tertiary education, and within Europe, the east and south lag the center and north, both in the quantity and quality of higher education.

Most European countries see higher education as a task for the state. Private funding is limited, private universities are the exception, and links between business and university-based research are weaker than in the United States. Europe's tertiary education policies are designed to ensure equal access to higher education and to keep research free from corporate agendas. Yet, the approach must be questioned. High fees have not discouraged young Americans from seeking a higher education; wages for graduates are much higher than for those who leave school, offering a good rate of return on investment for a university degree. And it is not just Americans who are encouraged: U.S. universities have many more international students than most universities in Europe. Switzerland and the United Kingdom are the notable exceptions (box 8.10).

Rethink immigration policies

In Europe, immigration policy is often seen as a humanitarian intervention. Many immigrants are refugees from countries with oppressive political regimes or civil wars, and Europeans—mindful of their own history of war and displacement—accept immigration as a moral duty. Family reunions are also an important part of European immigration. Many Europeans, however, would oppose more immigration for economic reasons: workers moving to Europe in search of higher wages, and employers inviting immigrants to fill positions with few local applicants for the wages offered.

Box 8.9: R&D policy: Switzerland and the United States

Switzerland

Switzerland is Europe's leader in innovation. In 2007, it obtained the highest number of patents per capita among industrialized countries, roughly three times the Organisation for Economic Co-operation and Development (OECD) average. According to the Global Benchmark Report 2011, Switzerland is the most competitive country in the world, ahead of Canada, Australia, the United States, and Sweden (Confederation of Danish Industry 2011). The reasons? First, Switzerland started early. Its emphasis on research and innovation has a long history. The first two institutions funding university-based research were established in or soon after 1943. Second, there are strong public-private links in the funding and conduct of research, and Switzerland has more private spending. Swiss

companies spend twice as much on R&D as the EU27 average (Switzerland spends 2.2 percent of GDP; EU27, 1.1 percent of GDP). Third, Switzerland has some outstanding universities: with a population of just 8 million, it has four universities in the top 100 of the Times Higher Education World University 2010 ranking. In part due to its R&D policies, Switzerland may be Europe's most innovative country.

United States

Half of the 50 most innovative companies in the world, as ranked by *Business Week* in 2010, are American. The country dominates the most R&D-intensive sectors. For example, it creates a third of the value added in the global information and communications technology industry. How does the United States do so well? First, sizable public spending: gross

expenditure on R&D was almost 3 percent of GDP in 2008, above the OECD average. Second, this spending is linked well to a broad tertiary education base: the United States accounted for a third of the total OECD population with higher education. Its universities can reap the commercial payoff of R&D, even when it is federally funded. Third, federal funding is not the sole driver of R&D and innovation: private firms spend a lot. The partnerships of venture capitalists and entrepreneurs in places like Silicon Valley have driven new innovations, changing business and expanding the technology frontier. Fourth, product market competition, labor market flexibility, and substantial management talent increase the payoff to R&D spending.

Source: Iwulska (2011), available at www.worldbank.org/goldengrowth

Box 8.10: Tertiary education: the United Kingdom and the United States

United Kingdom

British universities are the best in Europe, with two or three regularly among the top 10 in the world. After the United States, the United Kingdom has the second-largest number of foreign students. Expenditures are around 6 percent of GDP, the Organisation for Economic Co-operation and Development average. How has the United Kingdom gotten exceptional results with an ordinary budget? It has done a better job than its neighbors in combining a rich European heritage with modern know-how. First, spending per student is higher in the United Kingdom than most European countries. Second, universities charge high tuition fees by European standards, supported by student loans. Third, universities in the United Kingdom enjoy more independence from government. This creates greater

competition for funding and talent and more innovative curricula. The United Kingdom still faces challenges in getting the tuition cap right, supporting part-time students, and ensuring that schools are producing needed skills. But it has shown that it is possible to meld the tradition of great European universities with current needs and a modern approach.

United States

American universities successfully address two important issues: a growing demand for tertiary education, and limited capacity and public funding. A diversity of academic opportunities helps target different educational needs, while abundant funding and favorable governance allow top universities to attract world scholars, students,

and companies, channeling knowledge into ideas, innovations, and business solutions. Moreover, universities enjoy autonomy and diversity in funding, which is important in setting standards. U.S. universities dominate the international league tables, taking the top 5 positions—and 7 of the top 10—in the latest Times Higher Education World University ranking. Moreover, U.S. universities attract 20 percent of all international students. Given the role of top universities in building human capital for public and private sectors, and as direct and indirect contributors to innovation, other countries should look at how the United States regulates and finances its higher education systems.

