The EEAG Report

on the European Economy

Eleventh Annual Report

2012

THE EURO CRISIS

MACROECONOMIC OUTLOOK

THE EUROPEAN BALANCE-OF-PAYMENTS PROBLEM

BANKING REGULATION

COUNTRY REPORTS ON HUNGARY AND SWEDEN

PRICING CLIMATE CHANGE

EEAG
European Economic
Advisory Group
@ CESifo

The EEAG Report
on the European Economy
2012

EEAG
European Economic
Advisory Group **@** **CESifo**

FOREWORD

Recent developments in the euro crisis have cast a long shadow over Europe's future. The emergence of large intra-euro area imbalances and the loss of competitiveness by some euro area countries has resulted in exorbitant private and public foreign indebtedness. Spiralling deficits have triggered major cross-border capital flights from debtor countries, reflecting a loss of investor confidence in the sustainability of the euro area.

In its 11th annual Report on the European Economy, the European Economic Advisory Group at CESifo contributes to public debate over the crisis by analysing intra-European balance-of-payments imbalances as measured by the Target accounts. It discusses the difficult trade-off between short- and long-term risks faced by policymakers, and argues that the euro area cannot avoid a painful process of internal price level realignment to compensate for the missing possibility of external exchange rate adjustments. The Group advocates short-term liquidity help but rules out Eurobonds and other measures undermining investor liability, which would lead the euro area back to a system of excessive capital flows and current account imbalances. The Group reiterates its recommendation to policymakers to introduce the three-stage-crisis procedure described in last year's report.

As always, the report begins with an assessment of the current economic situation and a set of forecasts prepared by the Ifo Institute and complemented by the Group. Two chapters of the 2012 report focus on the current situation in individual euro area countries. In last year's report we analysed Greece; this year we focus on Sweden and Hungary. Sweden, on the one hand, offers a prime example of sound fiscal policies. Hungary, on the other hand, represents a country with deep structural and economic problems that remain largely unresolved. We include a chapter on the regulation of the banking sector, which also summarises the recommendations made in our earlier reports. These recommendations are now more pertinent than ever. The chapter on European energy and climate policy argues that a uniform price signal for carbon emissions is needed in the euro area.

The EEAG, which is collectively responsible for each chapter in this report, consists of a team of eight economists from seven European countries. This year, the Group is chaired by Jan-Egbert Sturm (KOF Swiss Economic Institute, ETH Zurich) and includes Lars Calmfors (Stockholm University), Giancarlo Corsetti (University of Cambridge), John Hassler (Stockholm University), Gilles Saint-Paul (University of Toulouse), Akos Valentinyi (Cardiff University), Xavier Vives (IESE Business School, Barcelona) and myself (Ifo Institute and University of Munich). The members participate on a personal basis and do not represent the views of the organisations they are affiliated with.

The EEAG Report
on the European Economy
2012

_____

CONTENTS

The outlook for the world economy is characterised by growing uncertainty primarily due to the current European debt crisis. The extent to which this crisis can be controlled is decisive for global economic growth in the forecast period. Assuming that any further escalation of the crisis can be prevented, growth should pick up slightly towards the end of the year.

This chapter explores the structural reasons for the current crisis in the euro area, looks at the resulting surge in private and public foreign indebtedness and closes by recommending the introduction of collateralised euro-standard bills that give countries access to low interest rates and can be used to settle ECB liabilities.

Why and how have banking regulatory mechanisms failed? After reviewing the crisis and its regulatory failures, this chapter examines on-going regulatory reform, competition policy and its interaction with regulation. It ends by considering reform of the EU's financial architecture and its regulatory framework.

Public finances have performed very strongly in Sweden. The chapter analyses how its fiscal framework has contained deficit bias. The main lessons are that fiscal transparency is more important than strict fiscal enforcement mechanisms and that growth-enhancing policies are an important complement to fiscal rules.

At the beginning of the 1990s Hungary was the front-runner in Central and Eastern Europe in terms of market reform, but has since fallen behind. What went wrong? This chapter's analysis points to inadequate policy responses to Hungary's deteriorating growth performance and labour market outcomes, and to the lack of a credible fiscal framework.

Climate change has given rise to a vast array of policies aimed at reducing the use of fossil fuel. This chapter discusses the arguments in favour of taxes and quantity restrictions on CO_2-emitting activities, especially on the burning of fossil fuel. It also analyses policies to subsidise technologies producing non-fossil based "green energy".

Authors: The members of the European Economic Advisory Group at CESifo

TABLE OF CONTENTS

RECOMMENDATIONS FOR EUROPE

Chapter 2: THE EUROPEAN BALANCE-OF-PAYMENTS PROBLEM

- **Introduce 'euro-standard' bills:** "Each country issues short-term treasury bills satisfying strict common standards, which are to be jointly supervised, so as to share the same risk profile. These bills would be collateralised with future tax revenue or real estate and standardised. Although each state would still retain full responsibility for servicing its own debt, in the new regime these nationally differentiated bills with strict common standards would trade within a few points from each other, providing the common financial asset for the ordinary operations of the ECB." (see page 79)

- **Settle Target balances:** "Systems that effectively discipline Target credits are good for the future ..." (see page 80)

Chapter 3: BANKING REGULATION

- **Promote European financial integration:** "Burden-sharing agreements for bank resolution are needed, as well as a European resolution and supervisory authority." (see page 91)

- **Give national central banks a supervisory role:** "Macro-prudential supervision should be led by the central bank and closely coordinated with micro-prudential supervision." (see page 91)

- **Redesign the euro area's financial architecture:** "A possible configuration of the euro area financial architecture along the lines of the new UK model would be to pull the European Systemic Risk Board and the European Banking Authority (and even the European Insurance and Occupational Pensions Authority) as a subsidiary under the wing of the ECB and keep a developed European Securities and Markets Authority independent." (see page 92)

Chapter 4: LESSONS FROM SWEDEN

- **Develop a culture of fiscal transparency and public debate:** "Well-defined fiscal objectives, fiscal transparency and a qualified economic-policy debate may be more important to fiscal discipline than binding rules and automatic correction mechanisms." (see page 113)

- **Frame budget decisions in the right way:** "A well-defined process for evaluating the scope for active tax and expenditure decisions may be of great importance". (see page 113)

- **Promote output growth to boost fiscal sustainability:** "High output growth greatly facilitates fiscal consolidation. In the long run this requires growth-enhancing reforms. In the short run, the ability to achieve large real exchange rate depreciation, stimulating net exports, is of paramount importance to open economies with serious competitiveness problems."(see page 113)

Chapter 5: LESSONS FROM HUNGARY

- **Decouple fiscal policy from election cycles:** "A fiscal policy that varies strongly with the election cycle may sufficiently increase uncertainty in an economy to have a negative effect on investment, which ultimately reduces total factor productivity and economic growth. Hence the creation of a fiscal framework that ensures prudent and sustainable fiscal policies is not only important to avoid financial crisis, but is also important to ensure sustained growth." (see page 128)

- **Set up independent fiscal watchdogs to ensure fair-play:** "The Hungarian crisis indicates that an independent national fiscal watchdog may be an important component of an effective fiscal framework." (see page 128)

- **Introduce stronger enforcement mechanisms:** "The European Union lacks mechanisms to enforce 'good behaviour' on the part of its member states in the short run. Hence actions undertaken by some member states may have negative spill-over effects on other members. Without enforcement mechanisms, it is hard to see how the European Union can handle a crisis the next time one occurs." (see page 129)

Chapter 6: PRICING CLIMATE CHANGE

- **Do not treat different renewable energy technologies inconsistently:** "Learning externalities may differ between different technologies, but are not large enough to motivate any substantially different treatment of them. Both different technologies and mitigation efforts, however, are currently treated inconsistently by individual EU member states. The European Union should swiftly harmonise these policies." (see page 145)

- **Promote mitigation and introduce a common CO_2-tax:** "A first and simple step would be to introduce a common CO_2-tax." (see page 145)

SUMMARY

2011 was a tough year for the world economy. While the United States struggled to avoid a double-dip scenario and growth in emerging economies slowed slightly (but remained robust), the euro crisis, which started with problems in Greece in 2010, continued to intensify, plunging many European economies back into recession. During the Great Recession in the winter of 2008/2009, most Western countries implemented massive fiscal and monetary stimulus packages to prevent the situation at the time from deteriorating. These policies paved the way for an extraordinary recovery in 2010, but also aggravated underlying fiscal and external imbalances, leading to a massive accumulation of government debt. This year's EEAG report focuses on the resulting crisis in Europe, which is much more than just a sovereign debt crisis.

Chapter 1 of the report discusses the immediate macroeconomic outlook for the global economy. Chapter 2 argues that the euro crisis was fundamentally triggered by major macroeconomic imbalances within the euro area. These imbalances hindered capital flows, while uncertainty surrounding the repayment of government debt and the mid-term economic prospects of individual regions triggered outright capital flight. With European monetary authorities injecting ample liquidity in favour of the banking system, massive capital flight has resulted in huge balance-of-payments imbalances. Risk premiums on government bonds have also risen to levels that are unsustainable for some countries. Chapter 3 analyses Europe's financial architecture. It highlights the need for proper banking regulation and a well-defined framework for crisis resolution in order to create a more stable financial system able to cope with future problems of a similar kind. Chapters 4 and 5 profile two very different countries, Sweden and Hungary, and highlight the lessons that can be learnt from current and past crises. Whereas many European countries may envy Sweden's fiscal discipline, recent economic policies in Hungary seem to bode ill for the country's future. Finally, Chapter 6 looks at the long-term crisis of climate change and argues that the cost of both emissions and abatement should be equalised across technologies, industries and regions.

Chapter 1: Macroeconomic Outlook

After recovering in the first half of 2011, global economic conditions have deteriorated considerably since. Europe in particular was forced to revise its growth expectations sharply downwards. By the end of the year the European sovereign debt crisis had spread to member states of the monetary union which were regarded as both liquid and solvent in spring 2011, and had even affected their private sectors. The threat of a massive escalation of the debt crisis has grown significantly. This could have disastrous consequences for the European banking sector. Any attempt to save domestic private banks would heavily strain the public finances of many European states and, in extreme cases, may even jeopardise their solvency.

The high level of uncertainty is negatively impacting financing conditions for banks and companies and looks set to lead to a deferral in consumption and investment. The poor financial situation of private households in some (mainly southern) European countries will continue to require a high level of saving, thus heavily restraining private consumption. Finally, fiscal policy will be very restrictive in 2012 due to high levels of public debt. The negative fiscal impulse to aggregate demand will be particularly strong in the euro-area countries most heavily threatened by the debt crisis (Greece, Portugal, Spain, Ireland, Italy and France). These economies (with the exception of Ireland) will shrink over the coming year.

The adverse effects of any escalation of the debt crisis would not be limited to the euro area, but would also destabilise both the banking sector and the general economic situation in other industrial and emerging economies. The crisis has already affected the economies of Eastern Asia, which have long been developing dynamically. The only ray of light in 2011 came from the US economy, which outperformed expectations last autumn.

Our forecast assumes that the debt crisis can be kept under control. After a tough winter in which several European countries will fall back into recession, a mild recovery will set in for the remainder of the year. The economic slowdown in industrialised countries is expected to slightly dampen economic dynamism in emerging countries. However, supported by both monetary policy, which has recently become more expansionary again, and by growing domestic demand, emerging economies will record significantly higher increases in output than their Western counterparts. Net exports may therefore make a positive contribution to growth in advanced economies and a negative contribution in emerging economies. An anticipated improvement in consumer and producer confidence in advanced economies during the second half of 2012 will stimulate the world economy slightly towards the end of the year.

Within the euro area, economic developments have become increasingly heterogeneous. Export-oriented countries in the North with relatively sound public finances and high international competitiveness (Germany, the Netherlands, Austria, Finland and Luxembourg) recorded above-average GDP growth. The economic recovery in countries with weaker public finances, like France, Italy, Spain and Belgium, on the other hand, tended to be sluggish. Given their fiscal stance, these countries have increasingly felt the distrust of financial markets. Greece, Ireland and Portugal, which are already receiving official help from the so-called "troika" (EU, ECB and IMF), even saw their recession deepen as a result of capital outflow and intensified fiscal consolidation efforts. The convergence process visible until the mid-2000s, whereby the poorer regions were catching up with their richer counterparts, has not only stopped; it has reversed. Domestic demand will be particularly weak in France, Italy and Spain and in the European periphery during 2012 because these countries are expected to perform major fiscal adjustments. Given the relatively sound fiscal situation in the Northern region of the euro area, the refinancing conditions for both the public and private sector are expected to remain favourable here. This should allow domestic demand to remain relatively robust.

Until recently, inflation was on the rise in almost all regions of the world, driven primarily by the hike in energy and food prices in the first half of 2011. In many emerging market economies inflation was increasing due to above-average capacity utilisation rates. In industrialised countries, on the other hand, rather sluggish domestic economies curbed price increases, allowing monetary policy to remain extraordinarily expansionary. The global economic slowdown and the gradual phasing out of inflationary pressures due to the increase in raw material prices in the first half of 2011 will reduce inflation in all regions of the world. Inflation will, however, remain significantly higher in emerging markets than in industrialised countries.

Chapter 2: The European Balance-of-Payments Problem

The euro area is currently suffering from a confidence crisis with mutually accelerating runaway processes. The true cause of its problems, however, lies in fundamental distortions that built up prior to the crisis, after interest rates converged in anticipation of the introduction of the euro. The investment boom and expansionary fiscal policy made possible by lower interest rates did create real convergence in Europe, as intended. However, it also induced rapid wage and price inflation in the periphery countries which deprived them of their competitiveness, created huge current account deficits and eventually called into question fiscal sustainability. From 1995 to 2008, the GIIPS countries (Greece, Ireland, Italy, Portugal and Spain) appreciated by 30 percent in real terms compared to their euro area trading partners. This resulted in substantial, and in some cases huge, current account deficits. With the exception of Italy, net foreign debt positions climbed to levels ranging from 86 percent (Ireland) to 105 percent (Portugal).

Once the US financial crisis swept over to Europe, the capital markets were no longer willing to finance these current account deficits and, in some cases, private capital flows even reversed. The reluctance of private capital markets to provide further financing caused the credit-driven bubble to burst and exposed balance-of-payments imbalances within the euro area.

Long before public rescue operations started in 2010, the ECB policy eased the situation with a generous provision of refinancing credit, replacing the missing private capital flows and compensating for capital flight with credit provided through the Eurosystem (ECB and the national central banks in the euro area). More specifically, the ECB policy implied that the national central banks of the periphery created and lent out financial resources that private creditors from other countries were no longer willing to provide, and basically financed most of the current account deficits

of Greece and Portugal in the years 2008–2010 at low interest rates. The Irish central bank also compensated for a huge capital flight of around 130 billion euros, while its Spanish counterpart financed around a quarter of the country's current account deficit. In August 2011 even Italy started to suffer from massive capital flight. Within just six months 190 billion euros left Italy in net terms, a sum that was replaced with refinancing credit provided by the Banca d'Italia.

This refinancing credit to the GIIPS countries was merely compensating for the money seeping away to other euro-area countries. In the receiving countries the abundant liquidity reduced refinancing credit or was lent back to the respective central banks. So the entire process brought about no change in the aggregate money supply for the euro area as a whole: the flows in and out of the individual countries were automatically sterilised by the commercial banks' borrowing from (or lending to) their respective national central bank. The counterpart to all these transactions is that claims and debts have built up between the national central banks within the Eurosystem, with the central banks in countries with balance-of-payments surpluses effectively acquiring net claims on the central banks of countries with deficits (formally the surplus countries' central banks acquire claims on the ECB, which in turn acquires claims on the deficit countries' central banks within the intra-Eurosystem payments system referred to as *Target*). The credit flow between the national central banks was so large that the Bundesbank became a net debtor of the German banking system.

Rebalancing the euro area in the long term calls for an internal realignment of price levels. Essentially, the GIIPS countries have to deflate and/or the core countries have to inflate to reduce the current account imbalances. Both courses of action, however, are fraught with difficulty. Politically, it seems impossible to convince Germans, who once suffered hyperinflation, to accept the inflation alternative; yet the GIIPS countries will also have a hard time deflating, given that the real burden of public and private debt may become unbearable.

To rebalance the euro area in the short-term, measures must be taken to stop capital flight. Prima facie a potential measure could be Eurobonds, as they counter easy access to ECB refinancing credit with a cheap, long-term source of finance for governments. However, by eliminating interest differentials, the Eurobonds would relinquish the only equilibrating

force the euro area possesses to limit excessive capital flows and current account imbalances. Eurobonds would bring the euro area back to the dis-equilibrating growth pattern it experienced in the years preceding the crisis. Short-term stabilisation can therefore only be achieved in this way at the price of long-term destabilisation. Indeed, introducing Eurobonds would prevent the internal European realignment process from taking place.

The only way to combine short- and long-term stabilisation needs is via recourse to market-oriented interest rates, which reflect both risk and maturity. While government bonds satisfy this criterion, the ECB's refinancing credit does not, given that the ECB charges a uniform interest rate. This distorts the demand for short-term credit and, in a crisis situation, feeds large capital flights. To address this problem, the euro area could proceed immediately by creating what we call *Euro-standard bills*. These would be bills issued by the respective local governments and collateralised with government property or future tax revenue according to a set of common euro-area rules, giving them a senior status relative to other kinds of government finance. If such bills were available, the ECB could better distinguish between monetary and non-standard operations. If they were used to annually redeem the intra-Eurosystem Target debt, countries would no longer have an incentive to draw excessive refinancing credit, because ECB credit would ultimately reflect market conditions. Euro-standard bills, of course, would not preclude the use of liquidity interventions to manage the crisis.

Systems that effectively discipline Target credits are a good idea in the long-term as they make support decisions more transparent and discretionary, but their potential implications in the short-term are less clear. If the ECB were no longer to offer credit at below-market interest rates to countries facing capital flight, monetary conditions in these countries would be more restrictive, reducing overall demand and arguably increasing the fragility of the banking system. However, providing incentives to slow down, or even reverse, capital outflows from crisis-hit countries is a necessary ingredient of a comprehensive strategy for overcoming the crisis.

The situation in the euro area has been allowed to develop into such a deep crisis that no easy solutions exist; we are left instead with very difficult trade-offs. Providing large-scale help to the crisis-hit countries may avert an immediate financial crisis, although it

may also slow down the necessary realignment of price levels and prolong current account imbalances. However, it entails large risks if liquidity problems turn out to be solvency problems, as these will imply losses for the taxpayers in the countries footing the bill. The losses could lead to a political reaction in these countries that may undermine the viability of the euro in the long term. By the same token, internal devaluations in the crisis-hit countries will be both long and painful, and may stir up political resentment towards the European Union. Although the consequences are difficult to predict, any exit from the euro by a crisis-hit country such as Greece could speed up adjustment in that country, but is likely to increase the pressure on others. Closer fiscal integration is a way of enabling massive support to crisis-stricken countries, but this is not delivered by the fiscal compact, and political support for outright transfers between countries is unlikely to be gained in the foreseeable future.

It is impossible to predict how the euro crisis will develop. Our hope is that the euro area will be able to 'muddle through,' but we fear that the process will be long and painful at best. At worst, policymakers will face a situation whereby they have to choose between massive interventions, which could prevent an immediate financial crisis, but may lead to the euro's demise in the long run because of their political ramifications; and adopting a stricter stance, which could be viable in the long run, but may intensify the financial crisis and deepen economic distress in the short-term.

Chapter 3: Banking Regulation

The magnitude of the crisis, which originated in the problems with subprime loans in 2007, became systemic in the wake of the collapse of Lehman Brothers in September 2008, and took another systemic turn with the emergence of sovereign debt problems in Europe. It has uncovered severe weaknesses in the regulation and supervision of financial entities and has thrown a spotlight on financial regulatory reform.

Why and how have regulatory mechanisms failed? Have there been new market failures? What can be learnt from the crisis? Does it have direct implications for the financial architecture of the European Union and the euro area?

We think that regulatory reform should be based on a few basic principles:

1. A central regulatory body (such as the central bank) should have a mandate to maintain financial stability and be in charge of macro-prudential supervision.
2. Monetary policy is not the appropriate tool with which to recapitalise banks.
3. Regulation and supervision should encompass all entities that carry out banking activities.
4. Expected losses of liabilities guaranteed by the government should be covered by a risk premium determined by the market dependent on the risk assumed by the entity. Banks under the protection of the safety net need to limit their range of activities because of market hazard.
5. Institutions that play a key role in the financial system (where the Too-Big-To-Fail doctrine is applied) should be regulated so that they internalise the potential external effects of their bankruptcy. Regulatory standards should be uniform and accompanied by internationally coordinated supervision.
6. A fragmentary approach to financial regulation does not work. It is necessary to consider capital and liquidity needs and the degree of market liberalisation.
7. It is necessary to establish mechanisms to prevent delay of the supervisor's intervention while the balance sheets of financial institutions deteriorate and capital declines (regulatory forbearance).

Regulation faces the challenge of making the financial system more robust without hindering development, while protecting public interest and innovation and preserving globalisation. We see no contradiction between the stability of the financial system and economic growth, which is a crucial issue given the key role played by the financial system in economic growth. The financial sector needs to restore investor confidence, rebuild its reputation and adapt to the new and stricter regulatory atmosphere created as a result of the impression that the sector enjoyed excessive returns from taking excessive risks in the past. On balance, the reform process seems to be on the right track, with increased capital and liquidity requirements as well as more centralised trading arrangements for derivatives markets, although we shall have to await its implementation to assess its effectiveness. In the euro area with its single currency and many sovereigns, however, the wisdom of giving sovereign debt a zero weighting when calculating a bank's risk exposure is questionable. Proper risk weights for sovereign debt should be used to improve the accuracy of such calculations.

In EEAG (2003), Chapter 4, we argued that there were at least three basic problems with the financial architecture in the euro area. Firstly, we argued that the existing arrangements might not be adequate for financial stability. Secondly, the arrangements hindered European financial market integration to a large extent; and thirdly, they weakened the competitiveness of EU financial markets and institutions. We stated that: "The present gradualist approach may yield more costs than benefits in the long term and may end up proving ineffective. It would be better not to wait for a major crisis to strike in order to put the house in order." Now that a major crisis has occurred, where does this leave us? In our 2003 report we highlighted the need for clear procedures in the case of crisis lending and crisis management led by the European Central Bank and to establish clear principles guiding fiscal help by a transnational institution. We advocated more centralised supervisory arrangements in banking, insurance and securities in both the mid and the long-term.

The need to reform the European Union's financial architecture is now pressing due to persistent banking problems related to the sovereign debt crisis. The euro area should be stabilised with a credible liquidity facility for solvent sovereigns facing speculative attacks, and with a restructuring facility for insolvent countries. Furthermore, its financial architecture must be completed. The ECB should explicitly assume the function of guarantor of the system (in terms of liquidity provision to banks) and wield sufficient supervisory powers over systemic institutions and exert macro prudential control. It would also be advisable to forge closer links between the European prudential authority and the European System of Central Banks (ESCB). A formal framework of crisis resolution should be established and the chain of command in a crisis situation needs to be clearly identified, with the ECB at its centre. Furthermore, burden-sharing agreements for bank resolution have to be put in place together with a European resolution authority, and accompanied by a European deposit insurance fund for cross-border institutions.

Chapter 4: The Swedish Model

During the current economic crisis Sweden has stood out among the EU countries for its strong public finances. At the trough of the recession in 2009 Sweden had the smallest fiscal deficit of all EU countries, totalling only 0.9 percent of GDP. In 2011 Swe-

den even boasted a small fiscal surplus. At the end of the year, consolidated gross government debt was only 37 percent of GDP and the general government sector had a positive net financial worth of 22 percent of GDP. The yield on Sweden's long-term government bonds has fallen below that of Germany as a result.

The main explanation for Sweden's superior fiscal performance is that the country entered the economic crisis in 2008 with much stronger public finances, and has suffered less than other EU states during the crisis.

Sweden's sound public finances in recent years contrast starkly with its situation in the early 1990s, when Sweden suffered a deep economic crisis similar to that currently affecting Ireland and Spain. Its fiscal deficit reached 11 percent of GDP in 1993, while consolidated gross government debt totalled 73 percent of GDP in 1996. The crisis triggered a tough fiscal consolidation programme, which turned the deficit into a surplus in 1998. The government debt-to-GDP ratio has been steadily decreasing since the mid-1990s.

The fiscal crisis of the 1990s forged a broad consensus in Sweden that its fiscal house must be kept in order in the future to prevent the country from ever ending up in a similar situation again. This consensus was codified into a strict fiscal framework. It consists of the following pillars:

1. A top-down approach for the adoption of the budget in Parliament. Once a decision has been taken on overall government expenditure and its allocation between different expenditure areas, an individual expenditure item cannot be raised unless some other expenditure item within the same area is reduced correspondingly.
2. A surplus target for the fiscal balance whereby general government net lending should total 1 percent of GDP over a business cycle.
3. A ceiling for central government expenditure, which is set at least three years in advance.
4. A balanced budget requirement for local governments.
5. A pension system designed to guarantee long-term sustainability as contributions, not benefits, are defined.
6. A system whereby the government budget is monitored by a number of government agencies, which most recently include a Fiscal Policy Council with special provisions to safeguard its independence.

In addition, the framing of fiscal policy decisions probably contributed to increased budget discipline. The budget process is based on an evaluation by the Ministry of Finance of the so-called scope for reforms. It is defined as the total sum of tax decreases and expenditure increases which can actively be decided by the Parliament and which are compatible with the fiscal surplus target. The *scope-for-reform* estimate forms the basis of the government's internal budget negotiations. In recent years, it has also been accepted by the opposition parties, which have kept their budget proposals within the limits of this estimate.

On the whole, fiscal rules have been respected in Sweden. However, this is not because they are exceptionally stringent. There are no strong commitment devices or sanction mechanisms in the case of violations of the rules. There are no stipulations that past deviations from the fiscal balance target must be compensated for in the future, as is the case with the Swiss and German debt brakes and as is now envisaged as a general principle to be adopted by all countries in the euro area according to the new European fiscal compact. Instead, the Swedish system relies to a large extent on a high degree of fiscal transparency. This seems to impose high reputation costs on governments that renege on their own targets. It also means that voters have access to good information on fiscal policy, making it easier to hold politicians accountable.

It nevertheless remains difficult to assess the extent to which Sweden's recent favourable fiscal performance depends on its fiscal framework, and the degree to which its fiscal performance (and fiscal framework) is a consequence of the political consensus on budget discipline that emerged in the wake of the 1990s crisis. It is probably tempting to assign too much credit to the fiscal framework and too little to the psychological and political change of mind-set that is perhaps reflected in the absence of reforms to the fiscal framework since the 1990s.

It is also true that good fiscal performance does not depend entirely on decisions in the fiscal sphere. General macroeconomic conditions are also crucial. Fiscal discipline is much easier to achieve with high output growth than with a stagnating economy both in the short and in the long run. Sweden's budget consolidation in the 1990s was greatly facilitated by a large real exchange rate depreciation that raised both net exports and output. The real exchange rate depre-ciation was achieved by large currency depreciation, an option not available to the crisis-stricken countries in the euro area. Sweden's strong fiscal performance after the consolidation phase was also supported by higher growth levels than those seen in the other large EU economies, or than in Sweden itself previously. Factors like comprehensive tax reform in the early 1990s, extensive and early product market deregulation, a high level of R&D expenditure and wage bargaining reforms have probably contributed to Sweden's good growth performance over the last fifteen years.

The Swedish fiscal experiences suggest the following lessons for other countries:

- A deep fiscal crisis may help to create a broad and long-lasting consensus on the merits of budget discipline.
- Well-defined fiscal objectives, fiscal transparency and a qualified economic-policy debate may be more important to achieving fiscal discipline than binding rules with strong formal enforcement mechanisms.
- The framing of budget decisions, and specifically a well-defined process for evaluating the scope for active tax and expenditure decisions, may be of great importance.
- Budget discipline does not only depend on decisions within the fiscal sphere. Output growth is crucial. Growth-enhancing reforms may be necessary to raise long-run growth. In the short run, the ability to achieve a substantial real exchange rate depreciation that stimulates net exports is of paramount importance for economies with serious competitiveness problems.

Chapter 5: The Hungarian Crisis

Hungary was the frontrunner of market reforms among the former socialist countries in Central-Eastern Europe, gradually liberalising its economy in the 1980s. At the beginning of the 1990s, it seemed to be in the best position to converge fast with the European Union in terms of both income levels and institutional quality. However, this convergence has stalled since 2005. An expansive fiscal policy and the accumulation of a large external debt prior to the global economic crisis in 2008 made Hungary one of the most financially vulnerable countries in Europe. Moreover, recent policy measures aimed at improving the fiscal balance and the financial position of private

households have tended to undermine, rather than strengthen, the security of property rights and private contracts. By the end of 2011 Hungary once again was financially vulnerable and asking for help from the IMF.

Hungary posted relatively rapid growth in terms of GDP per capita between 1995 and 2004. During this period Hungary was keeping up with its Visegrad peers (The Visegrad Group is an alliance of four Central-Eastern European states: the Czech Republic, Hungary, Poland and Slovakia, formed in 1991 for the purposes of cooperation and supporting their European integration) and was converging to the old EU countries in terms of GDP per capita. However, since 2005 it has been growing more slowly than its peers and no longer appears to be converging to the old EU countries. Breaking down Hungarian growth into various factors reveals that its total factor productivity (TFP) has been growing at a relatively slow pace since 1995. Only faster capital accumulation and increased hours worked made Hungarian growth comparatively respectable. Unless TFP picks up, we expect Hungary to eventually diverge from the rest of Europe as margins of convergence through hours worked and capital accumulation are gradually exhausted. Weak investment levels in recent years suggest that this process has already started.

Labour market trends also suggest that Hungary is different from the other Visegrad countries. It has a comparatively low employment-population ratio. This low ratio can be explained by both labour demand factors (higher labour-related taxes make it expensive for firms to hire) and labour supply factors (an excess supply of unskilled labour and a generous pension and benefit system that allows individuals to drop out of the labour force).

Unlike its peers, Hungary has been subject to the EU's excess deficit procedure ever since it joined the European Union in 2004. Between 2002 and 2010 the general government's deficit either exceeded or was close to 5 percent of GDP. In addition, Hungary's fiscal policy is characterised by a strong election cycle, which was only broken by the financial crises in the run-up to the 2010 election. This policy has repeatedly led to rapid debt accumulation followed by a large fiscal correction before the cycle of debt accumulation started again. These developments clearly indicate that Hungary's fiscal institutions are weak. Successive governments have been unable to commit to a sustainable fiscal policy. Hungary has experimented with

several institutional set-ups since 2008. It established an independent fiscal council with its own staff to provide forecasts and monitor fiscal expenditure in a detailed and transparent way. However, when this council criticised the government's 2011 budget proposal, it was replaced by a three-member panel with a remit limited to merely expressing its broad opinion on the budget bill. A limit on public debt is now also enshrined in the constitution. Without independent forecasts and analyses of fiscal policy, however, it is unlikely that the new institutional arrangements will eliminate the election cycle and ensure that fiscal policy becomes sustainable.

The financial crisis of 2008 hit Hungary early on, obliging the country to request IMF assistance in late October 2008. Hungary's high public and external debt positions made it financially very vulnerable. Its fiscal behaviour in the past explains why public debt was so high. External debt was mainly driven by heavy international borrowing prior to 2008 by Hungarian banks, which offered loans denominated in foreign currency both to households and firms. This borrowing in foreign currency led to the build-up of a sizeable unhedged foreign liability position in the balance sheet of households and firms. These liabilities were largely denominated in Swiss francs and, to a lesser extent, in euros. Between September 2008 and March 2009 the Hungarian currency depreciated by 26 and 33 percent vis-à-vis the euro and the Swiss franc respectively. By November 2011, the depreciation vis-à-vis the Swiss franc had reached 66 percent compared to September 2008, putting a significant strain on many balance sheets. It will take time for the balance sheets of both households and firms to recover. Until then, economic growth in Hungary is likely to remain subdued.

The centre-right government of Hungary, which won a two-third majority in parliament in spring 2010, has embarked upon a series of unconventional economic policies. It has introduced taxes on financial institutions, which are much higher than similar taxes proposed in Europe. The government has also only levied crisis taxes on sectors dominated by foreign-owned firms. Another of its new policies was the introduction of a flat personal income tax rate of 16 percent, accompanied by an increase in other taxes on labour, and nationalised private pensions to plug the hole in fiscal revenues created by the flat tax. The government has also unilaterally changed the private loan contracts between banks and households to ease the strain on households' balance sheets caused by bor-

rowing in foreign currency before the crisis and by large-scale Hungarian currency depreciation since then. These measures have created new distortions across sectors, while undermining fundamental institutions such as private contracts and property rights. Such measures are unlikely to prove conducive to long-term growth.

Overall, low TFP and investment growth, combined with the lengthy process of repairing corporate and private household balance sheets and the new government's distortionary policies, suggest that Hungary will experience relatively slow economic growth in the years to come.

Chapter 6: Pricing Climate Change

Burning of fossil fuels is the main cause of climate change. By burning the carbon content of fossil fuel, carbon dioxide is produced and quickly spreads into the global atmosphere. This increases the greenhouse effect, thereby changing the earth's energy balance. Concern over the negative consequences of climate change has led to a large array of policy measures aiming at reducing fossil-fuel consumption.

Europe remains heavily dependent on fossil fuels. Over the period 1990–2008, the share of fossil fuels in total energy consumption fell only modestly, from 83 percent to 77 percent. Renewable energy production has increased at a fast rate, but nevertheless contributed a mere 8.4 percent to total energy consumption in 2008. These average values mask substantial variations between countries. The share of renewable energy in Sweden was 32 percent in 2008, for instance, while in the United Kingdom it totalled 2.6 percent. Making Europe fossil-fuel independent is a formidable task; indeed even satisfying the 20 percent target share of renewable energy in 2020 poses major challenges. Cleverly constructed policy measures are required to meet that target. Current policies, however, leave a lot of room for improvement.

Firstly, it is far from clear that policies to reduce demand for fossil fuels in the European Union have any effect at all. Indeed, such policies are likely to reduce the world market price of fuels, thereby boosting consumption (leakage) in other regions of the world. Furthermore, policies that speed up the arrival of alternatives to fossil fuels may also speed up the extraction of low-extraction-cost oil at the very least – a mechanism which has been labelled "The Green

Paradox" (see EEAG (2008), Chapter 5). The main threat to the climate, however, is not low-extraction-cost oil, but coal. If all of the world's oil supplies were to be burned, the ensuing climate change would most likely be moderate. That is not the case with coal. The fact that coal has a fairly high extraction cost relative to its price mitigates the green paradox and the leakage effects.

Secondly, emission of CO_2 from fossil fuel is an externality that is independent of the source. Therefore, policies to reduce fossil fuel use should neither discriminate between different uses nor between users in different countries. In reality, however, discrimination is the rule in Europe. The law of one price for emissions should instead apply, equalizing the cost of emissions as well as of abatement across technologies, industries and regions. In accordance with many studies on the subject, we show that the externality cost incurred by burning fossil fuels has a likely value of between 10 and 100 euros per ton of CO_2. To pin down a more exact number, value judgments about the subjective discounting of future generations must be made.

Thirdly, the current system of emission rights leads to business cycle variations in the price of emissions – high current demand drives up prices and vice versa. The fact that potential damages induced by emitting carbon are very long-lived implies that damages are not likely to depend on current business cycle conditions. Business cycle variations in the price of emission rights are therefore a sign of inefficient policies. A system to stabilise these prices within a range that takes account of reasonable estimates of the externality cost should therefore be considered.

Fourthly, if climate externalities are internalised by taxes or quotas, arguments can be made for special subsidies to technologies with learning externalities. However, we show that current estimates of such learning externalities appear far too small to motivate the major differences in subsidies across different technologies that plague European energy markets. In particular, the feed-in tariffs that make it several times more profitable to reduce emissions by solar panels on private houses than to use large off-shore wind power farms, for example, are costly and probably hinder rather than foster a shift towards reducing dependency on fossil fuels.

EEAG (2012), *The EEAG Report on the European Economy*, "Macroeconomic Outlook", CESifo, Munich 2012, pp. 17–55.

Chapter 1

MACROECONOMIC OUTLOOK

1.1 Introduction

Global economic conditions have deteriorated considerably since summer 2011. Europe in particular has been obliged to revise its growth expectations sharply downwards. The debt crisis and its consequences have stifled demand worldwide, even impacting regions that have long been developing dynamically, like East Asia. The only recent ray of hope came from the US economy, which outperformed forecasts last autumn. Overall, the world economy is expected to expand at a slower pace during the winter of 2011–2012 and to recover tentatively over the rest of the year. This forecast is based on the assumption, however, that the debt crisis in Europe will not worsen.

After a recovery period in the first half of 2011, the state of international capital markets has deteriorated noticeably since last summer. A substantial increase in uncertainty has caused the world's biggest stock markets to record significant losses. Demand for private and public debt securities fell particularly sharply in many European countries in autumn. With investors increasingly shying away from certain regions of the euro area, a large proportion of private capital flows have moved towards countries considered "safe havens", such as Japan and Switzerland. Accordingly, the yen and the Swiss franc have been subject to strong upward pressure since mid-2011, only eased by the intervention of the respective national central bank in both cases. In addition, the health of the banking sector, particularly in the euro area, has deteriorated markedly in the last few months. Hence, quotations for credit default swaps for loans issued by private banks from Europe, but also from the United States, shot up in autumn 2011. This reflects growing concern about the solvency of many financial institutions, which could suffer in the event of a further escalation of the European debt crisis. The outlook in the internal banking market in the euro area and, to a lesser extent, in the United States has grown increasingly bleak. So the widening spreads between the yields on secured and unsecured interbank lending indicates a growing distrust among banks.

In the second half of 2011, the European sovereign debt crisis spread to some member states of the monetary union, which had still been regarded as liquid and solvent in spring. Since summer 2011, the Italian government and, to a lesser extent, the French government, have come under increasing pressure due to rising refinancing costs. Thus, the danger of a further massive escalation of the debt crisis has risen significantly, since a liquidity crisis, or indeed a solvency crisis in Italy could lead to the collapse of many Italian banks. This would have disastrous consequences for the entire European banking sector. The attempt to save domestic private banks would heavily strain the finances of many European states and, in extreme cases, it would also jeopardise their solvency. France, in particular, would be affected by this event, since its private banks hold relatively high stocks of Italian government debt. Moreover, the size of the Italian economy means that it will be virtually impossible for the politico-economic solution which has been applied to date, namely the euro area EFSF bail-out fund, to absorb a possible liquidity or solvency crisis in Italy. Finally, the adverse effects of a worsening of the debt crisis are unlikely to remain limited to the euro area, but will probably also destabilise the banking sector, along with the economic situation of other industrial and emerging economies.

The forecast presented here is not based on a crisis escalation scenario. It assumes that the debt crisis remains under control and that, after a tough winter in which several European countries fall back into recession, a mild recovery can set in over the course of the year. Growth in world trade, which halved last year, dropping from 12 percent in 2010 to 6 percent in 2011, will be even weaker this year at a level of around 4 percent.

1.2 The current situation

1.2.1 The global economy

The speed of global economic growth has slowed in the past few months. Since mid-2010 there has been a

Figure 1.1

Trade and industrial production in the world[a]

a) Three months moving average.

Source: CPB Netherlands Bureau for Economic Policy Analysis, World Trade Monitor: November 2011.
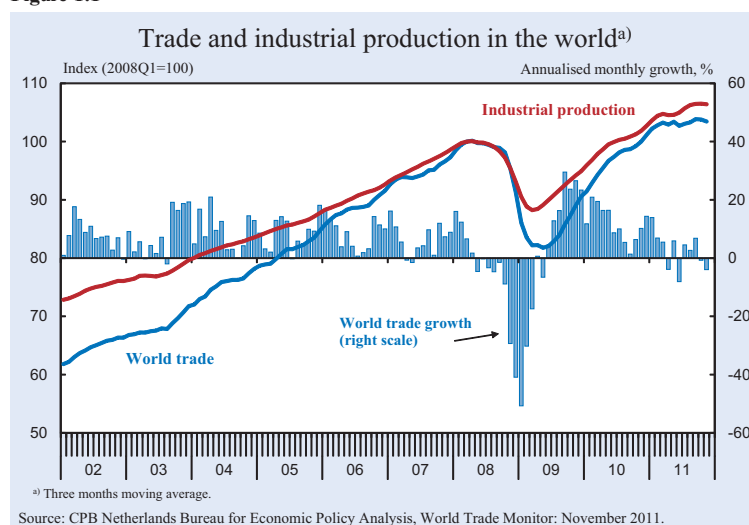
noticeable downward tendency, due not least to economic policy becoming more restrictive just about everywhere, as well as to the mounting debt problems besetting many advanced economies. The escalation of the debt crisis last summer was of particular importance to the European economic situation. In Japan the earthquake followed by a tsunami on 11 March causing the largest nuclear accident since Tschernobyl in 1986 also took its toll on the world economy. Global industrial production stagnated during spring and has increasingly been losing momentum since autumn 2011 (see Figure 1.1). World trade faltered throughout last year as a result and has not been as energetic as in winter 2009/2010.

The results of the Ifo World Economic Survey also show that the recovery phase witnessed from the second half of 2009 to the first half of 2011 has ended in

Western Europe. The indicators for most regions have fallen and are now, with the exception of Latin America, below their neutral levels (see Figure 1.2). In the emerging economies of East Asia, which are still expanding at rates well above average, the Ifo World Economic Survey has been pointing downwards since summer 2011.

The slump in sentiment reflects the drastic increase in uncertainty in autumn 2011 regarding the outlook for the world economy. Financial market volatility indices, which have risen substantially since August, also confirm this sentiment. Over the forecast period, uncertainty may prove one of the key burdens on economic activity: in an environment perceived to be risky, private purchasing and investment decisions often tend to be postponed. Moreover, risk premiums on private and public debt certificates are rising, which means that the financing conditions for companies and public budgets are deteriorating as a result.

The increase in uncertainty is due to several factors, some of which are, of course, mutually reinforcing. The massive slump in sentiment is primarily due to the failure to find an effective solution to the debt crisis in the euro area.

The crisis escalated in August 2011, when the markets lost confidence in the Italian government's commitment to implement the necessary austerity measures and structural reforms. Since then, not only have the rates of Italian government bonds come under growing pressure, but the risk premiums on Spanish and French government bonds have also increased significantly, not least because these countries are comparatively closely connected to Italy through the goods and services markets, as well as through their banking sectors. Consequently, the debt crisis has turned into a Europe-wide banking and economic crisis, which is also seri-

Figure 1.2

Ifo World Economic Survey
Economic situation

Source: Ifo World Economic Survey I/2012.
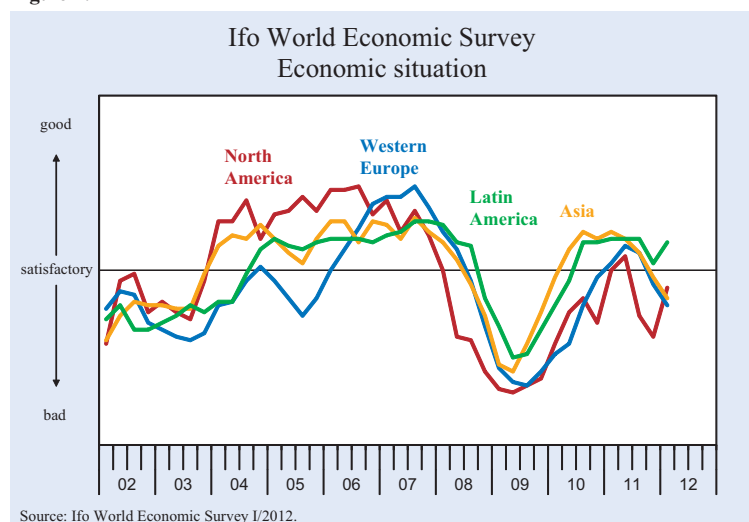
ously damaging other regions of the world by causing volatility in the financial markets to increase dramatically, for example.

Neither the summit meetings of high-ranking European politicians that took place throughout autumn 2011, nor the decision taken on 26 October 2011 to increase the EFSF euro area bail-out fund, which was combined with a "voluntary" partial debt cut for Greece, have reassured the markets. The ultimate success of the EFSF leveraging remains uncertain. Moreover, it is possible that the bail-out fund will prove too small should larger countries such as Spain or Italy fall into a liquidity crisis. Finally, it remains to be seen whether the tightening of fiscal consolidation measures announced by many member states of the euro area in autumn 2011, and the introduction of the national debt limits decided upon at the summit meeting held at the beginning of December, will actually be implemented with the intensity promised – and whether they will lead to the desired results.

In addition to the European debt crisis, unsuccessful political debate to date concerning the future politico-economic path of the United States has also increased uncertainty among households and firms. The super-committee that convened in autumn 2011 could not reach a consensus on a plan for reducing US national debt, which has become overwhelming. From 2013 onwards, an emergency mechanism is supposed to set in, which will allow for automatic cuts, especially to the defence, infrastructure and education budgets. However, the lifetime of this mechanism is extremely uncertain. From a consumer and producer perspective, the reliability of any long-term planning is correspondingly low.

High public sector debt in many countries makes the implementation of extensive measures to support the banking sector or to stimulate the economy almost impossible. Furthermore, current interest rates are at a very low level in almost all advanced economies, which also severely restricts the scope of central banks to take action.

Beyond the global increase in uncertainty, the economic slowdown that has occurred since

summer 2011 was also caused by forces specific to certain groups of countries. Both private and public debts are heavy burdens to the recovery of domestic demand in the majority of advanced economies. First of all, private wealth in the United States as well as in some European countries, dropped after the real-estate speculative bubble burst. This, in turn, slowed down private consumption and stopped it from becoming a primary pillar of economic recovery after the fiscal stimulus packages had run their course. Secondly, the governments of many industrialised countries are now obliged to tighten their financial reins in view of high and, in some cases, rapidly growing public debt. The need for consolidation is, at the same time, particularly urgent among the member states of the euro area. In Europe, severe austerity programmes have led to a sharp drop in private consumption and investment spending, leaving Greece and Portugal in recession. Japan was the only country to postpone much-needed consolidation programmes for a while as a result of the natural and nuclear disasters in March 2011 and replace them with an extensive reconstruction programme.

In emerging markets the policy stance also became more restrictive in the first half of 2011, which has dampened credit expansion as well as private demand. This was, however, not due to pressure from financial markets pushing for fiscal consolidation. It resulted from the combination of monetary policy tightening (China, East Asia and Latin America) and various restrictions on capital inflows and lending (China and Brazil), reflecting attempts on the part of the authorities to counteract impending economic overheating. High credit demand, along with strong increases in raw material prices over the winter 2010/2011, signifi-

Figure 1.3

Inflation in the world and oil price movements

Source: International Monetary Fund, International Financial Statistics, last accessed on 29 January 2012.
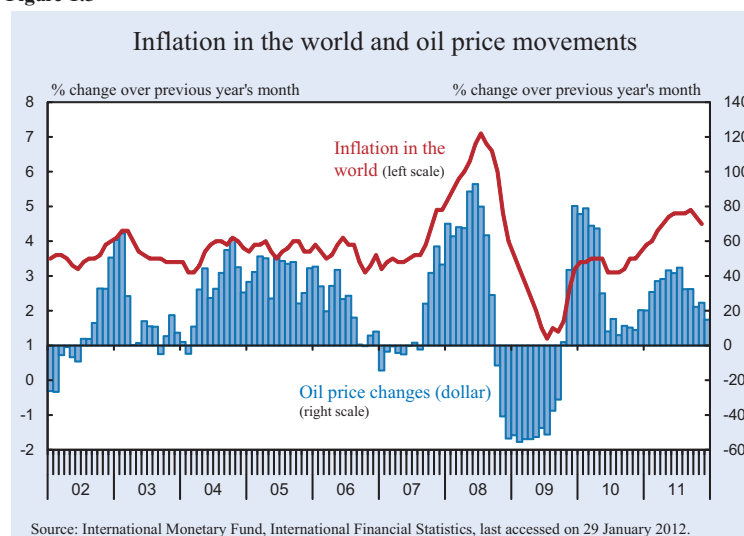
cantly accelerated the inflation rate in these emerging economies.