Source: Iwulska (2011), available at www.worldbank.org/goldengrowth

As chapter 6 argues, this attitude toward immigration puts Europe at a competitive disadvantage with immigration-friendly countries in North America and Oceania. Immigrants are needed to compensate for the decline in Europe's labor force, even with efforts to increase labor force participation and promote greater internal mobility. Europe should devise a more "economic" immigration policy. This should not imply that humanitarian motives for Europe's immigration policy are wrong. Instead, Europe should look at immigration as a gain rather than a gift. Ireland, Sweden, and the United Kingdom have immigration policies that reflect good practices in other parts of the world, such as Canada and the United States (box 8.11).

What are the ingredients? Nondiscriminatory labor markets attract the best and brightest. Language training for adults, access to education for immigrant children, and the prospect of acquiring citizenship all facilitate integration into society. "Points" systems can filter immigrants with required skills, and immigrants with job offers can be granted additional points. Opening universities to talented foreign students often attracts and retains a skilled labor force. A more conscious and proactive immigration policy could help Europe maximize economic gains while keeping social tensions low.

Reform social security

Europe's social security systems (public pensions, unemployment insurance, and social welfare) largely account for the bigger size of its governments. The pension system accounts for the bulk of social security spending. Keeping pension spending under control remains the most important task—not only for fiscal consolidation, but also to prevent payroll taxes from rising and making European enterprises uncompetitive in world markets. As chapter 7 demonstrates, pension reform has begun in parts of Europe. Pressed by markets, governments have increased the retirement age, abolished early retirement schemes, and encouraged private savings for old age and infirmity.

Iceland appears to have achieved these objectives, maintaining a high level of old-age security (as reflected in generous replacement rates) at reasonable cost to the government. Japan's experience should also provide encouragement: the fastest-aging economy in the world spends around 10 percent of GDP on its public pension system, less than France, Germany, or Greece (box 8.12). The average public spending on pensions is essentially the same as in Europe (\$16,000 in 2000 prices). The main difference: the Japanese work longer, up to almost age 70 for men and more than 67 for women.

Chapter 7 advocates the principle that social security spending should exceed 10 percent of GDP only in exceptional circumstances (such as those in Japan). Over the medium term, savings of around 1 percentage point of GDP must be found in Europe's north, around 2 points in the center, and around 3 in the south. Serbia and Ukraine, with pension spending in excess of 15 percent of GDP, have more radical reform needs.

Reduce deficits and public debts

Fiscal austerity has become the battle cry of European leaders as they try to restore confidence in the eurozone. For much of Europe, it is necessary. As chapter 7 demonstrates, fiscal discipline is not just needed to reassure nervous investors—it is required to restore long-term growth. During the 2008–09 crisis, there was a coordinated push by governments in the industrialized countries to adopt fiscal stimulus packages to stem the decline in aggregate demand and pull western economies out of recession. A more differentiated approach might have been more suitable then; it is definitely needed now. Large government is associated with slower growth in Europe. Even in the short term, expansionary government spending will not restore growth.

But politically, achieving a lasting fiscal consolidation is not easy. A crisis such as that currently gripping the eurozone is an opportunity to muster the political energies to push through such a consolidation. Constitutional debt ceilings and “golden rule” provisions limiting new borrowing to the amount of public

Box 8.11: Immigration policies: Sweden and Canada (and the United Kingdom and the United States)

Sweden (and the United Kingdom)

Immigration plays a big role in both countries: in 2008, the foreign-born were 14 percent of Sweden's population and 11 percent of the United Kingdom's. Both have fairly liberal policies toward migrants from the new EU members, but they have different ways of assimilating foreigners. Sweden allows foreigners access to almost all benefits available to natives, setting clear rules on how to obtain citizenship. The United Kingdom's appeal does not come from its migration policy. The country attracts highly skilled newcomers for a range of reasons: cultural diversity, low language barriers, metropolitan centers such as London, and the presence of

multinational companies. European countries need models to learn from in managing immigration. Sweden and the United Kingdom offer contrasting examples, but both have aspects that deserve study, adaptation, and even emulation.

Canada (and the United States)

As global magnets for talent, the United States and Canada are exceptional, for somewhat different reasons. The U.S. economy is powered by immigration, and more than a million people immigrate there every year. Canada also has one of the highest shares of immigrants: one of five residents is foreign-born. The quality of immigration is high in

both countries. But immigration policy differs in many ways. The United States attracts migrants through its size, its tradition as a country of immigrants, and its contestable labor markets and job opportunities. Of all the immigrants coming to the United States, more than a quarter have tertiary education. But the lack of a comprehensive policy can lead to undocumented migration and weak public institutions for integrating immigrants. Canada has a more comprehensive set of policies based on a “points” system to both meet labor market needs and reunite families.