Until recently, the inflation rate was on the rise in almost all regions of the world. The hike in energy and food prices in the first half of 2011 was a significant factor in this development (see Figure 1.3). In many emerging market economies, the rate of inflation was accelerated by above-average capacity utilisation rates. This is also the reason why monetary policy in Latin America and in Asia has swung to a more restrictive course. In industrialised countries, by contrast, rather sluggish domestic economies have had a dampening effect on prices, allowing monetary policy to remain extraordinarily expansionary.

1.2.2 United States

In summer 2011, concerns about economic performance in the United States made the headlines – there was even talk of a return to recession. This was triggered by a downward revision of economic data for the first six months of 2011. The country was suddenly on the brink of stagnation, after previous reports of modest growth. The fear of another downturn sent stock markets tumbling. The Dow Jones Index lost 2,000 points, i.e. 16 percent in a few days between the end of July and the beginning of August.

However, the economic recovery in the United States regained momentum in the second half of last year. In the third quarter, real gross domestic product (GDP) increased by an annualised 1.8 percent (see Figure 1.4). Thus, the risk of a renewed dip into reces-

sion appears to have been averted for the time being. It was, however, a major concern until a few months ago as a result of a marked economic slowdown at the beginning of 2011, and on the grounds of the party dispute regarding raising the US debt limit.

Consumption, which was weakened by supply problems in the automotive sector following the Fukushima disaster in the second quarter, grew at an annualised rate of 1.7 percent and contributed a significant 1.2 percentage points to the GDP growth rate in the third quarter of last year (see Figure 1.5). Consumption of durables recorded the strongest rise.

For budgetary reasons, the latest positive trend in consumption also looks as though it may prove short-lived. Income growth has been smaller than consumption growth in the past few months, causing the household saving rate (in relation to disposable income) to decrease to 3.5 percent in November, versus 5 percent at the beginning of 2011. Given the high indebtedness of the private sector, as well as the ongoing crisis in the property market, any further decline in the saving rate would not appear to be sustainable.

Investments – mainly by large manufacturers – increased substantially in the third quarter of 2011: investments in equipment and software rose by an annualised 16.2 percent and non-residential construction increased by 14.4 percent. These increases, however, have presumably been inflated by anticipatory effects since the opportunity to obtain additional capital allowances expired at the end of last year. A lot of firms evidently did not wish to miss out on this opportunity and brought forward their investment plans.

Figure 1.4

Contributions to GDP growth[a)] in the United States
Seasonally adjusted data

Real GDP growth

□ Change in inventories
□ Foreign balance
□ Final domestic demand (excl. inventories)

02 03 04 05 06 07 08 09 10 11

a) Annualised quarterly growth.
Source: Bureau of Economic Analysis, last accessed on 29 January 2012; EEAG calculations.
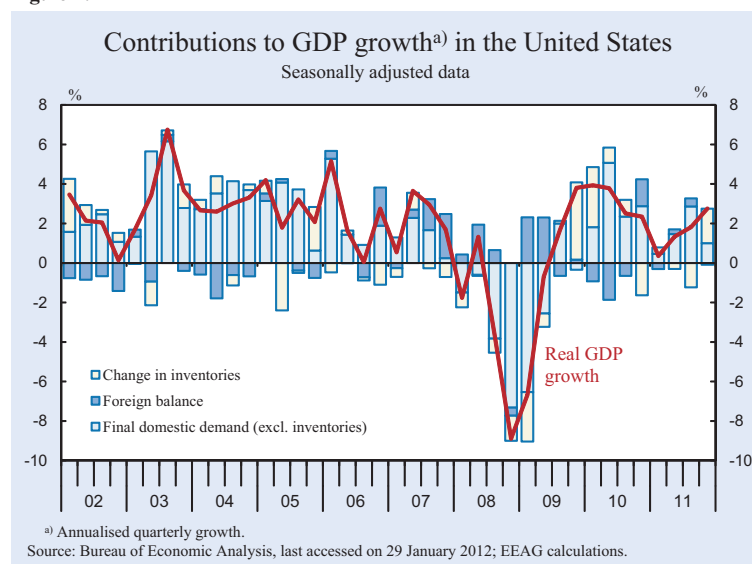
Even the beleaguered residential construction sector managed to record a slight increase in the third quarter for the second time in a row. Some see this as a turnaround in the US housing market – after six years of continual crisis. The main argument in favour of this view revolves around the fact that, in view of the stagnating prices in the owner-occupied sector, rising rents are making the rental market an increasingly attractive option for investors. This was underpinned by the September 2011 figures for new housing starts containing struc-

Figure 1.5

Business cycle developments in the United States

Private consumption a)

Gross fixed capital formation a)

Foreign trade a)

a) In constant prices, seasonally adjusted and work-day adjusted.
Source: US Bureau of Economic Analysis, last accessed on 29 January 2012.
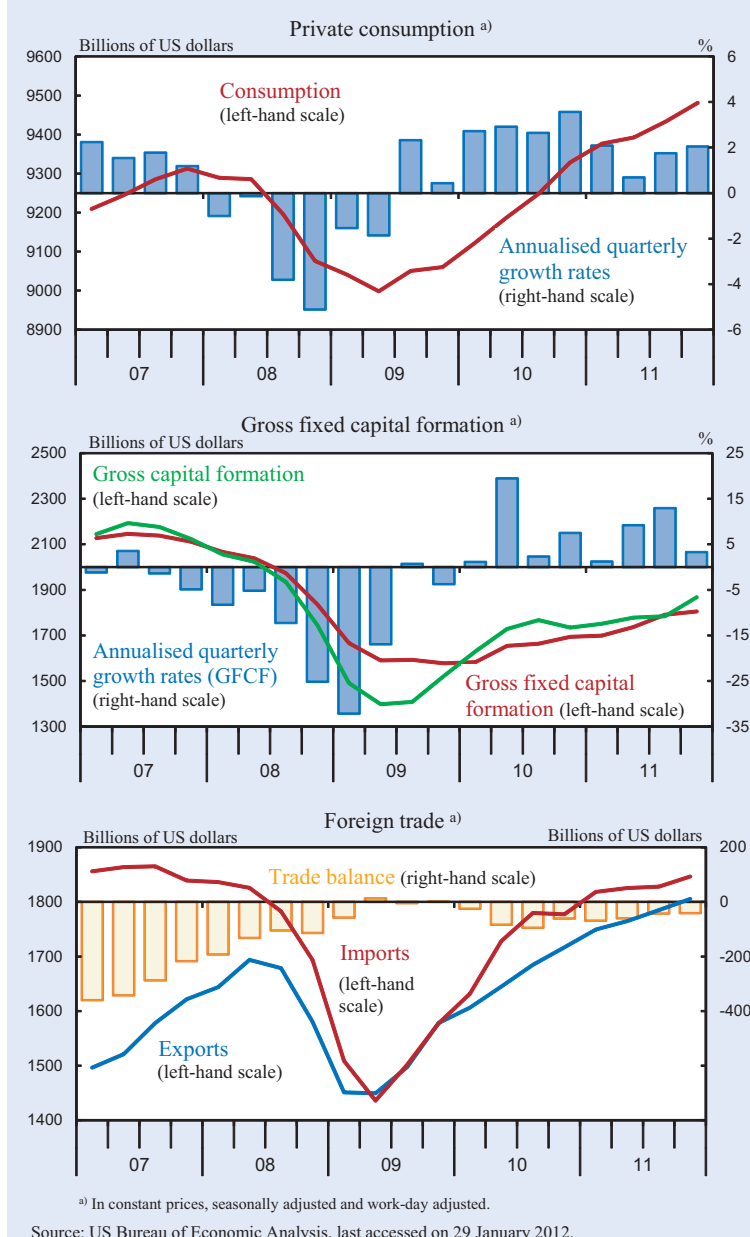
dollars, which would doubtlessly boost private consumption.

Only public spending and inventory investments have recorded negative growth rates recently. Even this may be viewed in a positive light, however, since it indicates that the US government considers it appropriate to reduce spending in view of its massive debt. Inventory reduction in the third quarter has led to subsequent restocking, thereby providing a strong impetus for growth in the fourth quarter. Overall US GDP grew by 1.7 percent last year (see Table 1.A.1).

The situation in the labour market has brightened somewhat in recent months. This confirms the moderate expansion of the US economy and dispels fears of a recession. The unemployment rate fell quite significantly to 8.5 percent in December after reaching levels of around 9 percent during most of last year (see Figure 1.6). Unfortunately, the recent decline has been mainly due to a decrease in the number of potential employees, and not primarily to a decrease in the number of persons actually registered as unemployed. Job creation, recently at 120,000 in November, also still lags far behind the average of past upswings.

tures with five units or more, which rose by over 40 percent versus the previous month. If rents continue to rise, the owner-occupied sector is also likely to benefit since this will encourage tenants to consider buying.

However, the market for single-family houses still looks grim, partly because (over)supply continues to be driven by foreclosures. President Obama has plans for this election year to oblige the two government-sponsored mortgage giants Fannie Mae and Freddie Mac to offer mortgagors the opportunity to refinance at current low interest rates. This would release house owners from debts totalling an estimated 65 billion

There was, however, a real rise of 0.3 percent in wages in October relative to September. This is a positive development, since the average wage per hour has declined by almost 2 percent year-on-year in real terms as a result of recent high inflation rates.

Driven by global price increases for energy and food products, the inflation rate also climbed continuously over the course of last year, reaching a high of 3.9 percent in September (see Figure 1.7). Upward pressure on inflation has eased steadily in the wake of the global economic slowdown, with the inflation rate dropping slightly to 3.0 percent in December as a result. At

Figure 1.6

Unemployment rates

Source: OECD, Main Economic Indicators, last accessed on 29 January 2012.

ports grew by 22 percent in the first ten months of 2011, imports, fuelled by strong domestic demand, grew even more strongly by 26.9 percent. The total overall increase in GDP amounted to 9.0 percent in 2011.

As a reaction to a prolonged increase in inflation over the past year, with inflation reaching 6.5 percent in July, China's central bank increased its key interest rates gradually to 6.6 percent, and the reserve ratio for large commercial banks to 21.5 percent. In addition, it imposed controls on lending by state-owned banks, which particularly limit the financing of small and medium-sized enterprises. These measures, as well as stagnating prices for raw materials and food, have led to lower inflation rates since the middle of last year; with inflation at 4.1 percent in December. The average inflation rate amounted to 5.4 percent for 2011.

least some of the inflationary pressure is based on the domestic economy, as shown by the rate of core inflation (excluding energy and food). In December 2011, core inflation stood at 2.2 percent, which is higher than the long-term average of 2.1 percent (over the past 15 years). Hence, upward pressure on inflation remains, despite continued tensions in the labour market and downward pressure on property prices.

1.2.3 Asia

Economic growth in *China* remained high during 2011, but lost some of its momentum over the course of last year due to more restrictive monetary policy and weaker world demand. Indicators such as the Purchasing Managers Index, retail sales and money supply growth suggest that the economy slowed down even further during the fourth quarter of last year.

The fact that overall dynamics last year remained high can be explained for the most part by a significant upturn in investment in production facilities. Similarly, private consumption increased strongly as a result of increases in real wages and in employment. Over five million new jobs in the cities were created in the first half of 2011 alone. The growth contribution from net foreign trade, on the other hand, provided little impetus. Although China's ex-

As a result of the earthquake and nuclear reactor disaster in March last year, the *Japanese* economy had to cope with two quarters of negative growth rates; there was a positive rebound effect in the third quarter when growth increased by an annualised 5.6 percent. A substantial part of this expansion can be explained by a 3.0 percent increase in private consumption owing to an improved income and job market situation, with the latter improving substantially, especially during the summer months. Net exports were also

Figure 1.7

Price developments in the United States

a) Consumer Price Index. - b) CPI excluding energy and food.
Source: US Bureau of Labor Statistics, last accessed on 29 January 2012.
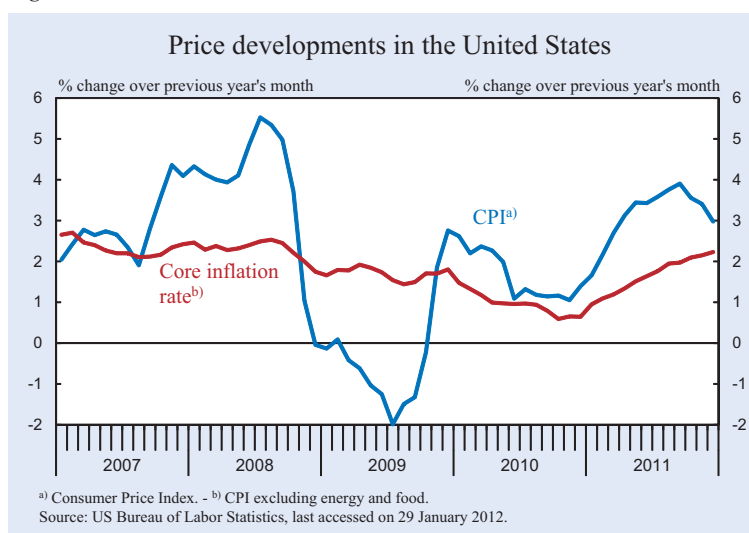
able to provide a significant boost of 3.4 percentage points, as exports grew by a staggering 32.7 percent and significantly more than imports (14.9 percent). Slightly weaker, but nevertheless strong expansion most likely occurred in the last quarter of 2011. Thus, for 2011 as a whole, a 0.7 percent fall in GDP is to be expected.

Driven largely by the increase in raw material and energy prices, the inflation rate managed to turn positive during the summer months. The strong appreciation of the yen and the overall weak economy, however, did not allow Japan to persistently move out of its deflationary situation.

In *India* the economy slowed down slightly over the course of last year starting from a high level. The year-over-year growth rates of GDP declined from 7.8 percent in the first quarter to 7.7 percent in the second quarter and to 6.9 percent in the third quarter of 2011. These rates resulted from a strong expansion in the services sector, while industrial production lost momentum. On the demand side, strong growth in private consumption and exports was recorded, but investment remained weak. The lack of readiness to invest may have been due to restrictive monetary policy, but can also be attributed to structural problems such as sluggish political approval processes for major projects. India's GDP is expected to have increased by 7.0 percent last year.

The biggest problem plaguing India's economy continues to be high inflation. After falling from 16 percent at the beginning of 2010 to 8.4 percent in the middle of 2011, the inflation rate has again followed a slightly upward trend in the last few months. Price increases are due to rising food prices, resulting from higher raw material and fertiliser costs, as well as rising wages in agriculture.

In the other East Asian countries, i.e. *Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan* and *Thailand*, economic growth slowed significantly after a strong first quarter. This slowdown was largely due to supply chain effects caused by the natural disaster in Japan, as well as a tightening of domestic monetary policy. While GDP increased somewhat more strongly

in the third quarter than in the second, negative growth rates were recorded for Thailand and Singapore. Accordingly, aggregate output in this region – after increasing substantially by 7.7 percent in 2010 – is expected to have increased by 4.5 percent in 2011.

1.2.4 Latin America

The economies of Latin America, *Argentina, Brazil, Chile, Colombia, Mexico* and *Venezuela*, slowed somewhat over the course of 2011. After signs of overheating in the middle of the year, a return to trend growth is now visible. Industrial production even decreased in many places. A less expansionary monetary and fiscal policy, as well as a weaker global environment has had a dampening effect on Latin America's economies. After a robust increase in overall economic production of over 6 percent in 2010, overall output growth of 4.3 percent is likely to have materialised in 2011. Inflationary pressures decreased in most Latin American countries accordingly, with the exception of Argentina and Venezuela, where inflation rates are likely to have remained at a double-digit level.

Brazil, the region's largest economy, stagnated in the third quarter. Its export industry is suffering from deteriorating competitiveness due to the appreciation of its currency. The government is trying to counter this with an increased import tax on motor vehicles. On the other hand, measures to control credit, which were brought in at the end of 2010 to circumvent overheating, are in the process of being withdrawn. The Brazilian central bank increased the degree of monetary expansion by continuing the interest rate

Figure 1.8

Contributions to GDP growth[a)] in the European Union

Seasonally adjusted data

a) Annualised quarterly growth.
Source: Eurostat, last accessed on 18 January 2012; Ifo Institute calculations.
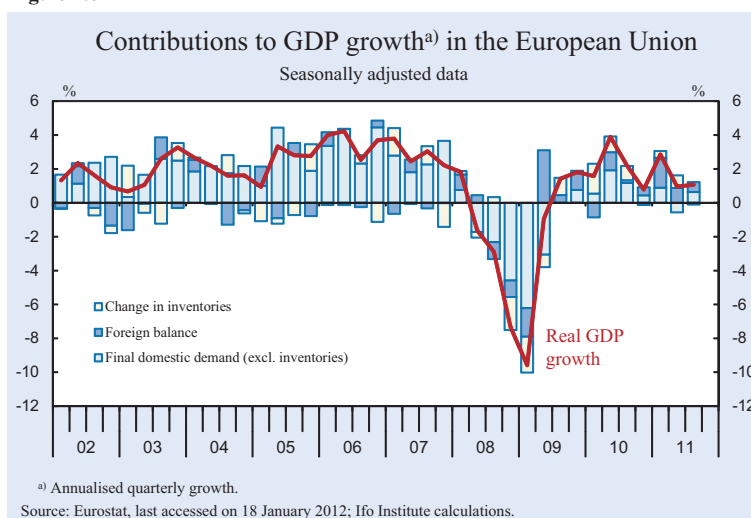
cuts which began at the end of August last year. Of course, these measures are still to be set against a background of high, although in recent months declining, inflation.

1.2.5 The European economy

The cyclical situation

The pace of economic expansion in the European Union has slowed considerably since the beginning of last year. During the summer, GDP increased by an average of 1 percent per quarter, following an increase of almost 3 percent in the first quarter of 2011 (see Figure 1.8). Although the slow-down in the second quarter can probably be traced back to the natural disaster in Japan, as well as the increase in energy prices in spring, it was primarily the worsening of the debt crisis that dampened the European econo-my. Consumption growth even turned negative again in the sec-ond quarter of 2011, while investment dynamics almost ground to a complete halt in the third quarter (see Figure 1.9) due to increased macroeconomic uncertainty, problems in the banking sector and fiscal auster-ity programmes. Since summer 2010 the export industry has also been increasingly limited by the fact that restrictive monetary policy in many emerging coun-tries has reduced local demand. The trade balance nevertheless managed to contribute positive-ly to GDP growth throughout the year, largely because import dynamics also slowed down con-siderably.

The overall deterioration of eco-nomic conditions in Europe is also clearly visible in sentiment indicators. With the exception of the construction sector, where indicators are still at historical lows reflecting the on-going

unwinding of house prices in several European countries, all major economic branches have shown a substantial decline since mid-2011, if not prior to this point (see Figure 1.10). The mood swing in the financial sector in particular, covering banks at the core of the sovereign debt crisis, has been quite strong.

The EU unemployment rate declined slowly from its peak of 9.7 percent in the middle of 2010 to 9.4 per-cent in March 2011, after which point the economic slowdown became noticeable. The unemployment rate subsequently rose to a new peak of 9.8 percent in October. A similar development, albeit at a somewhat

Figure 1.9

Business cycle developments in the European Union

Private consumption [a]

Gross fixed capital formation [a]

Foreign trade [a]

[a] In constant prices, seasonally adjusted and work-day adjusted.

Source: Eurostat, last accessed on 18 January 2012.

Figure 1.10

Confidence indicators[a] for different sectors
in the European Union

a) Arithmetic means of selected (seasonally adjusted) balances on business tendency survey questions. Balances are
constructed as the difference between the percentages of respondents giving positive and negative replies.
Source: European Commission, last accessed on 2 February 2012.

Figure 1.11

Price developments in the European Union

a) Harmonised Index of Consumer Prices. - b) HICP excluding energy and unprocessed food.
Source: Eurostat, last accessed on 29 Januar 2012.

Figure 1.12

Drop and recovery in GDP in European countries[a]

Red: euro area countries
Orange: fixed exchange rates vis-à-vis the euro
Green: flexible exchange rates

a) The end of a white bar shows the drop in GDP from its peak in 2008 to its trough during the crisis. A coloured
bar compares GDP in the third quarter of 2011 to its pre-crisis peak in 2008. Therefore, the size of the white bar
indicates how much of the fall in GDP has so far been made up for.

Source: Eurostat, last accessed on 18 Janaury 2012.

higher level, can be observed in the euro area (see Figure 1.6).

Driven by rapidly rising raw material prices and consumption tax increases in several member states, the rate of inflation in the European Union rose from 1.9 percent in June 2010 to 3.3 percent in April 2011 (see Figure 1.11). There was a similar increase in the core inflation rate, although delayed by a few months, from 1.4 percent to 2.2 percent during the same period. The reductions in July and August were largely caused by methodological changes in the treatment of seasonal products and should therefore not be over-interpreted. Despite the stabilisation of commodity prices since April 2011, inflationary pressures have not abated. The weak momentum of domestic demand, moderate wage developments and capacity utilisation, which is still below average in many member states, are also likely to have had a dampening effect on inflation in Europe over the course of 2011. However, these factors have not been able to curb the upward tendency to date.

Differences across Europe

Most European countries are still in the process of catching up to pre-crisis GDP levels (see Figure 1.12). By the third quarter of last year, only Austria, Belgium, Germany, Malta, Poland, Slovakia and Sweden had fully compensated for the loss in GDP that had occurred since autumn 2008. Greece has not yet emerged from recession, while Denmark, Italy, Ireland, Latvia, Portugal, Slovenia and Spain have only recovered a minor share of their post-crisis decrease in GDP.

EEAG Report 2012

Figure 1.13

GDP growth in selected regions of the euro area

% change over previous year's quarter   % change over previous year's quarter

France, Italy, Spain, Belgium

Germany, the Netherlands, Austria, Finland, Luxembourg

Greece, Portugal, Ireland

Source: Eurostat, last accessed on 29 January 2012; EEAG calculations.

Figure 1.14

Price developments^{a)} in selected regions of the euro area

Index (1999=100)   Index (1999=100)

Greece, Portugal, Ireland

France, Italy, Spain, Belgium

Germany, the Netherlands, Austria, Finland, Luxembourg

a) GDP deflator.
Source: Eurostat, last accessed on 2 February 2012; EEAG calculations.

Figure 1.15

Unemployment rates in selected regions of the euro area

% of labour force   % of labour force

Greece, Portugal, Ireland

France, Italy, Spain, Belgium

Germany, the Netherlands, Austria, Finland, Luxembourg

Source: Eurostat, last accessed on 18 January 2012; EEAG calculations.

Within the euro area, economic developments have become increasingly heterogeneous (see Figure 1.13). Export-oriented countries with relatively sound public finances and high international competitiveness (Germany, the Netherlands, Austria, Finland and Luxembourg with a share of around 42 percent in euro area GDP) recorded above average GDP growth. Since the introduction of the euro their prices have increased at a far more moderate pace than those of other member states, indicating a substantial improvement in competitiveness (see Figure 1.14). The economic recovery in more domestically oriented core countries (France, Italy, Spain and Belgium with a share of around 51 percent in euro area GDP) was rather sluggish. Given their fiscal stance, these countries have increasingly felt the distrust of financial markets. The so-called European periphery that is already receiving help from the "troika"[1] (Greece, Ireland and Portugal with a share of less than 6 percent of euro area GDP) even saw a deepening of recessionary tendencies as a result of capital outflow and renewed consolidation efforts. The convergence process visible until the mid-2000s, whereby the poorer regions were catching up towards their richer counterparts, has not only stopped; it has reversed.

As the economic growth rates of individual member states decoupled, their unemployment rates started to diverge substantially (see Figure 1.15). In countries relying on flexible short-time working arrangements during the crisis (Germany, the Netherlands,

[1] The "troika" consists of the European Commission, the International Monetary Fund and the European Central Bank.

Austria, Finland and Luxembourg), the unemployment rate has remained relatively low for the past three years and, despite the worsening of the European debt crisis, continued its moderate decline in the autumn of 2011. It is noteworthy that many of these countries had implemented labour market reforms before the recession. The countries of the European periphery (Greece, Ireland and Portugal), however, continue to experience unemployment rates which are high by historical standards and are still clearly following an upward trend. After stabilising at high levels during 2010 and the first half of 2011, unemployment rates in France, Spain and Italy started to rise noticeably again in summer 2011.

In *Germany* the upturn continued up until the third quarter of 2011. Output expanded at an annualised rate of 2.9 percent during the first three quarters of 2011. In the entire euro area, real GDP rose at an annual rate of only 1.5 percent over the same period. Hence, the German economy has made a well above average contribution to GDP growth in the euro area.

During the first three quarters of 2011, the impetus for the German economy came mainly from within: private consumption, which had fallen surprisingly in the second quarter, rebounded in the third quarter, rising by an annualised 1.0 percent during the first three quarters. This was outpaced by public consumption, which increased by an annualised average of 1.8 percent. Largely due to an exceptionally high growth rate in the first quarter, investment grew at the even faster rate of 7.3 percent. During the third quarter, however, construction investment decreased slightly. The high level reached in the first quarter thanks to catch-up effects and mild weather conditions could not be maintained during the summer semester. Overall, domestic spending was the biggest contributor to the increase in GDP, while net foreign trade provided only a marginal growth impetus. Although the export of goods and services rose fairly strongly (9.6 percent), imports grew only slightly less (9.0 percent).

On the basis of early indicators and the results of the Ifo business tendency survey, Germany's GDP probably fell in the fourth quarter of 2011. Exports are likely to have stagnated due to the slowdown of the world economy, while imports are likely to have risen moderately and net foreign trade will probably have made a negative contribution to overall production. On the whole, however, Germany's real GDP probably expanded by 3.0 percent in 2011 (see Table 1.A.2).

Employment has also continued to rise in Germany, albeit slowly. The seasonally adjusted number of employed persons increased by 0.2 percent in the third quarter of 2011; exceeding the trough in the third quarter of 2009 by nearly 820,000 persons. The seasonally adjusted number of workers paying payroll taxes also continued to grow. In September, there were only 57,000 short-time workers, compared to the maximum of 1.44 million at the height of the use of this facility in May 2009. In December, the seasonally adjusted number of registered unemployed totalled 2.8 million, or 231,000 fewer than in the previous year. Germany's average unemployment rate reached 6.0 percent in 2011.

Meanwhile, the consumer price index was 3.4 percent higher in November 2011 than in the same month of the previous year. This increase was largely driven by changes in energy prices, but good overall economic conditions also played a role.

After a blip in the second quarter of last year, GDP in *France* rose again by an annualised rate of 1.6 percent in the third quarter of 2011. Private investment, benefitting from low interest rates, contributed positively to the increase. France's private and public consumption both increased moderately. A strong contribution to GDP growth came from foreign trade, which continued to benefit from positive developments in global trade. There were dampening effects, however, from an unfavourable inventory cycle. France's GDP is expected to have risen by 1.6 percent last year.

The country's unemployment rate stagnated in October at 9.8 percent. France's labour market hardly benefited at all from the economic upturn in 2010 and 2011, primarily due to its lack of flexibility. Consumer prices increased by 2.7 percent in November as a result of high energy and commodity prices. Consumer prices on average rose by 2.3 percent in 2011.

In *Italy*, private investments have been declining since early 2011 and, in spite of comparatively low interest rates and favourable credit lending conditions, contributed negatively to GDP growth. Positive impetus came from private consumption, which benefited from a stable labour market situation. Foreign trade also made a positive contribution to GDP growth. However, the Italian economy's loss of international competitiveness over the past decade prevented foreign trade from making a sustainable contribution. Finally, while public consumption stagnated, Italy benefited from a favour-

able inventory cycle. GDP is expected to have increased by 0.7 percent last year.

Despite subdued economic dynamics, the Italian rate of unemployment remained stable at around 8.2 percent until autumn of last year and then, rose to 8.5 percent in October 2011. The rate of change in consumer prices, including administered prices as well as energy and commodity prices, peaked at 3.8 percent in October 2011. Consumer prices rose by 2.9 percent over the whole of 2011, largely due to higher energy and raw material prices.

GDP in the *United Kingdom* expanded by an annualised rate of 2.0 percent in the third quarter of 2011. This may, however, overstate the underlying economic dynamics. The extra holiday on the occasion of the Royal Wedding at the end of April, as well as the supply shortages caused by the natural disaster and the nuclear accident in Japan, reduced aggregate output growth in the previous quarter. With the disappearance of these factors, a simple temporary catch-up effect occurred. The weak underlying pace of the British economy was reflected more clearly in the development of demand components. In the third quarter, a clear positive contribution to GDP growth only emerged from inventory investments, while private consumption and investment in machinery and equipment stagnated. Net foreign trade made a negative contribution to growth because exports fell for the second time in a row. Overall, GDP in the United Kingdom grew by 0.9 percent in 2011 against a backdrop of rising unemployment (8.1 percent annual average) and an inflation rate of 4.5 percent.

Spain is still struggling to recover from the 2008–2009 crisis. Although GDP rose in the first half of 2011, it stagnated in the third quarter. The increase in GDP during the first half of last year was mainly due to a positive external contribution and a favourable inventory cycle. However, private consumption and private investment in particular had a dampening effect. While private consumption is still suffering from high unemployment and weak wage developments, low investment levels are a direct result of the structural crisis in the construction industry. Government consumption also contributed negatively to GDP growth last year. GDP nevertheless grew by 0.7 percent.

The situation in the Spanish labour market is dismal across the board. Unemployment reached 22.9 percent in November 2011, its highest level since the crisis began, while the average annual unemployment rate will probably total 21.7 percent in 2011. The increase in consumer prices slowed slightly in November 2011 at 2.4 percent, after rising comparatively fast on the back of higher administered, energy and raw material prices, particularly during the first half of last year.

The economic development of those countries under the rescue umbrella of the "troika", namely *Greece, Ireland* and *Portugal*, has been very heterogeneous since the start of last year. Of course, fiscal policy is extremely restrictive in all three economies. However, while Greece and Portugal are stuck in a deep recession, the Irish economy registered an average growth rate of 1.6 percent over the first three quarters of 2011. The reasons for this divergence are primarily of a structural nature. Ireland has a very competitive export sector with stable market shares in advanced, as well as in emerging markets. This has allowed the country to benefit disproportionately from the fairly dynamic development of demand – above all in emerging economies − over the past one and a half years. During the same period, Greece and Portugal benefitted far less from the global economic recovery, as their respective manufacturing sectors specialise in branches of industry that are currently under increasing competitive pressure from emerging countries. Relative competitiveness has evolved very differently in all three countries since the outbreak of the financial crisis. Ireland was able to lower its unit labour costs by 3.0 percent in 2011 alone (see Table 1.1). The improvement in this competition indicator is substantially lower in the other two countries. Whereas the adjustment in Ireland had already started in 2009, Greece and Portugal did not follow suit prior to 2010 and 2011 respectively. This divergence can at least partly be explained by the fact that the labour market in Ireland is much more flexible than in Greece and Portugal.

Although economic dynamics slowed in the first half of 2011 in *Central and Eastern Europe*, they remained clearly positive. Exports still expanded strongly until the middle of the year, but lost pace in the light of the economic slowdown in the euro area. Industrial production did not increase as quickly as in the previous year either. Negative business expectations have prevailed in almost all of these countries since summer, while consumer confidence has also weakened almost everywhere.

In Poland and Slovakia in particular overall economic development was robust. In Poland, expansion was

Table 1.1

Labour costs[a]

	Compensation per employee[b]		Real compen-sation costs[c]		Labour productivity[d]		Unit labour costs[d]		Relative unit labour costs[e,f]		Export performance[g]	
	1999–2010	2011	1999–2010	2011	1999–2010	2011	1999–2010	2011	1999–2010	2011	1999–2010	2011
Germany	1.1	2.7	0.3	1.9	0.6	2.4	0.5	− 0.1	− 0.6	− 3.7	0.8	2.4
France	2.7	2.7	1.0	1.2	0.7	1.4	1.9	1.0	− 0.1	0.2	− 2.4	− 1.0
Italy	1.9	2.2	− 0.4	0.9	− 0.2	0.4	2.8	1.2	2.2	5.8	− 4.2	− 1.1
Spain	3.0	1.7	− 0.2	0.5	0.6	1.7	2.9	− 0.9	1.5	− 3.1	− 0.8	2.8
Netherlands	3.1	1.9	0.8	2.0	1.0	1.7	2.3	− 0.1	− 0.2	− 0.1	0.1	− 0.8
Belgium	2.5	3.2	0.6	1.1	0.7	1.6	2.0	1.4	0.6	− 0.5	− 1.3	− 0.4
Austria	2.1	2.4	0.7	0.7	1.0	1.7	1.1	0.6	− 0.8	0.5	− 0.3	1.4
Greece	4.9	3.8	1.9	3.5	1.7	0.8	3.7	− 0.2	0.2	–	− 1.7	− 0.1
Finland	3.0	2.3	1.6	0.7	1.3	3.0	1.8	− 0.9	− 2.3	1.3	− 1.4	− 1.7
Ireland	4.0	− 0.3	2.1	1.0	2.1	2.5	2.6	− 3.0	− 3.0	− 8.7	2.0	− 1.1
Portugal	3.6	1.3	1.0	0.3	1.1	− 0.5	3.0	− 1.2	0.2	1.6	− 1.3	− 0.4
Slovakia	7.5	4.1	3.8	2.1	4.0	2.6	2.7	− 0.3	1.5	0.5	2.6	2.3
United Kingdom	3.7	2.8	1.3	− 0.6	1.1	0.9	2.7	1.4	− 0.6	2.5	− 2.0	0.3
Sweden	2.9	2.5	1.2	1.2	1.6	2.3	1.7	0.4	− 2.5	− 3.0	− 0.4	0.5
Denmark	3.3	1.8	0.9	− 0.3	0.8	1.8	2.7	0.3	0.8	− 3.0	− 0.7	− 2.0
Poland	5.0	6.0	1.6	3.1	3.7	3.2	2.4	2.6	− 4.2	− 2.7	2.6	− 3.0
Czech Republic	5.8	3.1	3.7	3.0	3.0	1.6	2.5	1.1	1.4	1.2	4.3	1.3
Hungary	7.5	2.0	1.7	− 1.9	2.5	2.6	5.8	1.1	0.8	− 1.0	4.5	0.8
Iceland	6.2	4.5	0.6	2.6	1.5	2.1	5.6	1.0	− 1.2	3.7	0.8	− 3.3
Norway	4.6	3.9	− 0.3	− 4.7	0.7	1.5	4.2	2.0	3.5	7.9	− 3.5	− 5.6
Switzerland	1.8	1.0	0.8	0.5	0.7	0.9	1.4	− 0.8	2.6	–	− 0.3	− 4.3
Japan	− 0.9	0.4	0.3	1.8	1.2	− 0.9	− 1.5	1.5	− 2.0	6.7	− 2.5	− 5.1
United States	3.6	3.0	1.4	1.6	2.0	1.5	1.8	1.5	− 3.7	− 7.1	− 1.5	− 0.6
Canada	3.2	3.2	0.9	0.9	0.8	1.3	2.5	1.7	4.7	4.7	− 3.5	2.2
China	–	–	–	–	–	–	–	–	–	–	11.6	2.3

[a] Growth rates. – [b] Compensation per employee in the private sector. – [c] Compensation per employee deflated by GDP Deflator. – [d] Total Economy. – [e] Manufacturing sector. – [f] Competitiveness– weighted relative unit labour costs in dollar terms. – [g] Ratio between export volumes and export markets for total goods and services. A positive number indicates gains in market shares and a negative number indicates a loss in market shares.

Source: OECD Economic Outlook No. 90, December 2011.

mainly based on private consumption and investment. Both there and in the Czech Republic, investment demand was supported by additional structural funds from the European Union for the development of infrastructures. However, in most Central and Eastern European member countries of the European Union, overall demand was held back by national consolidation measures. Exports, which are highly dependent on the economic situation in Western Europe, still expanded strongly at beginning of last year, but slowed as the year progressed. Unemployment decreased in most countries and after having risen until the middle of the year, inflation rates also started to decline steadily.

In addition, the recent devaluation of several currencies in the region further increased the already relatively high debt burden of many households due to mortgage loans frequently taken out in Swiss francs or euros in recent years. The Hungarian currency in particular has significantly lost value since September 2011. Domestic factors such as rising national debt, the government's controversial programmes and continued economic weakness may help explain this phenomenon (see Chapter 5). The problems are currently so serious that financial assistance is being negotiated with the International Monetary Fund (IMF) and the European Commission.

In countries such as Poland, the Czech Republic and Romania, which were on solid economic ground until mid-2011, national currencies have also been falling since then. Concerned by the euro crisis, investors withdrew early from the Eastern European currencies, since the countries involved were more badly affected by the last recession than the euro area itself.

While local central banks mostly saw little incentive to change interest rates during the first half of 2011, they raised them or intervened in order to stabilise exchange rates in the second half of the year, despite the weaker economic momentum in these economies.

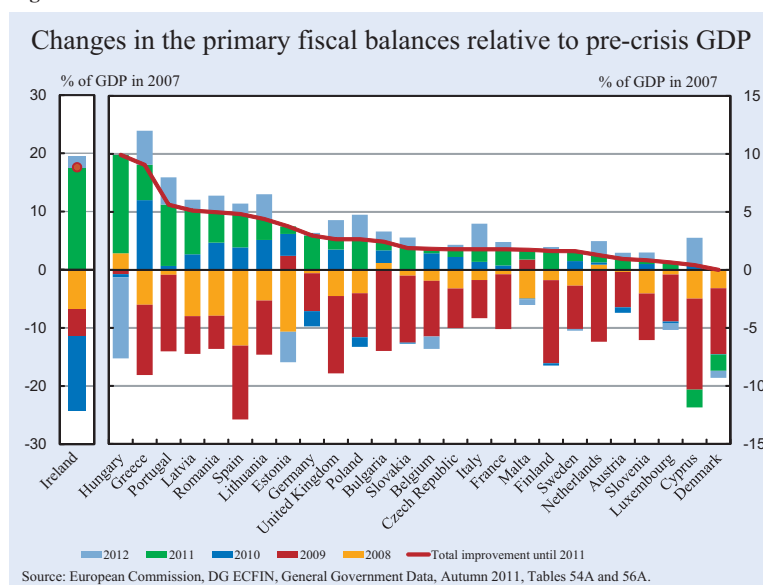**1.3 Fiscal and monetary policy in Europe**

1.3.1 Fiscal policy

For the second year in a row, economic and political discussions in Europe centred on the sovereign debt crisis and how to prevent an even worse recession than the 2008–2009 downturn, during which public finances in Europe deteriorated massively. In many member countries public fiscal balances started to improve again in 2010. In most cases this reduction was mainly due to economic improvement and, to a much lesser extent, to the cut back of economic stimulus programmes. A major exception was Greece. Here financial markets forced the government to implement strict consolidation measures. Public primary deficits in all member states, with the exception of Cyprus and Denmark, are expected to have diminished in 2011 (see Figure 1.16).[2] In some countries the remaining economic stimulus programmes expired in spring and other countries have implemented tough discretionary cuts. This year the fiscal stance varies from accommodative (Hungary, Estonia and Belgium), to neutral or slightly restrictive (Sweden, Germany, Finland, Czech Republic, Austria and France) and highly contractionary (Ireland, Poland, Lithuania, Italy, Cyprus, Portugal and Greece).[3] The vast majority of countries are on consolidation programmes and therefore have a direct negative impact on growth. Italy and Spain were forced to drastically tighten their austerity course planned for the coming years in response to pressure from the financial markets, which also forced France to adopt additional consolidation measures. Finally, Greece, Ireland and

Portugal, which already receive external financial support, had to increase their savings efforts in the autumn of 2011 in order to be able to meet the requirements of the "troika" for the coming years.

The baseline scenario for this forecast assumes that the European peripheral countries, as well as Spain, Italy and France, will adopt consolidation measures in the coming year that far exceed the austerity programmes announced to date. All in all, cost-saving efforts in the euro area are expected to bring the aggregate deficit down from 4.1 percent of GDP in 2011 to 3.4 percent in 2012 (see Table 1.A.3 in Appendix 1.A). The debt-to-GDP ratio will increase accordingly from 88.1 percent in 2011 to 90.5 percent in 2012.

As noted above, part of the improvement in fiscal balances in the last two years has been due to automatic stabilisers built into our systems, such as the progressive tax system and unemployment and welfare benefits that depend upon economic conditions. Fiscal balances have also been improved by cut-backs in fiscal stimulus packages. Figure 1.17 shows estimates of structural deficits, i.e. deficit measure in which business cycle effects have been attempted to remove, in the four large economic blocks in the world. Steady declines in the extremely high structural deficits in both the United States and the United Kingdom are visible. Nevertheless, according to these estimates structural deficits this year will still remain substantially above pre-crisis levels. For the euro area, hit by the sovereign debt crisis, improvements are much stronger as the structural balance is expected to outperform from a long-term historical perspective. Only Japan's government is not reducing deficit levels at the moment, citing

Figure 1.16

Changes in the primary fiscal balances relative to pre-crisis GDP

Source: European Commission, DG ECFIN, General Government Data, Autumn 2011, Tables 54A and 56A.

---

[2] It is generally believed that changes in interest payments by the government do not have a strong impact on the economy and are not intended to as such. For that reason, we use the change in the primary deficit – which excludes changes in government interest payments – of the general government relative to a pre-crisis measure of economic size of a country, i.e. its GDP in 2007, to estimate the fiscal stance of the public sector.

[3] As Figure 1.16 shows, Ireland and Hungary are special cases. By rescuing its banking sector, the Irish government experienced a huge increase in its deficits in 2010. As these bail-out costs are one-off, an automatic strong correction was realised last year. In Hungary the improvement in the fiscal balance in 2011 reflects the expropriation of private pension funds. These receipts are one-off. Hence, the fiscal balance will sharply deteriorate this year.

Figure 1.17

Government structural budget deficits

Source: OECD, Economic Outlook 90, December 2011.
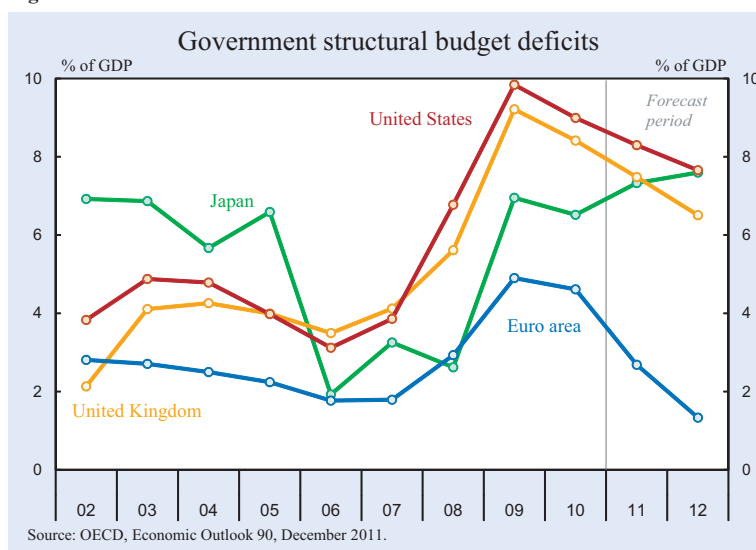
the nuclear disaster in March last year as its main motive.

After providing positive impulses in the years 2008, 2009 and 2010, fiscal policy in *Germany* went on a consolidation course last year. In contrast to other European governments, this was only partially driven by the concerns of financial markets; and was mainly to meet the requirements of the debt rule embodied in German law.

To relieve the national budget, the German federal government increased revenues and cut expenditure. Non-pecuniary social benefits and wages for civil servants only saw very small increases last year. German states and some municipalities consolidated their budgets mainly on the expenditure side. In addition, some states increased their real-estate transfer taxes and many municipalities raised their taxes. Various economic stimulus measures also expired gradually. Finally, at the beginning of last year, unemployment insurance contribution rates and health insurance premiums were raised, while measures to curb costs came into force in the health sector.

This year consolidation efforts look set to weaken. The introduction of a financial transaction tax, which was estimated to bring in revenues of around 2 billion euros, has been adjourned until a common procedure in the European Union is found. The budget deficit may decrease from 1.3 percent of GDP last year to 1.0 percent this year.

A possible spill-over of the sovereign debt crisis in the euro area to *France* represents the biggest risk to the

forecast. France's recent loss of its top credit rating, as well as current financial market developments, suggest that the French Government will in the near future announce consolidation measures that go beyond those already decided. So far additional revenue and spending cuts set in the budget for the year 2012 amount to only 7 billion euros, including a Value Added Tax (VAT) increase in the catering sector. As indicated by an increase in the spread of 10-year French government bonds compared to German government bonds in the last two months of 2011, this did not satisfy the financial markets. It is therefore assumed that further measures will follow, which will be enough to achieve the stated goal of a total government deficit of 3 percent in relation to GDP by the end of 2013. The stable political situation, which has led to generally positive reviews in the World Bank governance indicators in 2010, gives rise to the hope that a credible announcement from the French government could lead to a stabilisation of the financial markets.

With the exception of Ireland, the *United Kingdom* still had the highest deficit-to-GDP ratio in the European Union last year at 9.5 percent (see Table 1.2). The weak economy has led the government to postpone its target of achieving a structurally balanced budget by one year, i.e. the end of the budgetary period 2016–2017. In the absence of additional policy measures, the independent Office for Budget Responsibility that was established in May 2010 believes that there is a roughly 60 percent probability that this mandate will be met. However, most of the reduction is supposed to take place after 2012.

Due to its public debt of around 120 percent of GDP and its high refinancing requirements of 319 billion euros next year, *Italy* is attracting a lot of attention from the financial markets. The rise in yields of 10-year government bonds to around 6.5 percent in December 2011 indicates that at least until the end of 2011 substantial doubts remained regarding the Italian state's ability to pay. During Silvio Berlusconi's time in office confidence in the Italian Government was successively eroded, which is reflected in the poor evaluations of Italian governance by the World Bank.

Table 1.2

Public finances

	Gross debt[a]				Fiscal balance[a]			
	1999–2008	2009	2010	2011	1999–2008	2009	2010	2011
Germany	64.0	74.4	83.2	81.7	− 2.0	− 3.2	− 4.3	− 1.3
France	62.4	79.0	82.3	85.4	− 2.8	− 7.6	− 7.1	− 5.9
Italy	106.3	115.5	118.4	120.5	− 2.9	− 5.4	− 4.5	− 3.8
Spain	48.3	53.8	61.0	69.6	− 0.2	− 11.2	− 9.3	− 6.6
Netherlands	52.4	60.8	62.9	64.2	− 0.4	− 5.6	− 5.0	− 4.3
Belgium	97.7	95.9	96.2	97.2	− 0.6	− 5.9	− 4.2	− 3.7
Austria	64.7	69.5	71.8	72.2	− 1.7	− 4.1	− 4.4	− 3.4
Greece	103.4	129.3	144.9	162.8	− 5.8	− 15.8	− 10.8	− 8.9
Ireland	33.4	65.2	94.9	108.1	0.7	− 14.2	− 31.3	− 10.3
Finland	41.3	43.3	48.3	49.1	3.8	− 2.8	− 2.8	− 1.2
Portugal	58.3	83.0	93.3	101.6	− 3.6	− 10.2	− 9.8	− 5.8
Slovakia	39.6	35.5	41.0	44.5	− 5.0	− 8.0	− 7.7	− 5.8
Slovenia	25.7	35.3	38.8	45.5	− 2.3	− 6.1	− 5.8	− 5.7
Luxembourg	7.1	14.8	19.1	19.5	2.5	− 0.9	− 1.1	− 0.6
Estonia	5.0	7.2	6.7	5.8	0.3	− 2.0	0.3	0.8
Cyprus	62.8	58.5	61.5	64.9	− 2.3	− 6.1	− 5.3	− 6.7
Malta	63.0	67.8	69.0	69.6	− 5.2	− 3.7	− 3.6	− 3.0
Euro area	**69.2**	**79.9**	**85.7**	**88.1**	**− 1.9**	**− 6.4**	**− 6.3**	**− 4.1**
United Kingdom	42.5	69.6	79.9	84.0	− 1.8	− 11.4	− 10.3	− 9.5
Sweden	50.2	42.7	39.7	36.3	1.4	− 0.9	− 0.1	0.6
Denmark	43.4	41.8	43.7	44.1	2.5	− 2.8	− 2.8	− 4.2
Poland	43.6	50.9	54.9	56.7	− 4.1	− 7.3	− 7.8	− 5.6
Czech Republic	25.6	34.4	37.6	39.9	− 3.7	− 5.8	− 4.8	− 4.1
Hungary	61.0	79.7	81.3	75.9	− 6.1	− 4.5	− 4.3	3.5
Romania	18.9	23.6	31.0	34.0	− 2.9	− 9.0	− 6.9	− 4.9
Lithuania	20.0	29.4	38.0	37.7	− 1.9	− 9.5	− 7.1	− 4.9
Bulgaria	43.0	14.6	16.3	17.5	0.7	− 4.3	− 3.1	− 2.5
Latvia	13.4	36.7	44.7	44.8	− 1.9	− 9.6	− 8.2	− 4.1
EU-27	**61.9**	**74.7**	**80.3**	**82.5**	**− 1.8**	**− 6.9**	**− 6.6**	**− 4.7**

[a] As a percentage of gross domestic product; definitions according to the Maastricht Treaty.

Source: European Commission, Autumn 2011.

The change of government which took place in November testifies to the sharp rise in pressure on Italy from the financial markets and from domestic and foreign politics. The incumbent government was replaced by a transitional cabinet, consisting mostly of non-partisan technocrats, and equipped with a clear mandate to initiate or accelerate the implementation of urgently needed reforms. Confidence has grown based on the fact that the creation of technocratic governments discharges individual political parties from direct responsibility for implementing painful consolidation measures. A transitional administration may therefore face relatively weak political opposition from its parliament. Furthermore, it is not unrealistic to suggest that Italy will be in a position to implement austerity measures that are politically acceptable and will, at the same time, ensure the solvency of the Italian state. Since the outbreak of the financial crisis in 2009, Italy has carried significantly lower public deficits than the countries of the European periphery (Greece, Spain, Portugal, and Ireland). Italy's primary deficits were therefore significantly lower than the euro area average and even went into a primary surplus of 0.9 percent of GDP last year. The continuation of this trend alone may prevent the public debt ratio from growing in the next two years if refinancing costs continue to remain stable. Moreover, Italy's private sector is in a good financial position compared to those of other European countries, which opens up a relatively large financing potential to the government through taxation of assets. In addition, Italy may under plausible assumptions remain solvent, even if it has to carry a long-term refinancing interest rate of 7 percent.

All this gives cause for hope that October's large austerity package worth 54 billion euro, as well as the additional programme announced in December, will

actually be implemented, and will at least partially restore the confidence of the financial markets. The two bundles of measures include the sale of state property, cuts in the public sector, measures to bring flexibility to the labour market and a pension reform. In addition, higher consumption and property taxes are planned. To achieve the objective of a balanced budget by the end of 2013, even more far-reaching measures are likely to be announced, which are taken into account by our forecast.

After *Spain* missed its own stated objective of a government deficit of 6 percent of GDP last year, concerns re-emerged in the financial markets as to whether the consolidation measures announced and decided upon so far actually go far enough.[4] The yields on 10-year Spanish government bonds rose to over 6 percent on average in the month of November, before slightly decreasing to 5.6 percent in December, and thereby signalled a still significant probability of default in the next few years. The new Spanish Government may therefore – and also with a view to maintaining its still comparatively good credit rating – initiate significantly greater savings efforts in the near future than previously announced. Indeed, our forecast is based on this assumption.

The development of public finances is a cause for concern in all three countries i.e. Greece, Ireland and Portugal supervised by the "troika". Despite enormous consolidation efforts, they will miss the deficit targets agreed with the "troika" for last year. In Greece and Portugal, this is due to the strong decline in economic activity. The incumbent government in Greece was consequently replaced by a transitional cabinet, consisting mostly of non-partisan technocrats, and equipped with a clear mandate to initiate or accelerate the implementation of urgently needed reforms. In Ireland, however, the deficit reduction slowed because the recapitalisation of the banking sector required more funds than originally expected. Ireland's targets for this year also look unrealistic, because its deficit plans are based on economic forecasts that seem overly-

optimistic from today's perspective. It is therefore likely that all three countries will have to increase their cost-saving efforts in order to achieve the deficit targets for the coming years.

1.3.2 Monetary conditions and financial markets

Monetary conditions

Monetary conditions remained extraordinarily accommodative in all major industrialised economies in the world. The somewhat improved economic conditions combined with increasing inflation rates led the European Central Bank (ECB) to increase its main refinancing rate in April and July 2011 by a total of 50 basis points. The subsequent worsening of the economic outlook obliged the ECB to reverse both interest rate hikes in two steps in November and December to 1 percent (see Figure 1.18). Purchases of government bonds were also extended further; and by mid-January 2012 the ECB recorded such securities amounting to over 200 billion euros in its balance sheet.

Furthermore, in December the ECB decided to lower the minimum reserve ratio from 2 to 1 percent for the first time since 1999. As the ECB offers an interest rate equal to the key interest rate on these reserves up to the defined minimum and banks normally take up refinancing credits from their respective central bank to meet the minimum reserve requirements, this measure basically implies a reduction in central bank money demand. This, in turn, means that less collateral in the form of government and corporate bonds,

Figure 1.18

Central bank interest rates

Bank rate (BoE, United Kingdom)

Federal target rate (Fed, United States)

Main refinancing rate (ECB, euro area)

Target policy rate (BoJ, Japan)

Source: European Central Bank; Federal Reserve Bank of St. Louis; Bank of England; Bank of Japan. Last accessed 2 January 2012.
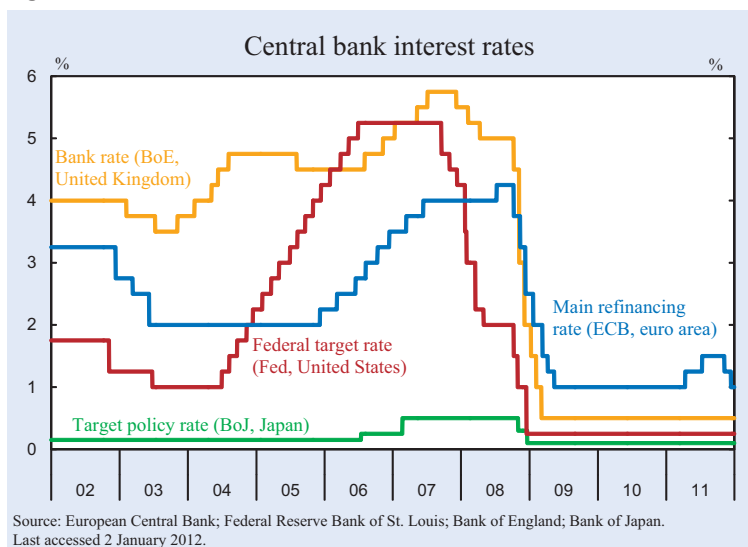
[4] At the beginning of this year the new Spanish government public announced that its deficit for 2011 may turn out to be higher than 8 percent of GDP. The way that this new estimate affects the rest of this forecast is not yet fully appreciated.

for example, are needed by the banking sector. As the latter are valued at (falling) market prices, these securities have been the factor limiting access to central bank money for some banks. Hence, instead of further expanding the list of collateral accepted by the central bank – as was the case previously – this measure reduces the need for that collateral.

Open market operations are still performed as fixed rate tenders with unlimited allocation and demand for them has significantly increased since spring 2011. ECB loans to banks in the euro area, which reached a trough of 407 billion euros in early April 2011 after falling since mid-2010, doubled to 879 billion euros at the end of last year. Roughly half of that increase was realised after the governing council of the ECB decided to carry out refinancing operations with a three-year maturity in its December session. However, the liquidity supplied by the monetary policy operations was actually reduced throughout the second half of 2011; at the end of the year the banks parked 623 billion euros as a deposit facility or in the form of time deposits with the Eurosystem (this figure only totalled around 100 billion euros in early April 2011). The extensive use of the liquidity absorbing measures of the ECB by the banking sector highlights the renewed broadening of the banking crisis. Instead of being active in the interbank market, banks prefer to use the safe haven options provided by the ECB (see Figure 1.19).

As the banks hold a high proportion of their assets in the form of government bonds, currency losses or cuts in debts lead to an extensive burden on them. In a situation similar to that of the requisite write-offs of structured financial products in the course of the sub-
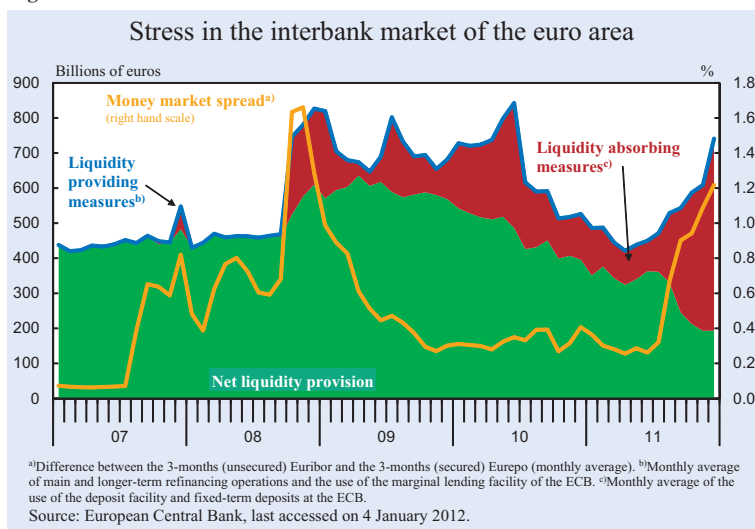
prime crisis in the United States, the banking system again fell into a deep crisis of confidence.

Another way to highlight the worsening of the debt situation and the associated banking crisis is by looking at a measure of the risk premium on the interbank money market. Whereas interest rates for secured three-month money (Eurepo) on the interbank money market decreased significantly in the second half of 2011, from 1.3 percent in July to 0.2 percent in December, the interest rate for unsecured three month cash (Euribor) only moved from 1.6 percent to 1.4 percent during the same time period. Hence, the difference between unsecured and secured three-month money market rates increased sharply since the summer months and reached an average of 122 basis points in December (see Figure 1.19). After mark-ups of up to 166 basis points at the time of the collapse of Lehman Brothers in November 2008, when the first wave of the global financial crisis reached Europe, a phase of recovery set in at the end of 2009, with risk premiums at around 30 basis points on interbank markets. Trade of base money issued by the ECB seems to have come to a complete standstill in the past few months as a result of strong distrust between banks.

From an economic point of view, the main fear is that troubled banks send out an additional negative impetus and restrict lending to the private sector beyond normal economic conditions. Albeit at a much lower level than in 2008 or 2009, the ECB's bank lending survey does show a tightening of the credit standards applied to the approval of loans or credit lines to enterprises in the euro area as a whole. According to the bi-annual "Survey on the access to finance of SMEs in the euro area" (SAFE) conducted by the ECB and the European Commission since 2009, the willingness of banks to lend during the past six months has also deteriorated. While in the latest survey of last summer, up to 50 percent of the firms surveyed declared a lesser propensity to lend in the periphery countries, this number stood at about 10 percent in countries like Germany or Finland. Another indication of a supply-side credit crunch in the peripheral countries is the relatively strong increase in lending rates in recent

Figure 1.19

Stress in the interbank market of the euro area

a) Difference between the 3-months (unsecured) Euribor and the 3-months (secured) Eurepo (monthly average). b) Monthly average of main and longer-term refinancing operations and the use of the marginal lending facility of the ECB. c) Monthly average of the use of the deposit facility and fixed-term deposits at the ECB.
Source: European Central Bank, last accessed on 4 January 2012.

months. Although newly issued loans to non-financial corporations in all euro area countries became more expensive, the increase was substantially higher in Italy, Spain, Greece and Portugal. Combined with declining volumes in the outstanding loans in these countries, this indicates the existence of a credit crunch in this region and is a main motivation for the ECB to counteract the shortage of short-term liquidity through an extension of its measures to support bank lending.

Figure 1.20

Credit developments in the euro area[a]

a) These indexes of adjusted outstanding amounts are calculated according to $I_t = I_{t-1}(1+F_t/L_{t-1})$, where L stands for the outstanding nominal amount of credit and F the amount of transactions (credit granted). The transactions F are calculated from differences in outstanding amounts adjusted for reclassifications, other revaluations, exchange rate variations and other changes which do not arise from transactions (see European Central Bank 2010 for details).
Source: European Central Bank, last accessed on 29 January 2012.

In the coming months the banks, particularly in the peripheral countries, must make considerable efforts to meet the increased capital requirement of 9 percent by June 2012, which was adopted by the EU Summit on 26 October 2011. According to estimates by the European banking supervisor, the EBA, the expected capital requirements of the largest banks in the common currency area amounted to 113 billion euros in the context of recent stress tests. In those countries most affected, measured by the total balance sheet of the respective national banking systems, their sovereign bonds suffered from massive price declines.

The close relationship between the national debt crisis and the banking crisis shows that the banking systems in the countries at the periphery of the euro area, i.e. those affected most by the debt crisis, suffer from liquidity problems and depend almost exclusively on the drip-feed of the respective national central banks. In terms of the ECB's liquidity-providing operations in October 2011, 71 percent (422 billion euros) were handled by the central banks of Italy, Spain, Greece, Portugal and Ireland, while local commercial banks in those countries accounted for only 4 percent of total deposits (17 billion euros) at the ECB. The commercial banks of Germany, France, the Netherlands, Austria, Finland and Luxembourg are net creditors to the Eurosystem. While their loans through its regular refinancing operations represented a share of only 29 percent (175 billion euros), they accounted for almost the entire sum of Eurosystem deposits (400 billion euros).[5]

This year the ECB is expected to leave the key interest rate at 1 percent and maintain its enhanced credit support measures. The expected deterioration of the economic situation will lead to a significant slowdown in price pressure. Looking further into the future, the continuing problems in the banking sector will also delay any return to a much more restrictive monetary policy.

Against this background, credit and capital market interest rates are likely to remain low for debtors with high credit ratings. Nevertheless, credit demand remains subdued, even in countries like Germany. Only the credit volume of housing loans still showed a steady increase in the first half of last year (see Figure 1.20). Since autumn, however, it has stagnated just like consumer and corporate credits.

The central banks in Central and Eastern Europe did not see any reason to change their interest rate policies last year. An exception to this rule was Poland, where the central bank raised its key interest in several steps by altogether one percentage point to 4.5 percent due to robust domestic demand and strongly expanding exports. Further increases are unlikely given the forecast of weaker economic conditions.

Bonds, stocks and foreign exchange markets

From an international perspective, government bond yields for the euro area decoupled from those in other major regions in the world in 2011. Whereas in Japan, the United States and the United Kingdom these long-term interest rates basically continued to fall throughout last year, they underwent a substantial

---

[5] Chapter 2 of this year's report goes into details here.

increase in the euro area during October and November (see Figure 1.21) largely nullifying the previous reduction.

The differences within the euro area are large and continue to increase, mainly reflecting a further surge towards safe assets (see Figure 1.22). The return on 10-year EU government bonds with the highest credit rating (Austria, Finland, France, Germany and the Netherlands) have fallen since April from an (unweighted) average of 3.6 percent to 2.6 percent in December. Except for Ireland, the other core members of the euro area (Belgium, Greece, Italy, Portugal and Spain) had to accept an increase in these capital market interest rates. In view of the spread between Portugal's government bonds and that of the euro area average of well over 900 basis points, as was the case in December last year, the financial markets appear to assume that it is likely to be the second country to default on its outstanding debt.

After a moderate recovery in the major stock markets up until spring last year, the euro crisis constituted a substantial set-back during the rest of the year (see Figure 1.23). The stock market falls last autumn in the euro area in particular were quite severe, bringing the markets almost back down to the lows seen in early 2009. In the United States and in the United Kingdom, the last few months of 2011 allowed stock markets to largely recover the losses that they sustained during summer and autumn.

The euro exchange rate against the US dollar also remained volatile, albeit to a lesser extent

Figure 1.21

10-year government bond yields

a) The synthetic euro-area benchmark bond refers to the weighted average yield of the benchmark bond series from each European Monetary Union member.

Source: Datastream, last accessed on 7 January 2012.

Figure 1.22

Regional disparties w.r.t. government bond yields in the euro area
Differences between 10-years national and synthetic euro area benchmark bond yields

Source: Datastream, last accessed on 2 January 2012.

Figure 1.23

Developments in stock markets

Source: Datastream, last accessed on 2 January 2012.
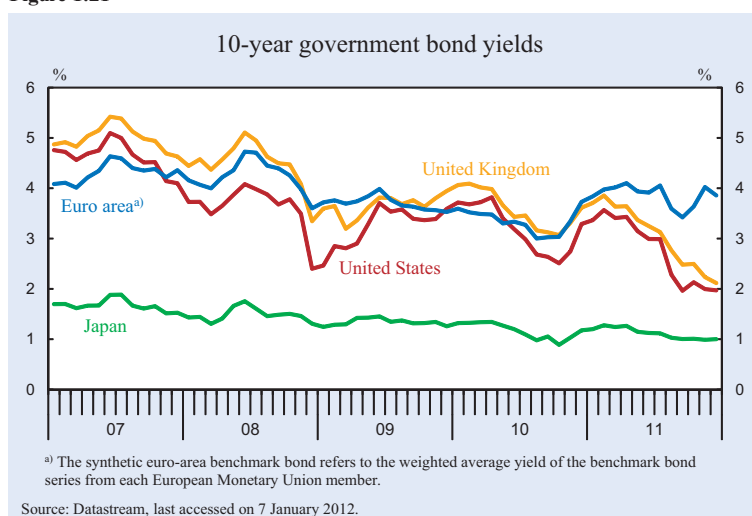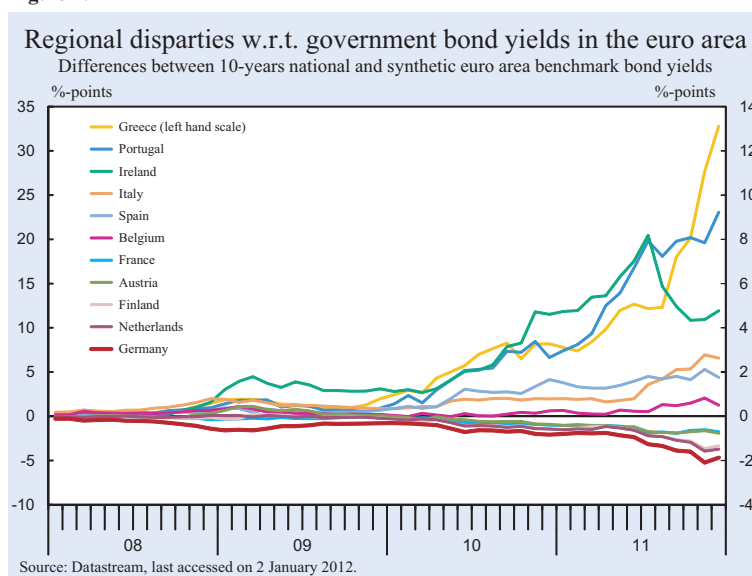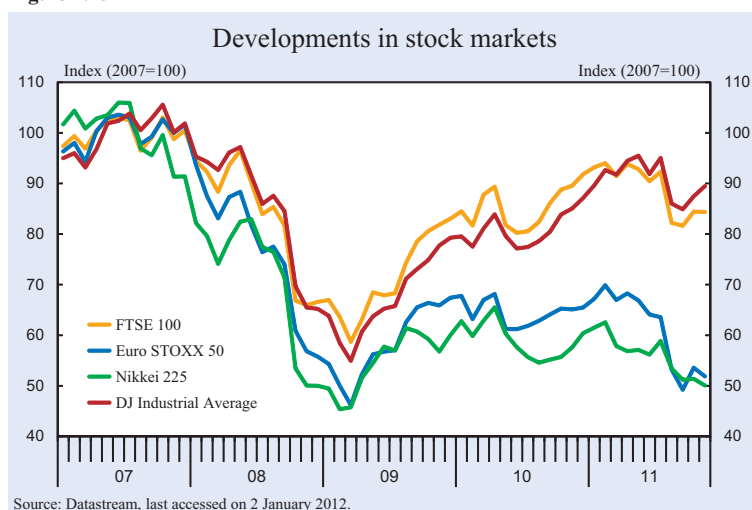
than in the years 2008–2010. After appreciating from 1.33 in early 2011 to 1.45 in April, the euro depreciated again against the US dollar to 1.32 at the end of the year (see Figure 1.24). The weakening of the euro during the second half of the year was associated with a further escalation of the sovereign debt and banking crisis in the euro area.

Since the start of the crisis in 2008, the world's major currencies have undergone substantial revaluations (see Figure 1.25). Large movements have occurred, especially during the winter of 2008/2009. Real effective exchange rates, by comparison, remained fairly stable in the United States, the United Kingdom and the euro area last year. China and Japan again experienced strong appreciations of their currency, especially during the summer semester. Whereas in the case of Japan this was indeed caused by the appreciation of the nominal exchange rate due to safe haven effects, for China the surge in inflation was the main driving force.
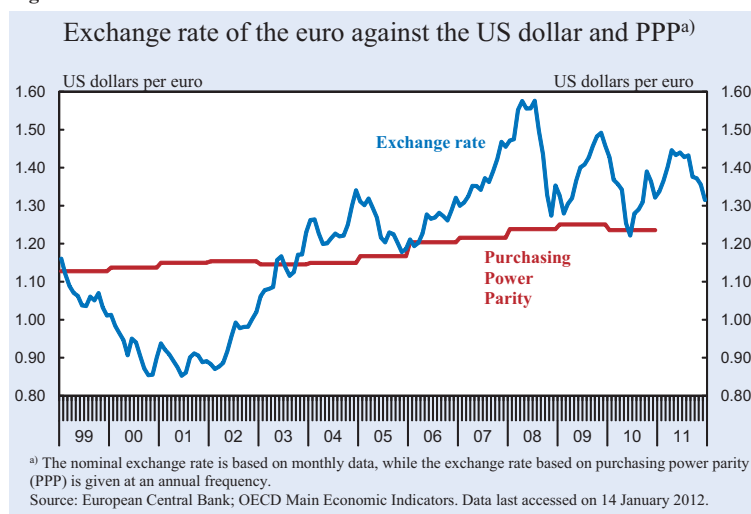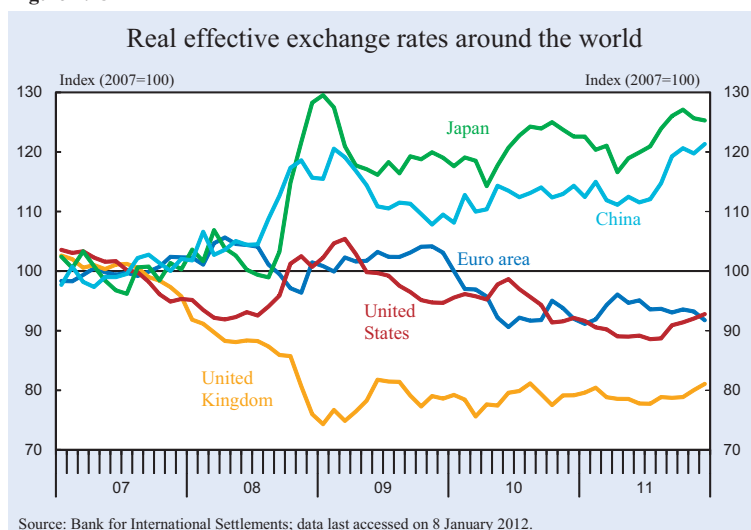
1.4 The outlook

1.4.1 The global economy

Economic growth will slow significantly this year. The high level of uncertainty and the debt problems of many advanced economies are contributing to this slowdown. Both of these factors have worsened the assessment of the current situation, as well as until the end of 2011 the six-month outlook in the recent Ifo World Economic Surveys (see Figure 1.26). The uncertainty is likely to cause a marked deterioration in financing conditions for

Figure 1.24

Exchange rate of the euro against the US dollar and PPP[a]

a) The nominal exchange rate is based on monthly data, while the exchange rate based on purchasing power parity (PPP) is given at an annual frequency.
Source: European Central Bank; OECD Main Economic Indicators. Data last accessed on 14 January 2012.

Figure 1.25

Real effective exchange rates around the world

Source: Bank for International Settlements; data last accessed on 8 January 2012.

Figure 1.26

The Ifo economic clock for the world

Source: Ifo World Economic Survey I/2012.

banks and companies and, in addition, will lead to a deferral in consumption and investment. The poor financial situation of private households in the United States as well as in some (mainly southern) European countries will continue to require a high level of saving, and will thus heavily restrain private consumption growth. Finally, fiscal policy in Europe and to a lesser extent in the United States will, due to the high levels of public debt, become noticeably restrictive. The negative fiscal momentum should be particularly strong in several of the euro area countries, which are threatened by the debt crisis (Greece, Portugal, Spain, Ireland, Italy and France), and whose economies (except for Ireland) will shrink in the coming year. An expansionary fiscal policy is only likely to be seen in Japan this year.

The economic slowdown in the industrialised countries will somewhat dampen the economic dynamism in the emerging countries. This is reflected by the negative assessment in the Ifo World Economic Survey for Asia and Latin America (see Figure 1.27). However, supported by both monetary policy, which has recently become more expansionary again, and by growing domestic demand, these countries will record significantly higher increases in production than the Western world. In fact, net exports may make a positive contribution to growth in advanced economies and a negative contribution in emerging economies. The main reason for this is the relatively robust growth in demand in emerging markets (especially China, Russia and Brazil). Japan, however, is an important exception, since its trade balance

Figure 1.27

Ifo World Economic Survey
Economic expectations for the next six months

Source: Ifo World Economic Survey I/2012.

Figure 1.28

Economic growth and the Ifo economic climate for the world

a) Arithmetic mean of judgements of the present and expected economic situation.
Source: IMF, World Economic Outlook, October 2011; GDP 2011 and 2012: EEAG forecast;
Ifo World Economic Survey I/2012.

Figure 1.29

Regional contributions to world GDP growth a)

a) Based on market weights.
Source: IMF; calculations by the EEAG; 2011 and 2012: EEAG forecast.
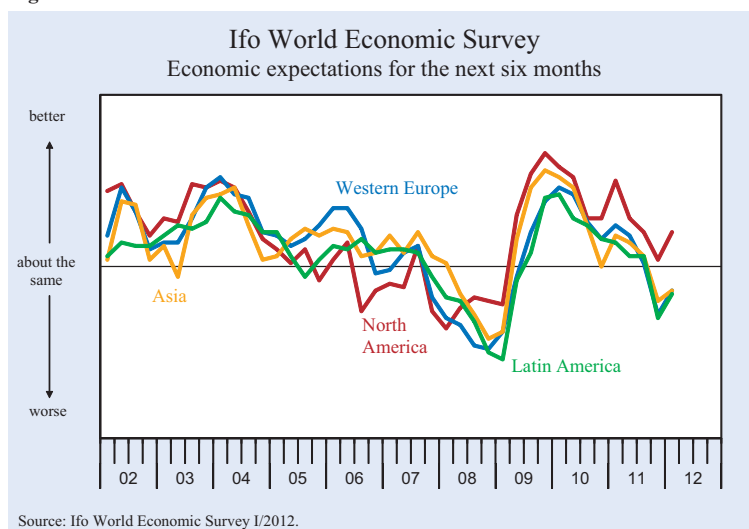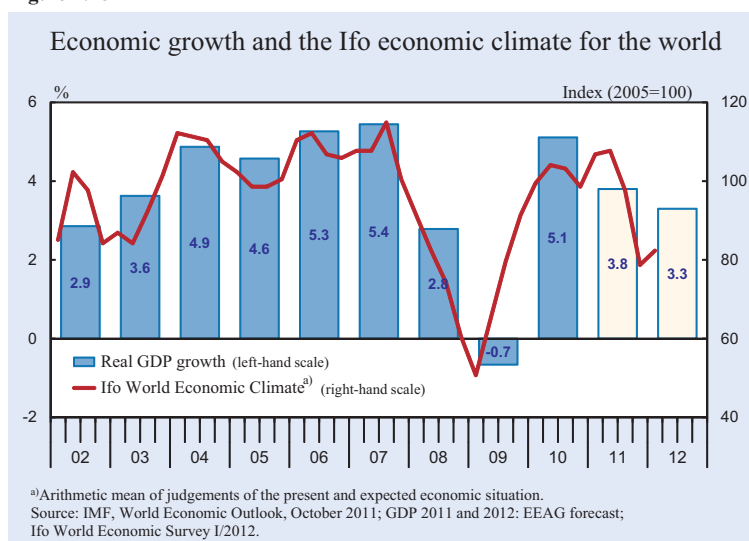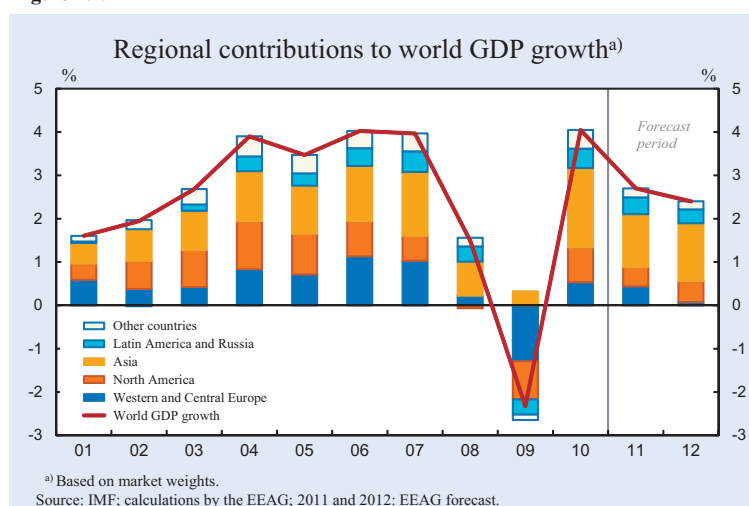
is likely to worsen due to imports rising sharply as a result of the government's reconstruction programmes. For Europe we assume increasing signals that the debt crisis will be brought to heel over the course of the year. Accordingly, the confidence of consumers and producers in the advanced economies is likely to improve during the second half of 2012. This should slightly stimulate the world economy towards the end of the year. Overall, total output of the world economy will record a small increase of 3.3 percent this year after 3.8 percent last year, when using purchasing-power-parity adjusted weights to aggregate the economies (see Figure 1.28). While North America and Europe will remain below their potential, the emerging markets will once again deliver the strongest contribution to world economic growth (see Figure 1.29).

The global economic slowdown in most recent quarters and the gradual phasing out of inflationary pressures from the increase in raw material prices in the first half of 2011 will reduce the inflation rate in all regions of the world. Traditionally, the rate of inflation in the emerging market economies will, however, remain significantly higher than inflation rates in industrialised countries. Stronger domestic demand and a higher rate of capacity utilisation in emerging markets will contribute to higher inflation. The weak underlying inflation rate in some euro area countries will be counteracted by the one-off effects of consumption tax increases.

1.4.2 United States

The underlying economic pace of the US economy is still subdued. Major economic indicators such as the ISM Purchasing Managers Index and University of Michigan Consumer Sentiment Index have regained ground in the last two months. Although the Consumer Sentiment Index is still at a subdued level, the December value of the ISM Purchasing Managers Index even points to an expansion rate of about 4 percent for the overall economy.

The crisis in the financial markets has exposed serious structural problems in the United States. In the third quarter of 2011, 22 percent of mortgage loans were still "under water", i.e., the outstanding borrowing exceeded the actual value of the property secured. Moreover, the number of foreclosures is still high, as is the number of unsold houses. These factors will put downward pressure on property prices, as well as on

construction activity over the forecast period. The consolidation of the construction sector leaves an overhang of workers who are difficult to place in other sectors of the economy. In addition, an inability to sell their homes restricts the mobility of unemployed residents. These are major reasons why the United States is increasingly building up long-term unemployment. In view of the continuing erosion of property prices, a reduction of the high debt levels of many private households would be possible only by maintaining consumer restraint. The dynamics of private consumption will consequently remain lower than during previous recoveries and rise only gradually this year.

No positive impetus can be expected from fiscal policy this year. The final phasing out of the effects of the American Recovery and Reinvestment Act, adopted in 2009, is restrictive compared to the previous fiscal year. A new economic stimulus package of over 447 billion US dollars ("Jobs Bill"), brought in by President Obama in autumn of 2011, was stopped by the Republicans in the Congress. Given the distressed financial situation of the United States, which in the current fiscal year is facing a budget deficit totalling around 975 billion US dollars, the public sector should react with substantial savings. At a federal level, however, the cost-saving efforts will, despite an overall deficit of around 7 percent of GDP this fiscal year, remain limited. For instance, contrary to the current legal situation, neither the termination of the temporary relief in social security contributions nor the withdrawal of the extension of the reference period for unemployment benefits is to be expected.

Due to the political process, a sustainable fiscal consolidation is not to be expected to set in this year. The bi-partisan savings commission, which was set up to work in the context of the negotiations on the debt limit increase last summer, could not agree on a plan to reduce borrowing by 1.5 trillion dollars over a 10 year horizon. The rating agencies have responded to the budgetary situation of the United States by reducing its credit rating (Standard & Poor's) or outlook (Moody's and Fitch). So far this has in itself not yet been reflected in higher interest rates for US government bonds.

The deadlock in Congress and the upcoming November 2012 presidential elections signify great uncertainty about the medium-term path of US government debt. If policy makers cannot agree on a consolidation strategy, automatic savings of 1.2 trillion

US dollars will be required in the defence, infrastructure and education budgets over 10 years from 2013 onwards.

At a rate of 0 to 0.25 percent, monetary policy remains expansionary. In addition, "Operation Twist", which was started in September 2011 in order to reduce long-term interest rates, will be continued until June 2012. Within this programme, a total of 400 billion US dollars in short-term bonds in the portfolio of the US central bank, the Federal Reserve, will be replaced by long-term bonds. Another round of "quantitative easing" is not scheduled. A change in the expansionary monetary policy stance is not in sight for the time-being. The responsible Federal Open Market Committee of the Fed has announced its decision to leave the key interest rate at its current low level until 2014.

The write-off opportunities that stimulated investment in autumn last year, together with global economic cooling, imply that equipment and software investment will stagnate during the winter semester. However, in view of the healthy corporate profits generated particularly by large enterprises, combined with low interest rates, growth rates will gain momentum again soon. After a slowdown during the first half of 2012, GDP will rise by 1.9 percent overall this year, versus 1.7 percent last year (see Figure 1.30).

The situation of small and medium-sized enterprises, which remain under stress, is a major hindrance to significant job creation. These enterprises are active mainly in the labour intensive services sector and are still complaining about on-going consumer restraint and poor profit prospects. In view of sluggish income

growth and the persistent high levels of household debt, this situation will improve only slightly in 2012. Easing inflationary pressures over the course of this year will contribute to improved real income growth and will stimulate consumption. Overall, the unemployment rate will on average fall only slightly to 8.3 percent this year, from 9 percent in 2011.

The core inflation rate can be expected to continue to rise slightly over the next six months due to expiring oil price effects and expansionary monetary policy. This will be followed by a moderate reduction in the second half of the year. Actual inflation will continue to fall due to reduced pressure from food and energy prices. Assuming constant crude oil prices and a tepid economy, the consumer price index will rise by 1.9 percent this year, following 3.1 percent in 2011.
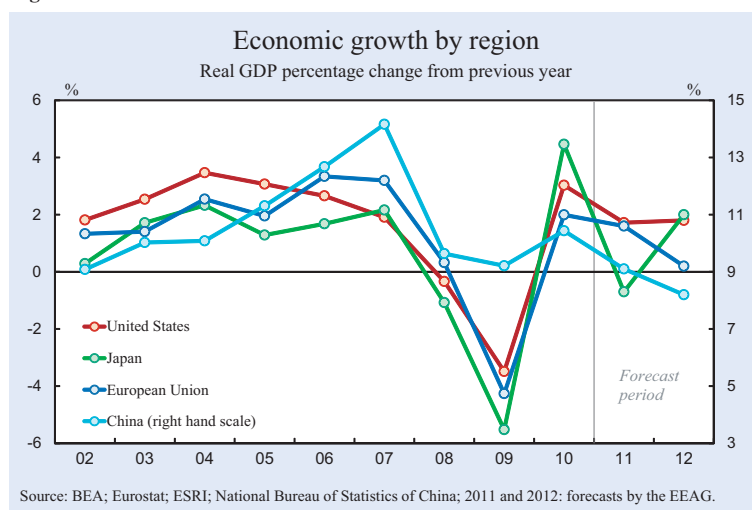
1.4.3 Asia

In *China* more expansionary monetary policy will allow economic activity to slightly gain momentum again over the course of the year. Private consumption will be stimulated by rising real incomes, increasing employment and the tax-free amount of income available. Fixed investments are likely to develop less strongly than previously, but still robustly as they are supported by fiscal policy. In this respect, the government has decided to introduce more social housing programmes. Public spending is also expected to expand significantly because of measures to combat poverty and as a result of the expansion of the pension and health insurance schemes. For all these reasons, overall economic expansion is expected to be driven by domestic demand again. Foreign trade will dampen overall growth, while weaker demand from the United States and Europe will reduce export growth. Furthermore, imports will continue to increase more strongly, meaning that the current account surplus is expected to decrease further. Overall Chinese GDP growth is expected to slow down to 8.1 percent in 2012 (see Figure 1.30).

In line with assumptions of more stable prices for raw materials and food, inflationary pressures are expected to subside further. The steady appreciation of the

Figure 1.30

Economic growth by region
Real GDP percentage change from previous year

Source: BEA; Eurostat; ESRI; National Bureau of Statistics of China; 2011 and 2012: forecasts by the EEAG.

Chinese yuan will also have a dampening effect on inflation. The relaxation of monetary policy, which in December began with a cut in the reserve ratio by 0.5 percentage points, is therefore expected to continue as a result of the slowing economy. The average rate of inflation should decline to 3.7 percent this year.

In the face of the consequences of the earthquake and the expected slowdown of the global economy, *Japanese* fiscal and monetary policy is still trying to stimulate the national economy. The government has now enlarged its programme for the reconstruction of the economy to 19 billion yen for the next five years. This amount represents approximately 4 percent of GDP. Thus Japan's national debt is set to continue to grow rapidly and will increase next year to 215 percent of GDP. Due to persistent threats of deflation – the core inflation rate in the third quarter of 2011 was – 0.4 percent – the Bank of Japan will not change its zero-interest rate policy. To further broaden the expansionary effects of monetary policy, the central bank has extended its purchase programme for government and corporate bonds introduced in October 2010 from 5 billion yen to 20 billion yen. In addition, loans to financial institutions have been extended up to 35 billion yen. These measures should ensure that prices increase slightly next year, after falling by 0.3 percent on average in 2011.

At the beginning of this year, Japanese production will once again have increased noticeably as a result of further catch-up effects in capital investment. However, these effects should abate gradually over the course of the year. Overall economic development will be increasingly characterised by growing concerns about an imminent tax increase, as well as a slower global economy. Exports will also be weakened by the strong appreciation of the yen and the consequent deterioration in price competitiveness. An increase in GDP by 2 percent is not least due to a large statistical overhang at the beginning of the year (see Figure 1.30).[6]

In *India*, a further tightening of monetary policy is to be expected. Its central bank has defined a target range for inflation of between 4.5 and 5.5 percent, whereas inflation is currently well above 8 percent. The Indian economy is expected to be driven once again by the dynamics of private consumption. Restrictive monetary policy measures and the persis-

tence of high structural hurdles are likely to curb investment growth. Due to the weaker global economy, exports will probably increase at lower growth rates. GDP is likely to grow by 6,5 percent this year, following an increase of 7.0 percent in 2011.

This year's aggregate output in other Eastern and Southern Asian countries is expected to expand more broadly, although not to the extent seen in 2010. The causes of this are the further weakening in export demand from the United States and Europe, as well as restrictive monetary policy. Nevertheless, the region should benefit from continued high growth in China. Furthermore, domestic demand is expected to remain robust and GDP is expected to increase by 4.2 percent in 2012.

1.4.4 Latin America

Lower demand for raw materials due to the global economic slowdown is dampening economic growth in the Latin American region comprising of *Argentina, Brazil, Chile, Colombia, Mexico* and *Venezuela*. Due to solid macro-economic fundamentals, however, the economic situation remains positive in the region. Boosted by continuing strong domestic demand in particular, GDP for the region is expected to show an overall increase of 3.5 percent this year, following 4.3 percent in 2011.

Although economic performance in Mexico expanded robustly throughout 2011, growth dynamics are expected to slow in 2011, mainly due to the economic slowdown in the United States, Mexico's most important trading partner. In 2010, around 80 percent of exports went to the neighbouring country, which represents over a third of Mexican GDP. The central bank has already indicated an interest rate change at an early stage to address the deterioration in the external economic environment.

1.4.5 Assumptions, risks and uncertainties

How well the European debt crisis can be controlled is a decisive factor for global economic growth in the forecast period. This forecast is based on the assumption that it will be possible to reassure the financial markets in the medium term, and thus to prevent any further escalation of the crisis. This requires strong efforts to improve public finances on the part of many member states of the euro area. In other words, on

---

[6] The statistical overhang, also called the carry-over effect, is the contribution of the previous year to growth in the current year.

top of the already announced austerity and reform programmes, fiscal consolidation will probably have to be intensified further. Under these assumptions, no further debt cuts are to be expected and the common European currency should remain stable. The uncertainty currently overwhelming the market should slowly subside over the course of the year as a result.

It is not certain that the baseline scenario described above will actually come to pass. We cannot rule out the possibility that the most important of the risk scenarios may occur, namely that the political will to implement far-reaching reforms in large countries such as Italy and Spain slackens, or that investors see these reforms as ineffective and lacking in credibility. In such a situation, several political and economic responses are conceivable, all of which will worsen the short- and medium-term economic outlook.

1. Without any European monetary or fiscal policy interventions, the high and growing interest rates on public debt in the countries concerned will practically cut them off from the capital markets (like Greece). Their probably inevitable default would seriously damage further parts of the European banking system and initiate a capital flight from the euro area. The economic consequences of such events could be enormous; especially as such contagion may spread to other regions of the world. We therefore do not expect the currency union to withstand such an escalation.
2. If the European Union were to answer the call for the collectivisation of public debt by extending present rescue funds or by introducing Eurobonds, the creditworthiness of the remaining anchors of stability in the euro area may suffer considerably. It would also cause further lasting damage to trust in the euro area as a whole and in each of its member states. The direct and indirect costs for the donor countries arising from such a move could quickly strengthen local political resistance to paying assistance money and dramatically increase investors' concerns that the currency union might fail. Therefore, a lasting solution that will reassure the markets can no longer be expected in this case either.
3. It is also possible that the ECB may engage in the large-scale purchase of government bonds or that the rescue fund may receive a license to refinance from the ECB. Both of these cases correspond to an unabashed monetisation of public debt which would fundamentally contradict the spirit of the

European treaties. Although it is true that this need not necessarily lead directly to inflation, it must be expected that such an infringement of the current monetary policy principles would undermine the credibility of the ECB to deliver medium-term price stability. This would, in turn, increase the mistrust of investors dramatically. Medium-term inflation expectations may rise substantially as a result, while interest rates on loans – including sovereign bonds – would be pushed upwards. This would result in an overall increase in average real interest rates in the euro area. In this event, strong resistance is to be expected from Germany in particular, again calling the monetary union into question.

In line with our assumption that the euro crisis will slowly abate, it is assumed that the exchange rate of the euro will average at around 1.30 US dollars this year.

International trade, which expanded by 6.2 percent last year, is forecasted to grow by only 3.9 percent in 2012. We also assume that world oil prices will fluctuate at around 111 US dollars per barrel over the whole of the forecasting period.

However, it is important to bear in mind that the current climate of extreme macro-economic and political uncertainty makes forecasting a very difficult business. Even small deviations on the part of Italy, for instance, away from its planned fiscal consolidation path could create fresh turmoil in the already extremely tense financial markets, triggering political reactions that are almost impossible to predict. Such events could quickly make the assumptions underlying our forecast obsolete.

1.4.6 The European economy

The cyclical situation

The economy of the European Union went through a moderate recession this winter. GDP shrank in the fourth quarter of 2011, and it will stagnate in the first quarter of 2012 (see Figure 1.31). A majority of sentiment indicators have been pointing downwards since summer and have deteriorated in many member states in recent months. The worsening of the debt crisis and the growing uncertainties created by it are largely responsible for this decline in consumer and producer confidence. It will result in a deferral of consumption
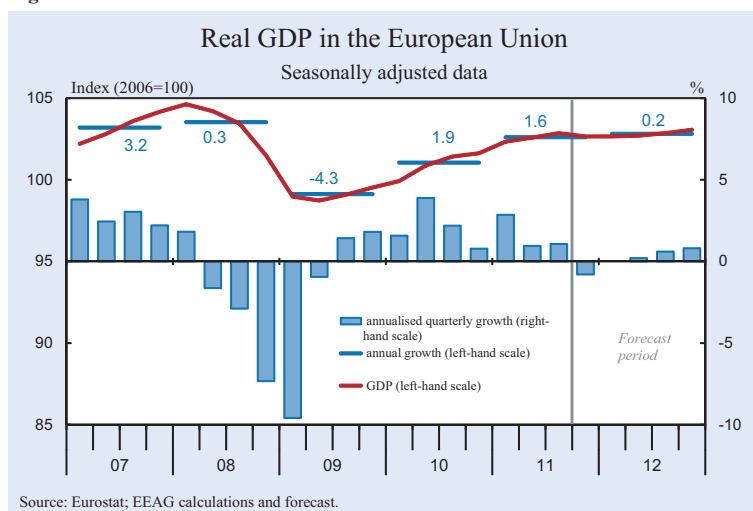
Figure 1.31

Real GDP in the European Union
Seasonally adjusted data

Source: Eurostat; EEAG calculations and forecast.

Figure 1.32

Demand contribution to GDP growth in the European Union[a]

a) Gross domestic product at market prices (prices of the previous year). Annual percentage change.
Source: Eurostat; EEAG calculations and forecast.