Source: Iwulska (2011), available at www.worldbank.org/goldengrowth

Box 8.12: Social security: Iceland and Japan

Iceland

Iceland may show a way forward for countries trying to meet social security promises while holding public spending in check. Its system delivers one of the highest replacement rates in the world—close to 97 percent for the average worker—at a low public cost of less than 2 percent of GDP, compared with the Organisation for Economic Co-operation and Development (OECD) average of more than 7 percent. It helps that, for a developed country, Iceland has a relatively young population with a high fertility rate. But there are other reasons. First, the system has had a pensionable age of 67 years for both men and women for several decades. Tax and other policy incentives encourage workers to stay in the labor force beyond the legal minimum, and the country has one of the world's highest elderly participation rates.

Second, benefits are means-tested. Third, a mandatory occupational pension scheme must deliver more than 50 percent of replacement wages for workers meeting minimum tenure requirements. The pension system contributed to the development of Iceland's financial sector and has already recouped most of the losses experienced during the country's recent economic collapse.

Japan

Japan has the oldest population in the world. The ratio of Japanese ages 65 and older to the working-age population is 35 percent, compared with 25 percent for the EU15 and 20 percent for the United States. What is Japan doing, and what can aging countries learn? First, an aging society is a big fiscal burden, but it can be looked after by adjusting the system. Public pension spending in Japan is 10 percent of GDP, nearly 3 percentage points

higher than the OECD average. But Japan still spends less than younger countries: for example, the ratios are higher in France (13 percent), Greece (12 percent), and Germany (11 percent). The pension system has been adjusted several times: in 2004, for example, the government cut benefits for new retirees by 0.9 percent a year. Second, people have to work longer. Japan's system punishes early retirement with lower benefits, and encourages later retirement with the lowest implicit tax on working beyond retirement age. Third, the elderly can be protected by making public pensions progressive, with lower replacement ratios for high-income retirees. Japan may need to do even more: female work participation could be much higher and Japan may need more immigrants.

Source: Iwulska (2011), available at www.worldbank.org/goldengrowth

investment can provide focal points for consolidation efforts. The European Union's macro-surveillance framework provides for an annual reduction of public debt by one-twentieth of the difference between current debt and the Maastricht criterion of 60 percent of GDP. Using a 60 percent of GDP debt ceiling for the EU15 and a 40 percent ceiling for the EU12, the candidate countries, and the eastern partnership, chapter 7 calculates the required improvement in the primary balance to range between 3 percent of GDP (for the eastern partnership countries) and almost 8 percent of GDP (for the southern EU member states).

For inspiration in matters of fiscal adjustment, European leaders might turn to Turkey—a country with repeated fiscal and external imbalances resulting in bouts of inflation and exchange rate instability. Since 2001, however, Turkey has stabilized public finance, rapidly reduced public debt, and enjoyed fast (if volatile) economic growth. The 2008–09 crisis left the country much less vulnerable than previous episodes. Turkey's approach to fiscal stabilization and its economic reforms to boost competitiveness may have lessons for Southern Europe (box 8.13). New Zealand, where a crisis precipitated a reform of public finances and social service delivery, is another example.

Growth's golden rules

To conclude this chapter on the subject it began with, one can ask whether there are there any "golden rules" to guide policymakers to ensure the maximum consumption for Europe's current generation, while keeping future generations' prospects bright. The discussions around greater fiscal prudence, and the proliferation of constitutional brakes on public debt, suggest that governments in Europe are searching for a new set of rules. A set of golden rules for growth might look something like the following:

Box 8.13: Reducing public debt: Turkey and New Zealand

Turkey

Turkey halved the ratio of public debt to GDP from almost 80 percent in 2001 to less than 40 percent before the global crisis of 2009. Several factors helped. First, global prosperity, reforms at home, and accession talks with the European Union spurred growth. Second, through greater fiscal discipline, Turkey generated primary fiscal surpluses between 2002 and 2005. Third, it granted more independence to the central bank and implemented better monetary policies, increasing the confidence of global markets in the lira. Fourth, it better managed public debt, leading to longer maturity periods and lower interest rates. And fifth, it prudently

used privatization proceeds to repay sovereign debt. It takes a lot to reduce public debt, but Turkey shows it can be done. Its neighbors in Southern Europe might learn by studying its debt management practices, monetary policies, and reform and privatization program during the 2000s.

New Zealand

Since the early 1990s, New Zealand has halved its public debt—from around 60 percent of GDP to 30 percent in 2010. The country led in fiscal prudence: it was second in Stanford University's Sovereign Fiscal Responsibility Index rankings in 2010. What did it do? First, deep reforms in state finances helped return it to primary fiscal surpluses in 1994, after

two decades of deficits. The fiscal reforms were comprehensive: the government set up a management framework for a sustainable fiscal policy—using, for example, financial reporting standards similar to private sector accounting rules. Second, New Zealand used privatization proceeds of NZ\$14 billion in 1988–96 well, and made operations ranging from air traffic control to postal services competitive through deregulation. Third, these steps were part of a broader reform program that included reducing inflation from more than 8 percent in 1986–91 to 2 percent in 1992–97.