Figure 1.33

Employment in the European Union
Seasonally and work-day adjusted data

Source: Eurostat; EEAG calculations and forecast.
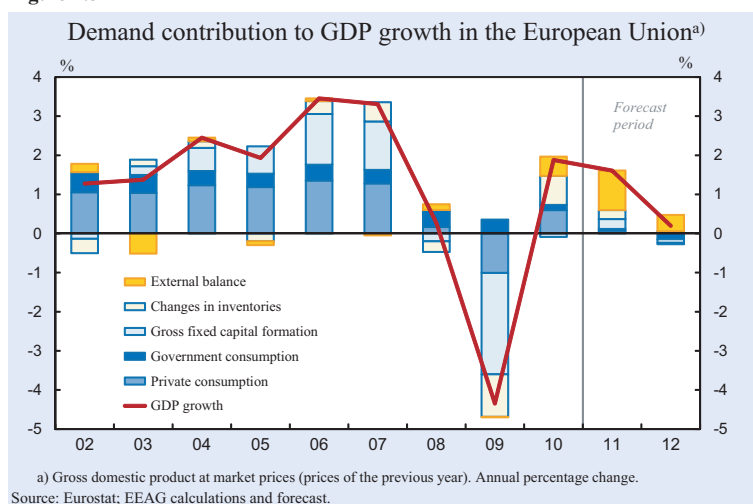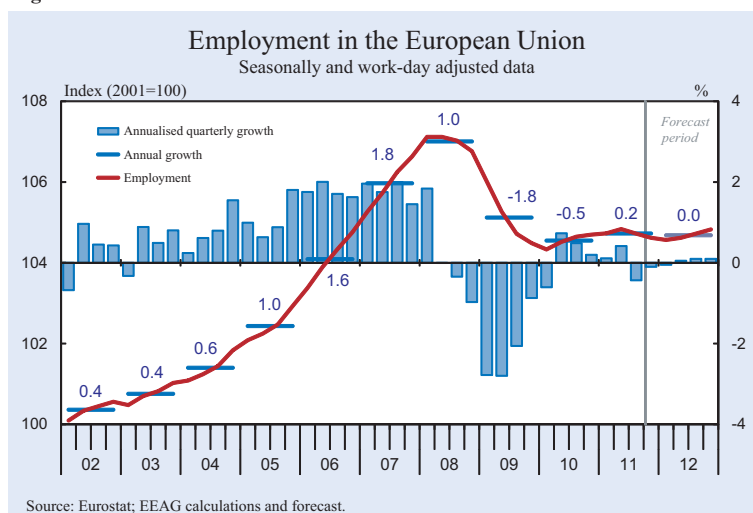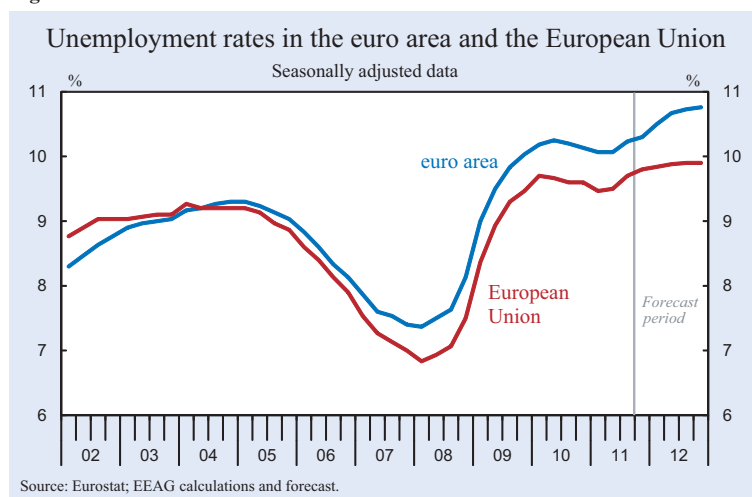
and a decline in investment in the months ahead. In addition, the financing conditions for households and businesses are likely to deteriorate, while fiscal policy is also expected to have a significantly negative impact on the overall economy this year. Finally, the slowdown in many emerging markets is likely to slow the expansion of exports.

Uncertainty is expected to gradually fade in the second half of 2012, and should even give way to a slight improvement in financing conditions and investment sentiment in Europe. The extremely expansionary monetary policy will have a positive impact on the readiness to accumulate capital. Nevertheless, domestic demand is hardly expected to show an increase, because massive spending cuts by the governments will reduce public consumption, while private consumption will stagnate as a result of considerable tax increases.

The only positive economic momentum in 2012 will come from net trade (see Figure 1.32). This will hardly be because of dynamic growth in exports, but rather because of weak imports. In spite of the slight economic improvement expected in the second half of 2012, GDP in the euro area will this year on average be 0.2 percent lower than in 2011. This is the result of negative growth in the fourth quarter of 2011 and the first quarter of 2012, pulling the averages for the whole year down. Overall, GDP in the European Union, which also comprises countries that are less affected by the crisis in the euro area, will increase by 0.2 percent this year, after 1.6 percent in 2011 (see Table 1.A.3).

Figure 1.34

Unemployment rates in the euro area and the European Union

Seasonally adjusted data

euro area

European Union

Forecast period

Source: Eurostat; EEAG calculations and forecast.

In view of the weak economy, leading to stagnation in employment (see Figure 1.33), the unemployment rate in the European Union will increase from 9.7 percent last year to 9.9 percent this year (see Figure 1.34). Differences in labour market regulation and in economic development between the individual member states are likely to further increase the spread of national unemployment rates.

The inflation rate is expected to decline from 3.0 percent last year to 1.5 percent this year. The stabilisation of raw material prices, moderate wages increases and average capacity utilisation that remains below average will be responsible for the easing of inflation pressures.

Differences across Europe

Domestic demand will be particularly weak in France, Italy and Spain and in the European periphery, as these countries are expected to implement draconian cost-cutting measures. Given the relatively sound fiscal situation in the Northern region of the euro area (Germany, the Netherlands, Austria, Finland and Luxembourg), the refinancing conditions for both the public and private sector will remain favourable here. This will allow domestic demand to remain relatively robust.

In some countries, the increase in the equity capital requirement for the banking sector to 9 percent, which was approved by the EU summit in October 2011, will also have a negative effect on the economy. To meet this new requirement, many Portuguese, Spanish and Greek banks will be forced to reduce their balance sheets, which may also reduce credit availability in these countries.

The economic upturn in *Germany* is not expected to continue in 2012 as its economy shifts down into a lower gear. Exports are expected to be significantly affected by the loss of dynamics in the global economy, and particularly by the various fiscal consolidation and savings efforts within the euro area in response to the sovereign debt crisis. The probable decrease in overall economic capacity utilisation, with weak developments in production as well as high uncertainty, is likely to reduce 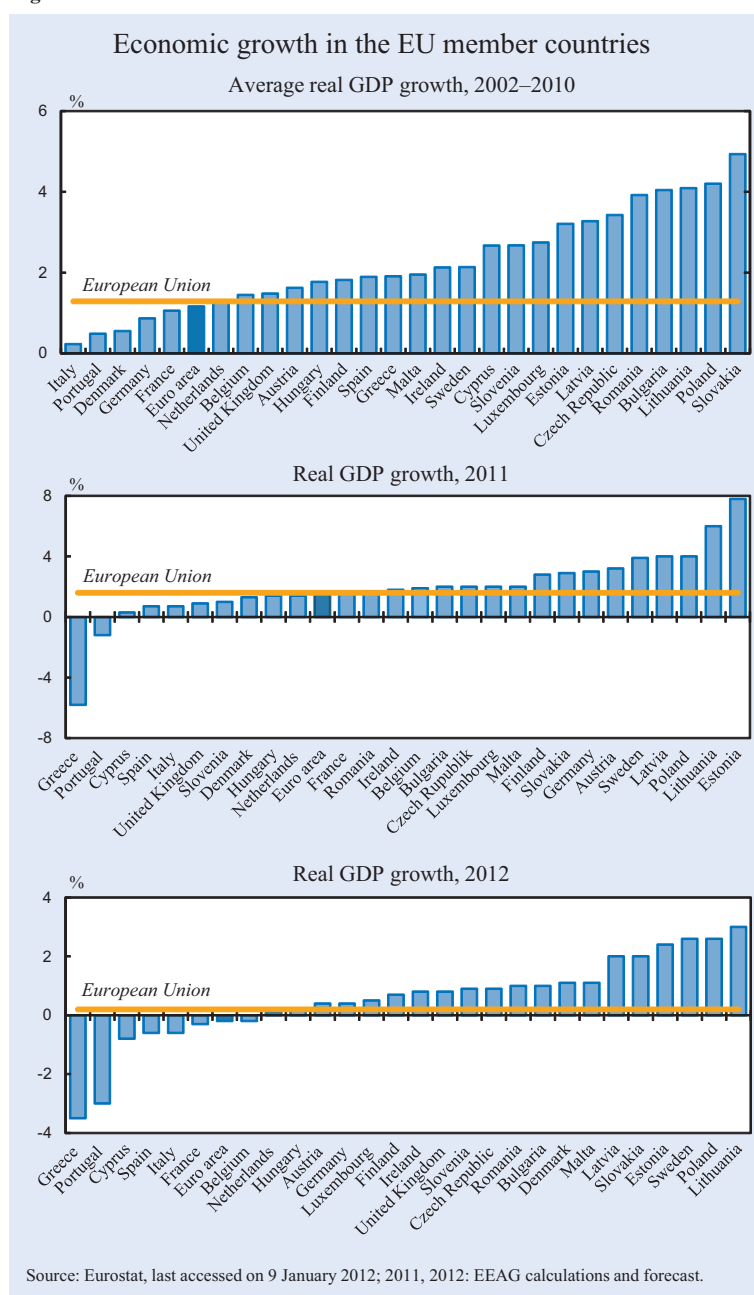equipment investment growth. However, private consumption, which trails the economic cycle, is expected to expand robustly, supported by strong labour market conditions and a fairly favourable income situation. Encouraged by low interest rates and the uncertainty of the prospects of financial assets, investment demand for residential buildings is expected to increase. Therefore, Germany – unlike many other European countries – will not go into recession, as defined by at least two consecutive quarters of negative growth.

The uncertainty arising from the euro crisis is expected to dissipate gradually this year. This should trigger an uptick in the world economy, allowing German exports to slowly increase. The confidence of German companies should then gradually return, encouraging them to ramp up investment as a result. With robust consumer demand and lively housing construction activity continuing, GDP can be expected to expand at a rate around potential in the second half of 2012, which implies annualised growth of 1¼ percent. Over the whole of 2012, GDP is expected to increase by an average of 0.4 percent (see Figure 1.35).

The economic upturn in *France* is over for the time being. Although GDP increased throughout the first three quarters of last year, important indicators and additional consolidation efforts on the part of the French government suggest an imminent downturn. The probability of a recession this winter is high.

Private investment is likely to suffer from rising interest rates and more restrictive lending by banks in the forecast period. The earnings prospects for businesses are also increasingly troubled. In addition, no positive momentum is expected from private consumption this

Figure 1.35

Economic growth in the EU member countries

Average real GDP growth, 2002–2010

Real GDP growth, 2011

Real GDP growth, 2012

Source: Eurostat, last accessed on 9 January 2012; 2011, 2012: EEAG calculations and forecast.

lowing 9.7 percent in 2011. As a result of the downturn, the inflation rate should fall back to 0.9 percent. The inflation rate could, however, be much higher if the French government imposes further increases in VAT in order to restore the national budget.

The economic recovery in *Italy* is also over. The upswing in the years 2010 and 2011 was very weak, and GDP is likely to have fallen in the fourth quarter of 2011. Further declines will be recorded for the first three quarters of this year.

Investment activity will be limited by more restrictive bank lending, as well as by rising interest rates. In addition, Italian businesses are expected to postpone investments because of the significant uncertainty surrounding developments in the government debt crisis. Private consumption expenditure can offer no positive impetus, as the labour market situation is expected to worsen and disposable income will suffer from consolidation measures. Public consumption is also expected to fall as a result of saving measures both already initiated and assumed. Only net foreign trade may contribute positively to overall economic development. GDP is expected to decline by 0.6 percent this year.

year. High unemployment, as well as tax increases, both already announced and anticipated, will affect the disposable income of private households. Fiscal consolidation by the French government will lead to falling public consumption, thereby also dampening GDP growth. The only positive contribution is to be expected from net foreign trade. GDP will fall by 0.3 percent this year as a result of a mild recession during the winter.

The economic downturn will lead to a rise in unemployment in the forecast period. The unemployment rate is expected to average 10.5 percent this year, fol-

The decline in Italian economic performance will also lead to a rise in unemployment. This year, the average unemployment rate is expected to rise to 9.0 percent, after standing at 8.2 percent on average last year. The inflation rate is expected to fall from 2.9 percent in 2011 to 0.9 percent this year as a result of the recession. No increases in sales taxes are assumed.

In the *United Kingdom*, domestic demand will be exposed to further major stress factors this year. On the one hand, fiscal policy will again send a strong negative impulse of over 1 percent in relation to GDP.

On the other hand, the situation in the labour market has deteriorated significantly since spring 2011; the harmonised unemployment rate reached 8.3 percent in September. This is, above all, due to the job cuts in the public sector, which started in 2010. In addition, employment expectations have declined strongly in the manufacturing sector, as well as in retail and wholesale trade and in other services industries.

Monetary policy has once again increased the level of expansion. In October, the Bank of England expanded its government bond purchase program by 75 billion pounds sterling (87 billion euros), which now amounts to just below 20 percent of GDP. Nevertheless, inflationary pressures should diminish in the short term, due to the disappearance of some temporary factors in 2012, particularly the effect of the VAT increase early last year, which accounts for over 1.5 percentage points of the harmonised inflation rate of 4.8 percent as of November 2011.

Hopes of a robust, export-driven recovery in the near future are dwindling fast. Although the effective exchange rate is still more than 20 percent below its value in early 2007, the global economic slowdown and additional saving efforts in France, Italy and Spain, which are among the ten most important trading partners of the United Kingdom, will curb exports.

This winter, early indicators point to a stagnation in economic output. From spring 2012 onwards, increasing real incomes due to lower price pressure, as well as improved price competitiveness, should support growth. In total, this indicates an increase of 0.8 percent in overall economic production (following 0.9 percent last year). The unemployment rate is forecasted to average 8.4 percent this year, while inflation is expected to approach the Bank of England's 2 percent inflation target over the course of the year and amount to 2.4 percent on average for 2012 as a whole.

The increased consolidation efforts of the new government of Prime Minister Mariano Rajoy have nudged the *Spanish* economy back into recession. A decline in GDP was recorded for the last quarter of 2011, and this trend looks set to continue over the first three quarters of 2012.

A positive impulse will come from abroad, as imports are expected to decline due to weak domestic demand, while exports will continue to increase – albeit moderately – as a result of the improved competitiveness of

the Spanish economy. Private consumption, on the other hand, will fall slightly as a result of high unemployment, weak wage growth and the anticipated consolidation measures of the government. Furthermore, private investment is expected to remain weak because credit availability from banks is becoming more restrictive, and interest rate levels are expected to rise. GDP will shrink by 0.6 percent in 2012.

The economic downturn will lead to further increases in unemployment. The average annual unemployment rate will rise from 21.7 percent in 2011 to 23.0 percent this year. The inflation rate, on the other hand, is forecasted to decline to 0.7 percent in 2012 as a result of the weak economy. If the Spanish government raises VAT rate again, the inflation rate should turn out to be significantly higher.

Given the higher interest rates charged by banks and their increased risk aversion, declining credit availability can be expected in many *Central and Eastern European countries*. This may have a restrictive effect on private investment this year. Moreover, no stimulus measures are to be expected from governments. Dependence on external capital injections and limited access to bond markets will force governments to maintain a restrictive course. Domestic demand and consumption in particular are likely to remain weak in most of these countries due to consolidation measures. Although unemployment declined in 2011 in the majority of countries, including in the Czech Republic and the Baltic States, this improvement is expected to abate in view of slowing economic momentum. All indicators point to a noticeable slowdown in the region as a whole, and inflation rates will continue to fall as a result.

Appendix 1.A
Forecasting tables

Table 1.A.1
GDP growth, inflation and unemployment in various countries

	Share of total GDP in %	GDP growth in %			CPI inflation in %			Unemployment rate[d] in %		
		2010	2011	2012	2010	2011	2012	2010	2011	2012
Industrialised countries:										
EU-27	29.3	1.9	1.6	0.2	1.9	3.0	1.5	9.6	9.7	9.9
Euro area	21.9	1.9	1.5	–	1.5	2.7	1.2	10.1	10.2	10.7
Switzerland	1.0	2.7	1.9	1.3	0.6	0.5	0.7	3.9	3,1	3.3
Norway	0.7	0.7	1.5	1.9	2.3	1.5	1.8	3.5	3.3	3.2
Western and Central Europe	31.0	1.9	1.6	0.2	1.9	2.9	1.5	9.5	9.5	9.7
United States	26.2	3.0	1.7	1.9	1.6	3.1	1.9	9.6	9.0	8.3
Japan	9.9	4.5	– 0.7	2.0	– 0.7	– 0.3	– 0.1	5.0	4.5	4.4
Canada	2.8	3.2	2.2	1.7	1.8	2.9	1.8	8.0	7.5	7.3
Industrialised countries	**70.0**	**2.8**	**1.3**	**1.2**	**1.4**	**2.5**	**1.4**	**8.8**	**8.5**	**8.4**
Newly industrialised countries:										
Russia	2.7	4.0	4.0	3.5	–	–	–	–	–	–
China and Hongkong	11.0	10.3	9.0	8.1	–	–	–	–	–	–
India	2.9	9.9	7.0	6.5	–	–	–	–	–	–
East Asia[a]	5.7	7.7	4.5	4.2	–	–	–	–	–	–
Latin America[b]	7.7	6.1	4.3	3.5	–	–	–	–	–	–
Newly industrialised countries	**30.0**	**8.1**	**6.3**	**5.6**	**–**	**–**	**–**	**–**	**–**	**–**
Total[c]	**100.0**	**4.4**	**2.8**	**2.5**	**–**	**–**	**–**	**–**	**–**	**–**
World trade, growth		**12.2**	**6.2**	**3.9**	**–**	**–**	**–**	**–**	**–**	**–**

[a] Weighted average of Indonesia, Korea, Malaysia, Taiwan, Philippines, Singapore. Weighted with the 2010 levels of GDP in US dollars. – [b] Weighted average of Argentina, Brasil, Chile, Columbia, Mexico, Peru, Venezuela. Weighted with the 2010 level of GDP in US dollars. – [c] Weighted average of the listed groups of countries. – [d] Standardised unemployment rate.

Source: Eurostat, OECD, IMF, National Statistical Offices, 2011 and 2012: forecasts by the EEAG.

Table 1.A.2

GDP growth, inflation and unemployment in the European countries

	Share of total GDP in %	GDP growth in %			Inflation[a] in %			Unemployment rate[b] in %		
		2010	2011	2012	2010	2011	2012	2010	2011	2012
Germany	20.4	3.7	3.0	0.4	1.1	2.5	1.8	7.1	6.0	5.5
France	15.9	1.5	1.6	– 0.3	1.7	2.3	0.9	9.5	9.7	10.5
Italy	12.6	1.5	0.7	– 0.6	1.6	2.9	0.9	8.4	8.2	9.0
Spain	8.7	– 0.1	0.7	– 0.6	2.0	3.1	0.7	20.1	21.7	23.0
Netherlands	4.8	1.7	1.4	0.1	0.9	2.5	1.5	4.5	4.4	4.7
Belgium	2.9	2.3	1.9	– 0.2	2.3	3.5	1.2	8.3	7.2	7.9
Austria	2.3	2.3	3.2	0.4	1.7	3.6	2.0	4.4	4.1	4.1
Greece	1.9	– 4.7	– 5.8	– 3.5	4.7	3.1	– 0.1	12.6	17.6	19.6
Finland	1.5	3.6	2.8	0.7	1.7	3.3	2.0	8.4	7.8	7.5
Ireland	1.3	– 0.4	1.8	0.8	– 1.6	1.2	0.6	13.7	14.5	14.9
Portugal	1.4	1.4	– 1.2	– 3.0	1.4	3.6	1.0	12.0	12.8	13.9
Slovakia	0.5	4.2	2.9	2.0	0.7	4.1	2.2	14.4	13.4	13.9
Slovenia	0.3	1.4	1.0	0.9	2.1	2.1	1.7	7.3	8.1	8.9
Luxembourg	0.3	2.7	2.0	0.5	2.8	3.7	2.1	4.6	4.8	5.0
Cyprus	0.1	1.1	0.3	– 0.8	2.6	3.5	1.7	6.3	7.8	8.7
Estonia	0.1	2.3	7.8	2.4	2.7	5.1	3.2	16.8	12.4	12.3
Malta	0.1	2.9	2.0	1.1	2.0	2.4	1.2	7.0	6.5	6.5
Euro area[c]	**75.0**	**1.9**	**1.5**	**– 0.2**	**1.5**	**2.7**	**1.2**	**10.1**	**10.2**	**10.7**
United Kingdom	13.8	1.8	0.9	0.8	3.3	4.5	2.4	7.8	8.1	8.4
Sweden	2.8	5.4	3.9	2.6	1.9	1.4	1.0	8.4	7.5	7.3
Denmark	1.9	1.3	1.3	1.1	2.2	2.7	2.0	7.4	7.6	7.4
EU-20[c]	**93.5**	**1.9**	**1.5**	**0.1**	**1.8**	**2.9**	**1.4**	**9.6**	**9.7**	**10.2**
Poland	2.9	3.9	4.0	2.6	2.7	3.9	3.2	9.6	9.7	8.6
Czech Republic	1.2	2.7	2.0	0.9	1.2	2.1	2.5	7.3	6.8	6.5
Romania	1.0	– 1.3	1.7	1.0	6.1	5.8	3.6	7.3	7.3	7.5
Hungary	0.8	1.3	1.4	0.2	4.7	3.9	3.5	11.2	10.9	12.0
Bulgaria	0.3	0.2	2.0	1.0	3.0	3.4	3.0	10.2	11.1	10.4
Lithuania	0.2	1.4	6.0	3.0	1.2	4.1	3.9	17.8	15.7	14.4
Latvia	0.1	– 0.3	4.0	2.0	– 1.2	4.2	3.0	18.7	16.0	15.0
New members[d]	**6.5**	**2.2**	**2.9**	**1.7**	**3.1**	**3.9**	**3.2**	**9.5**	**9.4**	**9.0**
EU-27[c]	**100.0**	**1.9**	**1.6**	**0.2**	**1.9**	**3.0**	**1.5**	**9.6**	**9.7**	**9.9**

[a] Harmonised consumer price index (HICP). – [b] Standardised unemployment rate. – [c] Weighted average of the listed countries. – [d] Weighted average over Poland, Czech Republic, Romania, Hungary, Bulgaria, Lithuania, Latvia.

Source: Eurostat, OECD, IMF, 2011 and 2012: forecasts by the EEAG.

Table 1.A.3

Key forecast figures for the European Union

	2009	2010	2011	2012
	Percentage change over previous year			
Real gross domestic product	− 4.3	1.9	1.6	0.2
Private consumption	− 1.7	1.0	0.3	0.1
Government consumption	2.0	0.7	0.2	− 0.7
Gross fixed capital formation	− 12.4	− 0.3	1.9	− 0.5
Net exports[a]	0.0	0.5	1.0	0.4
Consumer prices[b]	1.0	1.9	3.0	1.5
	Percentage of nominal gross domestic product			
Government fiscal balance[c]	− 6.9	− 6.6	− 4.7	− 3.9
	Percentage of labour force			
Unemployment rate[d]	9.0	9.6	9.7	9.9

[a] Contributions to changes in real GDP (percentage of real GDP in previous year). – [b] Harmonised consumer price index (HCPI). – [c] 2011 and 2012: forecasts of the European Commission. – [d] Standardised unemployment rate.

Source: Eurostat, 2011 and 2012: forecasts by the EEAG.

Table 1.A.4

Key forecast figures for the euro area

	2009	2010	2011	2012
	Percentage change over previous year			
Real gross domestic product	− 4.2	1.9	1.5	− 0.2
Private consumption	− 1.2	0.9	0.4	0.0
Government consumption	2.5	0.5	0.0	− 0.8
Gross fixed capital formation	− 12.1	− 0.8	2.0	− 0.8
Net exports[a]	− 0.6	0.8	0.9	0.6
Consumer prices[b]	0.3	1.5	2.7	1.2
	Percentage of nominal gross domestic product			
Government fiscal balance[c]	− 6.4	− 6.2	− 4.1	− 3.4
	Percentage of labour force			
Unemployment rate[d]	9.6	10.1	10.2	10.7

[a] Contributions to changes in real GDP (percentage of real GDP in previous year). – [b] Harmonised consumer price index (HCPI). – [c] 2011 and 2012: forecasts of the European Commission. – [d] Standardised unemployment rate.

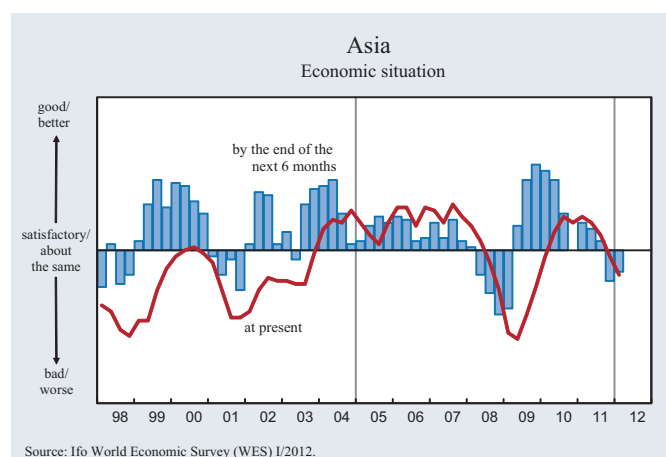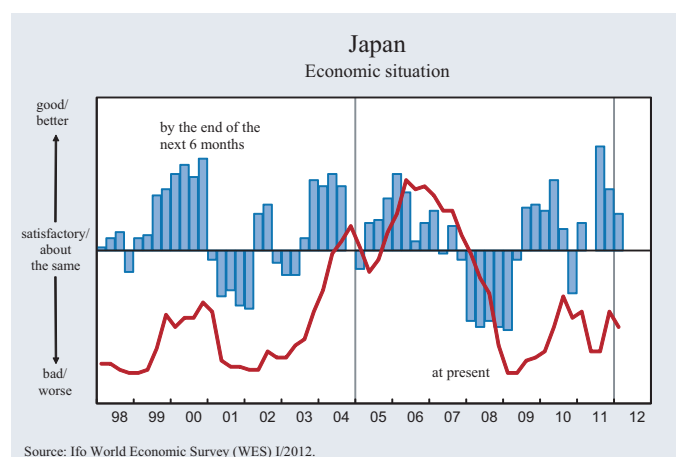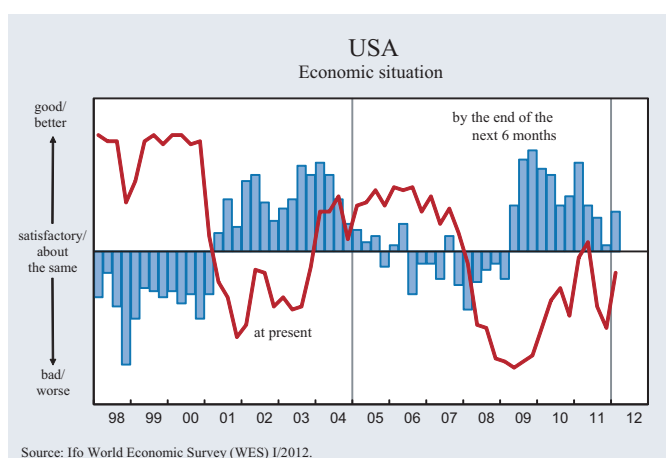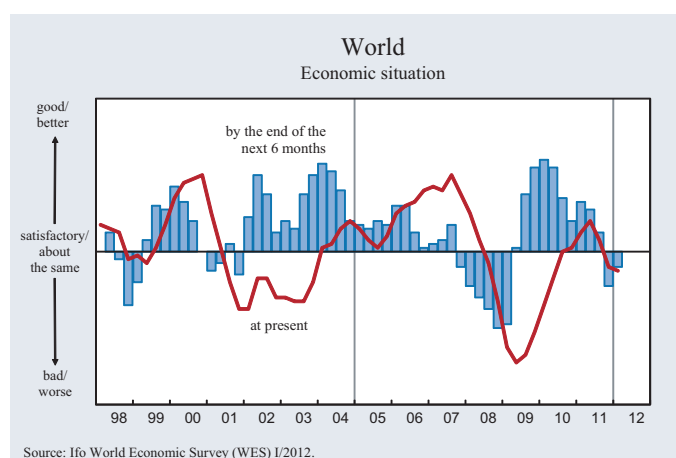Source: Eurostat, 2011 and 2012: forecasts by the EEAG.

Appendix 1.B
Ifo World Economic Survey (WES)

The Ifo World Economic Survey (WES) assesses worldwide economic trends by polling transnational as well as national organizations worldwide about current economic developments in the respective country. This allows for a rapid, up-to-date assessment of the economic situation prevailing around the world. In January 2012, 1,129 economic experts in 120 countries were polled. WES is conducted in cooperation with the International Chamber of Commerce (ICC) in Paris.

The survey questionnaire focuses on qualitative information: on assessment of a country's general economic situation and expectations regarding important economic indicators. It has proved to be a useful tool, since economic changes are revealed earlier than by traditional business statistics. The individual replies are combined for each country without weighting. The "grading" procedure consists in giving a grade of 9 to positive replies (+), a grade of 5 to indifferent replies (=) and a grade of 1 to negative (–) replies. Grades within the range of 5 to 9 indicate that positive answers prevail or that a majority expects trends to increase, whereas grades within the range of 1 to 5 reveal predominantly negative replies or expectations of decreasing trends. The survey results are published as aggregated data. The aggregation procedure is based on country classifications. Within each country group or region, the country results are weighted according to the share of the specific country's exports and imports in total world trade.
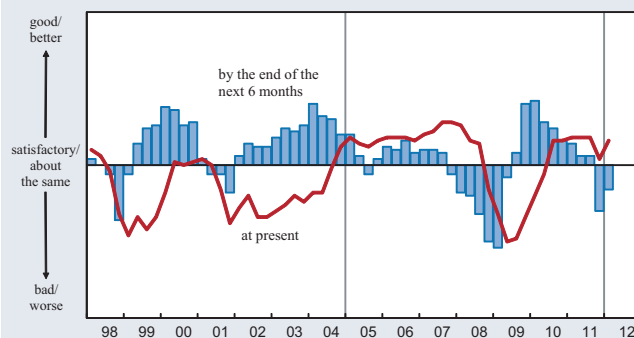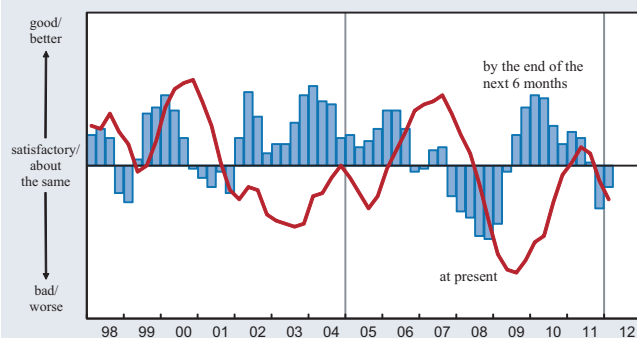
IFO WORLD ECONOMIC SURVEY (WES)

Source: Ifo World Economic Survey (WES) I/2012.

Source: Ifo World Economic Survey (WES) I/2012.

Source: Ifo World Economic Survey (WES) I/2012.

Source: Ifo World Economic Survey (WES) I/2012.

CIS
Economic situation

Belarus, Georgia, Kazakhstan, Kyrgyzstan, Russia, Ukraine

good/better

satisfactory/about the same

bad/worse

by the end of the next 6 months

at present

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Latin America
Economic situation

good/better

satisfactory/about the same

bad/worse

by the end of the next 6 months

at present

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

European Union (16)
Economic situation

good/better

satisfactory/about the same

bad/worse

by the end of the next 6 months

at present

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Eastern Europe
Economic situation

good/better

satisfactory/about the same

bad/worse

by the end of the next 6 months

at present

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12
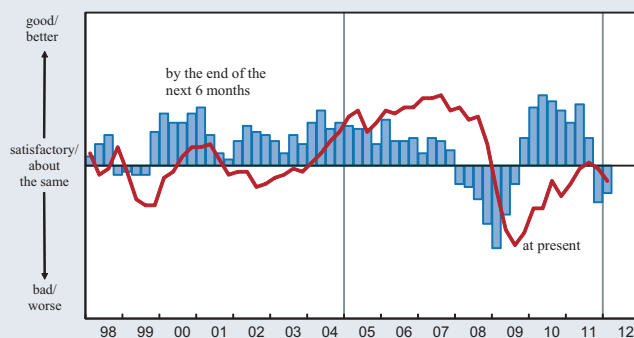
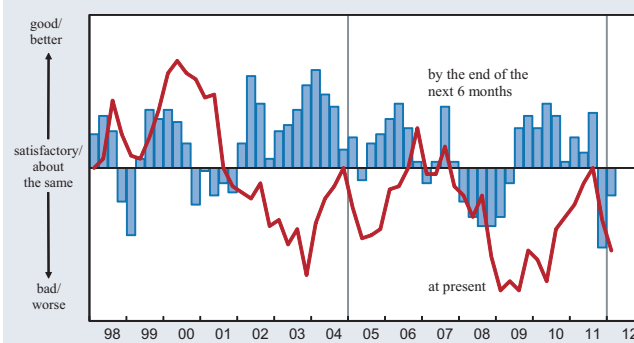Source: Ifo World Economic Survey (WES) I/2012.

Germany: Ifo business climate[a)]
Seasonally adjusted data

2005=100

Ifo business climate

Assessment of business situation

Business expectations

125 120 115 110 105 100 95 90 85 80 75
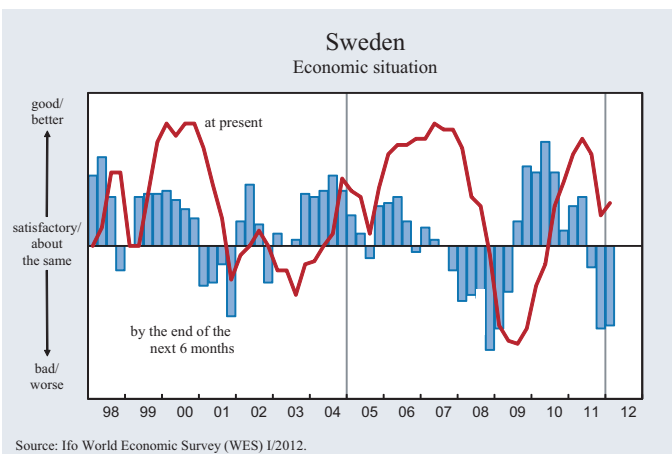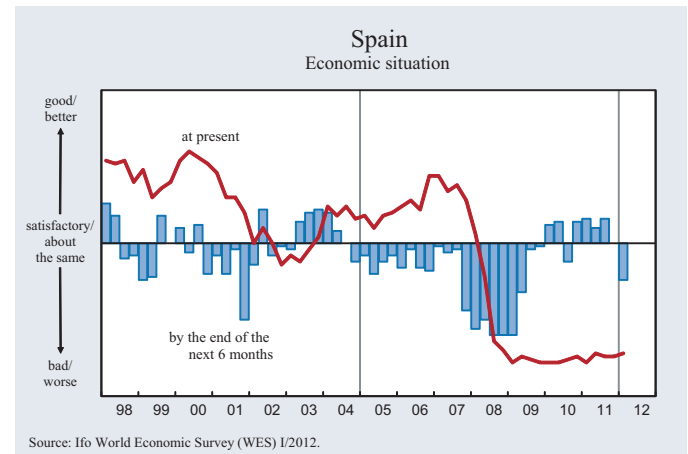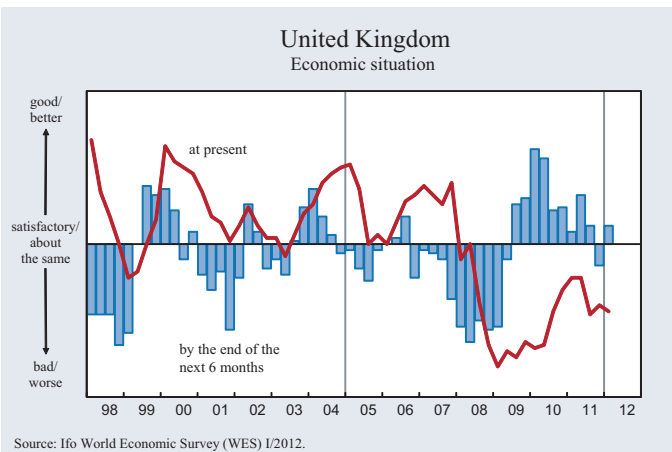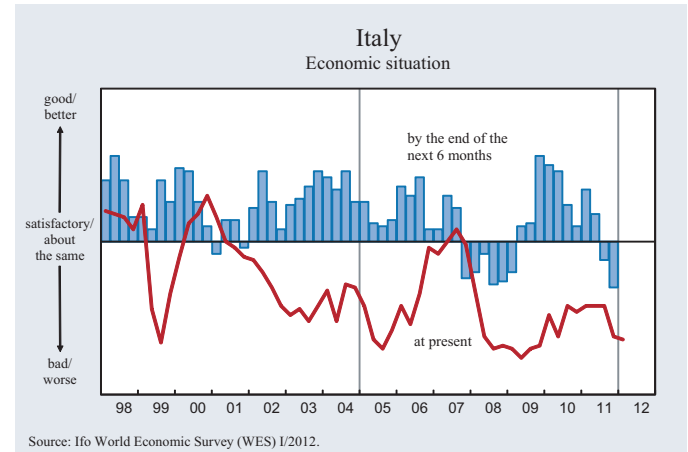
98 99 00 01 02 03 04 05 06 07 08 09 10 11 12
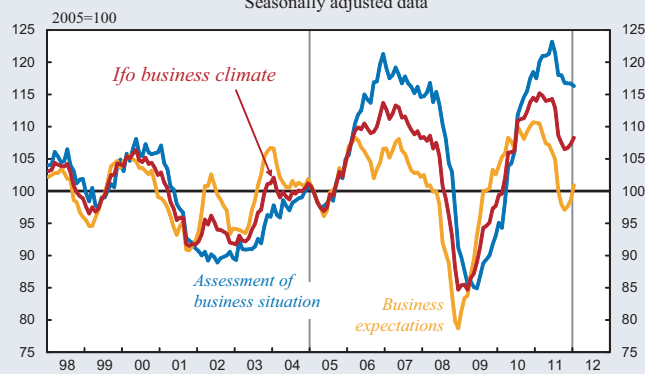
[a)] Manufacturing industry, construction, wholesale and retail trade.
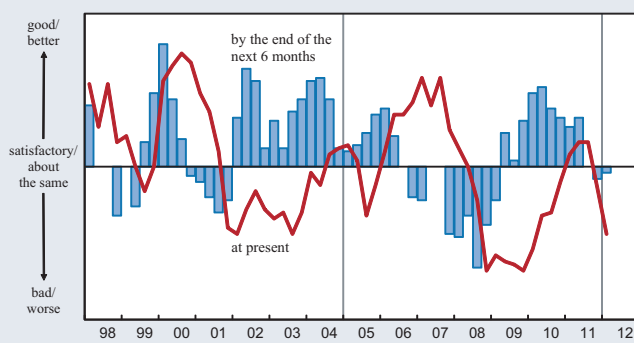Source: Ifo Business Survey, January 2012.

France
Economic situation

good/better

satisfactory/about the same

bad/worse

by the end of the next 6 months

at present

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Italy
Economic situation

good/
better

satisfactory/
about
the same

bad/
worse

by the end of the
next 6 months

at present

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

United Kingdom
Economic situation

good/
better

satisfactory/
about
the same

bad/
worse

at present

by the end of the
next 6 months

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Spain
Economic situation

good/
better

satisfactory/
about
the same

bad/
worse

at present

by the end of the
next 6 months

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Sweden
Economic situation

good/
better

satisfactory/
about
the same

bad/
worse

at present

by the end of the
next 6 months

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Finland
Economic situation

good/
better

satisfactory/
about
the same

bad/
worse

at present

by the end of the
next 6 months

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Austria
Economic situation

good/
better

satisfactory/
about
the same

bad/
worse

at present

by the end of the
next 6 months

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Belgium
Economic situation

good/better

by the end of the
next 6 months

satisfactory/
about
the same

at present

bad/
worse

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Denmark
Economic situation

good/better

at present

satisfactory/
about
the same

by the end of the
next 6 months

bad/
worse

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12
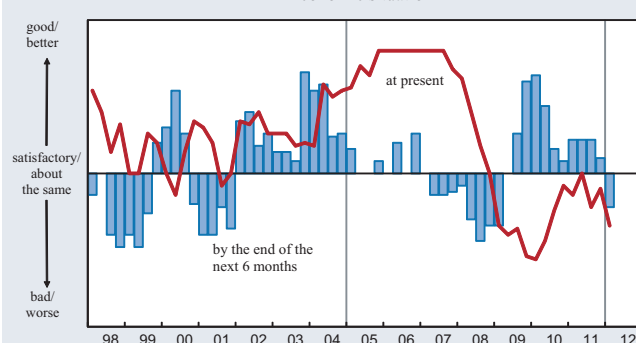
Source: Ifo World Economic Survey (WES) I/2012.

Greece
Economic situation

good/better

at present

by the end of the
next 6 months

satisfactory/
about
the same

bad/
worse

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12
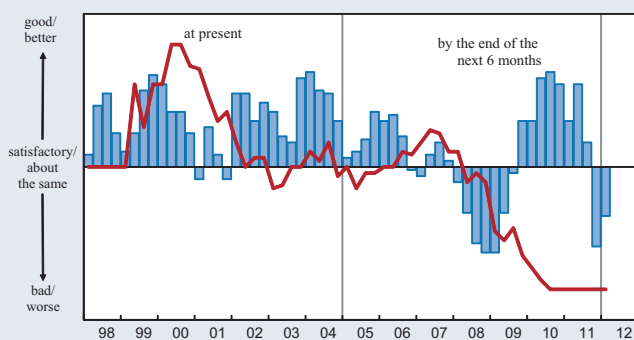
Source: Ifo World Economic Survey (WES) I/2012.

Ireland
Economic situation

good/better

at present

satisfactory/
about
the same

by the end of the
next 6 months

bad/
worse

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12
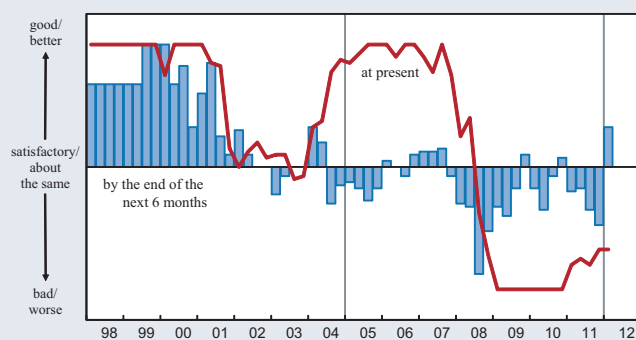
Source: Ifo World Economic Survey (WES) I/2012.

Netherlands
Economic situation

good/better

by the end of the
next 6 months

satisfactory/
about
the same

at present

bad/
worse

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12
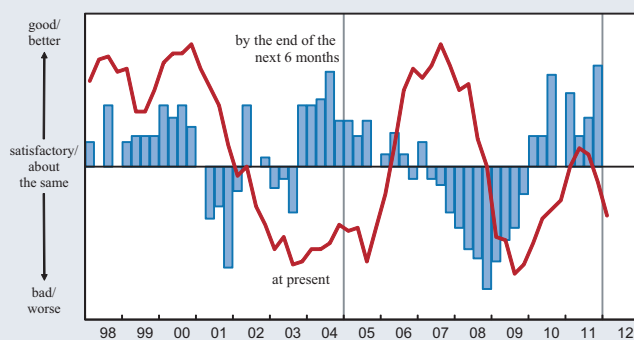
Source: Ifo World Economic Survey (WES) I/2012.

Portugal
Economic situation

good/better

by the end of the
next 6 months

satisfactory/
about
the same

at present

bad/
worse

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12
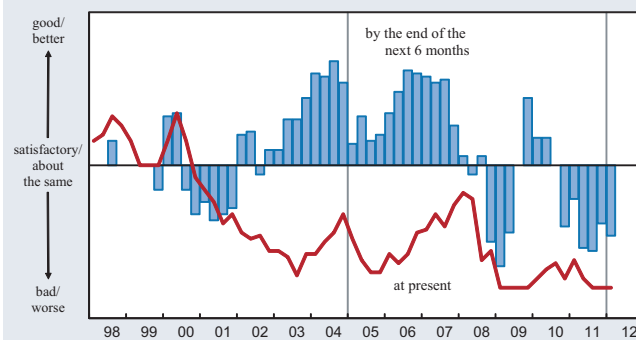
Source: Ifo World Economic Survey (WES) I/2012.

Slovenia
Economic situation

Source: Ifo World Economic Survey (WES) I/2012.

Hungary
Economic situation

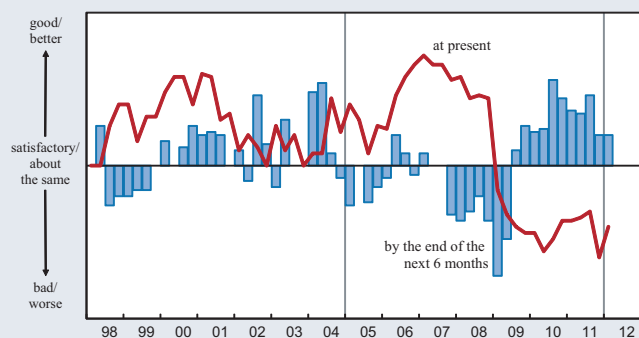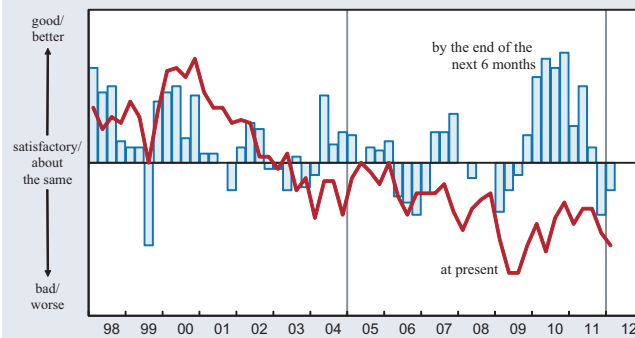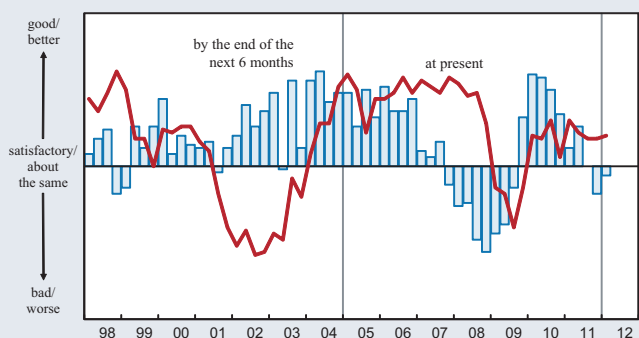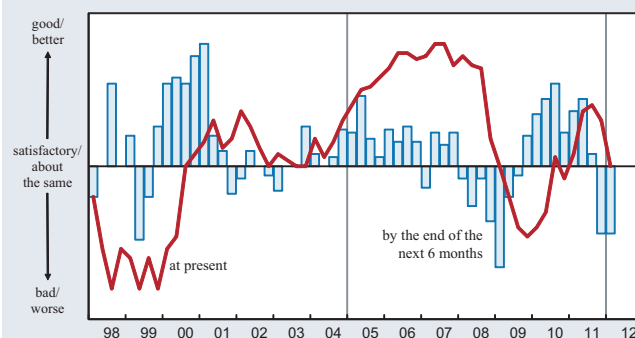Source: Ifo World Economic Survey (WES) I/2012.
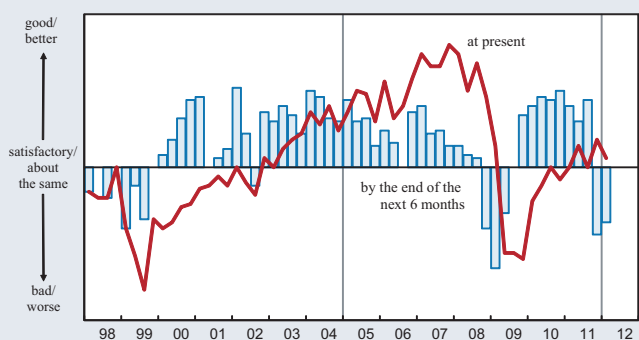
Poland
Economic situation

Source: Ifo World Economic Survey (WES) I/2012.

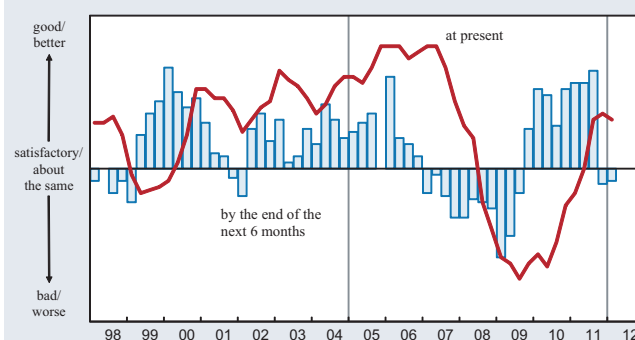## Czech Republic
Economic situation

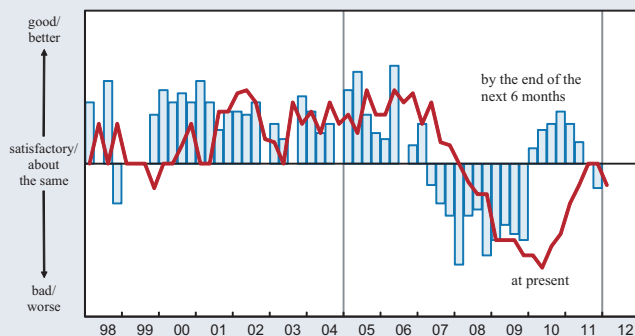Source: Ifo World Economic Survey (WES) I/2012.

Slovakia
Economic situation

Source: Ifo World Economic Survey (WES) I/2012.
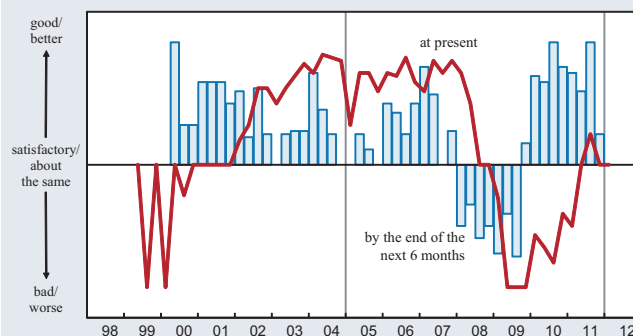
Estonia
Economic situation
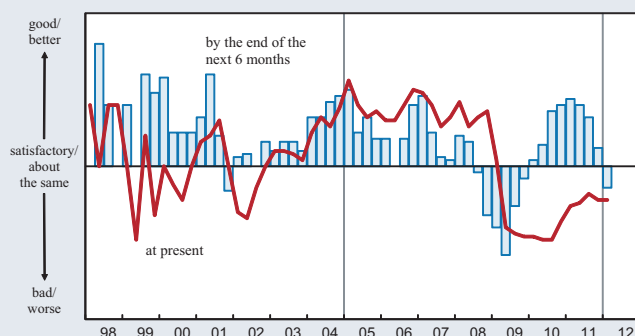

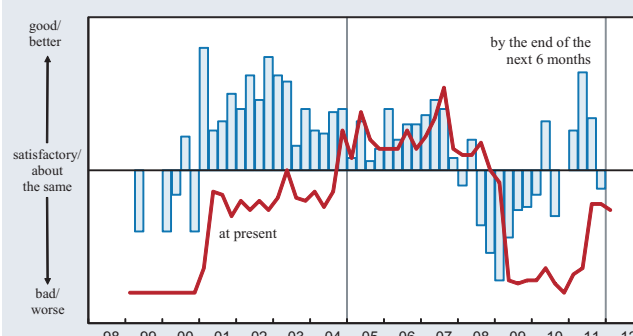Source: Ifo World Economic Survey (WES) I/2012.

Latvia
Economic situation

good/
better

satisfactory/
about
the same

bad/
worse

by the end of the
next 6 months

at present

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Lithuania
Economic situation

good/
better

satisfactory/
about
the same

bad/
worse

at present

by the end of the
next 6 months

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Bulgaria
Economic situation

good/
better

satisfactory/
about
the same

bad/
worse

by the end of the
next 6 months

at present

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

Romania
Economic situation

good/
better

satisfactory/
about
the same

bad/
worse

by the end of the
next 6 months

at present

98 99 00 01 02 03 04 05 06 07 08 09 10 11 12

Source: Ifo World Economic Survey (WES) I/2012.

The European Balance-of-Payments Problem

2.1 Introduction

The euro was introduced on the assumption that no large internal imbalances would ever pose a threat to its stability. The rules set out in the Stability Pact were considered sufficiently stringent to secure the euro's future. Dissenting voices nevertheless abounded, within and outside Europe. Stressing the problem of imbalances, Friedman (1997a, 1997b, 2001) forecast that the euro would last ten years. Similar statements were made by Feldstein (1997), who even emphasised the danger that the euro could potentially exacerbate political divisions within Europe. Other critics pointed out that rules in the Stability Pact would not prevent fiscal crises from occurring, and, once under stress, the institutional setting of the euro area would be inadequate to deal with it (see Buiter et al. 1993, among many others).

These analyses were not taken seriously in Europe, where they were discarded as expressions of political preference rather than economic expertise. After all, the euro was very much a political enterprise, arising from the desire to keep Europe's divisions and potential conflicts under control after World War II. Its introduction was arguably accelerated by the German reunification, as France and other European countries had to be reassured that the new political geography of Europe would not conflict with their post-World War II strategy of reining in Germany in a European context. While the euro will hopefully survive the present crisis, scientific honesty calls for an acknowledgement that the early warnings cited above were not groundless. Indeed, at the time of writing, the euro is immersed in a deep existential crisis. Substantial capital flight from several European countries that have shaken European stability in recent years are currently feeding one of the largest economic challenges ever faced by post-war Europe.

There are differing views on the causes of, and cures for, this crisis. At one end of the spectrum, some ultimately see it as a public debt crisis and advocate the strengthening of political constraints on government borrowing. Others primarily regard it as a confidence crisis, which should be addressed by setting up a very large rescue fund, i.e. by wielding a 'big bazooka'. They count on the fact that, if the crisis is truly expectation-driven, the resources will never have to be used. This chapter begins by reconsidering these and other views, and later stresses the structural reasons for the crisis, particularly the loss of competitiveness on the part of some euro area countries and the resulting surge in private and public foreign indebtedness. The chapter closes with some policy conclusions and recommendations.

EU leaders have devoted most of their attention to the public debt issue. The fiscal compact agreed upon at the EU Summit on 8 December 2011 aims to re-establish the fundamental principle of fiscal discipline as a precondition for a viable monetary and economic union. There is no doubt that a successful fiscal compact would be a key step towards rescuing the euro area from the political climate of uncertainty that has prevailed to date. However, as not all EU countries were willing to sign the compact, it merely has the status of an intergovernmental agreement which is superseded by the EU Treaty. Thus, the opening of the excessive deficit procedure is not automatic as intended, but requires an active, qualified majority decision on the part of the Council.[1] Once opened, the procedure was supposed to lead to automatic consequences unless a qualified majority of euro-area member states were to oppose them. However, since details of the compact are still to be defined at the time of writing this report, we fear that the rules may be diluted through various compromises made even after the deficit procedure has been opened. Indeed, it is very likely that there will still be (1) political decision-making on fines (although with a reversed qualified majority) and (2) fines that countries can pay with borrowed money that could become part of a future bail-out. That does not constitute a strong sanction. In EEAG (2003), Chapter 2, we proposed (1) that sanctions should be decided by the Court of Justice and (2) that

---

[1] See European Council (2011a,b).

sanctions should be non-pecuniary (e.g. loss of voting power).[2] Since such changes are not likely, one should not expect the fiscal compact to be binding.

In our view, a credible strategy for getting the euro area back on track needs to consider two key problems:

i)   The emergence of large intra-euro area imbalances reflected in the misalignment of price and wage levels, as well as in sizeable current account deficits and surpluses and net foreign asset positions.
ii) The emergence of massive cross-border capital flight, recorded by exorbitantly large claims between national central banks within the Eurosystem, pointing to a loss of confidence in the policies of some euro area countries.

To solve the first problem, the euro area requires an internal realignment of real exchange rates. As a currency realignment is precluded by the very existence of a common currency, adjustment can only occur via changes in price, wage or productivity levels.

To solve the second problem, a mechanism is needed that re-establishes the market's confidence in continued lending to the respective countries, provides immediate liquidity assistance to countries while they try to implement necessary policy measures and slows down capital flight. The euro area needs a credible plan to simultaneously address fundamental imbalances and to stem the possibility of self-fulfilling runaway processes due to the less-than-perfect credibility of policy plans, at both a national and a euro area level.[3]

The crisis has made it quite clear that, in the case of independent states, country-specific risk is bound to be priced by the market sooner or later. Large price differentials for government bonds can only jeopardise the work of the European Central Bank (ECB), and blur the distinction between standard and non-standard monetary operations on the one hand, and fiscal interventions on the other. Moreover, such differentials can feed large and destabilising cross-border capital flows into the countries issuing relatively safer assets.

With independent states, the liability principle, whereby each state is ultimately responsible for its debt, needs to be clearly inscribed in the new fiscal com-

pact. This will allow for interest differentials among national borrowers. Yet, to function properly, the euro area also needs a core system of common assets that are of a sufficiently high quality to provide a European safe asset. A homogenous, commonly guaranteed bond or bill may, in principle, satisfy the need for a common safe asset, but is hardly consistent with the liability principle, given the present lack of political integration. National bills subject to common rules and satisfying strict standards may, however, offer a viable alternative to a homogenous Eurobond and serve the same purpose. Section 2.6 of this chapter defines and proposes such a European standard bill.

2.2 Capital flights are shaking macroeconomic stability in Europe

While there is hope that the euro will survive, albeit on shaky foundations, its founders must have deemed it unconceivable that the newly created currency area would ever experience capital flights as large as, or even larger than, the flows that have torpedoed financial and currency stability in emerging markets from Latin America to Central Europe and Eastern Asia in the past. Yet massive capital outflows from the crisis countries are now a fact.

2.2.1 Fundamentals and 'confidence'

It is well known that, once policymakers have lost credibility, the economy can be shaken by belief-driven speculative attacks of a magnitude only loosely related to fundamentals (Calvo 1988, Cole and Kehoe 2000). De Grauwe (2011) and others have pointed out that self-fulfilling speculative spirals can severely damage a government's creditworthiness. If some investors begin to doubt that a country will be able to repay its public debt, they will sell the respective government bonds they hold, making the price of these bonds fall and the effective interest rates rise.

There are all kinds of market dynamics that can feed such attacks. A key pattern consists of herd behaviour. The price decline stokes uncertainty among other investors, who also sell their assets to avoid capital losses, inducing a further decline. This, in turn, makes more investors apprehensive, potentially causing panic in the end.

Once such an attack is set in motion, governments have to offer higher yields for newly issued govern-

---

[2] See EEAG (2003), Chapter 2, pp. 46–75.
[3] Key difficulties involved in designing solutions to either problem are discussed in Section 2.6.

ment debt, which increases the interest burden in their budgets and prompts them to borrow more to finance this burden. This leads to progressively higher debt-to-GDP ratios, which further undermine the confidence of investors and induce them to charge an even higher interest rate. At the moment such mutually reinforcing runaway processes are clearly destabilising the financial system of the euro area.[4]

These analyses are plausible, but they need to be complemented by two important observations. Firstly, self-fulfilling speculative attacks do not arise when policies and institutional arrangements are credible. Good fundamentals and sound institutions prevent belief-driven destabilisation. In this sense, the current crisis in Europe cannot be exclusively due to confidence factors – it also is the result of years of distorted growth, during which some European countries ran large current account and/or public deficits, or allowed their banks to take on too much risk, and let unit labour costs rise relative to those of other members of the euro area.

Secondly, with imperfect policy credibility, confidence crises do impact negatively the macroeconomic process, generating a strong recessionary impulse. In Europe, the risk premiums on government debt spillover to the borrowing costs of residents in the respective country. In other words, firms and households in the periphery countries see their creditworthiness and their ability to borrow closely tied to that of their governments. High and volatile sovereign risk spreads have generated a lethal credit crunch in these countries, producing the premises of a deep recession in 2012 in some of those countries.

The idea of a public debt crisis spiral – a government that is solvent when it has to pay up to 5 percent interest on its debt may become insolvent if it has to pay 10 percent – is an intuitive explanation, but fails to capture the true economic essence of the problem. Gloomy expectations of a recession can become self-fulfilling because, as soon as firms and households expect a slowdown in growth, they also expect the government budget to
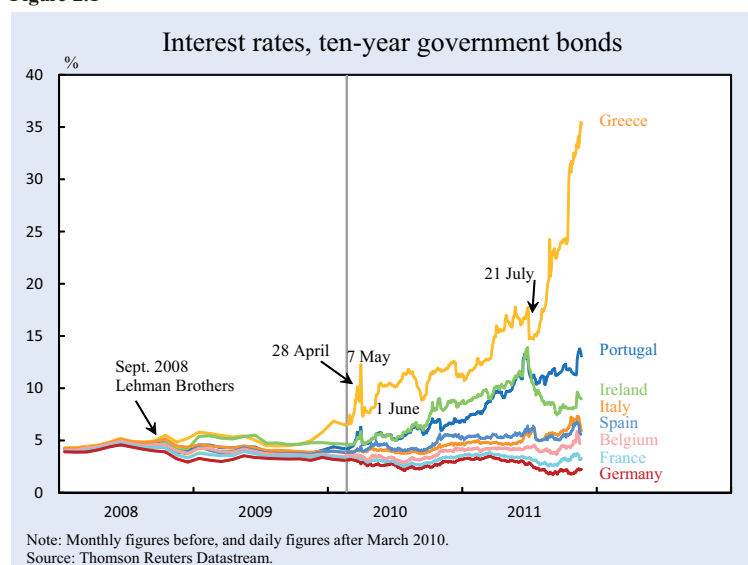
deteriorate (due to falling tax revenues). To the extent that this raises the risk premiums on government bonds and these are correlated to those on private debt, it also feeds back directly into the interest paid by the private sector. Even if policy interest rates remain close to zero, the economy nevertheless experiences the equivalent of a monetary contraction in such a scenario.[5]

It follows that analyses stressing confidence as a key factor responsible for driving interest rate differentials in Europe should also stress the following two facts. Firstly, confidence crises only occur when fundamentals are already weakened. Secondly, once set in motion, they are equivalent to sharp negative shocks to the macroeconomy.

2.2.2 The confidence crisis

The mere fact of a confidence crisis resulting in capital flight and differing risk perceptions, whether fundamental or expectations-driven, can best be illustrated by looking at interest spreads and asset values. Figure 2.1 shows how interest rates for ten-year government bonds have evolved during the financial crisis. As is well known, the interest rates for all euro area countries were nearly identical until the first half of 2008, they began to differ after the collapse of Lehman Brothers and they exploded after spring 2010. Greek rates peaked temporarily on Wednesday 28 April 2010. During that day, the interest rate for two-year Greek government bonds soared to 38 percent (although it settled at a lower rate at the end of that day). The markets were obviously jumpy.

Figure 2.1

Interest rates, ten-year government bonds

Note: Monthly figures before, and daily figures after March 2010.
Source: Thomson Reuters Datastream.

[4] See Krugman (2011a) who compares the situation with a vicious circle.
[5] See the extensive analysis in Corsetti et al. (2011).

As discussed in greater detail below, the European Union reacted by creating a rescue programme for Greece and establishing the European Financial Stability Facility (EFSF) on 8/9 May 2010. These measures led to a temporary reduction in the spreads. However, from 1 June 2010 onwards the Greek rate started to rise again, with momentary periods of relief, and went beyond 35 percent by the end of last year. Meanwhile, a second rescue program for Greece of 130 billion euros was announced, the details of which were not yet known at the time of this writing. All of these measures were obviously unable to prevent the Greek risk premium from rising to levels signalling catastrophe. Including ECB support (purchases of government bonds and Target credits), the total level of public credit already granted to Greece could now total around 390 billion euros (see also Figure 2.10).[6]

Figure 2.2

Prices of ten-year government bonds

Note: Year of issue: 2006; Ireland: 2007.
Source: Thomson Reuters Datastream.

After some delay the interest rates of Ireland and Portugal followed suit. However, whereas the Portuguese rate kept rising, the Irish rate peaked in June 2011, declined substantially thereafter, and began to rise again in November. The Italian and Spanish rates also rose gradually, but steadily compared to those of Germany. The crisis has now affected the interest paid by France, Austria and Belgium. Even the negative risk premiums allowing Germany to borrow at extremely favourable rates have been fluctuating with market confidence.

As outstanding government bonds have a given statutory rate of interest, they adjust to the rising interest rates with declining market values. Figure 2.2 shows the development of the market values of ten-year government bonds issued in 2006 and 2007. Greek sovereigns fell to less than 30 percent of their face value by the end of 2011, Portuguese sovereigns to less than 70 percent, Irish sovereigns to less than 80 percent, Italian sovereigns to less than 90 percent and Spanish sovereigns to slightly above 90 percent.
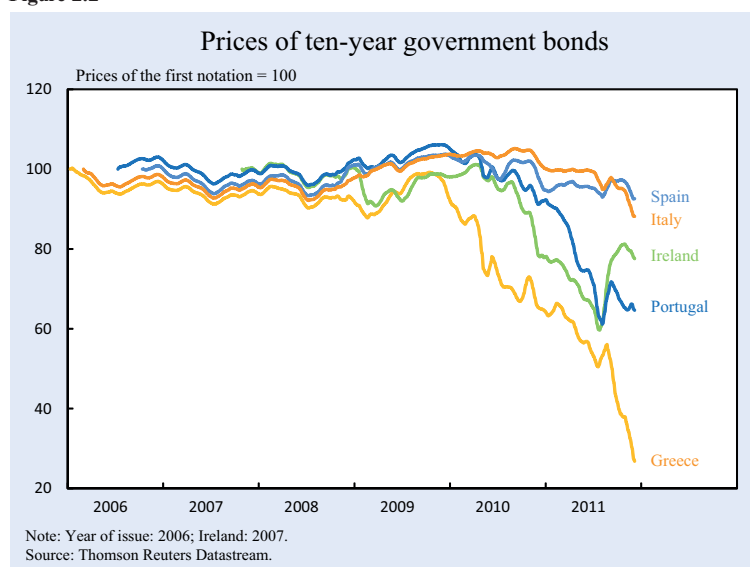
The losses in market value put a substantial strain on the balance sheets of investment funds, insurance companies and commercial banks worldwide. In Europe, France was hit particularly hard, because its banking sector was far more strongly exposed to the Southern countries' public debt than that of any other nation. Insofar as banks were holding government bonds on their trading books, they were obliged to show write-off losses on their balance sheets. However, as most government bonds are held on their banking books, the majority of write-off losses remain hidden to date. Even the stress tests carried out by the European Banking Authority (EBA) have not seriously attempted to address this issue.

Despite institutional reluctance to address this issue openly, the repercussions on the private economy were significant. Banks and financial intermediaries reacted to the imminent write-off losses by rebalancing their lending strategies. The fall in the price of government bonds affected the creditworthiness of those private agents who held them in their portfolios. The fiscal squeeze implied by higher public borrowing costs and calls for higher taxes, higher tariffs and more expensive public services also gave rise to the expectation of strikes and other forms of protest that would hamper production and distribution. This all implied that borrowing in the private sector became more expensive as public borrowing costs rose. The correlation coefficient between the public and private risk premiums tends to be quite high, especially for the euro area countries subject to fiscal stress (see for instance, Corsetti et al. 2011). While a high correlation could, in principle, reflect two-way causality

---

[6] First Greek Loan Facility (May 2010) 110 billion euros, Target loans (as of 30 September 2011) 100 billion euros, purchases of government bonds 50 billion euros (estimate), second bail-out package 130 billion euros (Euro Summit Statement 26 October 2011).

(from the private crisis to its public counterpart and vice-versa), it is apparent that, once a sovereign state is in trouble, the prevailing direction goes from public to private. Thus, the rising interest spreads were not limited to the public sector, but affected entire economies.[7]

2.3 Over-borrowing, over-lending and the loss of competitiveness

While it is obvious that capital flight from the crisis-hit countries has occurred, it is not clear whether this was due to an irrational or a rational market reaction to conflicting information about country fundamentals, the firepower of rescue facilities and other such factors. After all, fundamentals are not only subject to present destabilising forces, but are also influenced by their stabilising counterparts. The lower the market value of existing government bonds falls, the larger the profit investors will make if a country does indeed repay its debt. Thus, falling prices also trigger more demand for such bonds, which limits the runaway process. The recovery of Irish government bonds from spring to autumn 2011 can be interpreted in this light.

In fact, if the default probabilities differ, the statutory interest rates for government bonds from different countries should also differ, for if they do not, the mathematically expected interest rates (in short: the effective interest rates) differ by the default probability. For simplicity, consider the extreme (and unrealistic) case where default means that no money is paid back. If, say, the annual statutory interest rate of a country is i and the annual default probability is p, the effective rate of interest is $i - p$. Thus, equality of the effective interest rates requires spreading the statutory interest rates in line with the differing default probabilities.

In EEAG (2011) we emphasised that, for this reason, it would be wrong to worry unduly about interest rate differentials within the euro area.[8] On the contrary, interest differentials are a necessary ingredient for a

Figure 2.3

Interest rates, ten-year government bonds

Source: Thomson Reuters Datastream.
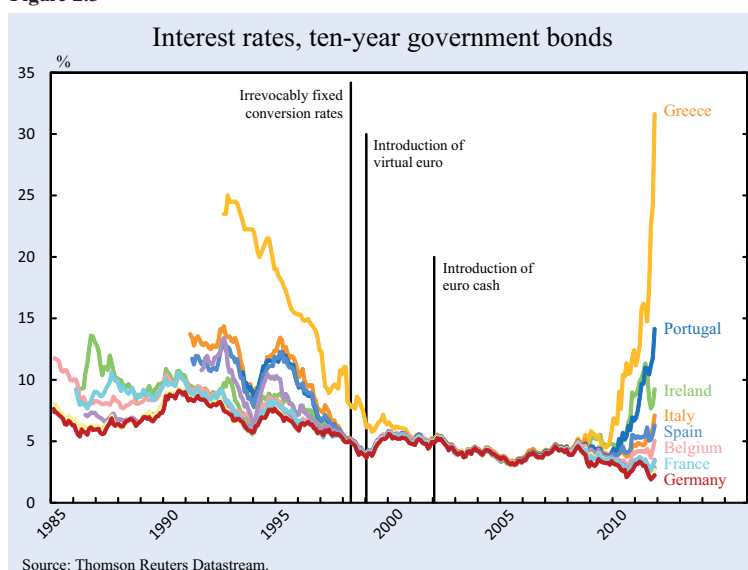
functioning European capital market, since they send price signals to borrowers and investors. If a country borrows too much or is hit by a negative shock, its increasing default probability should indeed be reflected in rising interest rates to provide sufficient incentives for adjustment.[9]

Let us suppose that interest spreads were to be suppressed artificially by letting countries issue unlimited amounts of homogeneous Eurobonds, i.e. bonds jointly guaranteed by all euro area countries. In this scenario, a country could de facto reduce its effective interest rate simply by borrowing more, because this would increase its default probability and hence the probability of shifting the repayment burden to the other countries guaranteeing the debt. Note that a lower effective interest rate would then induce the country to borrow even more. A vicious feedback effect could be activated: borrowing more would further increase the probability of default, thereby reducing the effective interest rate even further, and strengthening the incentive to borrow.

In the extreme case where borrowers know for sure that they will not be able to repay the extra money borrowed and are nonetheless allowed to participate in Eurobond issuances, there is no intrinsic limitation to their borrowing. For such countries this means increasing living standards today without reducing them in the future. Credit given by other countries in this case is tantamount to a donation.

---

[7] Harjes (2011) estimates a pass-through coefficient, from public to private borrowing cost, as high as 50 percent.
[8] See EEAG (2011), Chapter 2.

[9] If they were not, the implication would be that either investors are irrational, or they anticipate a bail-out.
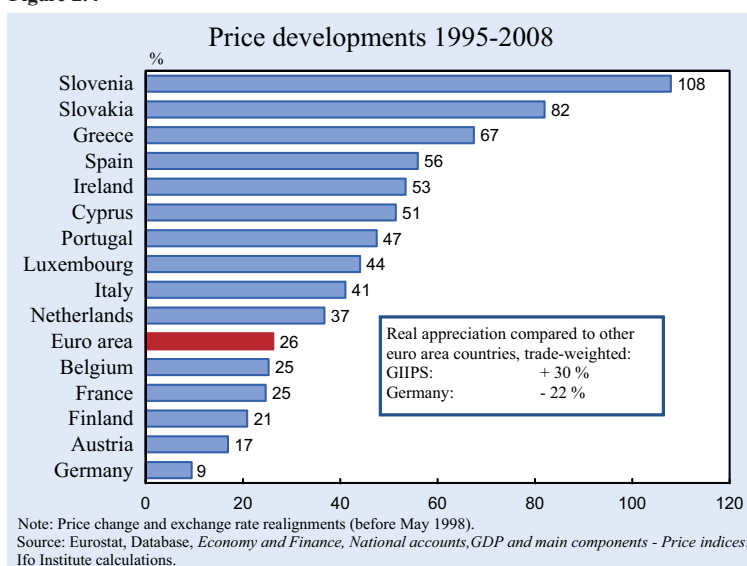
There seems to be a broad consensus that Eurobonds of this kind are not to be introduced in the foreseeable future. Yet there is also ample evidence that the introduction of the euro itself produced similar effects in the years before the crisis, because it suggested to investors that all euro countries would be 'sitting in the same boat' and would therefore have the same default probability. This belief clearly contradicted the no-bail-out clause of the Maastricht Treaty, but it was not entirely irrational, given that the regulators themselves obviously shared it. After all, the European governments had managed to free banks from the obligation of holding equity against government bonds in the Basel regulatory framework, arguing that all government bonds would be perfectly safe assets.[10] Thus, in a sense, the euro was already perceived to be a kind of Eurobond system, and therefore induced the runaway process in terms of the excessive borrowing described above.

Figure 2.3, which extends Figure 2.1 to earlier years, shows the rapid convergence of interest rates before the introduction of the euro. While undervaluation of credit risk over the past decade was more of a global phenomenon than specific to the euro area, the new currency undoubtedly contributed to it, and quite decisively. The present crisis was preceded by roughly a decade of uniform interest rates, extending from 1998 to 2008. Prior to 1998 interest rates had varied substantially because investors faced country-specific depreciation risks for which the countries had to pay a premium over the German Bund. That phase ended with the EU Summit in Madrid in December 1995, when the ultimate decision to introduce the euro was made and it was foreseeable which countries would be joining and when the exchange rates would be irrevocably fixed (which happened in May 1998). Within just two years, 1996 and 1997, all interest rates except that of Greece converged to the Bund level. The Greek rate converged later, as the drachma was not among the currencies for which the exchange rate had been previously fixed and because Greece did not join the euro area until 2001, two years after the other countries.

The similarity between pre-euro interest dispersion and today's dispersion is striking. In the past interest rates diverged due to the fear of depreciation; now they do so because of the fear of default. As discussed above, while the chart refers to the interest rate on public debt, the convergence was much more general and also included private interest rates. The general drop in interest rates triggered an expansion in countries which had hitherto been obliged to pay a premium, as the lower interest rate induced private and public agents to borrow more. In Portugal and Greece the government sector took the opportunity to hire more employees at higher wages, while in Ireland and Spain the private sector built more homes, created employment and gave higher wages to construction workers. In the end, it made little difference which sector acted first. As the construction workers paid more taxes, the government sector was pulled along; and as government employees used their wages to build more homes, the construction sector benefited. This all generated a boom with high growth rates, declining rates of unemployment, high wage increases and high rates of inflation.

From 1995, the beginning of interest convergence, to 2008, the year of the full outbreak of the financial crisis, Ireland grew by 118 percent, Spain by 56 percent, Greece by 55 percent and Portugal by 33 percent, while the euro area average was 31 percent. Germany, on the other hand, suffered from an extremely low rate of net investment (the lowest of all OECD countries) and grew by only 22 percent during this period. Among the countries now in crisis, only Italy did not participate in the boom: its

Figure 2.4

Price developments 1995-2008

%

Country	Value
Slovenia	108
Slovakia	82
Greece	67
Spain	56
Ireland	53
Cyprus	51
Portugal	47
Luxembourg	44
Italy	41
Netherlands	37
Euro area	26
Belgium	25
France	25
Finland	21
Austria	17
Germany	9

Real appreciation compared to other euro area countries, trade-weighted:
GIIPS: + 30 %
Germany: − 22 %

Note: Price change and exchange rate realignments (before May 1998).
Source: Eurostat, Database, *Economy and Finance, National accounts, GDP and main components - Price indices*; Ifo Institute calculations.

[10] See EEAG (2011), Chapter 2.

growth rate was 19 percent, even lower than that of Germany.

Figure 2.4 shows that prices also increased rapidly. In the period under consideration, the price level of domestically produced goods and services (GDP deflator) in Greece increased by 67 percent. In contrast, the price level in Germany increased by only 9 percent. This obviously meant that Germany depreciated in real terms compared to its trading partners, while Greece appreciated. Italian prices also rose by 41 percent, but unlike the other countries now in crisis, Italian inflation seems to have resulted from an internal cost push, rather than a demand-driven boom. The box in the chart gives the exact figures, which also take into account the last currency realignments to occur before the exchange rates were irrevocably fixed in May 1998. Germany depreciated against its euro area trading partners by 22 percent, whereas the GIIPS countries appreciated by 30 percent against theirs.[11]

Over time the appreciating countries developed current account deficits, as rising prices undermined the competitiveness of their exports and rising real incomes boosted imports. This phenomenon is illustrated by Figure 2.5, which depicts the average current account deficits in the years 2005–2010. Portugal and Greece had truly huge current account deficits of 10.8 percent and 11.7 percent of GDP respectively. Spain's deficit of 7.6 percent of GDP was also alarmingly large. The deficits of Italy (2.0 percent) and Ireland (3.5 percent) were much smaller. While the Irish current account deficit disappeared as early as 2010, Italy's deficit kept rising, reaching a level of 3.5 percent in 2010. The deficits posted by Greece and Portugal, by contrast, settled at 10.1 percent and 10.0 percent respectively in that year. Recent estimates for 2011 show that the joint current account deficits of the GIIPS countries will total around 127 billion euros, or 4.0 percent of their joint GDP (see European Commission 2011).

The current account deficits are, by definition, identical to the respective capital imports that these countries absorbed. Current account deficits and capital flows are jointly determined by economic forces. The causal origin of an imbalance can in principle come from the goods and services, as well as from the capital markets. As argued above, however, there is ample evidence that, in the period considered, the imbalances in the euro area originated in the capital market. The announcement and introduction of the euro (in a period of global undervaluation of risk) constituted a unique and strong shock to Western Europe's economy that led to extreme and unusual cross-border capital movements.[12] In those countries subject to capital inflows, the economy underwent a growth process with sustained increases in prices and rising current account deficits. In Germany, which suffered from a capital outflow, the real economy and prices stagnated, turning its current account deficit into a surplus, as the competitiveness of exporting industries increased and imports were held back by stagnating incomes. Germany's current account surplus, and hence Germany's net capital export, totalled 6.1 percent of GDP in the period 2005–2010. In absolute terms, the current account surplus in 2011 is estimated to be 131 billion euros.

A current account deficit measures the annual increase in the net foreign debt position of a country, and a current account surplus represents the annual increase in its net foreign asset position.[13] Figures 2.6 and 2.7 show the net foreign positions of the euro area
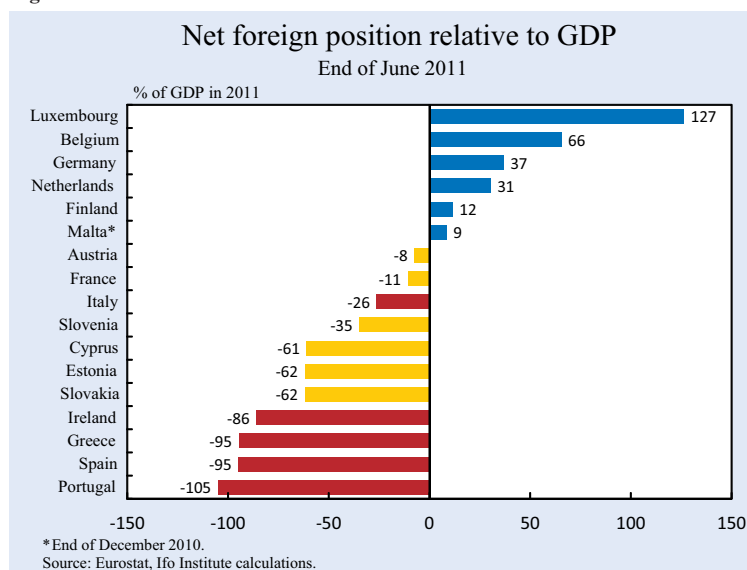
---
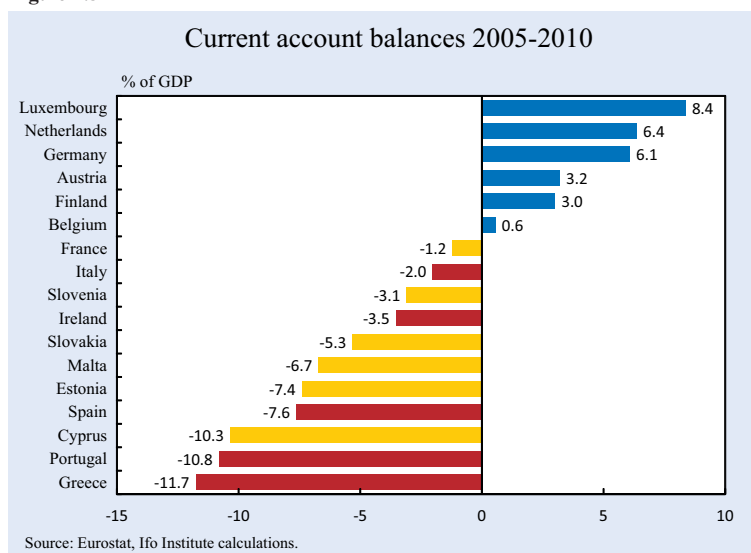
[11] We use the term GIPS for Greece, Ireland, Portugal and Spain and GIIPS for these countries plus Italy.
[12] This was predicted in Sinn and Koll (2000) and re-examined in Sinn (2010). See also Sinn et al. (2011).
[13] For the net foreign asset position revaluation, however, adjustments due to changing market values and exchange rates of foreign assets are added. Such revaluation adjustments are not included in the current account flows.

Figure 2.5

Current account balances 2005-2010
% of GDP

Country	Value
Luxembourg	8.4
Netherlands	6.4
Germany	6.1
Austria	3.2
Finland	3.0
Belgium	0.6
France	-1.2
Italy	-2.0
Slovenia	-3.1
Ireland	-3.5
Slovakia	-5.3
Malta	-6.7
Estonia	-7.4
Spain	-7.6
Cyprus	-10.3
Portugal	-10.8
Greece	-11.7

Source: Eurostat, Ifo Institute calculations.

Figure 2.6

Net foreign position relative to GDP
End of June 2011

% of GDP in 2011

*End of December 2010.
Source: Eurostat, Ifo Institute calculations.

countries that had accumulated by June 2011, in terms of percent of GDP and in terms of euros respectively.

It is worth noting that Italy's net foreign debt position, while sizeable in absolute terms (due to the economic size of this country), amounts to only 26 percent of GDP. This is due to the fact that Italy has not traditionally delved into foreign borrowing, so an external deficit has emerged only recently. For the rest of the crisis-hit countries, however, net foreign debt amounts to a startling 95 percent of GDP, with little variation between individual countries (95 percent for Greece, 86 percent for Ireland, 105 percent for Portugal and 95 percent for Spain). The latter figures are very large by historical standards, and they

Figure 2.7

Absolute net foreign position
End of June 2011

Billion euros

* End of December 2010.
Source: Eurostat, Ifo Institute calculations.

arguably show more clearly than any other indicator the fundamental macroeconomic imbalances in the crisis-hit countries.

As discussed below, the true situation in the periphery countries is even worse than suggested by these figures, since in the boom years nominal GDP – to which the debt is related – was inflated by rapid nominal growth (reflecting both high real growth and large price increases). Indeed, in the pre-euro period, it seemed for a number of years that public and private debt levels could be kept in check because of the rapid increase in nominal incomes. With the crisis shattering any exuberant expectations about prospective growth, it is now clear that the inflated price and wage levels in the first years of the euro are not sustainable. The bitter truth facing the crisis countries today is that, as their goods must become cheaper for them to regain competitiveness, this will at least initially increase their debt-to-GDP ratios.

No less than 52 percent of the total net foreign debt of the GIIPS countries, or about 1021 billion euros, is accounted for by Spain. 417 billion euros or 21 percent by Italy, and 521 billion euros or 27 percent by Greece, Ireland and Portugal combined. The Spanish figure may look less alarming insofar as Spain has a relatively low ratio of public debt to GDP, which totalled about 70 percent in 2011. This is a better ratio than the euro area average (88 percent). However, as explained, it was largely the real-estate sector that absorbed the foreign credit in Spain. The sector experienced a classical real-estate bubble that, when it burst, generated a high rate of unemployment that has now reached more than 20 percent, concentrated among the young. Spain is not a small country like Greece or Ireland, but one of the euro area's biggest economies. The sheer size of its outstanding foreign debt is a major threat to the stability of the euro area.
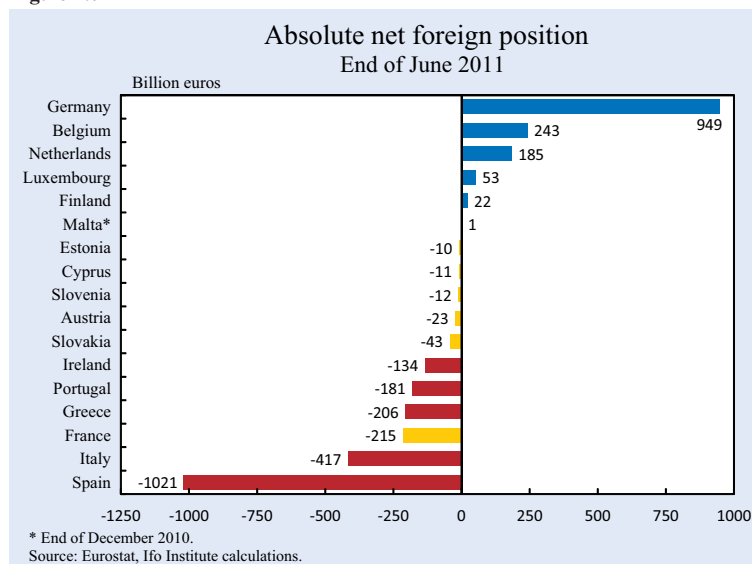
On the other side of the balance are countries like Belgium, Germany and the Netherlands. It is important to note that the German net foreign asset position, amounting to 949 billion euros or 37 percent of GDP in June 2011, is about as large as Spain's net foreign debt in absolute terms. The combined net foreign wealth of Belgium and the Netherlands, on the other hand, largely offsets the net foreign debt of Italy. By mid-2011 even the euro area's entire net foreign asset position was negative (– 820 billion euros).

2.4 Capital flights and the euro area's internal balance-of-payments imbalances

Initially, the relative high inflation in the periphery countries was often interpreted as inherent in the process of productivity and price convergence due to capital flows from the core.[14] Increasingly, however, it also reflected overly-optimistic expectations that the then rising trend in income and real-estate prices would continue into the future (and/or that their investment would be somehow guaranteed). At a global level, such an illusion burst in the period from August 2007, when the interbank market first seized up, to October 2008, when the collapse of Lehman Brothers triggered a major financial crisis in the United States and Europe. These events undermined the assumption that former high-interest countries would be safer than before the introduction of the euro, while equity losses on US structured securities forced banks to deleverage by pulling out of risky investments. Borrowing in the interbank markets became more expensive and virtually impossible at times. Across borders, these problems reflected the reluctance of investors to finance the imbalances of crisis countries. In some cases capital even fled abroad on a dramatic scale in anticipation of the adjustments to come.

As is well known, the ECB, like central banks in the United States and elsewhere, stepped in decisively, de facto substituting for the freezing interbank market. Direct borrowing and lending between bank A and B, wherever located, was replaced by the indirect flow of credit via the Eurosystem (the ECB and the national central banks in the euro area). While the replacement was unrelated to national boundaries in principle, in practice it meant that the countries of the periphery received a public capital flow via the Eurosystem that replaced the stalling inflows of private capital previ-

ously financing their current account deficits. The borrowing commercial banks received more refinancing credit from their National Central Banks (NCBs), while the 'lending' banks either placed the funds that they no longer dared to lend (and thus export) in time deposits or in the 'deposit facility' with their NCBs, or took less central bank refinancing credit in the first place. By compensating for the portfolio choice of the markets, the activities of the Eurosystem had automatically avoided the disruptive balance-of-payments crises that usually accompany massive capital flights of the kind now being experienced by the crisis countries in the euro area. However, the intervention also has relevant implications for the allocation of capital in Europe.

The replacement credit flowing through the ECB system is indirectly measured by the so-called Target accounts. 'Target' is the name of the euro area's electronic payment system. A payment system like Target is an essential building block of a monetary union, and the key vault for the smooth operations of financial markets, especially monetary policy. In normal times, i.e. without large risk premiums in interbank markets, the transactions via Target accounts may or may not net out, yet there is no implicit subsidy to capital movements. During the crisis, however, the Target system recorded huge imbalances, turning it into a seismograph of the shock waves that capital markets sent through the Eurosystem.[15] The operation of the Target system guaranteed liquidity at basically risk free rates to national financial systems and governments facing difficulties.

More specifically, the Target accounts measure the imbalances resulting from the reluctance of the capital markets to continue financing the current account deficits of the periphery countries and from the outright capital flight from these countries.

As the interbank market broke down, the capital inflow from private lending operations and asset purchases went missing in the periphery countries. In fact, capital was flowing out as foreign banks repatriated the funds they had been lending and domestic investors began to exchange domestic for foreign assets to safeguard their wealth. This created a net flow of money through the Target system.

Considered on their own, these movements of funds across the borders would have reduced the stock of

---

[14] See, e.g., Sinn and Reutter (2000) and Sinn and Koll (2000) as well as the critical review of these interpretations in Sinn (2010).
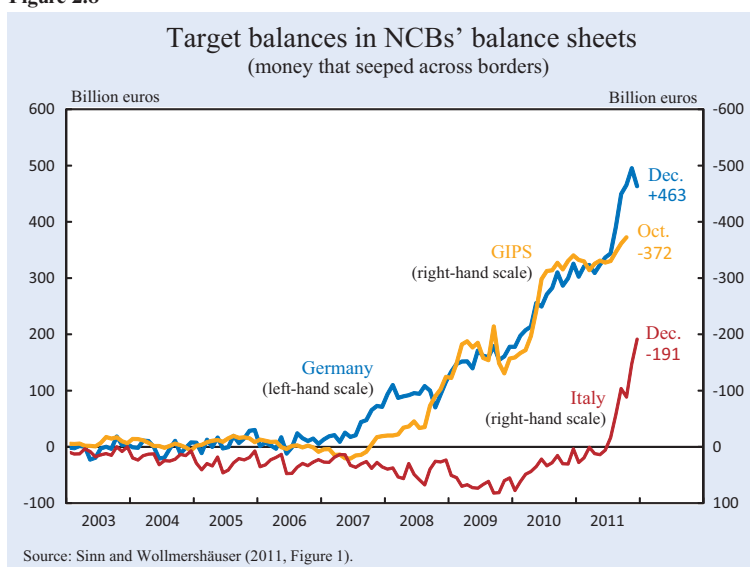
[15] See Sinn (2011a,b), Sinn and Wollmershäuser (2011) and CESifo (2012).

base (central bank) money in the crisis countries and increased it in the receiving countries. However, common monetary policy at the euro area level ensures that these flows are fully and automatically sterilised. Banks in the countries sending the money drew more refinancing credit and money from their NCBs to replace the outflow of money via the Target system; while banks in the receiving countries lent the money seeping in to their respective NCB or took less refinancing credit in the first place, because they did not need the extra liquidity. Thus, neither the aggregate stock of base money nor its distribution among the countries was affected.[16] The Target balances recorded in the national balance sheets therefore also measure the reallocation of net central bank credit between countries, or equivalently, a credit provision between the central banks replacing stalling private capital flows, as argued above.

The orange curve in Figure 2.8 shows the development of *negative* Target balances at the central banks in the GIPS countries compared to the Eurosystem, and the blue curve shows the corresponding development of *positive* Target balances at the Bundesbank.[17] Sizeable cross-border net flows of funds within the euro area clearly began in the summer of 2007 and have continued unabated, with short lulls, ever since. By December 2011, a huge stock of Target credit had accumulated in Germany, amounting to 463 billion euros. This represents about half of Germany's net foreign wealth as reported in Figure 2.7. In addition, capital also fled towards non-euro area countries like Switzerland, Japan and the United States.

The internal euro area balance-of-payments imbalances have been so huge and persistent for over four years that the money flowing in electronically from

Figure 2.8

Target balances in NCBs' balance sheets
(money that seeped across borders)

Source: Sinn and Wollmershäuser (2011, Figure 1).

the euro area's periphery (GIIPS countries) has now entirely eliminated, in an accounting sense, the stock of net NCBs credit to the banking system in the core (the non-GIIPS countries).[18] The process has absorbed the entire net central bank credit in the core and has even made it negative (– 222 billion euros in October 2011). While this has not resulted in a credit squeeze in the core economies, due to the fact that capital was chasing 'safe' assets,[19] the core NCBs have now become net debtors to their respective commercial banking systems.[20]

Of course, the replacement of private credit with public credit via the Eurosystem, as shown by the Target balances, would have been more difficult had the ECB not reduced its collateral requirements for refinancing credit. As early as 15 October 2008, in the week following the Washington G7 agreement to rescue all systemically relevant banks, the ECB Council reduced the creditworthiness of the required collateral from A- to BBB- (see Table 2.1). It announced that it would return to normal collateral requirements by December 2009, but the Council postponed and ultimately shelved this plan. Moreover, it subsequently suspended any rating requirement for Greek, Irish and Portuguese government bonds submitted by commercial banks as collateral for refinancing credit. Although the ECB required a discount on the face value of the government bonds, this step was decisive

---

[16] For further details see Sinn (2011b) and Sinn and Wollmershäuser (2011, Section 7).
[17] To the extent the data are published they stem from the NCBs' balance sheets. Otherwise, they are reconstructed from IMF statistics. For details see Sinn and Wollmershäuser (2011, see in particular the appendix of the NBER version of that paper). The ECB itself does not possess a comprehensive data set but reconstructed the data for missing countries in the same way as was done by these authors. We find this lack of statistics on the part of the ECB unacceptable and urgently recommend that statistics offering the necessary clarity are provided by the ECB, see European Central Bank (2011, p. 37, footnote 5).

[18] See Sinn and Wollmershäuser (2011), Figure 9.
[19] See Sinn and Wollmershäuser (2010, Figure 7 and related discussion) as well as the Sinn (2011a,b).
[20] Tornell and Westermann (2011, 2012) and Kohler (2012) have argued that this may pose severe problems in terms of the sustainability of the euro system.

Table 2.1

ECB collateral requirements

Date	Minimum credit rating threshold
Until 14 October 2008	A–
15 October 2008	BBB–
10 May 2010	Suspended for Greece*
31 March 2011	Suspended for Ireland*
7 July 2011	Suspended for Portugal*
* For debt instruments issued or guaranteed by the government.	

Source: Sinn and Wollmershäuser (2011, NBER version).

in providing banks with the low-cost credit that the market was no longer willing to provide. In addition, the ECB generously accepted non-marketable assets and asset-backed securities the banks had themselves created out of their credit portfolios (often protected by national state guarantees). The share of these two latter categories in the submitted collateral increased from about 15 percent to over 40 percent in the period from 2006 to 2010.[21]

While there is disagreement on the modalities and the extent of the ECB interventions, there is no doubt that the ECB had to act in an institutional void – as no explicit mechanism to deal with a crisis was envisioned in the treaties. Initially, the ECB policy actions handled liquidity problems in the financing of ailing banks and financial systems in both the core and the periphery countries. With the emergence of sovereign and jurisdiction risk, however, the interventions of the ECB started to have specific implications for financing balance-of-payments deficits, cushioning possible disruptive effects of capital flights, and public budget deficits. Effectively, they have resulted in the financing of government debt by the Eurosystem that article 123 of the EU Treaty had intended to prohibit. This process has not produced overall monetisation, but it has implied a redistribution of credit risks across national boundaries.