Source: Iwulka (2011), available at www.worldbank.org/goldengrowth

- Extend the benefits of freer trade to those outside the European Union. Enlargement has made Europe stronger, and Europe should continue to extend economic integration toward the east. Trade is the most important part of Europe's convergence machine, and the single market is the European Union's "crown jewel." The European Union should strengthen the single market, and speed up the extension of its benefits to its neighbors.
- Borrow from abroad only for investment. Where foreign finance has been used for private investment, it has fueled productivity growth and convergence in Europe. But countries relying on finance mainly to boost consumption have added less to productivity, becoming more vulnerable. Rules for countercyclical fiscal policy and macroprudential regulations follow.
- Give enterprises the freedom to start up, grow, and shut down. Efficient regulation of enterprise should trust but verify, make compliance easy but punish violation, and concentrate regulatory resources where risks are highest. Regulation in Europe should promote competition by making entry and exit easier for enterprises, and should reduce the costs of running or growing a business.
- Public funds should catalyze private innovation, not substitute for it. Effective innovation policy sets the table for innovators to thrive. It supports inventors, mobilizes finance, understands the importance of economic agglomeration, and brings choice and business resources into universities.
- Labor laws should treat insiders and outsiders more equally. Regulations should not treat those who seek jobs and those who have jobs differently. Seeing labor as a fixed lump to be divided among workers leads to poor rules. Contestable labor markets, greater mobility within Europe, and talent attracted from outside will help Europe create jobs, make workers more productive, and help offset the demographic decline.
- Public debt should mainly finance public investment. With high debt and modest expected growth rates in Europe, government spending should now be based on the premise that future generations are not likely to be a lot wealthier. Taxation

should finance social security, public services, and the government wage bill. Efficiency considerations—not equity—should drive borrowing.

With policies that reflect these rules, Europe can restore the lustre of its economic model. It can secure the welfare of the 500 million people who live in the European Union today. The European convergence machine can bring another 100 million people in Europe's candidate and potential candidate countries to high-income status—and accelerate improvement in the living standards of 75 million people in the eastern partnership.

There are many reasons to believe that Europeans will make these changes. The main reason for optimism is that many countries in Europe have already made changes, and others are making them. The sovereign debt crisis has obscured the fact that Europe has done quite well over the past two decades. As this book demonstrates, Europe excels at managing trade and most aspects of private finance. It has done reasonably well in regulating enterprise and promoting innovation, though with big differences across countries. Its weaknesses lie mainly in how it has organized work and government. But even in these aspects, some countries in Europe have rebuilt their institutions and can serve as models for others.

A report card on Europe's performance for the last two decades would be a solid "B." Over the next two decades, with strengthened economic structures, better social policies, and efficient government, an "A" is not out of reach.

Answers to questions on page 433

- Greater labor mobility and more uniform national regulations for modern business services are making the single market more efficient.
- Sustaining economic integration requires making the single market efficient, crisis-proofing financial flows, and facilitating production networks through improved public services in emerging Europe.
- To remain a global economic leader, Europe has to sustain regional integration, reduce public debt, reform social security, revamp employment protection laws, and institute policies to attract talent from around the world.



Notes

- 1 Phelps, Edmund. "The Golden Rule of Accumulation: A Fable for Growthmen." *The American Economic Review*, Vol. 51, No. 4. (Sep., 1961), pp. 638-643.
- 2 von Weizsäcker, Carl Christian. 1962. *Wachstum, Zins und optimale Investitionsquote*, Tübingen (Mohr-Siebeck), 96 pages.
- 3 They were Tjalling Koopmans, Maurice Allais, Christian von Weizsacker, and John von Neumann.
- 4 In an excellent account of the euro's origins and prognosis, Marsh (2009, p. 194) cites an excerpt from a 1996 speech by former Bundesbank president Hans Tietmeyer: "In a monetary union, countries have to tackle and solve their economic problems and challenges in a similar way and with similar speed. If the countries decide fundamentally different answers, then great problems will arise. Countries which implement the right solutions soon become more competitive against those which react wrongly or late." What is true of monetary union is also true for broader economic union. It is also sensible for those expected to join the eurozone to get a head start on reforms needed to make their economic structures more flexible.
- 5 Labor mobility also improves the flexibility of labor markets and is associated with lower unemployment (chapter 6). By allowing workers to move to where jobs are and their skills are in highest demand, it increases aggregate productivity. Chapter 5 hypothesizes that despite progress over the last two decades, Europe's labor markets are still too fragmented to allow leading innovation clusters such as Silicon Valley or Tokyo to emerge. Labor mobility would also help all European countries deal with their demographic challenges, by getting more of Europe's young people and workers in structurally weak regions into work.
- 6 Strictly, the flows from parents to subsidiaries include various forms of financing, and not all can be classified as FDI. There clearly is, however, a close relationship between the large equity stakes western banks took in Eastern Europe and their willingness to have large debt exposures to their subsidiaries in order to finance rapid expansion of their business. Many have acquired valuable franchises that are unlikely to be wound down. But some have come in late, or moved too aggressively into risky business areas, and may be forced to recognize losses and exit due to the need to shore up balance sheets back home.
- 7 World Bank (2012) discusses Georgia, where a legacy of poor public sector performance has begun to be overcome through radical simplification and deregulation, allowing the state to focus on essential tasks, pay public servants better, and reduce administrative corruption.
- 8 This is persuasively argued in the Report of the Polish Presidency of the Council of the European Union on rekindling economic growth in Europe (Ministry of Foreign Affairs of Poland 2011).