It is useful to look at the ECB's interventions from the viewpoint of a normal balance-of-payments crisis. In the absence of a common currency (in this case the euro), massive capital flight or current account deficits usually force a central bank to increase domestic interest rates, and/or use its international reserves, possibly borrowing from other central banks, and eventually accepting a currency depreciation. This limits the sustainability of balance-of-payments deficits. In the euro area, however, there is theoretically no such limit if the ECB accepts sufficiently low

collateral for refinancing credits. The accumulated financial flows intermediated by the Eurosystem are simply recorded as accounting credit and debit across NCBs. In other words, when bank A is located in a different country to bank B, the Eurosystem intermediation shows up on the balance sheets of the individual NCBs. As NCBs merely record the flows in their accounts, the credit and debit records cancel each other out in the Eurosystem's consolidated balance sheet, and there is no net creation of central bank money (monetary base) in the process.

A few formal identities may help clarify the relationship between the Target accounts and the balance of payment. For our purposes, we use the customary definition of the capital account that records the activity of private agents as well as fiscal rescue operations, but excludes official settlements across borders, which is the balance of payments.[22] The definition of the balance of payments is thus simply the sum of the current account and the portion of the capital account excluding official settlements. For transactions across countries with independent currencies, balance-of-payments deficits and surpluses are usually settled in official reserve currencies (dollars, euros, yen, sterling, Swiss francs), or by changes in the amount of Special Drawing Rights (a type of accounting currency) at the International Monetary Fund (IMF).

Within the euro area, the settlement occurs in terms of net flows of euros via the Target system, involving debit and credit accounting across NBCs. Thus, the Target account in principle *is* the intra-euro area balance of payments. The two concepts are basically synonymous.[23]

A balance-of-payment or Target deficit always results from an imbalance between the total current account and how much of it the capital market is willing to finance. There is a balance-of-payment deficit if the capital market is willing to finance only a fraction of the current account deficit, and an even greater deficit

---

[21] See Rocholl (2010).

[22] The statistical terminology distinguishes between capital account and financial account in the balance of payments. To simplify the language, the term 'capital account' in this chapter refers to the sum of capital account and the financial account of the balance of payments.

[23] See Sinn (2011a), Sinn and Wollmershäuser (2011) and Homburg (2012).

if, in addition, private capital flows out in net terms. For any given current account deficit, an increase in capital outflows necessarily results in an additional balance-of-payment deficit. As a result of capital flight, it is possible to simultaneously have a current account surplus and a balance-of-payment deficit.

The combination of external imbalances in both the current account and the capital account is creating enormous imbalances in balances of payments within the euro area. The charts in Figure 2.9 show how Target credit relates to the current account deficits of each of the GIIPS. The red curve indicates the stock of Target credit as shown in Figure 2.8, and the blue curve shows the current account balance accumulated from 1 January 2008. It refers to the auxiliary coordinate system also shown in blue. It is important to note that both lines represent stocks rather than flows.

By definition, the current account must be financed with either ordinary capital imports or Target credit. Thus, if in Figure 2.9 the (blue) current account line is above the (red) Target line, the vertical distance between these two lines measures the cumulated ordinary capital import since 1 January 2008, and if the

Target line is above the current account line, the distance measures the cumulated ordinary capital export.

The charts for Greece and Portugal show that over the three years from 2008 to 2010, their current account deficits were nearly entirely financed with Target credit. In net terms there was hardly any net private capital inflow over the three years under consideration. Thus, these two countries had been benefiting from net official assistance de facto well before the official public rescue operations started in 2010. They were effectively protected from an early and painful capital account reversal. This assistance allowed them to receive a net inflow of goods from other countries to the tune of 140 billion euros over the three years of the crisis: Greece and Portugal were effectively drawing credit from other euro area NCBs at below market rates. While no parliament was involved in deciding on this credit, in economic terms it was quite similar to an open rescue credit via the EFSF, for example, which taps funds from the core and lends them to the periphery. Even the liability aspects are very similar, for if these countries go bankrupt and their collateral, largely government bonds, falls in value, the surviving euro countries are to share the liability according to their respective ECB capital shares, which is exactly the liability sharing rule for EFSF credits. As shown in Figure 2.10, support from the Eurosystem to date clearly exceeds any assistance paid out in terms of rescue loans by the community of states.

In Ireland the Target credit vastly exceeds the accumulated current account deficit (of about 14 billion euros). It mainly corresponds to huge net outflows of private capital totalling around 130 billion euros. Predominantly this represented a withdrawal of those short-term funds that the banks of the core had been lending to Ireland.

In Spain the Target credit covered about a quarter of the current account deficit in the years 2008–2010, which amounted to around 200 billion euros. Three quarters of the accumulated current account deficit was financed with private credit.

Figure 2.9

(Cumulative) Target credits and current accounts

Source: Sinn and Wollmershäuser (2011, Figure 12)
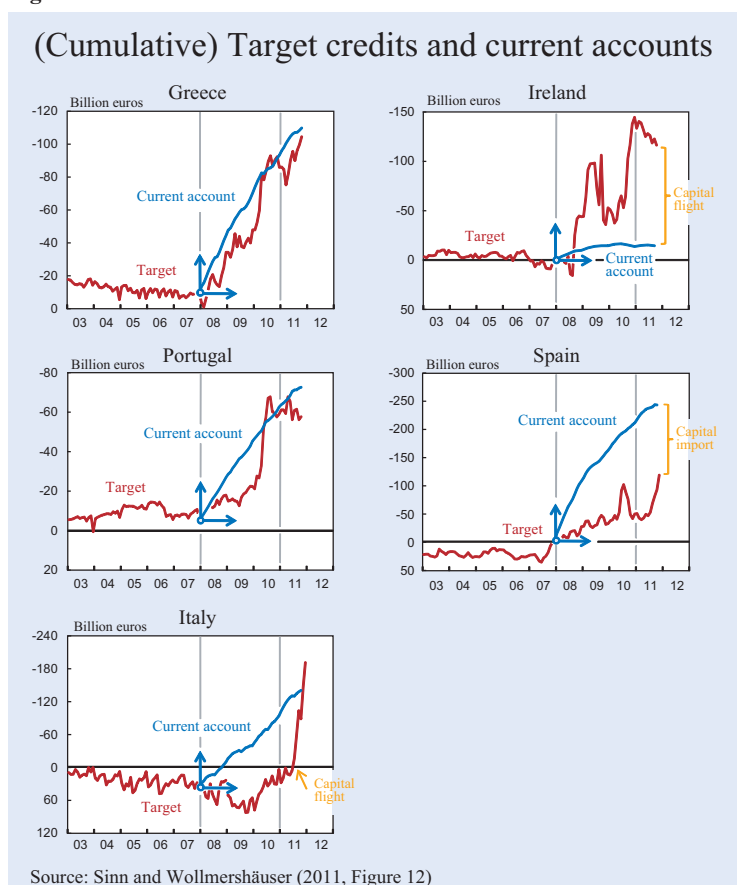
As shown in Figure 2.8, Italian Target liabilities did not start to grow until later (from July 2011 onward). The chart clearly shows that the Target curve became much steeper than the current account curve at that point, indicating capital flight. As Italian and foreign investors started to reduce their exposure to Italian assets and to purchase assets abroad, the Eurosystem, through the Banca d'Italia, provided liquidity to Italian banks to compensate for the shrinking inter-bank loans.

In the second half of 2011 the Italian net private asset position swung completely. The capital flight that has occurred since then has more than offset Italy's capital import since the beginning of 2008. As of the end of 2011, Target finance was even a little higher than the sum of the current account deficits over these four years.

The main recipient of outflows from Italy was Germany. As mentioned above, by the end of last year, Germany had accumulated Target claims of around 460 billion euros, or half of the country's net foreign asset position. Moreover, even before Italy started to suffer large outflows, the Bundesbank's Target claims had grown substantially in the years 2008–2010, almost accounting for Germany's entire current account surplus with the rest of the euro area. So, while the German current account surplus with the rest of the euro area was 264 billion euros over the three years mentioned, Germany's Target claims increased by 255 billion euros. Thus, 96 percent of the current account surplus corresponded to Target claims of the Bundesbank against the Eurosystem, and only 4 percent, or 10 billion euros, were accounted for by other assets. Interestingly enough, 6 billion of those 10 billion euros were claims resulting from public rescue operations in favour of Greece, and only 4 billion euros represented private, marketable assets or claims.

Capital flights of this kind have usually marked the end of fixed exchange rate systems. Consider the Bretton Woods system of fixed exchange rates that was in place in the first post-war period up to 1973.[24] Towards the end of this system, the US Federal Reserve engaged in an excessively expansionary policy (while fiscal policy was also loose) that was no longer compatible with the credibility of the official conversion rate with gold, as it sustained a rate of inflation that was clearly above inflation in

Germany. Despite capital controls, capital started to flow from the United States into Germany and other safe-haven currencies. As a result of the fixed exchange rate regime, the dollars arriving in Europe either had to be exchanged for domestic money, increasing its overall stock or, if sterilised, had to replace domestic refinancing credit. The inflow of dollars (or US Treasury Bills to which they were converted) accumulating in the European national banks back then are, by and large, comparable to today's Target claims.

The Bretton Woods system ended soon after France asked the United States to convert the dollars it had accumulated into gold; the United States gave up the gold standard at that point (1971). This cannot happen in the euro area, given that no NCB in the Eurosystem has any right to 'call due its Target claims'. On the other hand, the GIIPS are, of course, not the United States. They cannot pursue an expansionary monetary policy in the face of large capital outflows. They can, however, slow down their reform process, or fall victim of confidence crises and keep feeding the outflow of capital.

A more recent and relevant example is the large systemic crisis of the European Monetary System in 1992–93, that derailed the plan to introduce the euro initially set out in the Maastricht Treaty. As discussed by Buiter et al. (1998), large imbalances emerged because of the combined effect of a major inflationary shock in Germany, and the cumulative erosion of competitiveness in the periphery of the system. The shock derived from the modalities of German unification, granting a one-to-one conversion rate of East German wages with the West, and starting a large programme of transfers (Sinn 1992). To counter inflation, the Bundesbank engaged in rapid monetary contraction, raising policy rates between 1990 and 1992 (in mid-1992, the German Discount and Lombard rates were as high as 8.75 and 9.70 percent respectively). With a fixed exchange rate system, the other countries in Europe were forced to adjust their rates accordingly. To make matters worse, as doubts emerged about their ability to remain in the fixed exchange rate system while absorbing a strong monetary contraction, a rising interest rate premium amplified the negative monetary impulse from the Bundesbank. Then as now, there were widely contrasting interpretations of the crisis: one interpretation stressed self-fulfilling erosion of confidence, whereas another emphasised fundamental macroeconomic imbalances.

---

[24] See Tornell and Westermann (2011), Blankart (2012), Kohler (2012) and Schlesinger (2012).

Over the course of 1992, any cooperative solution – involving a nominal appreciation of the D-mark, which would have allowed the Bundesbank to lower policy rates – was rejected, reflecting increasing internal divisions among policymakers. Some countries simply refused to let their currency devalue against the D-mark. When markets fully realised the extent of these divisions, speculative movements became a tsunami. The only way to resist this tsunami would have involved active and unlimited lending of reserves from the core and international institutions, to the periphery countries in crisis. Under the Exchange Rate Mechanism of the European Monetary System, however, no obligation was present. A large balance-of-payments imbalance immediately translated into a balance-of-payments crisis, forcing many countries to opt out of the system. Some of the countries which were able to defend their parity against massive speculative attacks, like France, could count on strong cooperation with Germany (mainly in the form of liquidity support), but especially on the fact that interest rates within the system would fall rapidly, once excess demand in Germany was reduced by the effective revaluation of the D-mark. In this sense, the break-up of the system, and extensive and large devaluation by the periphery, allowed the core to remain intact.

A key lesson from this analysis is that, as long as fundamental imbalances are not corrected, and confidence crises are not contained, the functioning of the payment and financial system will come at the price of persistently large, or even growing, balance-of-payments deficits. Limiting Target accounts will increase the likelihood of an at least partial break-up of the Eurosystem.

However, large Target imbalances are worrisome for a number of reasons. Firstly, they show that public capital flows have replaced private flows which, if it were to continue over time, would distort the allocation of resources within the euro area. Secondly, they substantially reallocate credit and wealth risks between the countries of the euro area. A default by one state or by residents in one state raises the taxpayers' bill across Europe proportionately. The losses are nominally born by the Eurosystem as a whole, but they are allocated to the NCBs in proportion to their ECB capital keys, which basically reflect country size. The NCBs, in turn, have to be recapitalised by either retaining profits, which otherwise would be distributed to the respective national treasuries or by outright capital injections from governments. In either case national tax payers foot the bill. Moreover,

should the Eurosystem break up, multilateral target liabilities may in principle turn into bilateral liabilities, de facto aggravating the situation of the creditors.[25] As long as the Eurosystem provides liquidity at a euro area wide fixed price to banks, the Target system can provide virtually unlimited credit to finance massive reshuffling of portfolios across borders, not to mention large current account imbalances.

The key problem highlighted by the above considerations is that the current state of the monetary union is not sustainable, as a mix of fundamental imbalances and confidence factors are creating increasing tension between the crisis countries and the rest of the euro area.

2.5 The rescue operations

As the sovereign spreads on government bonds grew high and volatile in crisis countries, and the balance sheets of the NCBs increasingly worsened, as shown in Figures 2.8 and 2.9, the ECB increased its pressure on euro area governments to help out with relief operations. There were several steps in this development.

Firstly, on 8/9 May 2010 a 110 billion euros package for Greece was agreed (80 billion euros from the European Union and 30 billion euros from the IMF). Other rescue mechanisms were also enacted. They included the EFSF, with a volume of 440 billion euros, the European Financial Stability Mechanism (EFSM), with a volume of 60 billion euros, which were basically funds available for the European Commission, as well as a 250 billion euro supplement from the IMF.
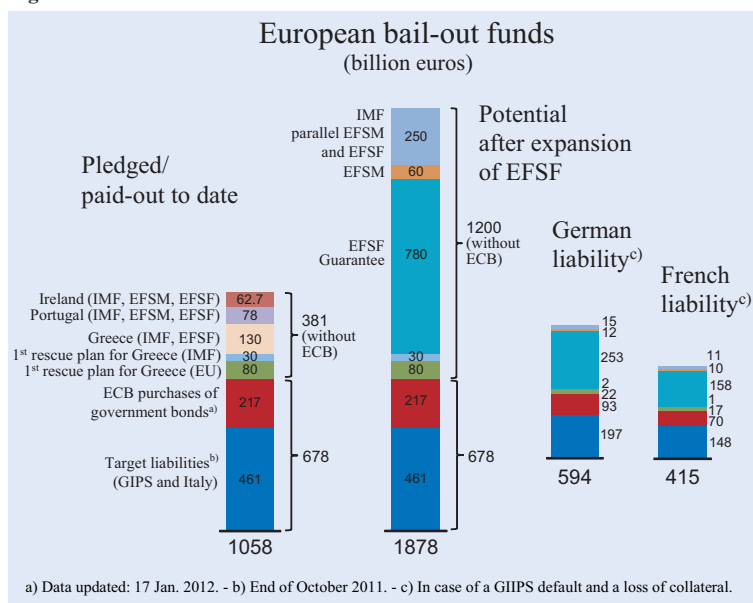
On 29 November 2010, a 62.7 billion euros package for Ireland was agreed, which was taken out of the previously agreed rescue facilities (IMF: 22.5 billion euros, EFSM: 22.5 billion euros and EFSF: 17.7 billion euros).

On 17 May 2011, a 78 billion euros facility for Portugal was agreed, to which the EFSF, EFSM and IMF each contributed 26 billion euros.

On 21 July 2011 the euro area leaders extended the volume of the EFSF from 440 billion euros to 780 billion euros in order to be able to effectively lend

---

[25] In the case of a non-cooperative break-up with default, however, since Target credit mostly corresponds to past capital inflows into the country, the creditor states may be tempted to seize foreign assets accumulated in their own financial systems.

Figure 2.10

European bail-out funds
(billion euros)

a) Data updated: 17 Jan. 2012. - b) End of October 2011. - c) In case of a GIIPS default and a loss of collateral.

440 billion euros. This required ratifications by all of the euro area parliaments, which were completed on 13 October 2011.

On 26 October 2011 a second bail-out package of 130 billion euros for Greece was agreed upon.

Figure 2.10 summarises the rescue activities, incorporating Target credits, up until October 2011 and ECB purchases of government bonds up until 13 January 2012 It is based upon the most recent data available at the time of writing. The first column shows the funds actually committed, and the second column the potential commitments, including IMF help and the enhanced EFSF.

The figure shows that the overall public credit volume granted to the GIIPS countries, as far as this can be determined to date (see footnote), has risen to 1,058 billion euros, and none of this credit has thus far been repaid. Interestingly enough, at 678 billion euros the ECB's implicit and explicit rescue operations are far bigger than the credit help granted to particular countries by the parliaments of the euro area, which totals only 381 billion euros.[26] However, as the second column shows, the potential overall rescue facility by the community of states and the ECB totalling 1,878 billion euros is much bigger than the sum granted to individual states up to this point.

[26] The help granted to a particular country includes the money conditionally promised, such as the money earmarked for Greece, provided Greece meets the conditions of the European Commission, the IMF and the ECB, the so-called 'troika'.

The third and fourth columns show the theoretical maximum liabilities that the current institutional setting would imply for Germany and France should (a) the GIIPS countries default and their collateral become worthless while (b) the euro as such continue to exist. In this case the German share in the ECB losses increases from Germany's statutory 27 percent to 43 percent, while the French share increases from 20 percent to 32 percent. This explains the respective dark blue and red portions of these columns. The remaining portions are explained by the potential maximum losses in the EFSF as laid down in the underlying treaty, the countries' respective shares in the EU budget and the respective shares in the IMF budgets. At the beginning of 2012, the maximum total German liability amounted to 594 billion euros and the corresponding French liability to 415 billion euros. Of course, these calculations are carried out keeping other things equal: the economic 'Armageddon' brought about by a generalised default in the euro area will by itself create massive economic losses of a size that is difficult to forecast.

The size of the official packages agreed upon since 2010 is not small per se, but there is a clear reason why the piecemeal approach to the crisis adopted so far, in uncertain and contradictory steps, has provided no solution to the crisis. Addressing the crisis will call for a clear definition of the future financial and fiscal architecture of the euro area, as well as one that provides a clear sense of direction towards a sustainable single currency. It will also require decisive interventions in the short-term to stem destabilising confidence crises at their roots.

2.6 Reforming the EMU

The euro area's internal problems, with the emergence of large and volatile risk premiums and large balance-of-payments imbalances, have arguably arisen as a result of fundamental asymmetries across its borders, which have grown out of proportion due to massive underestimation of credit risk within the union before the eruption of the global crisis and the lack of effective correcting mechanisms since. The underestima-

tion of credit risk after the announcement of the euro introduction led to overly rapid and unfounded interest rate convergence and excessive capital flows, which, in turn, created inflationary bubbles, mispricing and excessive risk-taking in the periphery countries while arguably contributing to a stagnation in the core (see EEAG 2011). In some countries, this led to huge current account deficits and dangerously high net foreign debt positions, which undermined the creditworthiness of some countries (see Figure 2.6). In the case of Ireland, high public liabilities generated by the rescue of the banking sector combined with smaller, but non-negligible, external deficits made the national economy extremely vulnerable. The position of Italy, fragile because of the large stock of public debt, has further deteriorated with the global crisis, due to the atypical emergence of current account deficits in recessionary years, as a result of competitiveness losses.

When the US crisis swept over to Europe and capital markets became aware of the risks at stake, country-specific interest rates diverged and capital fled to the core in waves, starting from the smallest and more exposed countries. With a large current account deficit to finance, the periphery replaced the missing private capital with public credit that commercial banks were able to draw out of the Eurosystem masking or even fostering the imbalances that may ultimately threaten the stability and existence of the EMU as a whole.

The euro area urgently needs measures to correct the existing imbalances and reduce interest divergence and capital flight, enabling the system to return to a sustainable equilibrium. Achieving all these goals is extremely difficult, perhaps even impossible since a number of the proposed measures to provide short-term relief create difficult trade-offs and conflicts with desirable long-run equilibriums. Regaining competitiveness requires crisis countries to engineer real devaluations. But with a large stock of public and private liabilities denominated in euros, falling prices raise the real burden of debt, implying that fiscal stress may be rising in the process of disinflation. This suggests that relative price adjustment, which is bound to be painful and time consuming, must be combined with liquidity support. The risk inherent in this strategy is that, to avoid financial disaster now, the European Union will de facto accept open-ended support to countries that ultimately turn out to be insolvent. In this case, the tax payers in those countries giving the support will in the end face large costs,

which may lead to a political revolt that could kill the whole euro project as we know it. The risk inherent in the alternative strategy, avoiding open-ended support at all costs to 'save the euro' in the long run, is that it could – if the worst comes to the worst – lead to financial catastrophe now.

Another key issue concerns the creation of a common safe asset in the euro area. The immediate introduction of Eurobonds or other systems of collective liability would arguably provide short-term relief to periphery countries, but also effectively restore the distorted pre-crisis system of neglected investment risks within the euro area – a system which is likely to again lead to macroeconomic, current account and net foreign asset imbalances. Without a safe asset, however, the euro area would constantly be subject to massive and destabilising capital movements and flight. In addition, normal operations by the ECB would be constantly challenged by the lack of any clear distinction between monetary and financial stability on the one hand, and fiscal stability on the other.

Below we discuss the trade-offs on both accounts: correcting competitiveness with a large stock of debt denominated in euros, and creating a safe class of assets in the euro area.

2.6.1 Realigning relative wages and prices under a large debt denominated in euros

In the absence of open realignment possibilities by way of exchange rate adjustment, the most arduous task facing the euro area for the remainder of this decade is that of bringing its internal relative price and wage levels back to a sustainable equilibrium. Only such realignment will make it possible to reduce the euro area's internal current account imbalances and create the conditions for sustaining the internal debt that has accumulated so far. Indeed, for some of the crisis countries, reducing net foreign debt is ultimately the way to regain the full confidence of capital markets.

In principle, the necessary rewinding of the clock could be achieved via deflation in the periphery and/or inflation in the core. Both alternatives, however, will meet with high resistance. Inflation in Germany would undermine the country's acceptance of the euro and threaten the survival of any government tolerating it. The reason for this is well known:

given Germany's experiences with hyperinflation in the 1920s, even the remotest fear of inflation will trigger political resistance. Deflation in the periphery countries, which were used to high and persistent inflation even before the euro, will in turn require severe austerity measures that force the economy down with a degree of rigour that may well bring people onto the streets, and even threaten the stability of the political system.

A key problem is that national private and public debt is no longer denominated in a domestic currency, as it was prior to the introduction of the euro. In the 1992–93 crisis, any country that exited the European Exchange Rate Mechanism and devalued immediately became more competitive without suffering any adverse effect on the government and private debt situation. Today, any drop in domestic prices to regain competitiveness (or an exit from the euro area without changing external debt into national currency) would at the same time raise the burden of debt in relation to nominal domestic income. Thus, unlike previous episodes of realignment in Europe, the benefits from real devaluation are going to be tempered, if not offset, by its adverse balance sheet effects for firms and the government (Corsetti 2010, Krugman 2011b and EEAG 2011).[27] This problem is well known, especially in relation to the experiences of Latin American countries, where devaluations have been systematically associated with large contractions, financial crises and debt defaults.[28]

Yet there are instances suggesting that it is not impossible to gain competitiveness via real depreciation that results from cutting wages and prices, or letting them inflate by less than in other countries. Latvia decreased its price level by 8 percent within only one year (2009Q1–2010Q1) after an internal wage moderation agreement had been achieved, and Ireland cut its price level by over 14 percent compared to its euro area trading partners over a period of five years (2006Q3–2011Q2), after its house price bubble burst.

In Latvia the government could count on at least three favourable features of the economy at the time of the internal devaluation. Firstly, public debt was small – hence the fall in the price level did not have a strong impact on the fiscal burden of the country, via the implicit rise in the real value of public liabilities.

Secondly, the country size is small, which made it easy to find a compromise between all relevant social groups. Thirdly, Latvia wanted to enter the euro area and knew it would jeopardise its entry chances with an open depreciation.[29] Nonetheless, a large external debt implied that real devaluation had strong negative wealth effects on private firms and households. Latvia accepted a 20 percent decrease in its real GDP. In the case of Ireland, the prospects of a successful devaluation were enhanced by productivity growth and the existence of a manufacturing sector that quickly recovered as it was able to sell at lower prices.

Germany also depreciated by 22 percent against its euro area trading partners in the period from 1995 to 2008, as shown by Figure 2.4. This process coincided with a period of stagnation, unemployment and outflows of capital. Only 3 percentage points of Germany's real depreciation were due to exchange rate adjustment before the currency parities were fixed within the euro area. The remaining 19 percentage points of the country's depreciation were due to pure price adjustments within the euro area, with most of the gains coming from higher price dynamics abroad, rather than price compression at home.

Unfortunately, the crisis countries are not in the same position as Germany. Firstly, given the definition of price stability by the ECB and the long tradition of low inflation rates in Germany, it will be difficult to trim domestic inflation significantly below the euro-area level to regain competitiveness. Secondly, since they are borrowers rather than lenders, they do not have the time for a gradual adjustment of more than a decade.

While there is some uncertainty about the size of the adjustment, the realignment required by Greece and Portugal is likely to be much larger than that needed by Ireland. Their pre-crisis current account deficit-to-GDP ratios were about three times as large as Ireland's. EEAG (2011) estimated that Greece would need a real depreciation of between 16.5 percent and 33 percent.[30] OECD purchasing power parity estimates suggest that Greece would need a depreciation of 31 percent to reach the price level of Turkey,[31] a country that enjoys similar specialisation advantages. Of course, a slightly higher inflation target for

---

[27] For an extensive discussion of this problem see in particular EEAG (2011), Chapter 3.
[28] On that continent it is commonly dubbed 'original sin', to stress the profound macroeconomic consequences of being unable to borrow in domestic currency.
[29] Prime minister Valdis Dombrovskis in a speech given to the Munich Economic Summit, May 2010.
[30] See EEAG (2011), p. 119.
[31] According to OECD purchasing power parity for GDP (see OECD online database *http://stats.oecd.org/Index.aspx?dataset-code=SNA_TABLE4*).

the ECB, which we have argued in favour of in earlier reports, would bring some relief.[32] However, any relief provided via this channel will necessarily be quite limited.

Remarkably, although the European economy has been in crisis for several years now; there is, with the exception of Ireland, little sign of any real depreciation to date in the crisis-hit countries; or if the process has begun, its impact has been minimal according to the data available at the time of this writing. Looking at the GDP deflator, the measure of the price level for domestic output, Spain depreciated by only 0.5 percent and Portugal by just 0.3 percent from 2008 to the second quarter of 2011. Greece appreciated by 1 percent, while Italy appreciated even further by 1.4 percent. As previously, all data refer to changes in the GDP deflator relative to the respective euro area trading partners.[33] Stronger depreciations will have to be realised in the years to come.

An argument often put forward in political debate is that the crisis countries should be able to 'grow' out of their foreign debt problems, rather than overcoming them by way of real depreciation. Unfortunately, this argument does not hold, in particular if 'growth' is supposed to be generated by deficit spending and loose public budget constraints (a definition often adopted by politicians when speaking of the need to foster 'growth').[34] In this case, more demand would come at the cost of larger government debt accumulation. Moreover, without real depreciation, economic recovery tends to increase imports. The trade deficits, which in all crisis countries except Ireland have been contributing to the current account deficits, are therefore most likely to increase, resulting in further accumulation of foreign liabilities in that case.

Sweden in the early 1990s, discussed in Chapter 4, provides a vivid illustration of the importance of real exchange rate depreciation and net export growth in order to come out of a sovereign debt crisis without a long period of stagnation. Given that a realignment of exchange rates is not possible, periphery countries will have to go through a period of diminished nominal income growth, if not nominal income shrinkage, to correct unsustainable domestic and foreign debt levels. This will be necessary to strengthen the competitiveness of their exports and keep their imports down.

It could be that some countries with excessive realignment needs will find it too difficult to go through the real depreciation required within the euro area and may contemplate the option of leaving the euro area and reintroducing a national currency that is allowed to depreciate against the euro. Sometimes this possibility is discussed in terms of a temporary exit ('taking a sabbatical from the euro'). In our view, it is essential that the decision of whether or not to stay in the euro area be left to individual countries, and should not automatically imply that these countries also have to leave the European Union.

An exit from the euro would make the currency denomination of debt contracts within and outside the country an even larger issue, since a large and quick depreciation would amount to a correspondingly large increase in the value of debt in terms of domestic output if the debt remained denominated in euros. However, as we pointed out in EEAG (2011), Chapter 2, an essential advantage of an external depreciation after exiting the euro consists in the automatic redenomination of the internal bank debt of private agents. With both an internal and an external devaluation, balance sheets would be distorted to the extent that agents hold foreign debt, but only an internal devaluation with falling domestic prices would aggravate the position of companies as their real assets would lose value, while their bank debt would remain unchanged.

Changing the denomination of the external debt would, in principle, be desirable, but is technically more complex, and arguably has greater consequences. In the euro area, public debt contracts are written under national law, but external private debt is written under foreign law. At least for private contracts, the burden of the external debt cannot be lowered by nominal depreciation. In any case, experience with country defaults suggests that countries depreciating their external debt might be bracing themselves for years of limited access to international financial markets, and may encounter high risk premiums.

A default would, of course, be a huge burden for the creditor countries, which would have to write off some of their claims. If only Greece and/or Portugal were to default, this burden would be relatively small and surmountable. However, there is the risk of further bandwagon effects and destabilising expectations which, if not contained, would impose negative externalities on other countries by causing bank runs and large-scale bankruptcies by financial institutions like

---

[32] See e.g. EEAG (2003), p. 42, or EEAG (2006), p. 36.
[33] See European Commission (2011).
[34] Productivity growth would instead be useful, as it would enable real depreciation to take place without wage and income cuts.

pension funds and insurance companies. This could trigger an economic crisis, which could potentially result in a deep international contraction. The political ramifications for the euro project, and hence for the future of the European Union, are impossible to predict.

The euro area therefore has the choice between Scylla and Charybdis. There will either be a prolonged period of pain, stagnation and internal political friction in the periphery countries or a financial and political crisis in the euro area that challenges its very existence. While we are unable to choose between these options, we recommend that the euro area countries and the ECB make active efforts to keep crisis-stricken countries on board by providing liquidity support to help them overcome their internal problems and to carry out the reforms that would facilitate the process of real depreciation, such as increasing labour market flexibility, liberalising firm entry and exit and privatisation. This support must not, however, be open-ended and turned into large transfers of resources between solvent and insolvent countries in the euro area. This raises yet another dilemma. A situation could emerge whereby Europe has to choose between government debt restructurings for several countries with potentially devastating effects on the financial system and a deep downturn in the short run on the one hand and massive transfers which may not in the end be politically viable and which may threaten the political cohesion of the euro area on the other.

EEAG (2011), Chapter 2, specified a detailed crisis procedure with well-defined support for the affected countries, distinguishing between liquidity crisis, impending insolvency, and full insolvency. Basically, we emphasised the need to provide generous liquidity help (of the kind provided by the Eurosystem or the rescue funds) to countries that have reasonable prospects of overcoming a crisis for a fixed period of two years to complement reform efforts and policy corrections. If liquidity turns out to be insufficient, or if the realignment needed is too large for the country, the report emphasised the need to offer help with a gradual process of debt restructuring.

We argued that, year by year, the then maturing government bonds could be subjected to a haircut of up to 50 percent and be converted into new government bonds secured at a rate of 80 percent by the community of states (with a limit for the accumulated guarantees and public loans of 30 percent of GDP). In

economic terms, this proposal boils down to insuring a country's creditors against default, albeit with a deductible: the first 60 percent of a potential default loss is born by the creditor, and the remaining 40 percent is born by the community of states, if necessary. The main idea of the proposal is to specify implicit upper bounds on losses incurred by creditors in order to limit the interest rates that states would have to pay for new government debt and to facilitate access to capital markets.[35]

While problems of credibility of the rules affect many of the proposals for restructuring mechanisms, including ours, it is worth noting that any 'fiscal compact' which simply denies the possibility of a large crisis in some regions of the union, and hence does not foresee the procedures to deal with it, is incomplete, ineffective and dangerous. In practice, such a 'fiscal compact' will, at best, amount to a replay of the same, failed approach of the Maastricht Treaty, with an overdose of wishful thinking. This is all the more so as it was agreed at the EU summit launching the fiscal compact that the earlier decided write-down of the Greek debt should be regarded as unique and exceptional, and that voting procedures within the ESM which is to replace the EFSF are to be changed so that decisions on financial support no longer requires unanimity but only a qualified majority.

At the time of writing, serious reform efforts are underway in the crisis-hit euro area countries. These efforts need to be sustained and complemented at a union level, avoiding politically unpalatable transfers, but without sparing help with liquidity for a well-defined time span when fundamentals justify it. Most importantly, it is necessary to rapidly reach a consensus on a desirable and sustainable institutional reform for the euro, providing a much-needed sense of direction for individual countries.

2.6.2 Euro-standard bills

Even in recent years, when credit risk was no longer underestimated, the institutional setup of the Eurosystem has maintained a fundamental dichotomy between government bonds and private assets that

[35] The effect this has on interest rates depends on when default is expected to take place and the maturity of the bond. Consider a ten-year bond and a probability of default of 50 percent. If default is expected to occur in ten years and thus only on the principal, a spread of less than 3 percentage points is needed to compensate for the default risk. If default is expected within a year, the spread is about twice as high.

bear a national risk premium, and ECB funds that are available to all countries regardless of their creditworthiness and default probabilities. As discussed at the outset of this chapter, this implies that, as investors may massively move from the riskier to the safer national assets within the euro area, the effective interest rates that countries have to pay for ECB refinancing credit are lower the higher the default probability is for local banks and the lower the collateral these banks provide to their NCBs. As long as ECB lending does not account for market risk premiums, the usual brake in the system is missing and capital flights can become extremely large. Section 2.4 looked at the alarming capital flight that has taken place from the crisis countries in recent years.

The ECB has addressed the crisis with a growing number of non-standard interventions and by reducing collateral requirements (see Table 2.1). Recently, it even offered a tender for three-year refinancing credit amounting to almost 500 billion euros.[36]

These measures constitute an attempt to stimulate real private investment financed with borrowed funds and bank purchases of government bonds. In other words, they are motivated by the desire to reduce the consequences for the private and public sector of an increasing level of sovereign risk. Yet, unless concrete reforms take place simultaneously that improve the country's credibility in the eyes of the markets, the ECB policy runs the risk of becoming an attempt to fill a bottomless pit.

In reforming the architecture of the euro area two mistakes are to be avoided. The first mistake consists of creating artificial conditions leading to a mispricing of credit risk. The damage done by years of risk underestimation is clear not only in the euro area, but also at a global level. A homogenous Eurobond, or blanket cross-border guarantees for national debt (even if they were feasible) would not be a good idea for the reasons explained in some detail in EEAG (2011) and reconsidered above. Compressing credit risk creates mechanisms that favour the emergence of large imbalances within the euro area. With imperfect policy credibility, confidence factors may nonetheless lead to disruptive pricing spirals, eventually undermining public and private debt sustainability due to self-fulfilling expectations. Creating an institutional

system capable of stemming confidence crises is consequently a priority for the new architecture of the euro area.

The second mistake consists of overlooking a fundamental requirement for the smooth working of a monetary union, namely the existence of a class of assets sufficiently homogenous to provide the common safe assets in the area, required for monetary operations and any kind of exchange requiring safe collateral.

Let us consider possible benchmarks for a reform, starting with a review of the US system. Unlike the European Union or the euro area, the United States is a federal state with a common legal system and other tools to enforce central rules to be obeyed by local states. The federal government has complete power over a very large share of fiscal resources, both on the taxing and the spending side. The bills and bonds issued by the federal government are the safe assets at the core of open market operations by the central banks, and provide the ideal instrument for collateralised transactions at both a private and a public level.

The US Federal Reserve System is comparable to the Eurosystem of central banks. The US system is split into 12 districts, each with its own District Federal Reserve Bank, or 'District Fed'. Each district is of a size comparable to that of a state in the euro area, but the districts bear no geographical or legal relation to US states. In fact, the District Feds are owned by private commercial banks. If residents of one district want to purchase goods and assets in net terms from other districts, Target-like liabilities are bilaterally booked in the Interdistrict Settlement Account with regard to those District Feds where the money is flowing to. Unlike in the euro area, the Target-like liabilities have to be settled once a year (every April) with marketable assets. These marketable assets are held in a clearing pool administered by the Federal Reserve Bank, and according to the net liabilities that have built up; the ownership shares in the clearing pool are reallocated between the District Feds. The interest income earned by the pool of assets is reallocated accordingly. Before the crisis, these assets used to consist of gold-backed Treasury Bills of the highest quality. During the crisis, and in conjunction with the adoption of non-standard policies, Asset-Backed Securities (ABS), which are of lower quality but pay higher yields, were also included in the clearing pool.

---

[36] This was the largest infusion of credit by the ECB into the banking system to date and met high demand albeit hardly increased net liquidity provision by the ECB as, at the same time, it crowded out main refinancing operations and was accompanied by a substantial increase in the use of the ECB deposit facility.

The need to settle Target-like balances with marketable assets has arguably provided a brake preventing the accumulation of major cross-district imbalances in the US system to date, because the banking system of a district reaps no advantage by drawing a Target-like credit, given that its interest cost is the same as that charged by the local commercial banks for borrowing the funds in the interbank market. If the residents in a district want to acquire goods or assets in net terms from other districts, they must sell an appropriate amount of assets in exchange (including the 'sale' of certificates of debt or debentures). In Europe, Target liabilities do not have to be settled; they may stay on the books and cannot be called due by the NCBs holding the Target claims. The interest on these liabilities is the ECB's main refinancing rate, which is substantially lower than the interbank rate for the crisis-hit countries. At the time of writing, for example, the ECB refinancing rate is 1 percent, while the interbank lending rate to Italian banks is around 5 percent (and Italian government bonds offer yields of about 6–7 percent due to their longer maturity).

There is, of course, in principle nothing wrong with preserving the central bank's ability to pursue explicit policies of liquidity support to banks, whether this liquidity support gives rise to accounting records in Target, or simply substitutes intermediation between two German/French/Dutch banks in trouble. The US example does not highlight any need to limit the ECB's capacity to use certain instruments, when there are good reasons for using them.

The main lesson to be learnt from the US concerns the smooth working of a common monetary policy and payment system, distinguishing ordinary operations from non-standard operations. This problem lies at the heart of a desirable reform of the euro area architecture, where the ECB council is currently deciding on monetary policy and accepting assets with quite different risk and prices as homogenous collateral, with discounts that do not reflect market discounts. Both the conduct of a single monetary policy, and the virtuous coexistence of independent states giving rise to country-specific risk, requires the creation of a class of assets with prices that are, to a large extent, insulated from local imbalances.

When considering an initiative of this dimension, the creation of a Eurobond would be consistent with the creation of the euro. A Eurobond would guarantee the same interest rate for all euro area countries and would gradually bring all of them into the same rating category by converting their outstanding old debt into Eurobonds. In the end, government bonds would have an interest rate that differs from the ECB refinancing rate only by the difference in maturity, making the arbitrage incentive disappear.

However, unlike in the United States, the coexistence of independent states in the euro area implies that a homogenous Eurobond with a single interest rate for government bonds would distort the pricing of risk, creating an incentive to over-borrow and over-lend. The allocation of capital in the euro area would be determined by a common institution mutually guaranteeing the investment of distinct individual borrowing states. The perils of this approach are highlighted in EEAG (2011) and shortly discussed again in Section 2.3 of this chapter: these consist of distorted allocation of capital and production, affecting growth and welfare across borders, as well as hampering growth at the aggregate euro area level.

Even if, one day, the euro area were to become a common political entity with the requisite legal and actual enforcement devices, a Eurobond enabling individual states to borrow at the same interest rate would not be advisable. Surely, the common European state would have to possess the right to borrow itself, but that would not be the same as Eurobonds. After all, even the United States has no instrument that would allow individual states to borrow at the same interest rates. Apart from worrisome implications for the redistribution of wealth risks and interest costs among the current European nations, which are likely to give rise to political conflict, policies that equate the interest rates for government bonds create incentives to increase public debt levels (and indirectly private debt levels), de facto re-establishing the pre-2008 situation, whereby the convergence of interest rates caused a misallocation of resources in the euro area. The countries benefitting from low interest rates are likely to pursue expansionary fiscal and financial policies, rather than using the interest advantage to finance structural reforms in the economy and ensure a sustainable path for their public finances. The danger of cross-country imbalances, large capital movements sustaining uncompetitive equilibriums and persistent current account imbalances will once again be high.

Before the United States was able to solve this problem it underwent a difficult period of state defaults in the nineteenth century, which ultimately made it clear that no interstate rescue programs would be available.

This experience then led to the formulation of strict budget rules, limiting the state debt to a minimum. We are afraid that Europe will also have to suffer painful experiences before the requisite fiscal discipline can be achieved. In the wake of the EU Summit on 8 December 2011 in particular, the euro area countries are trying to limit the problem of excessive public borrowing by introducing a fiscal union with political controls over state budgets based on the idea that the ultimate roots of imbalances are fiscal.[37] While this may seem reasonable and in keeping with the tradition of the euro's institutional development, it is hard to believe that, having failed in the past, the same approach will work in the future.

On the one hand, there have been multiple sources of imbalances: some of the countries now facing financing external debt problems actually used to run low public deficits and low public debt-to-GDP ratios in the first few years of the euro. On the other hand, the key problem is that it is not possible to set the debt constraints in stone and enforce automatic correction mechanisms. Thus, while the agreements of the EU Summit of December 2011 are to be welcomed in the sense that they re-establish, at least partly, an agenda for stronger ties within Europe, they may not take us very far on their own. Even if member countries do write debt constraints into their constitutions, it is doubtful that this constitutes a safeguard against a violation. After all, some euro area countries do not even have a Supreme Court that could enforce such constitutional rules, while others give their citizens only limited possibilities to appeal to the Supreme Court.

The concrete danger is that the failure of the Stability Pact in the past will merely be repeated. There are two strong reasons to believe that this would indeed be the case. Firstly, although sanctions (fines) are intended to become automatic, a qualified majority can subsequently still stop them. Hence, these decisions are still *political*. Past experience shows the unwillingness of finance ministers to punish their peers, which is easy to understand, as each finance minister realises that s/he may be in a similar situation in the future, making lenience with sinners a good investment in the future. Secondly, a fine, which a country can borrow to pay for and then hope to be bailed-out by others, is not a very frightening disincentive to irresponsible behaviour.

It is therefore highly probable that the fiscal compact does not go far enough in combining massive support to crisis countries with a monetary union that is sustainable in the long run. A more ambitious fiscal compact, transferring sanction decisions from the political to the judicial sphere (the European Court of Justice) as we suggested in our 2003 report, along with the introduction of non-pecuniary sanctions, such as loss of voting power in the Council, would ultimately be required.[38] However, such developments appear highly unlikely in the foreseeable future.

Europe obviously needs a true fiscal compact. Without it, no currency union with independent states is possible, especially in a situation where, as a result of the crisis, virtually all European states have experienced an increase in their debt. Once debt become unsustainable in a large region within the euro area, the pressure on other member states to come up with rescue packages involving more than liquidity support (as well as on the ECB to monetise public debt) – although in violation of the no-bail-out principle – is bound to become very strong. This course of events could sow discord and disruption in Europe.

The alternative of moving towards a US-like system seems more likely to provide stability in the long run. A major pillar of such a system would be a class of homogenous short-term assets providing the common collateral for monetary policy and the annual cross-border settlement of Target balances. The need to settle the Target credit with the safe asset would eliminate the automatic provision of subsidised credit via the payment system, without, of course, preventing the possibility of providing credit via other forms of interventions. This is likely to create a disincentive for countries to draw Target credit, and for leading private banks to offer higher interest rates for (international) interbank loans. In that way, the proposed arrangement would work against capital flight, instead of stimulating it.[39]

An important question, however, is how to construct such a class of homogenous short-term assets in the absence of a strong and large federal fiscal system without, at the same time, violating the 'liability prin-

---

[37] See European Council (2011b).

[38] See EEAG (2003), Chapter 2, Calmfors and Corsetti (2003) and Calmfors (2005).
[39] Please note, however, that enforcement is also likely to become an issue here. What if an NCB is not able to settle its Target credit with safe assets in a time of crisis? Would it be excluded from ECB credit lines? This seems unlikely. However, it would likely make the NCBs more cautious in providing liquidity against bad collateral. If intergovernmental rescue operations came as a replacement for Target credit, political decisions would be more open, transparent and discretionary rather than concealed, intransparent and automatic.

ciple'? Most proposals for Eurobonds or Eurobills are motivated by precisely this question; indeed, they explicitly recognise the need to avoid the cross-subsidisation of the risk of independent jurisdictions within the euro area.[40] They tend to either limit the amount of Eurobonds or Eurobills that a country can issue in terms of its GDP, or earmark tax revenues, de facto giving the community instruments a senior status. The main idea of these proposals is to approximate the US architecture, by creating the analogue of US federal bonds via a set of guarantees and collateralised borrowing, a possibility difficult to envisage unless a common European state is formed.

Following this very logic, however, there is a simpler and arguably more practical way to pursue the same goal that avoids the risk of over-borrowing when creating a joint liability. The idea is as follows: each country issues short-term treasury bills satisfying strict common standards, which are to be jointly supervised, so as to share the same risk profile. These bills would be collateralised with future tax revenue or real estate and standardised. Although each state would still retain full responsibility for servicing its own debt, in the new regime these nationally differentiated bills with strict common standards would trade within a few points from each other, providing the common financial asset for the ordinary operations of the ECB. They could also be used as collateral to settle financial flows between private agents.

Governments would retain full responsibility for servicing the bills. In fact, they would be committed to service them in full, before ordinary government bonds could be serviced. With such a new fiscal compact, these national bills, which could be dubbed 'euro-standard' bills, would circulate together with ordinary bonds, both priced by the markets. No government should be allowed to issue more 'euro-standard' bills than an amount consistent with the expectation that the issuing state itself will be able to service them, which for transparency's sake could be set as a limit in percent of GDP. Country-specific risk would thus primarily drive the price of ordinary bonds, providing at the margin the right signal and incentive to governments to take corrective actions should they stray from the path of debt sustainability. The risk of a state-specific bankruptcy giving rise to interest premiums would not contain any implicit borrowing subsidy as potentially implied by a Eurobond system.

A sufficiently large pool of bills with similar characteristics would make it possible to draw a clearer distinction between standard monetary policy operations, cross-settlement, and non-standard operations in support of the payment and financial system. In a system whereby, having learnt the lessons taught by the current crisis, European governments apply more rigorous principles of policy sustainability, it is not inconceivable that euro-standard bills would circulate widely and become highly substitutable for each other.

Several fairly complex issues would have to be tackled in the transition to such a new institutional setting. There are well-known problems related to diluting existing debt instruments by introducing new ones with seniority status. The fact that we suggest short-term bills rather than long-term bonds will limit this danger and make it possible to define exceptions from the so-called 'negative-pledge clauses' that prevent countries from issuing bonds senior to those already circulating in the market. These transition issues are common to other, related proposals.

Euro-standard bills are not a solution to all of the challenges currently faced by the countries in the euro area. For instance, they provide no vehicle for creating a cap on interest rates to stem an expectations-driven crisis. Their introduction could nonetheless favour the process of rebuilding policy credibility that in some European countries, most notably Italy, has primarily affected the interest rates paid on debt instruments with short maturity. It could also be combined with other schemes, and eventually ease the transition to forms of closer fiscal integration.