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Selected Indicators

TABLE A1. BASIC INDICATORS

TABLE A2. TRADE

TABLE A3. FINANCE

TABLE A4. ENTERPRISE

TABLE A5. INNOVATION

TABLE A6. LABOR

TABLE A7. GOVERNMENT

SOURCES AND DEFINITIONS

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Table A1. Basic indicators

	GNI, per capita, US\$ 2010	GDP		
		Per capita, PPP, international \$ 2010	PPP, international \$, billions 2010	Real, per capita, growth, percent 2000-10
EU15				
Austria	47,060	40,005	335	1.3
Belgium	45,910	37,600	409	1.0
Denmark	59,050	39,489	219	0.6
Finland	47,720	36,651	197	1.9
France	42,390	33,820	2,194	0.7
Germany	43,110	37,260	3,044	1.2
Greece	26,940	27,805	315	2.0
Ireland	41,000	41,188	185	1.6
Italy	35,150	31,555	1,909	0.0
Luxembourg	77,160	86,899	44	1.8
Netherlands	49,050	42,255	702	1.2
Portugal	21,880	25,610	273	0.6
Spain	31,750	32,070	1,478	1.0
Sweden	50,110	39,029	366	1.8
United Kingdom	38,370	35,904	2,234	1.1
European Free Trade Association				
Iceland	32,710	34,895	11	1.2
Liechtenstein	137,070 ^a	—	—	1.0 ^b
Norway	84,290	56,692	277	0.9
Switzerland	71,530	46,581	365	1.0
EU12				
Bulgaria	6,270	13,780	104	5.1
Cyprus	29,430	31,092	34	1.4
Czech Republic	17,890	25,283	266	3.1
Estonia	14,460	20,615	28	5.0
Hungary	12,850	20,029	200	2.4
Latvia	11,620	16,312	37	4.9
Lithuania	11,390	18,184	60	5.1
Malta	19,270	26,640	11	1.5
Poland	12,440	19,783	755	4.1
Romania	7,840	14,287	306	4.7
Slovak Republic	16,830	23,423	127	4.5
Slovenia	23,860	27,063	56	2.6
EU candidate countries				
Albania	3,960	8,817	28	5.0
Bosnia and Herzegovina	4,770	8,590	32	3.8
Croatia	13,870	19,516	86	3.1
Kosovo	3,290	—	—	5.7
Macedonia, FYR	4,570	11,159	23	2.4
Montenegro	6,750	13,016	8	3.7
Serbia	5,630	11,281	82	4.2
Turkey	9,890	15,321	1,115	2.8

Total, thousands 2010	Population			Total, thousands 2050	Working age, percent 2050	Old age, percent 2050	CO ₂ emissions, metric tons per capita 2008
	Working age, percent 2010	Old age, percent 2010	Old age, percent 2010				
8,214	67.6	18.1	7,521	56.4	30.1	8.1	
10,423	66.2	17.8	9,883	58.1	27.7	9.8	
5,516	65.5	16.6	5,575	60.3	24.6	8.4	
5,255	66.6	17.2	4,820	58.2	27.3	10.6	
64,768	64.9	16.5	69,768	58.9	25.5	5.9	
81,644	66.0	20.6	71,542	56.3	30.1	9.6	
10,750	66.4	19.4	10,036	54.8	32.1	8.7	
4,623	67.7	11.3	6,334	59.9	23.3	9.9	
60,749	66.1	20.1	61,416	55.6	31.0	7.4	
498	66.8	14.8	721	62.8	20.6	21.5	
16,783	67.7	15.2	17,334	59.3	26.0	10.6	
10,736	66.0	17.8	9,933	56.2	30.6	5.3	
46,506	68.1	16.9	52,491	55.2	31.2	7.2	
9,074	65.2	19.3	9,085	59.5	25.7	5.3	
62,348	66.3	16.3	71,154	60.8	23.6	8.5	
309	67.1	12.4	351	60.0	24.2	7.0	
35	69.2	14.5	36	57.5	28.5	—	
4,676	66.2	15.6	4,966	59.9	25.0	10.5	
7,623	68.0	16.6	7,296	57.4	29.0	5.3	
7,149	68.3	17.9	4,651	53.9	33.8	6.6	
1,103	73.3	10.2	1,392	61.5	25.8	7.9	
10,202	70.7	15.9	8,540	54.7	33.1	11.2	
1,291	67.4	17.6	862	53.7	32.2	13.6	
9,992	68.3	16.7	8,490	56.7	29.9	5.4	
2,218	69.6	17.0	1,544	55.9	31.2	3.3	
3,545	69.7	16.3	2,788	55.7	32.0	4.5	
407	69.0	15.1	396	57.2	29.7	6.2	
38,464	71.7	13.5	32,085	55.4	31.7	8.3	
21,959	70.3	14.8	18,060	56.1	31.3	4.4	
5,470	71.7	12.6	4,944	56.7	30.0	6.9	
2,003	69.9	16.6	1,597	53.6	34.0	8.5	
2,987	67.3	10.3	2,824	62.8	24.0	1.3	
4,622	70.9	14.9	3,892	54.4	33.8	8.3	
4,487	67.8	16.9	3,864	57.0	29.6	5.3	
1,815	65.9	6.6	2,223	66.3	17.0	—	
2,072	69.7	11.5	1,991	59.8	26.2	5.8	
667	70.7	13.5	578	54.1	32.4	3.1	
7,345	68.1	16.6	5,869	58.0	29.0	6.8	
77,804	66.9	6.2	100,955	63.9	19.3	4.0	

	GNI, per capita, US\$ 2010	GDP		
		Per capita, PPP, international \$ 2010	PPP, international \$, billions 2010	Real, per capita, growth, percent 2000-10
Eastern partnership countries				
Armenia	3,200	5,463	17	8.1
Azerbaijan	5,330	9,943	90	13.6
Belarus	5,950	13,928	132	7.8
Georgia	2,690	5,073	23	5.9
Moldova	1,810	3,110	11	5.1
Ukraine	3,000	6,721	308	5.4
North America and Oceania				
Australia	43,590 ^a	39,407 ^a	865 ^a	1.7 ^b
Canada	43,270	38,989	1,330	1.2
New Zealand	28,770 ^a	29,531	129	1.2 ^b
United States	47,390	47,199	14,587	0.9
East Asia				
China	4,270	7,599	10,170	9.6
Indonesia	2,500	4,325	1,037	4.0
Japan	41,850	33,753	4,302	0.9
Korea, Rep.	19,890	29,004	1,418	4.1
Malaysia	7,760	14,731	418	3.0
Philippines	2,060	3,969	370	2.8
Singapore	40,070	57,936	294	3.7
Taiwan, China	19,280	35,800	828	3.6
Thailand	4,150	8,554	591	3.4
Vietnam	1,160	3,205	279	6.0
Latin America				
Argentina	8,620	16,012	647	3.1
Brazil	9,390	11,210	2,185	2.5
Chile	10,120	15,732	269	2.7
Colombia	5,510	9,462	438	2.5
Mexico	8,890	14,498	1,644	0.9
Peru	4,700	9,538	277	4.2
Uruguay	10,590	14,384	48	2.6
Venezuela, RB	11,590	12,233	353	1.7
Africa				
Algeria	4,450	8,384	297	2.0
Egypt, Arab Rep.	2,420	6,180	501	3.0
Morocco	2,850	4,712	151	3.5
South Africa	6,090	10,570	528	2.1
Tunisia	4,160	9,550	101	3.5
Other				
India	1,330	3,582	4,195	5.8
Russian Federation	9,900	19,840	2,812	5.7

a. 2009.

b. 2000-09.

— = not available.