2.7 Conclusions

The euro was primarily and essentially a political initiative, motivated by the ultimate goal of enhancing pacific coexistence and prosperity in Europe after the horrific experiences of two world wars. This ultimate goal is invaluable. The method followed to date to achieve this goal, however, may have created the premise for a major setback.

European integration has proceeded by pushing forward incomplete institutions that readily become dysfunctional when confronted with rapidly changing economic reality. From a treaty comes a crisis, which leads to a new treaty, or a patch-up of the old one. Technical glitches and mistakes are either not under-

---

[40] Brunnermeier et al. (2011) and Hellwig and Philippon (2011).

stood by the governments signing the treaties, or perhaps ignored, with the idea that political agreements can always find a way out of a crisis. This method is acceptable as long as the rules are not too dysfunctional, and there is a model of adjustment that works.

The question is whether the economies adopting the euro locked themselves into a system with no feasible adjustment mechanism. As a result of the capital flows the euro triggered, countries in the core of the euro area have run surpluses and have maintained low inflation, and countries outside the core have run deficits, or have large enough debts to be easily pushed into unsustainable macroeconomic dynamics. The euro was introduced at a time when credit risk was utterly under-priced at a world level, and this contributed to under-pricing in Europe. In a similar way that low income, unskilled people in the United States could easily obtain mortgages to buy homes, governments and households in the periphery of the euro area could tap international financial markets. The result was a build-up of explicit and implicit liabilities, accompanied by inflation differentials that amounted to a major misalignment of prices.

To correct these misalignments, periphery countries will have to become more competitive by becoming cheaper. However, this would mean that these countries' debt levels will increase in real terms. As for Latin American countries burdened by dollar-denominated debt, or for Baltic and Central European states burdened by euro-denominated debt, a devaluation creates destabilising balance sheet effects. For all practical purposes, from the vantage point of each country in the union, the euro is a foreign currency.

When the global crisis hit in 2008, internal imbalances led markets to question the stability of the periphery, accelerating the process whereby brewing tensions turn into a full-blown disruptive economic storm. Massive capital flight forced governments to raise the interest on their debt and induced commercial banks to draw refinancing credit from their NCBs, planting the seeds of controversial fiscal issues in the event of a break-up.

The situation in the euro area has been allowed to develop into such a deep crisis that there are no easy solutions to it. Instead, very difficult trade-offs may have to be made. Providing large-scale help to the crisis-hit countries can avoid an immediate financial crisis, but entails large risks if liquidity problems turn out to be solvency problems, as this will imply losses

for tax payers in the countries footing the bill. Such losses could lead to a political reaction in these countries, killing support for the euro in the long-term. Internal devaluations in the crisis-hit countries will be long and painful, and risk creating political resentment against the European Union. Although the consequences are difficult to predict, the exit from the euro area of a crisis country such as Greece could speed up adjustment in that country, but is likely to exacerbate the situation for others. Closer fiscal integration is a way of enabling massive support for crisis countries, but the fiscal compact does not deliver it and political support for true fiscal integration is unlikely in the foreseeable future.

Systems that effectively discipline Target credits are good for the future – making support decisions become more transparent and discretionary – but it is less clear what implications they have in the short run. By having the ECB no longer offer credit at below-market interest rates to countries facing capital flight, on the one hand, monetary conditions in these countries would be more restrictive, deteriorating overall demand. On the other hand, it would increase incentives for private capital from abroad to invest in these countries, thereby reducing capital flight and fostering overall supply.

The development of the euro crisis is impossible to forecast. Our hope is that the euro area will be able to 'muddle through', but we fear that the process will, at best, be long and painful. At worst, policymakers will face a situation whereby they have to choose between massive interventions, which could prevent an immediate financial crisis, but lead to the euro's demise in the long run because of its political ramifications, and a stricter stance, which could be viable in the long run but may lead to an acute financial crisis and deep economic distress in the immediate future.

In this chapter we have attempted to define a feasible solution to the problem of creating a class of highly substitutable, high quality assets to carry out day-to-day monetary policy and keep the payment system running smoothly. This is one element for the euro area's continued survival. Anticipating the economic problems associated with a common Eurobond, our proposal is to introduce *euro-standard bills,* issued by each government, and for which each government will be solely responsible. These bills, however, will satisfy strict requirements that each state will commit to enforce, subject to joint supervision, with the

new fiscal compact. Once the regime is in place, these new assets, collateralised and with seniority status, should trade within a few points of each other. They can be used for refinancing operations and the international settlement of Target balances. By bringing the Eurosystem closer to its US Federal Reserve counterpart, the proposed euro-standard bill system would contribute to monetary and financial stability in Europe.

References

Brunnermeier, M., Garicano, L., Lane, P.R., Pogano, M., Reis, R., Santos, T., Van Nieuwerburgh, S. and D. Vayanos (2011), "ESBies: A Realistic Reform of Europe's Financial Architecture", *VOX*, 25 October.

Buiter, W.H., Corsetti, G. and N. Roubini (1993), "'Excessive Deficits': Sense and Nonsense in the Treaty of Maastricht", *Economic Policy* 8, p. 57–100.

Buiter, W.H., Corsetti, G. and P. Pesenti (1998), *Financial Markets and European Monetary Cooperation: The Lessons of the 92–93 ERM Crisis,* Cambridge University Press.

Blankart, C.B. (2012), "The Euro in 2084", *CESifo Forum* 13, Special Issue, January (Translation from *ifo Schnelldienst* 16, 2011, pp. 20–4).

Calmfors, L. (2005), "What Remains of the Stability Pact and What Next?", *Swedish Institute for European Policy Studies* 8.

Calmfors, L. and G. Corsetti (2003), "How to Reform Europe's Fiscal Policy Framework", *World Economics Journal* 1, pp. 109–16.

Calvo, G. (1988), "Servicing the Public Debt: The Role of Expectations", *American Economic Review* 78, pp. 647–61.

CESifo (2012), "The European Balance of Payments Crisis", *CESifo Forum* 13, Special Issue, January 2012, with contributions by H.-W. Sinn, H. Schlesinger, W. Kohler, C.B. Blankart, M.J.M. Neumann, P. Bernholz, T. Mayer, J. Möbert and C. Weistroffer, G. Milbradt, S. Homburg, F.L. Sell and B. Sauer, I. Sauer, J. Ulbrich and A. Lipponer, C. Fahrenholz and A. Freytag, U. Bindseil, P. Cour-Thimann and P. König, F.-C. Zeitler, K. Reeh, A. Tornell and F. Westermann.

Cole, H.L. and T. Kehoe (2000), "Self-Fulfilling Debt Crises", *Review of Economic Studies* 67, pp. 91–116.

Corsetti, G. (2010), "The Original Sin in the Eurozone", *VOX*, 9 May.

Corsetti, G., Kuester, K., Meier, A. and G. Mueller (2011) "Sovereign Risk and Macroeconomic Stability", Federal Reserve Bank of Philadelphia Working Paper.

De Grauwe, P. (2011), "Eurozone Bank Recapitalisations: Pouring Water into a Leaky Bucket", CEPS Commentary, 24 October 2011.

EEAG (2003), *The EEAG Report on the European Economy 2003,* CESifo, Munich 2003, *http://www.cesifo-group.de/portal/pls/portal/docs/1/1192632.PDF.*

EEAG (2006), *The EEAG Report on the European Economy 2006,* CESifo, Munich 2006, *http://www.cesifo-group.de/portal/pls/portal/docs/1/1192576.PDF.*

EEAG (2011), *The EEAG Report on the European Economy 2011,* CESifo, Munich 2011, *http://www.cesifo-group.de/portal/pls/portal/docs/1/1199474.PDF.*

European Central Bank (2011), "TARGET2 Balances of National Central Banks in the Euro Area", *Monthly Bulletin,* October, p. 35–40.

European Commission (2011), European Economic Forecast – Autumn 2011 (provisional version).

European Council (2011a), Council Regulation (EC) No 1176/2011 of the European Parliament and of the Council of 16 November 2011 on the Prevention and Correction of Macroeconomic Imbalances, *Official Journal of the European Union* 54, L 306.

European Council (2011b), Statement by the Euro Area Heads of State or Government, Brussels, 9 December 2011, *http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/126658.pdf.*

Feldstein, M. (1997), "The Political Economy of the European Economic and Monetary Union: Political Sources of an Economic Liability", *The Journal of Economic Perspectives* 11, pp. 23–42.

Friedman, M. (1997a), "Why Europe Can't Afford the Euro – The Danger of a Common Currency", *The Times,* 19 November.

Friedman, M. (1997b), "Ich sage, der Euro wird bald wieder auseinanderbrechen", *Die Presse,* 12 December, p. 23.

Friedman, M. (2001), "Auf Kosten Dritter", *Capital*, 11 July, p. 18.

Harjes, T. (2011), 'Financial Integration and Corporate Funding Costs in Europe after the Financial and Sovereign Debt Crisis', IMF Country Report No. 11/186, International Monetary Fund.

Hellwig, C. and T. Philippon (2011), "Eurobills, not Eurobonds", *VOX*, 2 December.

Homburg, S. (2012), "Notes on the Target2 Dispute", *CESifo Forum* 13, Special Issue, January (Translation from *ifo Schnelldienst* 16, 2011, pp. 46–50).

Kohler, W. (2012), "The Eurosystem in Times of Crises: Greece in the Role of a Reserve Currency Country?", *CESifo Forum* 13, Special Issue, January (Translation from *ifo Schnelldienst* 16, 2011).

Krugman, P. (2011a), "The Hole in Europe's Bucket", *The Times,* October 23.

Krugman, P. (2011b), "Original Sin and the Euro Crisis", The Conscience of a Liberal, *New York Times,* 10 November.

Rocholl, J. (2010), "Kreditrisiken im Zentralbankbereich", Presentation given to the Scientific Advisory Council of the German Federal Ministry of Finance, 8 July 2010, unpublished.

Schlesinger, H. (2012), "The Balance of Payments Tells Us the Truth", *CESifo Forum* 13, Special Issue, January (Translation from *ifo Schnelldienst* 16, 2011, pp. 9–11).

Sinn, H.-W. (1992), *Jumpstart. The Economic Unification of Germany,* Cambridge, Massachusetts: MIT Press.

Sinn, H.-W. (2010), "Rescuing Europe", *CESifo Forum* 11, Special Issue, pp. 1–22.

Sinn, H.-W. (2011a), "The ECB's Stealth Bailout", *VOX*, 1 June.

Sinn, H.-W. (2011b), "On and off Target", *VOX*, 14 June.

Sinn, H.-W., Buchen, T. and T. Wollmershäuser (2011), "Trade Imbalances: Causes, Consequences, and Policy Measures", in: J.T. Boorman and A. Icard, eds., *Reform of the International Monetary System – The Palais Royal Initiative,* Sage Publications, Thousand Oaks, also published in *CESifo Forum* 12, 2011, pp. 47–58.

Sinn, H.-W. and R. Koll (2000), "The Euro, Interest Rates and European Economic Growth", *CESifo Forum* 1, 2000, Nr. 3, pp. 30–1.

Sinn, H.-W. and M. Reutter (2000), "The Minimum Inflation Rate for Euroland," CESifo Working Paper 377, 2000 *(http://www.ifo.de/portal/pls/portal/docs/1 /1190814.PDF); NBER Working Paper 8085, http://www.nber.org/papers/w8085.pdf.*

Sinn, H.-W. and T. Wollmershäuser (2011), "Target Loans, Current Account Balances and Capital Flows: The ECB's Rescue Facility", NBER Working Paper 17626, November, *(http://www.nber.org/papers/w17626),* CESifo Working Paper 3500, June *(http://www.ifo.de/portal/pls/portal/docs/1/1210631.PDF),* IIPF plenary lecture 2011, forthcoming in *International Tax and Public Finance*.

Tornell, A. and F. Westermann (2011), "Eurozone Crisis, Act Two: Has the Bundesbank Reached its Limit?", *VOX*, 6 December 2011.

Tornell, A. and F. Westermann (2012), "Greece: The Sudden Stop That Wasn't", *CESifo Forum* 13, Special Issue, January.

BANKING REGULATION

3.1 Introduction

The severity of the financial crisis resulting from the collapse of the US market for real-estate and subprime loans in 2007 has caused a large-scale economic recession and prompted a major rethink of financial regulation. The magnitude of the crisis, the worst since that of the 1930s, amplified by the market channels in a global market and the weaknesses in the regulation and supervision of financial entities that it revealed, has spotlighted the issue of financial regulatory reform. The crisis triggered by the subprime loan market became systemic in the wake of the failure of Lehman Brothers in September 2008, endangering the stability of the international financial system. The sovereign debt crisis, which started in 2010 with problems in Greece, Ireland and Portugal and recently spread to Italy and Spain, has provoked another wave of systemic problems centring on banks in the euro area.

Why and how have regulatory mechanisms failed? Have there been new market failures? What can be learnt from the crisis? Does it have specific implications for the financial architecture of the European Union and the euro area? The answers to such questions will reveal the key issues to be taken into account when designing adequate regulation and will determine whether a radical reformulation of the regulatory framework is needed.

In EEAG (2003), Chapter 4, we argued that there were at least three open problems with the financial architecture of the euro area. Firstly, we indicated that the provisions made may not adequately guarantee financial stability. Secondly, and to a large extent, these provisions hindered European financial market integration; and finally, they also hindered the competitiveness of EU financial markets and institutions. We stated that: "The present gradualist approach may yield more costs than benefits in the long-term and may end up proving ineffective. It would be better not to wait for a major crisis to strike in order to put the house in order".[1] Well, now that a major cri-

sis has struck, where does that leave us? In EEAG (2003), Chapter 4, we highlighted the need to establish clear procedures for crisis lending and crisis management with the European Central Bank (ECB) at their centre, and to confront the fiscal issue of how to provide help to a transnational institution. We also advocated more centralised supervisory arrangements in banking, insurance and securities in the medium and long run.

Against this background, Section 3.2 of this chapter overviews the crisis and its regulatory failures. Section 3.3 deals with ongoing regulatory reform, while Section 3.4 analyses competition policy and its interaction with regulation. In Sections 3.5 and 3.6 we look at the reform of the European Union's financial architecture and regulatory framework. The chapter then closes with some concluding remarks.

3.2 The crisis and regulatory failure

3.2.1 The crisis

The financial sector is plagued by all of the classical market failures. Firstly, a bankruptcy of a banking institution causes important *externalities*, especially if the institution is systemic, to the rest of the financial sector and to the real economy. Fragility, contagion and investor coordination problems are ubiquitous in the financial system. Secondly, *information asymmetries* in financial markets leave the small investor unprotected on the one hand, and may lead to market collapse because of adverse selection on the other. At the same time, widespread conflicts of interest between shareholders and depositors, as well as moral hazard, lead to excessive risk-taking, which is exacerbated by insurance and aid mechanisms aimed at avoiding the bankruptcy of systemic entities. Thirdly, there is the *market power* issue, since many banking sectors tend to be concentrated and have high barriers to entry. Finally, we could add that the *limited rationality* of economic agents may amplify financial cycles and encourage speculative bubbles.

---

[1] EEAG (2003), Chapter 4, p. 98.

The whole regulatory framework has been called into question by the crisis. The current EU sovereign debt crisis, with its menacing second wave of systemic risk, has once again exposed the weaknesses of the regulatory framework.

The originate-to-distribute model and the inverted pyramid of complex derivatives based on subprime mortgages were at the heart of the problems in the 2008 crisis. Mortgage supervision was in limbo, opaque and, given the complexity of the instruments, led to the undervaluation of risk. Besides, mortgage risk goes back to banks' balance sheets when structured investment vehicles (SIV) have liquidity problems due to explicit and implicit commitments of the entities. Risk undervaluation was reinforced by the use of statistical models based on short time series and historical correlations (and probability distributions with little weight on the tails), disregarding the systemic risk implied by these new instruments and high levels of leverage. Mechanical models for risk assessment, which only work within a range of very limited parameters, were overused. Furthermore, short-term wholesale funding proved to be a crucial weakness characterising the balance sheets of many financial institutions, as shown by the cases of Northern Rock and Lehman Brothers or, more recently, Dexia.

A whole chain of misaligned incentives led to catastrophe. Government agencies in the United States promoted subprime mortgages, which were granted to families with little chance of repaying their loan; credit rating agencies, aligned with the issuer, competed to grant the most favourable ratings to the riskiest products, and short-term compensation for agents encouraged excessive risk-taking. This chain was oiled by the very low interest rates which financed the housing bubble. Monetary policy was totally focused on inflation; without any concern for bubbles in asset value or the fragile balance sheets of financial institutions. Surprisingly, the model of monetary policy implemented by central banks does not give any role to financial intermediation.

There is also debate over the extent to which pressure to offer value to shareholders and inefficiencies in corporate governance mechanisms have contributed to the crisis. The existence of both deposit insurance and explicit and implicit too big to fail (TBTF) policies limits the responsibility of shareholders, encouraging them to demand high risk-taking, since profits are private and losses, in the case of bankruptcy, are social-

ised. In such cases shareholders design compensation packages to benefit those executives who promote risk-taking whereby compensation is not sensitive to profit decreases (by means of guaranteed bonuses, for instance), but is sensitive to increases. Fresh evidence shows that this took place before the crisis.[2] There may also be the additional problem of a conflict of interest between shareholders and executives, and between executives and traders of intermediaries.

What past and current crises have in common is maturity mismatch (excessive maturity transformation) in highly leveraged institutions, contagion due to interbank exposure and the coordination problems of investors who encourage interbank and commercial paper market participants not to renew their credit lines out of fear that others may not do so either. This led to the collapse of the asset-backed commercial paper market (securitization) and the associated collapse of the interbank market. The globalisation of financial markets potentially entails greater diversification, but also increases the likelihood of contagion with domino effects between entities and contagion due to information problems. The opacity of the new financial instruments known as derivatives plays a crucial role: it leads to underestimation of the huge systemic risk accumulated in the system, and offers no clear knowledge of the magnitude or of the exposures to the toxic products derived from subprime mortgages. This problem of asymmetric information paralyses interbank markets and renders them illiquid.

At the root of the problem of the interbank and money markets' lack of resiliency lies a lack of information on the position of the banks in those markets. The complex, opaque web of over-the-counter (OTC) transactions made by large banks explains why relatively small shocks, like the subprime crisis or the problems with Greek debt, provoke such large effects via contagion. A major problem is that the decentralised trading of bank reserves lumps together the original liquidity risk with counterparty risk,[3] increasing the adverse selection problem enormously. A potential solution is to move OTC transactions to a central counterparty clearing system (which is

---

[2] See Fahlenbrach and Stulz (2011), Cheng et al. (2010), Bebchuk and Spamann (2010), and Bebchuk et al. (2010). In that sense, it is also possible to interpret the statement of Chuck Prince, executive director at Citigroup (Financial Times, July 2007): "when the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you've got to get up and dance. We're still dancing."
[3] Counterparty risk is the probability that the other party in a transaction may not fulfill its part of the deal and may default on the contractual obligations.

transparent and centralises collateral and margin requirements).[4]

The opacity of OTC trading and the lack of a guaranteed central clearing counterparty may help explain why contagion from a relatively small problem in a market, like subprime mortgages in the United States or Greek sovereign debt in the euro area, has spread widely.

3.2.2 Major regulatory failures

Regulation has tried to alleviate market deficiencies with measures such as deposit insurance, with the central bank acting as lender of last resort, as well as with prudential and supervision requirements. The Basel II framework allows banks to trust their own internal models to assess and control risk and includes the demand for public disclosure of information on the part of financial institutions to encourage transparency and foster market discipline.

However, the whole regulatory framework has been called into question by the crisis. Firstly, dual regulation allows regulatory arbitrage between the regulated sector of depository institutions and the parallel banking system of structured vehicles and investment banks. Secondly, capital requirements in terms of quantity and quality were insufficient, while liquidity needs were disregarded. In the 2008 crisis there was a double failure of the banks' ability to bear losses (they did not have enough equity capital to cover the risks taken[5]) and of bank debt, which proved poor at absorbing losses when the layer of equity capital was eroded. To make matters worse, capital requirements are pro-cyclical. Furthermore, along the cycle, market value accounting also has pro-cyclical characteristics. Regulation does not give sufficient consideration to systemic risk. The opacity of the parallel banking system and of OTC derivatives markets has helped to conceal systemic risk. Finally, even although credit rating agencies play a very important role in regulation (for example, when determining capital needs), they competed with each other via lower rating standards without the adequate supervision of the regulator.

Critical questioning of the regulatory framework has concentrated on the lack of *macroprudential regulation* to limit the two main sources of system-wide financial risk: pro-cyclicality and inter-linkages in the financial system.

In general, regulation has not paid sufficient attention to conflicts of interest and has relied excessively on mechanisms of self-regulation and corporate governance. The influence of the financial sector, and of investment banks in particular, via lobbying may have contributed to lax regulations.

3.3 Regulatory reform

Governments have responded to the crisis with initiatives carried out by the Financial Stability Board (FSB) and the Bank for International Settlements (BIS), as well as through proposals and legislative changes in the United States, the United Kingdom and the European Union.

Solvency and liquidity requirements for the banking sector are set to increase substantially as a consequence of the new Basel regulatory framework (known as Basel III, see EEAG (2011), Chapter 5). This regulation aims to make entities capable of absorbing unanticipated losses and to forestall potential contagion between entities. The quantity (stricter solvency ratios) and the quality (fewer hybrid instruments such as preferred stock or subordinate debt) of the capital base will be raised, with the inclusion of countercyclical buffers, and liquidity requirements to adjust and moderate the industry's maturity transformation. These requirements will entail higher costs for institutions and potentially lower credit levels in the short term.[6]

In November 2011, the G-20 endorsed the FSB's proposal regarding the treatment of Global Systemically Important Financial Institutions (G-SIFIs).[7] The FSB simultaneously published an initial list of 29 identified G-SIFIs. This list will be updated annually. The G-SIFIs will need to have additional loss absorption capacity tailored to the impact of their default, rising from 1 percent to 2.5 percent or 3.5 percent of risk-weighted assets to be met with common equity and with full implementation in 2019. G-SIFIs will have more intensive and effective supervision of

---

[4] See Federal Reserve Bank of New York (2010), Duffie (2011) and Rochet (2010).
[5] Leverage ratios of assets to equity capital had ballooned to around forty times – twice historically normal levels. This was allowed to happen in part because there was no restriction on leverage, but instead limits on the ratio of capital to 'risk-weighted' assets, but the supposed 'risk weights' turned out to be unreliable measures of risk: they were going down when risk was in fact going up.

[6] BIS' estimates on the short term effects are quite moderate, while those carried out by the financial sector are much more dramatic.
[7] See *http://www.financialstabilityboard.org/publications/r_111104bb.pdf.*

risk management functions, data aggregation capabilities, risk governance and internal controls by 2016. The proposal brings broader powers and tools to the resolution authority (including statutory bail-in), and institution-specific minimum cross-border cooperation arrangements between national authorities to facilitate the collective resolution of cross-border firms. It also adds a framework for assessing and implementing resolution processes. By 2012 it is expected that the framework for the G-SIFIs will be extended to domestic systemically important banks and non-bank financial entities.

In addition, taxes and levies to absorb the shocks that systemic entities bring into the financial system are being debated on an international level. Accounting procedures will become more homogeneous (in a convergence process between the United States and the European Union) and the definition of capital will be harmonised to facilitate international comparisons, the treatment of off-balance sheet items and fair value estimates of assets in illiquid markets. Executive and employee compensation packages are being thoroughly reviewed in an attempt to control entities' risk-taking, as well as the banking sector's corporate governance.

Box 3.1

Regulation in the European Union

In July 2011 the European Commission presented a proposal to make Europe the first region to adopt, with some differences, the proposed "Basel III Agreements".[1] The proposal contains a Directive that:

- sets stricter requirements for the mechanisms and processes of corporate governance and increases oversight of risk management by Boards of Directors and supervisors;
- seeks to ensure the deterrent power, effectiveness and proportionality of the sanctions imposed by supervisors in case of violation of the requirements of the European Union;[2]
- proposes both a capital conservation buffer (unique for all banks) and a counter-cyclical buffer to be defined by each member state;
- requires supervisory institutions to submit an annual monitoring program specific to each entity based on risk analysis, more extensive tests and more systematic and rigorous rules;
- and seeks to reduce the influence of rating agencies by recommending internal risk assessment in making investment decisions and in calculating capital requirements related to certain significant holdings.

A Single Rule Book ensures the uniform application of prudential requirements contained in Basel III by all members, with more stringent requirements allowed only in cases of risk to financial stability or specific risk profiles of certain entities.

In July 2011, the European Parliament endorsed a Commission proposal on short-selling securities and certain aspects of credit default swaps (CDS) trading with the aim of increasing transparency and reducing risk by implementing a harmonised European framework for reporting requirements. The proposal allows the regulators to temporarily ban short selling in any financial instrument in exceptional situations and to prohibit naked short sales in equity and sovereign debt.[3]

In June 2010 the European Council recommended introducing a system of taxes and levies on both a European and a global level. In late September 2011 the European Commission presented a proposal for a financial transaction tax (FTT) to become effective on 1 January 2014 at an EU level, with three main goals: to increase the financial sector's contribution relative to the cost of the crisis, to reduce the riskiness of financial markets by discouraging speculative transactions (such as high frequency trading); and to ensure harmonisation at an EU level to avoid distortions of the Single Market. The minimum tax (0.1 percent for bonds and shares and 0.01 percent for derivatives) will apply to any exchange of financial instruments between financial institutions.[4] Germany and France support the European Commission FTT proposal, but the United Kingdom is opposed to it because, without a broad international agreement, there is concern over the prospect of a massive exodus of investors from London to other financial centres. There is also debate over the fate of the revenue raised and whether it should end up in the hands of the European Union or its member countries. Finally, the European Commission has also proposed measures to limit payments to departing bank executives and to ban the CEO from being the Chairman of the Board.

[1] European Commission, Revision of the Capital Requirements Directives (CRD IV), 20 July 2011.
[2] Administrative penalties may be up to 10 percent of annual turnover of the entity, as well as temporary bans on members of the governing body.
[3] In the words of European officials: "Short selling is the sale of a security that the seller does not own, with the intention of buying back an identical security at a later point in time to be able to deliver the security. It can be divided into two types: 'covered' short selling where the seller has made arrangements to borrow the securities before the sale and 'naked' short selling where the seller has not borrowed the securities when the short sale occurs".
[4] Primary markets transactions, transactions between financial institutions and the Central Bank and currency transactions on the spot market would be exempted.

Boxes 3.1, 3.2 and 3.3 deal, respectively, with regulatory developments in the European Union, the United States and the United Kingdom. It is particularly worth noting the UK proposal to ring-fence commercial off from investment banking activities in universal banks.

3.4 Competition issues

The relationship between competition, fragility and risk-taking is complex, but both theory and empirics support the idea that an increase in the level of competition, beyond some threshold, will tend to increase risk-taking incentives and the probability of bank failure. This tendency may be checked by the reputational concerns of the institutions, by the presence of private costs of managerial failure, or, more importantly, by appropriate regulation and supervision.[8]

---

[8] See Vives (2010, 2011a,b) for a more complete development of the arguments in this section.

In the European Union the competition authority has played an active role in controlling the distortions introduced by public help because it has the unique capability, among competition authorities, to control state aid. The important side benefit of state aid control in the European Union is that it limits the incentives of bankers to take excessive risk in the expectation of a bail-out if things go wrong. In other words, it addresses the TBTF issue. The competition authority may internalise that competition will be distorted if an institution that fails gets help. To limit the size (or better the systemically-corrected size) of an institution with divestitures once it receives public help (something that the European Union seems to be implementing) is an option, which extends the realm of competition policy. The competition authority in its role of protecting competition may have a say in the TBTF issue and therefore its actions should be coordinated with the regulator. The activism of the European Commission poses the question of competitive balance with those US banks which were recapitalised and for which no divestitures were required (see Box 3.4).

Box 3.2

The new regulatory framework in the United States

The Dodd-Frank Act passed in the United States in July 2010 is an effort to strengthen regulation and supervision. The most significant changes include:

- the set-up of the *Financial Stability Oversight Council*, a council of regulators, charged with identifying entities of systemic importance, which will be subject to tougher requirements in terms of liquidity, capital and leverage;
- enhanced consumer protection regarding lack of information on financial products; restrictions on banks to trade on their own behalf (Volcker rule[1]);
- greater transparency in clearing mechanisms and derivatives transactions;
- improved resolution mechanisms whereby regulators will be able to take charge and put troubled financial institutions into liquidation when their bankruptcy would jeopardise the stability of the system, whereby shareholders and unsecured creditors would bear losses.[2]

Entities of systemic importance may be subject to additional requirements at the regulator's discretion, including a reduction of their complexity, the adoption of "wills" to establish resolution procedures in case of bankruptcy, increased capital requirements, the introduction of debt instruments which turn into shares under certain conditions, leverage restrictions[3] and the set-up of independently capitalised subsidiaries. Derivatives transactions shall be performed through centralised platforms and not through OTC transactions, which shall remain under federal supervision. Prudential and transparency rules are set to the securitization market. Issuers shall retain five percent of the risk to ensure that they take greater care in underwriting loans. The *Bureau of Consumer Financial Protection* has also been created to help recover investor confidence and solve conflicts of interest. Credit rating agencies shall be subject to *Securities and Exchange Commission* (SEC) supervision. Under the Dodd-Frank Act, shareholders are also required to express their non-binding opinion on executives' pay.

[1] The passed law was a diluted version of the initial Volcker rule: banks will be able to invest up to 3 percent of their Tier 1 capital in proprietary trading and they will also be able to invest up to 3 percent of the Tier 1 capital in hedge funds and private equity funds.
[2] Before the reform, regulators were only able to bail-out or allow the bankruptcy of non-financial institutions in trouble (as in the cases of Bear Stearns, Lehman Brothers and AIG). The liquidation costs of an entity shall be financed by a tax levied (after the bankruptcy) on financial institutions with assets exceeding 50 billion dollars.
[3] In the United States, Bank Holding Companies already have a maximum debt-to-capital ratio of 24 (capital to total assets of 4 percent). Under the Dodd-Frank Act current restrictions are maintained as minimum requirements, but the Financial Stability Oversight Council is authorised to set its own debt-to-capital ratio of 15:1 if the entity entails a risk to financial stability.

Box 3.3

New proposals on regulation and competition in the United Kingdom

The Independent Commission on Banking (ICB), established by the UK Government, considered the benefits of a structural separation between domestic retail services and global wholesale and investment banking operations and concluded in September 2011 that the best policy is to require retail ring-fencing of UK banks, not total separation.[1] The objective would be to isolate those banking activities (the taking of deposits from, and provision of overdrafts to ordinary individuals and small and medium-sized enterprises (SMEs)) where continuous provision of service is vital to the economy and to bank's customers, from global external financial shocks. This would require banks' UK retail activities to be carried out in separate subsidiaries. The following services should not be permitted in the ring-fence: services to non-EEA (European Economic Area) customers, services (other than payments services) resulting in exposure to financial customers, 'trading book' activities, services relating to secondary markets activity (including the purchases of loans or securities), and derivatives trading (except as necessary for the retail bank prudently to manage its own risk). Subject to limits on the wholesale funding of retail operations, other banking services – including taking deposits from customers other than individuals and SMEs and lending to large companies outside the financial sector – should be permitted (but not required) within the ring-fence. The retail ring-fence would affect between one sixth and one third of the aggregate balance sheet of UK banks.

Retail ring-fencing banking activities should meet regulatory requirements for capital, liquidity, funding and large exposures on a standalone basis, and the permitted extent of its relationships with other parts should be conducted on an arm's length basis: independent governance and disclosures and reports as if it were an independently listed company. Given regulatory failure up to the crisis, the ICB recommends raising the capital standards for UK banks in relation to international recommendations. Furthermore, the supervisor should be able to require the banks to have additional primary loss-absorbing capacity if it has concerns about its ability to be resolved at minimum risk to the public purse. The resolution authorities should have a primary and a secondary bail-in power allowing them to impose losses on unsecured debt (bail-in bonds) in a resolution procedure before imposing losses on other non-capital, non-subordinated liabilities. In insolvency or resolution, all insured depositors should rank ahead of other creditors to the extent that those creditors are either unsecured or only secured with a floating charge.

Implementation of these reforms should be completed at the latest by the Basel III date of the start of 2019. In the Final Report, the ICB also made some recommendations about competition issues derived from the changes to UK banks after the crisis. These included measures to lower switching and entry costs, and to give the new Financial Conduct Authority (see Box 3.6) a new primary duty to promote competition.

[1] See ICB (2011).

The crisis has forced mergers of institutions backed by government subsidies and/or guarantees. The upshot is that some surviving incumbents have increased their market power and have a lower cost of capital because they are TBTF (and/or because of the public help). A merger policy must have a long horizon, and even in a crisis situation, it must consider the optimal degree of concentration in the industry, dynamic incentives for prudence of incumbents and the ease of entry. The consolidation brought by the crisis should not be problematic if the increased market power of the merged institutions is a temporary reward for past prudent behaviour that will fade away with new entry. However, if the market power consolidates due to barriers to entry into banking then consumers and investors will suffer the consequences. An active competition policy will be needed in that case.

Size and scope restrictions are blunt instruments for dealing with the TBTF issue. Controls on size are problematic because interconnectedness and line of business specialisation are more important than size for systemic risk. With regard to the scope of the banking firm, conflict of interest is what leads to potential market failure and effectively indicates possible scope limitations. Higher capital and insurance charges for systemically important institutions together with effective resolution procedures may be a better way of dealing with the problem. This should be coupled with a serious consideration of conflicts of interest in financial conglomerates. Given the limitations of behavioural regulation, structural restrictions seem warranted. The upshot is that the competition authority in its role of protecting competition may have a say in the TBTF issue and therefore its actions should be coordinated with the regulator. The potential for competition policy to provide a commitment device to partially address TBTF issues should not be dismissed.

In the United Kingdom, the proposal from the Independent Commission on Banking to ring-fence retail activities from investment banking activities (in sepa-

---

Box 3.4

Competition policy and regulation in the European Union and the United States

European Union

The European Union dealt with many banking aid cases during the crisis (taking 22 decisions only in 2008 and 81 decisions up to December 17, 2009). Most of the cases (75) were approved without objection.[1] The European Union has stated a number of conditions for state guarantees/recapitalisation including: non-discriminatory access to state help to maintain a level playing field among institutions and banking sectors; help should be limited in time and scope (only necessary liabilities); it should be accompanied by a contribution from the private sector and by appropriate market-oriented remuneration for support or recapitalisation. Furthermore, beneficiaries should be subject to some behavioural rules, incentives should be given for state capital to be withdrawn eventually, and a distinction should be made between fundamentally sound (but potentially distressed because of contagion) and other distressed banks (with recapitalisation for fundamentally sound institutions only).

The regulatory tools used by the European Union are structural (with balance sheet reductions and divestitures) and behavioural (with restrictions on pricing, publicity or compensation for employees). Some of the measures can be understood in terms of minimising competitive distortions of the aid and others in terms of checking moral hazard in the future. The important point is that even the measures purely aimed at competitive distortions will have an impact on *ex ante* incentives since a bank will know that help will be given with restrictions in case of trouble.

In the European Union a further potential contradiction between merger control and financial stability concerns arises. According to the European Merger Regulation, member states may block a merger to protect financial stability in the domestic market. Thus, it is questionable whether individual member states could implement this exception to fend off foreign entry[2] and to protect their national champions.[3]

United States

The Obama administration, following the advice of Paul Volcker, advocated limits on the size and scope (mostly in terms of proprietary trading) of banks to avoid the TBTF problem as well as to control risk-taking. What the European Commission tried to accomplish with state aid control, the United States and the United Kingdom may try to accomplish via regulation. The Dodd-Frank Act has introduced a mild version of the limits on proprietary trading and strengthened some limits on size (by extending the Riegle-Neal Act 1994 which prohibits any merger or acquisition that results in the combined banking organisation controlling more than ten percent of domestic deposits at the national level to all types of depositary institutions, and introducing a concentration limit to any consolidation of financial companies of ten percent of financial industry liabilities).[4]

[1] With 66 more cases cleared under a temporary framework to support lending to firms (DG Competition (December 17, 2009), State aid: overview of national measures adopted as a response to the financial/economic crisis). See Beck et al. (2010) for a thorough analysis and policy evaluation of bank bail-outs in Europe during the crisis.
[2] This has been the case, for example, in Portugal (case Banco Santander/Champalimaud Group in 1999), and Italy (cases BNL/BBVA in 2005; ABN AMRO/Antonveneta in 2005; Unicredito/HVB in 2006). This contrasts with the attitude of the United Kingdom in the merger of Santander/Abbey or of the Netherlands with the three-way acquisition and split of ABN AMRO.
[3] See Carletti and Vives (2009).
[4] A banking organisation could exceed the deposit cap with internal growth, but it would not be allowed to engage in any more mergers or acquisitions. Please note, however, that a national cap on market share for deposits should not be relevant from an antitrust perspective since the relevant markets from the competition perspective for retail and small and medium size enterprises are local.

---

rately capitalised divisions of a bank holding company (ICB 2011), see Box 3.4) is a compromise to alleviate the gambling problem with public insurance, while allowing some scope economies within banking activities. This structural measure has the potential to alleviate the problem, but will not eliminate it. One reason is that the definition of the boundary between the divisions will leave an important grey area and generate perverse incentives. Another reason is that the regulatory boundary problem persists: risky activities migrate to areas where regulation is lax and reproduce the problems that we have witnessed during the crisis in the shadow banking system. The outcome may be that the investment bank part may need to be rescued if it becomes systemic.

3.5 Financial architecture in the European Union: the new supervisory framework

A new European supervisory framework, the European System of Financial Supervision (ESFS), was introduced in January 2011. Its aim is to strengthen financial supervision by empowering regulatory bodies and replacing existing ones (that could only issue non-binding guidelines and recommendations), and to ensure the effectiveness of the decisions taken in emergency situation.

The ESFS consists of the European Systemic Risk Board (ESRB) and three European Supervisory Authorities (ESAs): the European Banking Authority

(EBA); the European Insurance and Occupational Pensions Authority (EIOPA) and the European Securities and Markets Authority (ESMA). The ESFS also comprises of the Joint Committee of the ESAs and the competent or supervisory authorities in each member state. By December of 2013 the European Parliament and the European Council shall review this framework (see Figure 3.1).

The two pillars of the new supervisory framework are the ESRB in charge of macro-prudential supervision and the ESAs in charge of micro-prudential supervision. The objective of the latter is to safeguard financial soundness at the level of individual financial firms and to protect consumers of financial services.

The main objectives of the new supervisory framework are to:

- help restore confidence in the financial system and specifically in delegated monitoring by public supervisors, rating agencies, auditors or securitization agents;
- contribute to the development of a single rulebook to issue directly applicable binding technical standards in key prudential areas, to issue binding interpretations of all EU legislation and to undertake reviews of national supervisors;[9]
- strengthen cross-border institutions, increasing the micro-macro link in risk assessment and in the design of regulation;
- prevent the build-up of risks that threaten the stability of the overall financial system, (e.g. regulating banks TBTF).

The ESRB is responsible for the macro-prudential oversight of the financial system within the European Union. It shall contribute to the prevention or mitigation of systemic risks to financial stability in the European Union that arise from developments within the financial system and taking into account macroeconomic developments, so as to avoid periods of widespread financial distress. It shall contribute to the smooth functioning of the internal market and thereby ensure a sustainable contribution by the financial sector to economic growth. It covers not only banks, but also other financial institutions, markets, products and market infrastructures. The ESRB must identify systemic risks, vulnerabilities and emergency situations. At the same time it must issue recommendations (including, where appropriate, for legislative initiatives) and early warnings (public or confidential) to the European Council, the three ESAs and national supervisory authorities, as well as monitoring follow-up.
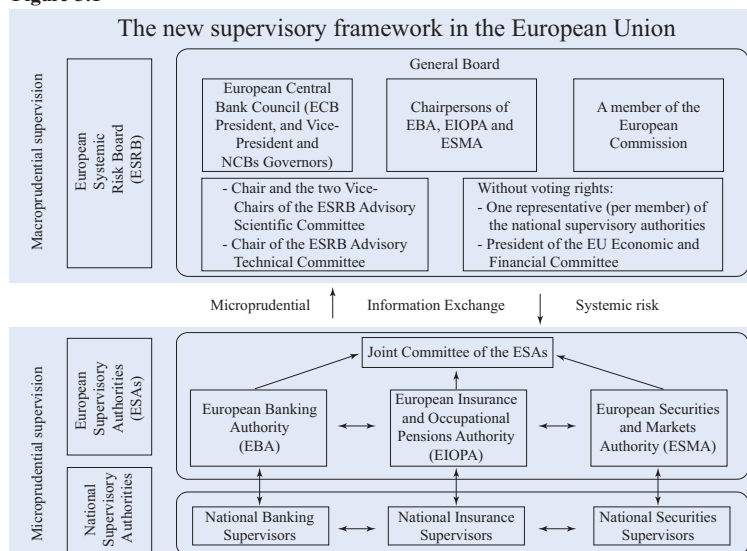
The ESRB shall coordinate its actions with those of international financial organisations, particularly the IMF and the FSB, as well as the relevant bodies in third countries on matters related to macro-prudential oversight.

The ESRB can request information from the ESAs in an aggregate form or individually if the requested financial institution is deemed to be systemically relevant.

The three ESAs will work on micro-prudential supervision in a network with the existing national supervisory authorities. Their additional competences are:

- developing proposals for technical standards to better define common standards for the application of legislative acts, respecting better regulation principles and monitoring the application at national level;

Figure 3.1

The new supervisory framework in the European Union

Macroprudential supervision

European Systemic Risk Board (ESRB)

General Board

European Central Bank Council (ECB President, and Vice-President and NCBs Governors)

Chairpersons of EBA, EIOPA and ESMA

A member of the European Commission

- Chair and the two Vice-Chairs of the ESRB Advisory Scientific Committee
- Chair of the ESRB Advisory Technical Committee

Without voting rights:
- One representative (per member) of the national supervisory authorities
- President of the EU Economic and Financial Committee

Microprudential — Information Exchange — Systemic risk

Microprudential supervision

European Supervisory Authorities (ESAs)

National Supervisory Authorities

Joint Committee of the ESAs

European Banking Authority (EBA)

European Insurance and Occupational Pensions Authority (EIOPA)

European Securities and Markets Authority (ESMA)

National Banking Supervisors

National Insurance Supervisors

National Securities Supervisors

---

[9] According to European authorities, national supervisors of cross-border groups were to co-operate within colleges of supervisors, but if they could not agree, there was no mechanism to resolve issues. Many technical rules were determined at a member state level, and there was considerable variation between member states. Even in cases where rules were harmonised, their application could be inconsistent.

- resolving cases of disagreement between national supervisors, where legislation requires them to cooperate or to agree;
- contributing to ensuring consistent application of existing and future technical EU rules (including through peer reviews);
- and coordinating in emergency situations or preventing threats to the correct functioning of the financial markets, taking actions such as the banning of operations, but that do not have fiscal effects for the member states (such as bail-outs).

The ESAs will be able to take decisions directly applicable to individual financial institutions if the national supervisor does not comply with the decision of the ESAs, and only in cases where there is directly applicable EU legislation.

Specifically, the main objectives of the European Banking Authority (EBA) are to:

- prevent regulatory arbitrage;
- guarantee a level playing field;
- strengthen coordination among international supervision;
- promote supervisory convergence;
- provide advice to EU institutions in the areas of banking, payments and e-money regulation, as well as on issues related to corporate governance, auditing and financial reporting.

The EIOPA has a responsibility to protect policyholders, pension scheme members and beneficiaries, and to act in an emergency crisis. The ESMA is responsible for fostering supervisory convergence among national supervisors, coordinating the actions of securities supervisors and adopting emergency measures in a crisis situation. The ESMA also directly oversees credit rating agencies, since their services are used around Europe.

The new supervisory framework is a step in the right direction, particularly in terms of crisis prevention, but it still lags behind the reality of financial integration and the possibilities of banking problem contagion in the European Union, particularly in the euro area.

In EEAG (2003) we stated that: "deeper and more integrated markets increase diversification possibilities, but at the same time raise potential problems of contagion and liquidity crises." The report forecasted that: "the fragility of the banking system may well increase in the short term." It also stated that: "regulatory fragmentation in Europe is a major obstacle to financial integration. It reduces the international competitiveness of European markets and institutions, and poses a threat to the stability of the financial sector".[10] Given that the value of centralised authority with appropriate information is enhanced in crisis situations, we recommended that the responsibility for financial stability should be born by the ESCB and the ECB in particular. We also advised the ESCB to establish and make public a formal framework of crisis resolution clearly identifying the chain of command in a crisis situation. Furthermore, the burden sharing issue in case of failure should be confronted: "A formal mechanism of co-operation should be established between the ECB, the national central banks and/or national supervisors, and the national treasuries to clarify responsibilities, establish information sharing protocols, and elucidate who would pay for failed (insolvent) institutions that have been helped".[11] We presented two alternative models for the future: in the first model prudential supervision of banks is in the hands of the ESCB with the ECB having a central role while European-wide specialised regulators in insurance and securities are constituted. In the second model, an integrated regulator of banking, insurance and markets – a European Financial Services Authority (EFSA) – is formed, while the ECB (in the ESCB) is responsible for systemic problems. The new supervisory framework is a step in the second direction.

In the EU crisis, management has proven a source of instability. The European Union has tried to achieve compatible financial integration and cross-border banking with national authorities in charge of supervision. Financial stability has suffered as a result. The options now are to either go back on integration or to diminish the role of national authorities. To go forward with integration burden-sharing agreements for bank resolution are needed, as well as a European resolution and supervisory authority. The present reform of EU financial architecture takes a middle path, preserving the role of national authorities with the convergence of national regimes, crisis concordats, and expanded co-ordinating roles for European financial authorities, but no burden-sharing agreements in case of a solvency crisis. The new ESRB may contribute to crisis prevention, but it will not contribute to crisis management and resolution. Macro-prudential supervision should be led by the

---

[10] EEAG (2003), Chapter 4, p. 113.
[11] EEAG (2003), Chapter 4, p. 114.

central bank and closely coordinated with micro-prudential supervision. This is particularly relevant for systemic institutions. The new supervisory model in the United Kingdom (see Box 3.6), with both macro- and micro-prudential control under the wing of the Bank of England seems sensible. Indeed, the central bank has an advantage in monitoring macroeconomic developments, can act decisively in a crisis (avoiding the problem of co-ordinating agencies and committees), and can internalise the effects of monetary policy on leverage and risk-taking. All this points towards giving the central bank a central role in macro-prudential control.[12]

The EU model is closer to the US model with a systemic board in charge of macro-prudential supervision, but with three differences: in the European Union the committee is multinational, it has no direct control over policy instruments and can only issue warnings, and the role of the European Commission and the Economic and Financial Committee is passive in contrast to the active role of the Treasury in the United States.

The integrated supervisor is to take care of cross-border groups in the euro area. Those groups should adhere to a European deposit insurance fund with liability proportional to the group's exposure to the particular countries. The deposit insurance fund could, at the same time, work as a resolution authority (like the FDIC in the United States). A second tier of national institutions could be supervised by national regulators.

A possible configuration of the euro area financial architecture along the lines of the new UK model would be to pull the ESRB and the EBA (and even the EIOPA) as a subsidiary under the wing of the ECB and keep a developed ESMA independent. This would put macro-prudential supervision in the hands of the ECB and would ensure coordination and information exchange with the prudential authority, as well as a clear line of authority in a crisis situation.

The EU sovereign crisis has added another dimension to the financial crisis linking the fate of the sovereign and that of its banks. Problems in the banks of Ireland and Spain have led to problems for the sovereign. Problems with the sovereign in Greece, Portugal

and Italy have, in turn, led to problems for their banks. In Hannoun (2011) it is shown that market participants have priced sovereign and banking default risks as closely related since the bank bail-outs of 2008–09.