Total, thousands 2010	Population			Total, thousands 2050	Working age, percent 2050	Old age, percent 2050	CO ₂ emissions, metric tons per capita 2008
	Working age, percent 2010	Old age, percent 2010	Working age, percent 2010				
2,967	71.8	10.3	2,943	61.2	25.2	1.8	
8,304	70.0	6.6	9,955	65.1	18.1	5.4	
9,613	71.6	14.2	7,739	57.8	29.6	6.5	
4,601	68.0	16.2	3,785	58.0	28.8	1.2	
4,317	73.7	10.6	3,635	58.6	28.3	1.3	
45,416	70.7	15.5	33,574	57.9	29.3	7.0	
21,516	67.8	13.7	29,013	61.7	22.5	18.6	
33,760	68.6	15.5	41,136	58.9	26.3	16.3	
4,252	66.5	13.0	5,199	60.8	23.0	7.8	
310,233	66.9	13.0	439,010	60.6	20.2	17.9	
1,330,141	73.4	8.6	1,303,723	59.5	26.8	5.3	
242,968	66.2	6.1	313,021	64.4	18.2	1.7	
126,804	64.1	22.6	93,674	52.1	37.0	9.5	
48,636	72.7	11.1	43,369	53.9	35.9	10.5	
28,275	65.3	4.8	42,929	63.3	16.0	7.6	
99,900	60.9	4.2	171,964	64.8	11.7	0.9	
5,140	78.0	7.2	8,610	64.3	23.9	6.7	
23,025	73.0	10.8	20,161	55.0	34.6	11.2	
66,336	70.8	9.0	69,611	59.3	26.0	4.2	
89,571	68.8	5.5	111,174	63.7	20.7	1.5	
41,343	63.6	10.9	53,511	62.9	18.9	4.8	
201,103	66.9	6.6	260,692	62.8	19.3	2.1	
16,746	67.9	9.3	19,387	62.0	22.6	4.4	
44,205	66.8	6.0	56,228	64.4	19.1	1.5	
112,469	64.9	6.4	147,908	62.1	19.0	4.3	
28,948	64.7	6.2	36,944	65.1	17.1	1.4	
3,301	63.8	13.6	3,495	62.8	21.6	2.5	
27,223	64.7	5.3	40,256	64.6	15.3	6.1	
34,586	70.1	5.1	44,163	62.8	21.8	3.2	
80,472	62.8	4.4	137,873	64.3	13.1	2.7	
31,627	65.7	6.0	42,026	62.3	18.6	1.5	
49,109	65.9	5.5	49,401	66.8	11.4	8.9	
10,525	69.2	7.4	12,180	59.3	24.3	2.4	
1,173,108	64.6	5.3	1,656,554	65.5	14.7	1.5	
139,390	71.7	13.3	109,187	59.0	26.4	12.0	

Table A2. Trade

	Exports, percentage of GDP				
	Goods			Services	
	Consumption 2009-10 ^a	Intermediate 2009-10 ^a	Capital 2009-10 ^a	Traditional 2010	Modern 2010
EU15					
Austria	7.1	20.0	6.9	8.8	5.6
Belgium	22.4	44.8	7.2	8.1	9.9
Denmark	9.8	11.8	5.1	9.3 ^d	5.5 ^d
Finland	2.0	15.7	6.7	3.0	8.6
France	5.1	8.8	3.8	3.5	2.1
Germany	6.0	16.9	7.6	3.2	3.9
Greece	2.7	2.8	0.4	11.1	1.2
Ireland	20.4	27.3	5.0	4.3	43.2
Italy	6.2	9.7	3.8	2.6	2.1
Luxembourg	3.6	17.6	2.4	17.0	105.3
Netherlands	11.9	18.7	7.9	5.3	6.5
Portugal	6.7	9.9	1.7	7.5	2.5
Spain	4.9	7.6	1.7	5.6	3.1
Sweden	5.9	15.7	5.6	4.7	9.5
United Kingdom	4.0	8.1	2.3	3.1	7.4
European Free Trade Association					
Iceland	15.0	19.4	1.4	13.9	5.7
Liechtenstein	—	—	—	—	—
Norway	2.7	24.8	1.5	5.1	4.5
Switzerland	13.6	17.5	5.3	3.9	11.7
EU12					
Bulgaria	10.3	22.7	3.1	11.0	3.5
Cyprus	2.9	2.1	0.5	18.0	16.7
Czech Republic	9.8	34.3	13.1	6.7	4.5
Estonia	11.9	29.0	7.9	15.5	7.1
Hungary	14.7	31.6	17.4	8.3	6.4
Latvia	9.4	20.9	2.9	10.6	4.6
Lithuania	15.2	21.2	5.2	9.7	1.4
Malta	5.6	18.0	1.8	34.3	12.9
Poland	10.1	13.9	3.9	4.2	2.7
Romania	6.3	15.7	4.4	2.7	2.5
Slovak Republic	17.7	32.8	8.8	4.9	1.8
Slovenia	12.8	25.7	4.6	9.2	3.6
EU candidate countries					
Albania	4.5	8.2	0.2	16.4	2.2
Bosnia and Herzegovina	6.3	18.6	0.9	6.3	1.4
Croatia	4.6	8.7	3.9	15.4	2.8
Kosovo	—	—	—	7.5	3.3
Macedonia, FYR	11.6	7.0	0.6	5.8	4.1
Montenegro	—	—	—	22.0	2.7
Serbia	6.6	15.8	1.5	5.1	4.0
Turkey	5.2	6.6	1.6	4.3	0.3

Imports, percentage of GDP				
Goods			Services	
Consumption 2009-10 ^a	Intermediate 2009-10 ^a	Capital 2009-10 ^a	Traditional 2010	Modern 2010
8.8	20.6	5.3	6.3	3.4
18.8	45.8	7.3	8.8	8.1
8.2	11.0	4.4	8.9 ^d	4.8 ^d
5.2	15.5	3.7	4.4	6.7
5.7	11.6	3.3	3.1	2.0
5.9	16.6	4.5	4.5	3.4
6.1	9.6	3.2	4.7	1.8
8.2	11.6	4.6	4.8	47.6
4.8	13.8	2.4	2.6	2.7
8.2	14.6	4.4	12.6	55.3
9.6	19.2	6.3	5.3	5.6
8.2	17.0	3.4	3.9	2.3
5.6	12.0	2.3	3.0	3.2
6.9	16.1	4.5	4.9	5.4
6.6	10.7	3.2	3.7	3.6
7.3	15.3	3.8	9.5	7.8
—	—	—	—	—
4.3	8.1	3.7	6.3	3.9
10.5	14.8	4.7	3.8	3.8
9.6	31.1	5.8	5.7	3.7
11.7	10.3	4.4	10.8	2.7
10.4	38.7	9.7	4.7	4.7
13.4	27.9	7.4	8.7	5.3
8.9	37.8	8.2	5.7	6.4
12.6	19.3	4.9	5.8	3.4
13.1	39.0	6.4	6.2	1.3
15.6	19.5	7.4	10.2	20.6
6.5	18.6	5.5	3.4	2.8
6.5	22.2	5.3	3.2	2.5
13.1	47.9	9.2	5.1	2.7
11.2	29.2	6.0	4.8	4.2
11.4	18.2	3.8	14.7	2.3
14.4	29.4	5.1	2.6	0.8
8.3	17.2	4.4	2.5	3.1
—	—	—	7.0	4.0
11.1	22.1	6.2	4.8	4.0
—	—	—	5.4	4.2
6.4	21.8	4.2	5.7	3.3
2.3	14.2	3.9	1.8	0.6

	Exports, percentage of GDP				
	Goods			Services	
	Consumption 2009-10 ^a	Intermediate 2009-10 ^a	Capital 2009-10 ^a	Traditional 2010	Modern 2010
Eastern partnership countries					
Armenia	2.0	8.4	0.2	6.3	1.7
Azerbaijan	0.9	35.5	0.4	2.7	0.9
Belarus	8.4	17.8	5.8	6.6	1.6
Georgia	2.9	8.0	0.7	11.8	1.2
Moldova	15.8	9.4	1.3	7.2	4.0
Ukraine	5.7	26.2	3.4	8.8	3.3
North America and Oceania					
Australia	1.6	13.5	0.5	3.2 ^c	1.0 ^c
Canada	2.4	15.6	2.0	1.9	2.4
New Zealand	11.5	8.2	1.2	4.9	1.2
United States	1.1	4.4	1.5	1.4	2.1
East Asia					
China	7.4	9.6	7.8	1.6	1.3
Indonesia	3.3	17.3	1.3	1.4	0.8
Japan	0.6	7.1	3.3	1.2	1.4
Korea, Rep.	1.9	20.0	14.3	6.0	2.1
Malaysia	10.4	56.4	11.3	11.3 ^b	3.6 ^b
Philippines	3.1	17.2	6.6	2.3	4.7
Singapore	11.5	84.9	18.7	21.6	28.7
Taiwan, China	—	—	—	—	—
Thailand	13.7	30.1	11.9	8.2	2.4
Vietnam	30.6	23.8	4.9	—	—
Latin America					
Argentina	3.1	12.1	1.2	2.0	1.5
Brazil	1.4	6.7	0.8	0.5	0.9
Chile	6.3	25.1	0.4	4.0	1.2
Colombia	2.0	10.4	0.2	1.2	0.3
Mexico	5.6	12.8	6.6	1.3	0.2
Peru	2.7	18.6	0.1	2.0	0.4
Uruguay	8.1	8.5	0.2	4.8	1.3
Venezuela, RB	0.0	11.6	0.1	0.4	0.1
Africa					
Algeria	0.2	30.2	0.0	0.9 ^b	1.1 ^b
Egypt, Arab Rep.	3.3	7.2	0.1	9.7 ^b	1.6 ^b
Morocco	6.6	9.9	0.4	8.6	3.1
South Africa	2.0	14.8	1.7	3.0	0.8
Tunisia	13.1	16.4	1.9	10.5	1.8
Other					
India	3.9	6.1	1.1	1.8	6.2
Russian Federation	0.5	18.3	0.5	1.8	1.2

a. Data for the most recent available year. b. 2009. c. 2008. d. 2004. — = not available.