The perspective of a restructuring of sovereign debt (e.g. in Greece) with losses for investors changes the expectations of a bail-out inducing a systemic problem due to the confluence of the built-in instability of the euro area (with one currency and many sovereigns), legacy assets on the books of banks due to the crisis, and the lack of appropriate institutions to deal with banking crises in the European Union. In the euro area there is the potential for a simultaneous run on the debt and the banks of a country, since the deposit insurance guarantees are devalued in cases where the sovereign has no access to the international capital market and has problems of its own. If this problem needs to be solved via collective burden sharing, it is up to the states to decide on rescue funds like the EFSF, EFSM, ESM etc. Burden-sharing gives rise to moral hazard effects and involves fiscal redistribution among countries. As such, it needs to be controlled by the parliaments of the participating countries.

The treatment of sovereign exposures in the European Union for purposes of capital requirements has induced banks to hold large amounts of sovereign debt and has provoked discrepancies between the market pricing of sovereign risk and the accounting of those risks in the banking book. This, in turn, has led to wide divergence in the recapitalisation needs of EU banks depending on whether market pricing or historical cost are used to account for sovereign exposures (see Box 3.5).

3.6 Evaluation of regulatory reform

Regulatory reform should be based on the following key principles:

1. A central regulatory body (such as the central bank) should have a mandate to maintain financial stability. It is necessary to consider specific macro-prudential measures, which take into account liquidity needs throughout the economic cycle. The Bank of Spain's dynamic provisions are an early example.

2. Providing liquidity is not the same as providing equity capital. If a systemically relevant bank needs capital, but cannot find it in the market, it should

---

[12] See the discussion in Vives (2001) about the pros and cons of putting together in the central bank monetary policy and banking supervision.

be recapitalised against shares by the respective state or states where it is located (or according to the relevant cross-country burden sharing arrangements made). Monetary policy is not the appropriate tool with which to recapitalise banks.

3. Any institution which fulfils the tasks of a bank (maturity transformations, supervision of opaque credits) is fragile; it is subject to moments of panic and needs the coverage of a safety net. Therefore, it cannot avoid supervision. Regulation and supervision

---

Box 3.5

The treatment of sovereign exposures in the European Union[1]

As of September 2011, twelve percent of the banks' sovereign debt exposures were included in the trading book (marked-to-market, reflected in the profit and loss account), 49 percent were classified as available for sale (marked-to-market, not reflected in the profit and loss account but in equity), and 39 percent were classified as held to maturity (valued at amortised cost net of any impairment provision). As a result, the pricing of sovereign risk in financial markets currently diverges from the accounting framework applicable to the banking book (which does not reflect the widening of sovereign spreads in the profit and loss account until an impairment provision is taken).

Basel rules vs Brussels rules
The Basel II standardised approach allows a zero risk weight to be applied to AAA and AA-rated sovereigns (see Table 3.1). However, large and sophisticated banks are expected to implement the IRB (internal ratings-based) approach and not the standardised approach for calculating credit risk capital. The IRB approach requires banks to assess the credit risk of individual sovereigns using a detailed rating scale, accounting for all relevant measured differences in risk. However, the European Capital Requirements Directive allows a generalised zero risk weight for exposures to member states' central government denominated and funded in the domestic currency of that central government thanks to the so-called "IRB permanent partial use" rules. According to these rules, a bank can apply the IRB approach to corporate, mortgage or retail exposures, but a zero risk weight to the sovereign debt of all EU member states. In the 2011, European stress test reports 59 out of the 90 participating banks applied their own internal model but only 36 to sovereign risk.

Table 3.1

Risk weighting in the Basel II standardised approach

Basel II standardised approach: sovereign risk weights credit assessment	AAA to AA–	A+ to A–	BBB+ to BBB–	BB+ to B–	Below B–	Unrated
Risk weight	0%	20%	50%	100%	150%	100%

Three main criticisms have been raised about the regulatory treatment of sovereign risk that provides incentives for banks to accumulate large sovereign exposures: (i) a zero risk weight is applied to AAA and AA-rated sovereigns; (ii) the new liquidity coverage ratio advocated in the Basel III proposals could encourage banks to hold more sovereign debt, and (iii) the large exposure regime in Europe excludes highly rated sovereigns from the 25 percent of equity limit on large exposures.

Recognition of sovereign risk in stress tests and the new capital buffer requirement
In July 2011, the EU banking stress test included haircuts applied to sovereign exposures in the trading book and increased impairment provisions for these exposures in the banking book. To prevent underestimation of risk for sovereign debt held in the banking book, the EBA has developed a much more rigorous approach than previously adopted and the probabilities of default based on external ratings (Table 3.2) are no longer zero.

Table 3.2

Risk weighting based on external ratings

Probability of default used in the EU wide stress test for sovereign exposures Standard & Poor's rating	Average two-year probability of default implied by external ratings in % (EBA calculations)
AAA to AA	0.03
A	0.26
BBB	0.64
BB	2.67
B	9.71
CCC-C	36.15

continued: Box 3.5

Furthermore, at the summit of the European Union in October 2011, systemic banks were required to strengthen their capital positions by building up an exceptional and temporary capital buffer to address current market concerns over sovereign risk reflecting current market prices. The requirement of the EBA is to reach a Core Tier 1 capital ratio of 9 percent by the end of June 2012. Sovereign exposures in the Held-to-Maturity portfolio, as well as in the loans and receivables portfolio, shall be valued at market value using haircuts which differ per maturity and per country.[2]

[1] This box is based on Hannoun (2011).
[2] The buffer was motivated by the exposure to Greek sovereign risk of European banks (mostly concerning French and German banks, as well as Greek banks). However, due to the general valuation at market prices (implying a revaluation of French and German debt) the institutions standing in line for more capital behind Greek banks were their Spanish counterparts (which had virtually no exposure to Greek debt). It is worth noting that the EBA is not proposing changes in the accounting treatment of sovereign exposures.

Box 3.6

New regulatory architecture in the United Kingdom

The reform of the financial regulatory system in the United Kingdom focuses on the transfer of functions from the Financial Services Authority (FSA), in an integrated ("one peak") model, towards a "two peak" model in which prudential supervision and the conduct of business regulation functions are separated. The Bank of England (BoE) will include the Financial Policy Committee (FPC) and the Prudential Regulation Authority (PRA) (as a subsidiary) in charge of macro-prudential and micro-prudential regulation, respectively, while the independent Financial Conduct Authority (FCA) will be in charge of the conduct-of-business supervision.[1]

In the new architecture, the FPC will be responsible for systemic risk identification and monitoring. The FPC will have powers to make recommendations on a "comply or explain" basis to the PRA and the FCA.[2] The PRA will carry out firm-specific regulation of deposit-taking institutions, insurers and the larger, more complex investment firms, from a systemic risk perspective. The FCA will be responsible for regulating conduct of business in the retail and wholesale banking, investment, securities and insurance markets; supervising the trading infrastructure supporting those markets; and for the prudential regulation of firms beyond the scope of the PRA.[3] The FCA's three operational goals are securing an appropriate degree of protection for consumers; promoting efficiency and choice in the market for financial services; and protecting and enhancing the integrity of the UK financial system. The FCA, insofar as is consistent with its general objectives, must promote competition as a significant driver of good conduct by firms.[4]

The government wants to impose a legal duty for the FCA to exercise its functions in co-ordination with the PRA supported by a statutory requirement to agree on a Memorandum of Understanding (MoU), concerning the operation of the regulatory process of dual-regulated firms (deposit-takers, insurers and significant investment firms) and consolidated supervision of groups.[5]

[1] See HM Treasury (2011a,b) and FSA (2011).
[2] The FPC will be chaired by the Governor of the BoE and made up of independent members and is expected to be established by the end of 2012.
[3] The scope of the FCA includes both exchange-operated markets and over-the-counter (OTC) dealing. The BoE will be in charge of clearing and settlement infrastructure.
[4] Possible measures intended to reduce market power include those helping to reduce barriers to entry or exit, and with searching or switching consumers' decisions.
[5] Some elements considered in the future arrangement would be supervisory colleges to assess risks related to a firm or group of firms and to avoid conflicting regulations, authorisation processes, provision from FCA to inform PRA before applying enforcement actions, and coordination in rule-making and policy setting.

---

should spread to all entities which carry out banking activities.

4. Expected losses of liabilities guaranteed by the government should be covered by a risk premium determined by the market dependent on the risk assumed by the entity. At the same time, the fact that banks which act under the protection of national safety nets are not monitored (moral haz-

ard) makes it necessary to limit their range of activities (particularly, high-risk activities like proprietary trading).[13]

5. Institutions that play a key role in the financial system (where the TBTF doctrine is applied) should be regulated so that they internalise the potential exter-

---

[13] See Matutes and Vives (2000).

nal effects of their bankruptcy. This can be achieved by means of Pigouvian taxes levied on institutions according to their contribution to systemic risk or by higher equity requirements.[14] Due to the presence of these institutions in global markets, regulatory standards should be uniform and accompanied by internationally coordinated supervision.

6. A fragmentary approach to financial regulation does not work. It is necessary to consider both capital and liquidity needs and the degree of market liberalisation;[15] an alignment of incentives should be encouraged in the system, particularly at all levels, from the Board of Directors to the client, including executives, analysts, traders and credit rating agencies.

7. It is necessary to establish mechanisms to prevent the delay of the supervisor's intervention while the balance sheets of financial institutions deteriorate and capital declines (regulatory forbearance). This has been a typical problem in financial crises, which only make them last longer and increases the damage caused.

The proposed regulatory reform measures are generally in line with the stated reform principles. The question is whether the reform will prove to be ambitious and effective enough. So far, the lack of concreteness has not offered a clear answer, but there are scenarios in which the reforms may fade.

It is yet to be seen if proposals in Basel III will end up setting sufficient standards and not distorting capital and liquidity requirements. Proposals regarding liquidity will affect maturity transformation in the banking sector, since they attempt to limit it and could penalise retail banking (if deposit finance is considered relatively unstable). The foreseeable influence over the shifting border between intermediation and market is more complex. Asset liquidity requirements will render credit less attractive and bonds more attractive, particularly treasuries. This was certainly the case before the EU sovereign debt crisis; and as regards liabilities, retail deposits will be prioritised versus non-secured wholesale funds. The outcome could be a shift to assets disintermediation and liabilities re-intermediation. In fact, maybe there is some tension between the tendency to monitor and reduce securitization on the one hand, and higher capital and liquidity requirements for credit entities, on the other.

Indeed, perhaps the banking sector could turn into a kind of narrow bank (where deposits are invested in safe, liquid assets such as public debt, at least before the sovereign debt crisis). Should this be the case, then the first question would be: who will carry out maturity transformation, which used to be the remit of traditional banking? If this task is given to non-regulated entities, the problem of the parallel banking sector will reappear and entities, which turn illiquid assets into liquid liabilities, will continue to be vulnerable, and if they are systemic, they will continue to be rescued.

The accounting treatment of sovereign debt for the purposes of capital requirements and, more generally, the use of marked-to-market in the accounting of banks' assets will continue to be a debated issue. Indeed, the use of marked-to-market accounting in banking is pro-cyclical and has been criticised on the grounds that it induces more instability and because asset prices in crisis situations may not reflect fundamental values due to coordination problems, information and liquidity frictions (see Adrian and Shin 2010, Allen et al. 2009, Plantin et al. 2008). The situation in the euro area with one currency and many sovereigns questions the wisdom of putting a zero weight on sovereign debt for the purposes of calculating the risky assets of a bank. A sovereign that controls its own currency can always avoid speculative runs on its debt by threatening to print money. This is not the case for euro area countries, which issue debt denominated in a currency they do not control. Risk weights for sovereign debt using appropriately market-based information should be used in the euro area and the European Union in general.

As regards reforms in the United States, the Dodd-Frank Act leaves regulation implementation at the discretion of the regulator. Effects will therefore depend upon its implementation. Thus, the law calls for new regulations (there were an estimated 200 new rules by eleven different entities). In addition, the great freedom granted to the regulator may be problematic based on the experiences of past crises. Rules that call for intervention under objective circumstances may prove superior.[16]

A second question is how to prevent implicit and explicit insurance mechanisms, together with limited

---

[14] See, for example, Acharya et al. (2010).
[15] See Vives (2011c) for an analysis of the necessary links between capital, liquidity and competition regulation

[16] For example, under the Federal Deposit Insurance Corporation Improvement Act (FDICIA 1991), when solvency drops below minimum levels, a bank may not expand its assets. When solvency drops again, recapitalisation may be needed or maximum interest rates may have to be changed on loans and deposits. FDICIA aims to reduce the discretional regulatory right through strict intervention rules, which are to be gradually applied (see Dewatripont and Tirole 1994).

responsibility and opacity of bank assets, from leading to excessive risk-taking. Improvements in resolution mechanisms and efforts to balance sheet transparency are palliative elements, but the problem will persist. The question is whether the subtle separation of activities proposed in the modified *Volcker rule* will go far enough. The issue is particularly important for systemic entities. In this case, it is worth pointing out that what matters as regards systemic risk is the specialisation, connections and position of a bank in the financial system, rather than its size, as can be seen from the Lehman Brothers' case. Besides, in terms of a bank's scope, what causes market problems is the conflict of interest between different activities, whose control should guide possible structural remedies of activity separation. The question is whether enough mechanisms to monitor the conflicts of interests inherent in financial conglomerates have been activated. In general, taxes that aim to repair the damage caused by systemic institutions are superior to restrictions according to the size of the entities. However, governments favour taxes and levies as a source of revenue (and a way to recover the cost of bank bail-outs), rather than as a way to correct externalities. There is debate over whether *ex ante* taxes or insurance funds are preferable to *ex post* taxes to finance bail-outs. *Ex ante* taxing is preferable as long as it discriminates between the different entities according to their risk profile. Proposals to tax only debt-financed assets ignore other sources of systemic risk (such as entities interconnections). The proposed FTT in the European Union may raise substantial revenues, but it is doubtful that it will help to diminish systemic risk, and its effects on price volatility may be ambiguous. Furthermore, the burden of the FTT is most likely to fall on consumers of financial products. Potential benefits of the FTT are that it may correct potential under-taxation of the financial sector due to the VAT exemption and curb the potentially damaging effects of high-frequency trading (where the incentives to invest in and react to information ahead of the market may be excessive). All in all the FTT should stand or fall on its effectiveness to correct the negative externalities of "excessive" financial transactions, rather than on being an instrument to raise revenue (for which other instruments may be more effective and less distortionary).[17]

Other aspects of the regulatory reform can also be questioned. It is questionable, for example, whether corporate governance reforms can be effective without addressing the fundamental problem of incentives

generated by deposit insurance and bail-outs of TBTF entities which, together with limited responsibility, lead shareholders to take excessive risks from a social point of view. It is not clear that restrictions on short selling improve the functioning of the market when the real problem is market manipulation. Another issue is how to make sure that credit rating agencies incentives are socially aligned.

Regulatory reform may have a remarkable impact on the degree of internationalisation of the banking sector. In fact, capital requirements for minority ownership will have important consequences in the international expansion of financial entities, and the tendency to isolate entities' problems in the countries where they arise may offer incentives to create supranational entities with a collection of capitalised, independently regulated and supervised subsidiaries (in the European Union, for example, replacing branch offices with national subsidiaries). This may curb European financial integration.

3.7 Conclusions

The crisis has laid bare major weaknesses in the regulation and supervision of the financial system and it leaves more doubts and questions than certainties about steps to be taken in the future. Regulation faces the challenge of making the financial system more resistant and stable without hindering development, while protecting public interest, innovation and preserving globalisation. A strong response to this challenge is crucial since the financial system plays a key role in economic growth. There is no contradiction between the stability of the financial system and economic growth. On the contrary, an unstable financial system will imply high cost for the economy because of the incidence of crises and because it directs too much capital into risky activities. The financial sector, which is perceived to have enjoyed excessive returns and taken excessive risks in the past, now faces the need to recover confidence and its reputation, and to adapt to a new and stricter regulatory atmosphere.

Hence, the financial sector will have to adjust the size to its contribution to the development of the economy. Regulatory changes will have a significant effect on defining business models and strategies for the internationalisation of financial intermediaries, though, for the time being, uncertainty is high because many of the planned reforms have not yet been specifically formulated. The reform process seems to be going in

---

[17] See the discussion in EEAG (2011), Chapter 5.

the right direction, although we shall have to await the implementation phase in order to be able to assess its effectiveness.

In the European Union the reform of financial architecture is pressing due to the persistent banking problems related to the sovereign debt crisis. The euro area should be stabilised with a credible liquidity facility for solvent sovereigns facing speculative attacks and with a restructuring facility for countries that are insolvent or face what we had called in our last year's report "impending insolvency".[18] Furthermore, its financial architecture must be completed. The ECB should explicitly assume the function of guarantor of the financial system (in terms of liquidity provision to private banks, not to recapitalise insolvent banks with artificially reduced interest rates) and should have sufficient supervisory powers over systemic institutions and macro-prudential control. It would also be advisable to link the European prudential authority more closely with the ESCB. A formal framework of crisis resolution should be established and the chain of command in a crisis situation needs to be clearly identified with the ECB at its centre. Furthermore, burden sharing agreements for bank resolution have to be put in place together with a European resolution authority that can be combined with a European deposit insurance fund for institutions that can potentially generate systemic problems in the financial system in the euro area.

References

Acharya, V., Pedersen L., Philippon T. and M. Richardson (2010), "Measuring Systemic Risk", AFA 2011 meetings paper.

Adrian, T. and H.S. Shin (2010), "Liquidity and Leverage", *Journal of Financial Intermediation* 19, pp. 418–37.

Allen, F., Carletti E. and F. Poschmann (2009), "Marking to Market for Financial Institutions: A Common Sense Resolution", e-briefs 73, C.D. Howe Institute.

Bebchuk, L., Cohen A. and H. Spamann (2010), "The Wages of Failure: Executive Compensation at Bear Stearns and Lehman 2000–2008", *Yale Journal on Regulation* 27, pp. 257–82.

Bebchuk, L. and H. Spamann (2010), "Regulating Bankers' Pay", *Georgetown Law Journal* 98, pp. 247–87.

Beck, T., Coyle D., Dewatripont M., Freixas, X and P. Seabright (2010), *Bailing Out the Banks: Reconciling Stability and Competition,* London: CEPR.

Carletti, E. and X. Vives (2009), "Regulation and Competition Policy in Banking"; in *Competition Policy in Europe. Fifty Years On from the Treaty of Rome,* X. Vives (ed.), Oxford: Oxford University Press, pp. 260–83.

Cheng, I.-H., Hong H. and J. Scheinkman (2010), "Yesterday's Heroes: Compensation and Creative Risk-Taking", ECGI – Finance Working Paper No. 285/2010.

Dewatripont, M. and J. Tirole (1994), *The Prudential Regulation of Banks*, Cambridge: MIT Press.

Duffie, D. (2011), *How Big Banks Fail and What to Do about It,* New Jersey: Princeton University Press.

EEAG (2003), *The EEAG Report on the European Economy,* CESifo, Munich 2003, *http://www.cesifo-group.de/portal/pls/portal/docs/1/1192636.PDF.*

EEAG (2011), *The EEAG Report on the European Economy,* CESifo, Munich 2011, *http://www.cesifo-group.de/portal/pls/portal/docs/1/1199477.PDF.*

Fahlenbrach, R. and R. Stulz (2011), "Bank CEO Incentives and the Credit Crisis", *Journal of Financial Economics* 99, pp. 11–26.

Federal Reserve Bank of New York (2010), "Tri-Parti Repo Infrastructure Reform", white paper.

FSA (2011), "The Financial Conduct Authority Approach to Regulation", June.

Hannoun, H. (2011), "Sovereign Risk in Bank Regulation and Supervision: Where do we stand?", *BIS 2011, http://www.bis.org/speeches/sp111026.pdf.*

HM Treasury (2011a), "A New Approach to Financial Regulation: Building a Stronger System", consultation document.

HM Treasury (2011b), "A New Approach to Financial Regulation: The Blueprint for Reform", white paper.

ICB (2011), "Interim Report", April.

Matutes, C. and X. Vives (2000), "Imperfect Competition, Risk Taking and Regulation in Banking", *European Economic Review* 44, pp. 1–34.

Plantin, G., Sapra H. and H.S. Shin (2008), "Marking-to-Market: Panacea or Pandora's Box?", *Journal of Accounting Research* 46, pp. 435–60.

Rochet, J.-C. (2010), "Systemic Risk: Changing the Regulatory Perspective", *International Journal of Central Banking* 34, pp. 259–76.

Vives, X. (2001), "Central Banks and Supervision with Application to the EMU" in: A. Santomero, S. Viotti and A.Vredin (eds.), *Challenges for Modern Central Banking*, Kluwer Academic Publishers (USA), pp. 95–113.

Vives, X. (2010), "Asset Auctions, Information, and Liquidity", *Journal of the European Economic Association* 8, pp. 467–77.

Vives, X. (2011a), "Competition and Stability in Banking", in: L. Céspedes, R. Chang and R. Saravia (eds.), *Monetary Policy under Financial Turbulence,* Santiago de Chile: Central Bank of Chile.

Vives, X. (2011b), "Competition Policy in Banking", forthcoming in: *Oxford Review of Economic Policy.*

Vives, X. (2011c), "Strategic Complementarity, Fragility, and Regulation", *CESifo Working Paper* 3507.

---

[18] See EEAG (2011), Chapter 2.

EEAG (2012), *The EEAG Report on the European Economy*, "The Swedish Model", CESifo, Munich 2012, pp. 99–114.

Chapter 4

THE SWEDISH MODEL[1]

4.1 Introduction

During the current economic crisis Sweden has stood out from other EU countries thanks to its strong public finances. At the trough of the recession in 2009 Sweden had the smallest fiscal deficit of all EU countries: only 0.9 percent of GDP. In 2011 there was even a (small) fiscal surplus. Sweden is one of the three member states that have never violated the deficit and/or debt criteria in the stability pact (the other two are Estonia and Luxembourg).[2]

This chapter tries to explain the strong performance of public finances in Sweden and looks at what lessons for other countries can be drawn. Section 4.2 reviews the development of public finances over time. Section 4.3 begins by surveying the research on why fiscal policy in modern democracies may be subject to a *deficit bias* and then discusses how the fiscal framework established in Sweden may have helped to contain such tendencies. The importance

of output growth to fiscal consolidation is highlighted in Section 4.4. Section 4.5 sums up the conclusions.

4.2 Development of public finances over time

To what extent does Sweden's comparably favourable fiscal balance depend on stronger public finances *before* the crisis and to what extent on the performance *during* the crisis? The two last columns in Table 4.1 break down the differences in government net lending between Sweden and other countries in 2011 into contributions from (1) differences in government net lending in 2007 and (2) differences in the development of government net lending during 2007–2011. The table shows that the main explanation of why the public finances are currently stronger in Sweden than elsewhere is the stronger position already before the crisis. The difference in government net lending between Sweden and the euro area as a whole in 2007, for example, accounted for as much as 4.3 percentage points of the 4.7 percentage points difference in 2011.[3] Greece, Portugal, Italy and Germany all had small-

---

[1] We are grateful to Anna Larsson and Joakim Sonnegård for their helpful comments on the chapter.
[2] The deficit criterion is that the fiscal deficit shall not exceed three percent of GDP. The debt criterion is that consolidated government gross debt shall not exceed 60 percent of GDP or that, if it does, it should be approaching the debt limit "at a satisfactory pace" (which means that it must be falling at the very least). See Calmfors and Wren-Lewis (2011).

[3] The exceptions to this pattern concern the comparisons to Ireland and Spain, which both had fiscal surpluses in 2007, but then suffered huge deteriorations when the unsustainable booms in both countries came to an abrupt end.

Table 4.1
Government net lending in Sweden and other EU countries as a percentage of GDP

	Level			Difference compared to Sweden		
	Net lending 2011	**Net lending 2007**	**Change in net lending 2007–2011**	**Difference in net lending 2011**	**Difference in net lending 2007**	**Difference in change in net lending 2007–2011**
Sweden	− 0.6	3.6	− 3.0			
Euro area	− 4.1	− 0.7	− 3.4	− 4.7	− 4.3	− 0.4
France	− 5.9	− 2.8	− 3.1	− 6.5	− 6.4	− 0.1
Germany	− 1.3	0.2	− 1.5	− 1.9	− 3.4	1.5
Greece	− 8.9	− 6.8	− 2.1	− 9.5	− 10.4	− 0.9
Ireland	− 10.3	0.1	− 10.4	− 10.9	− 3.5	− 7.4
Italy	− 3.8	− 1.6	− 2.2	− 4.4	− 5.2	0.8
Portugal	− 5.8	− 3.2	− 2.6	− 6.4	− 6.8	0.4
Spain	− 6.6	1.9	− 8.5	− 7.2	− 1.7	− 5.5

Source: European Economic Forecast, Autumn 2011, European Commission.

er deteriorations than Sweden in government net lending 2007–2011.

4.2.1 Long-term developments of public finances

Figure 4.1 shows the development of government net lending in Sweden. There have been large swings in fiscal outcomes, especially before 2000. The large fluctuations have to a large extent depended on strong *automatic stabilisers,* associated with a high ratio of government expenditure to GDP (see Section 4.2.2).

In the first half of the 1990s Sweden suffered a deep economic crisis similar to those currently occurring in Ireland and Spain. Credit market deregulation in the mid-1980s was followed by rapid credit expansion, which led to a price bubble for both private and commercial property. The bubble burst in the early 1990s and resulted in a serious banking crisis, which coincided in time with a deep international downturn. The large real appreciation that had taken place during the preceding boom when wages and prices rose faster than abroad, at the same time as the exchange rate was held fixed (first to a currency basket and then to the ecu), contributed to a fall in exports. The result was a deep recession, with GDP falling for three consecutive years (representing a total decrease of

around five percent) and unemployment rising from a trough of two percent in 1990 to eleven percent in 1993.[4] The result for public finances was a deficit of 11.2 percent of GDP in 1993.

The combination of large fiscal deficits and negative growth led to a rapid build-up of government debt (see Figure 4.2). Consolidated government gross debt increased from 41.2 percent of GDP in 1990 to 73.3 percent in 1996. The government net financial position went from a positive net financial worth of 8.0 percent of GDP in 1990 to net debt of 26.6 percent in 1996. This gave rise to serious doubts about Sweden's ability to service its debt in the financial markets, leading to the development of a large long-term interest rate differential vis-à-vis Germany (Figure 4.3).

The Social Democratic government that took office in Sweden in 1994 launched a tough fiscal consolidation programme, which continued the consolidation efforts started in 1992/1993 by the then Liberal-Conservative government. The programme was *unconditional*, in other words a
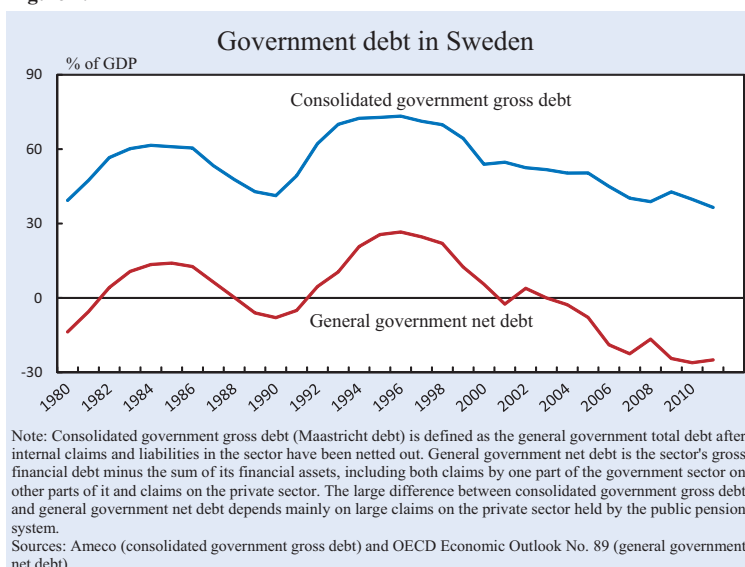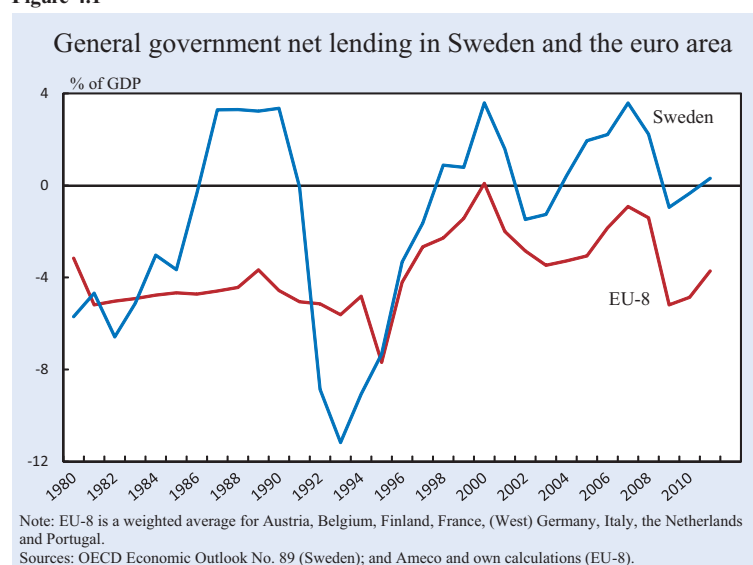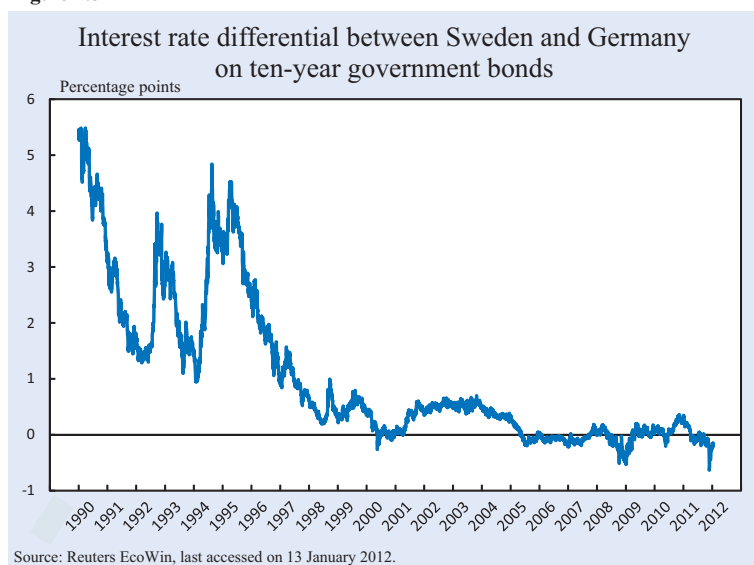
Figure 4.2

Note: Consolidated government gross debt (Maastricht debt) is defined as the general government total debt after internal claims and liabilities in the sector have been netted out. General government net debt is the sector's gross financial debt minus the sum of its financial assets, including both claims by one part of the government sector on other parts of it and claims on the private sector. The large difference between consolidated government gross debt and general government net debt depends mainly on large claims on the private sector held by the public pension system.
Sources: Ameco (consolidated government gross debt) and OECD Economic Outlook No. 89 (general government net debt).

Figure 4.1

Note: EU-8 is a weighted average for Austria, Belgium, Finland, France, (West) Germany, Italy, the Netherlands and Portugal.
Sources: OECD Economic Outlook No. 89 (Sweden); and Ameco and own calculations (EU-8).

[4] See, for example, Jonung and Hagberg (2005), Jonung et al. (2009) and Fiscal Policy Council (2010, 2011) for analyses of Sweden's 1990s crisis. A thorough analysis was also provided in Swedish Parliament (2001).

Figure 4.3

Interest rate differential between Sweden and Germany
on ten-year government bonds

Percentage points

Source: Reuters EcoWin, last accessed on 13 January 2012.

path for the fiscal deficit to be achieved irrespective of macroeconomic developments was set out. The programme's objectives were a fiscal deficit of below three percent of GDP in 1997 and a balanced budget in 1998. Figure 4.1 shows that these objectives were met; the fiscal situation improved even faster than scheduled.[5] This improvement continued until 2000, by which time a fiscal surplus of 3.6 percent of GDP had been achieved. The fiscal balance deteriorated again during the downturn of 2001–2003, but the emerging deficits were small. As of 2004 fiscal surpluses were achieved once again, which rose continuously up until 2007, when the surplus returned to the level of 3.6 percent of GDP.

The consolidation programme in the 1990s was rather evenly split between decreases in government expenditure and increases in government revenues.[6] Looking at ratios to GDP, the revenue ratio fell somewhat over the 1993–2000 period, while the ratio of government expenditure to GDP was reduced substantially from 71.7 percent in 1993 to 55.1 in 2000 (Figure 4.4). The increase in GDP when growth picked up again after the crisis in the first half of the 1990s was of key importance to these developments (see Section 4.4.1).

A key contributing factor to successful fiscal consolidation was that the costs of supporting failing banks in 1992–93 turned out to be small in the end. The total direct net cost to tax payers was estimated at around two percent of GDP in 1997. This is explained by the fact that the government largely followed a policy of injecting capital only in exchange for equity or other assets (mainly commercial property) that could later be sold off under favourable terms.[7]

The development of the fiscal balance is reflected in the development of the government debt ratio. Figure 4.2 shows a trend towards a reduction of both consolidated gross debt and net debt. From its peak of 73.3 percent of GDP in 1996, consolidated gross debt fell to 36.9 percent at the end of 2011. Government net debt was *negative* as of 2004, in other words the general government sector had a positive net financial worth from that time on. At the end of 2011 general government net financial worth amounted to 25 percent of GDP.

A frequently used measure of *fiscal sustainability* is the so-called *S2 indicator*, which is computed for the

---

[7] See Jennergren and Näslund (1997) and Englund (1999). In 1992 the Swedish government issued a blanket guarantee for all bank debt, which helped contain the banking crisis, but ultimately only had to be met to a small degree.
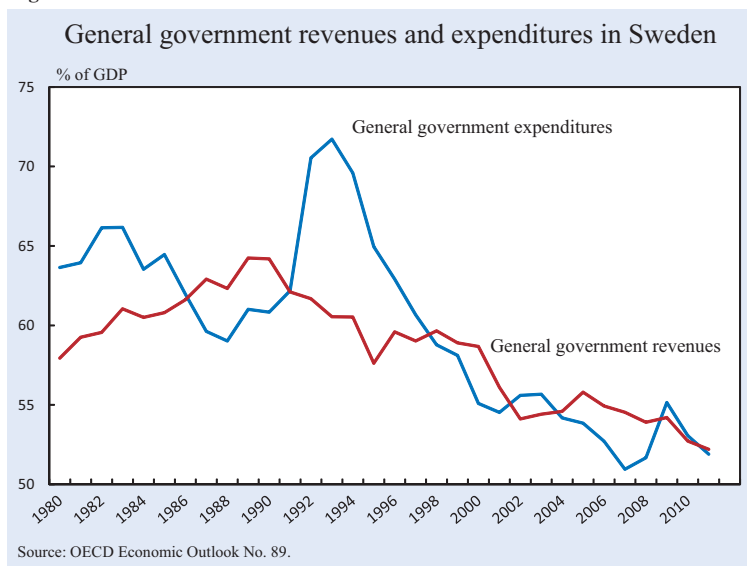
Figure 4.4

General government revenues and expenditures in Sweden

% of GDP

General government expenditures

General government revenues

Source: OECD Economic Outlook No. 89.

---

[5] See Henriksson (2007) for an account of the consolidation programme.
[6] Henriksson (2007) and Bergman (2010).

EEAG Report 2012

Table 4.2

The European Commission's S2 indicator

	2010 Scenario	Programme scenario
Belgium	6.4	6.6
Bulgaria	4.0	2.4
Czech Republic	8.1	6.9
Denmark	3.1	3.4
Germany	5.7	4.2
Estonia	1.3	1.7
Ireland	15.9	12.4
Greece	15.8	12.5
Spain	12.4	9.0
France	5.7	4.0
Italy	2.8	2.0
Cyprus	12.8	12.3
Latvia	6.7	7.7
Lithuania	9.8	9.2
Luxembourg	13.3	12.9
Hungary	0.6	4.7
Malta	8.0	6.9
Netherlands	8.9	6.1
Austria	5.3	4.7
Poland	5.5	3.4
Portugal	8.8	3.6
Romania	10.3	6.4
Slovenia	11.6	11.2
Slovakia	10.9	7.3
Finland	5.3	4.0
Sweden	**1.8**	**1.0**
United Kingdom	10.6	6.8
Unweighted average	**7.8**	**6.4**

Note: The S2 indicator gives the permanent increase in government structural primary net lending as a percentage of GDP required to meet the government's intertemporal budget constraint, that is the condition that future predicted primary surpluses (given unchanged tax and expenditure rules and a demographic projection) at least equal the current debt stock. The 2010 scenario gives the change relative to the actual position in that year, whereas the programme scenario gives the change relative to plans up to 2014 in the countries' stability and convergence programmes.

Source: Public Finances in EMU 2011, European Commission.

EU member states by the European Commission.[8] The indicator measures the permanent change in structural (cyclically adjusted) primary net lending as a percentage of GDP necessary for the government to comply with its *intertemporal budget constraint,* according to which future primary fiscal surpluses (revenue less expenditure excluding interest payments) must be at least as large as the outstanding debt. The estimated future primary surpluses are based on assumptions of unchanged tax and expenditure rules and on demographic projections. This metric also confirms the picture of strong public finances in

Sweden as compared to most other EU member states (Table 4.2). The S2 indicator is 1.8 for Sweden versus an (un-weighted) average of 7.8 for the European Union as a whole, using the actual situation in 2010 as the benchmark in this calculation. If the comparison is instead made with the plans in the convergence and stability programmes presented to the Ecofin Council, the Swedish figure is 1.0 and the European average 6.4. According to the first calculation Sweden comes third among the EU countries (after Hungary and Estonia), while according to the second calculation Sweden ranks first.

The favourable development of public finances in Sweden has closed the interest rate gap to Germany (Figure 4.3), a development which was seen as highly unlikely in the mid-1990s. The yield on ten-year government bonds is now (January 2012) even lower in Sweden than in Germany.
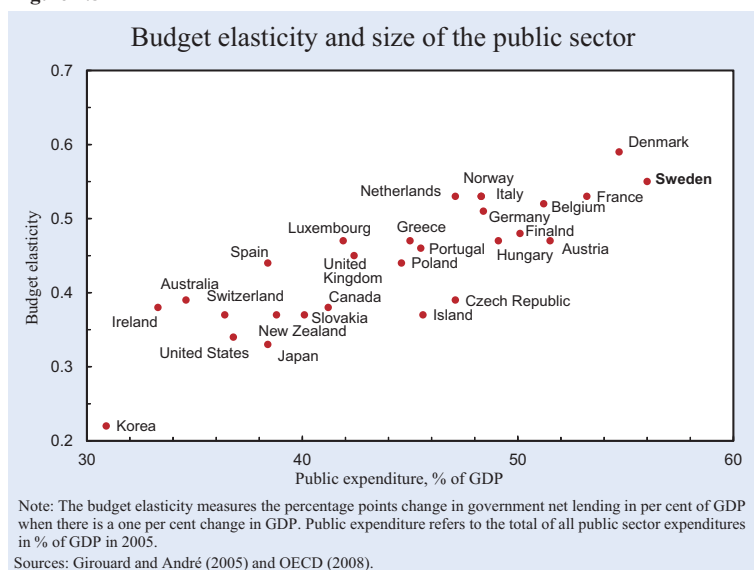
4.2.2 Fiscal developments during the economic crisis

The size of automatic stabilisers is closely related to government expenditure as a share of GDP. If taxes are proportional to GDP and all government expenditure is independent of GDP, the *budget elasticity* (more specifically the semi-elasticity of the fiscal balance with respect to GDP, or the percentage point change of the fiscal balance relative to GDP when there is a one percent change in GDP) equals the ratio of government expenditure to GDP.[9] Figure 4.5 also shows a strong relationship between the budget elasticity estimated by the OECD and the government expenditure-to-GDP ratio. From this graph, one should have expected a larger fiscal deterioration in Sweden than

[8] See, for example, European Commission (2010). The S2 indicator has been extensively analysed in Fiscal Policy Council (2009, 2010, 2011).

[9] See, for example, Gàli (1994), Girouard and André (2005) and Flodén (2009).

Figure 4.5

Budget elasticity and size of the public sector

Note: The budget elasticity measures the percentage points change in government net lending in per cent of GDP when there is a one per cent change in GDP. Public expenditure refers to the total of all public sector expenditures in % of GDP in 2005.
Sources: Girouard and André (2005) and OECD (2008).

to raise employment, which had not returned to pre-1990s crisis levels. To this end the government started to implement far-reaching reforms before the downturn in 2008–2009. Eligibility for sickness insurance and early retirement was severely restricted along with eligibility for unemployment insurance. Unemployment benefit replacement rates and compensation replacement rates in labour market programmes were also reduced. Together, these changes have had a *direct* mechanical strengthening effect on the fiscal balance of over one percent of GDP (not taking behavioural effects on the employment level into account).[12]

In addition, labour market reforms may have helped to maintain a high level of employment. The earlier Okun's law relationship between employment and GDP growth broke down in the recession: in 2008–2009 employment fell much less than it would have done if it had followed the earlier relationship between employment and output growth (Fiscal Policy Council 2010). This helped keep up tax revenues during the downturn. The reasons for the limited fall in employment have been much discussed, but no consensus has been reached on this point. The labour market reforms described above and the introduction of an earned income tax credit are potential reasons for this outcome. Such reforms can reduce the unemployment effects of macroeconomic disturbances.[13] Another possible explanation is that the 2008–2009 recession was restricted to the export industry, whereas demand held up much better in the more labour-intensive service sector. A related explanation is that the downturn was mainly regarded by firms as *temporary* and resulting from an external shock, which motivated labour hoarding, rather than as a more permanent downturn resulting from structural weaknesses in the domestic economy (as in the 1990s). In addition, firms probably had much more slimmed-down organisations than previously, which made them more inclined to keep staff in order to retain core competences.[14]

in the euro area during the 2008–2009 recession as GDP fell more. Instead, however, the opposite occurred.

One explanation is that the OECD is likely to have overestimated the size of automatic stabilisers in Sweden. The OECD does not take into account that local governments in Sweden now operate under a balanced budget requirement (see Section 4.3.2), which they also seem to respect. This means that local government expenditure is not independent of GDP. Instead, when GDP falls, and thus the tax revenues of local governments also decrease, the latter are forced to cut their expenditure. As local government expenditure amounts to over 20 percent of GDP, this means that the budget elasticity calculated by the OECD should be adjusted downwards by approximately as many percentage points. Hence, the general government fiscal balance is much less sensitive to GDP falls than indicated by the OECD estimate.[10]

Another explanation of the small deterioration in the fiscal balance in Sweden in 2008–2011 is that discretionary fiscal policy did not follow its usual counter-cyclical pattern. There was much less fiscal stimulus during the downturn than there would have been if earlier policy patterns had been followed.[11]

Sweden's strong fiscal performance in recent years reflects labour market reforms to a certain degree. The primary economic-policy objective of the Liberal-Conservative government that took office in 2006 was

---

[10] Fiscal Policy Council (2011).
[11] Ibid.

[12] Ibid.
[13] The seminal contribution is Blanchard and Wolfers (2000).
[14] Fiscal Policy Council (2010, 2011).

A final explanation of Sweden's recent fiscal performance is that no banking crisis, requiring large-scale government injections of new capital into banks, has (to date) developed. Swedish banks were not very highly exposed to the various types of mortgage-based securities and there have been no large falls in domestic property prices (although there have been warnings about inflated house prices from, for example, the IMF).[15] Swedish banks were, however, heavily exposed to the Baltic economies due to aggressive lending and sustained large capital losses there during their recent recessions, but – with some luck – those losses were absorbed by the banks themselves and their shareholders.

4.3 The fiscal framework

4.3.1 Theories of deficit bias and the Swedish case

The general tendency among OECD countries to accumulate government debt in the 1970s and 1980s has given rise to a large body of research literature which claims that unconstrained discretionary fiscal policy in modern democracies is likely to be subject to *deficit bias,* that is to be too expansionary on average. The explanations put forward partly overlap, but, following Calmfors and Wren-Lewis (2011), they can be classified as follows:

1. *Informational problems.* These may refer to a lack of understanding among both voters and politicians of the government's intertemporal budget constraint. Alternatively, there may be general over-optimism as stressed by Reinhart and Rogoff (2009). More sophisticated explanations emphasise that voters are more ignorant than governments, making it possible for the latter to exploit this lack of knowledge and increase their re-election chances through expansionary policy before elections, thus creating a political business cycle.
2. *Impatience.* Governments may be discounting the future at a higher rate than the electorate, because politicians can lose office in elections. One set of models stresses political polarisation in a two-party system where parties are likely to alternate in power (Alesina and Tabellini 1990; Persson and Svensson 1989). If the parties have differing preferences regarding the size or type of government expenditure, a party has an incentive to run a deficit when in power to favour its constituency

(tax cuts by liberal-conservative governments and expenditure increases by socialist governments or increases in the type of expenditure that their own constituency prefers). Such deficits have the strategic advantage from the point of view of the incumbent government of making it more difficult for the other party when it comes to power in the future to pursue the interests of its constituency, as room for fiscal manoeuvre is reduced by the requirement to service the accumulated debt.

3. *Common-pool problems.* As government expenditure or tax cuts may favour specific groups, those groups lobby for these with insufficient regard to their full budgetary costs both now and in the future. Hence, policy makers may fail to internalise the overall costs of deficits, leading to excessive government debt accumulation (von Hagen and Harden 1995; Hallerberg and von Hagen 1999; Velasco 1999, 2000). Common-pool problems are likely to be more important if pressure groups exert a large influence, if governments are fragmented (coalition governments) and if governments have weak support in the legislature (minority governments). Hallerberg and von Hagen (1999) outline two methods to mitigate common-pool problems: one is through a *strong finance minister,* who keeps spending ministers in check; the other is through a *contract solution,* whereby ministers (coalition parties) *ex ante* commit to a common contract on budget discipline.
4. *Time inconsistency.* It is well-known that unconstrained central banks, interested in low unemployment in addition to low inflation, may in a discretionary setting be subject to inflation bias, because they have an incentive to try to reduce unemployment through surprise inflation (Kydland and Prescott 1977; Barro and Gordon 1983a,b). Similar forces may apply to fiscal policy and then result in deficit bias (Agell et al. 1996). The temptation for governments to run deficits for this reason may have increased as central banks have become more independent, which has reduced the inflation bias of monetary policy (Castellani and Debrun 2005).

In the Swedish context, several of the described deficit-bias mechanisms are potentially important. There has been political polarisation regarding the size of government between a liberal-conservative bloc and a red-green bloc, which have alternated in power. Governments have been minority or coalition governments for decades, and high employment has been a key economic policy objective. So the impa-

---

[15] See, for example, IMF (2010).

tience, common-pool and time-inconsistency mechanisms could all be expected to play an important role under unconstrained discretionary fiscal policy-making.

4.3.2 Fiscal rules and institutions

Fiscal rules and fiscal transparency are widely seen as appropriate constraints to counter deficit bias. The fiscal crisis in the 1990s helped forge a broad consensus that the fiscal house must be kept in order so that the country would never end up in a similar situation again. This consensus has been codified into a strict fiscal framework. It was established in the late 1990s as a continuation of the budget consolidation programme discussed in Section 4.2.2, and has subsequently been successively amended, especially in recent years.[16] The framework consists of the following pillars:[17]

1. A *top-down approach* for the adoption of the budget in the Parliament. Decisions are taken in *two steps*. In a first step, the Parliament decides on overall expenditure and its allocation between 27 expenditure areas. In a second step, decisions are taken on individual expenditure items. In this phase, one form of expenditure cannot be raised unless another form of expenditure in the same area is correspondingly reduced. Hence, the decision on the total expenditure level will not be the result of a series of uncoordinated individual expenditure decisions. The two-step budget procedure is well-designed to deal with the common-pool problems discussed above.

2. A *surplus target* according to which general government net lending should be one percent of GDP. To preserve flexibility for fiscal policy, the target applies *over a business cycle*. In contrast to what was the case in the United Kingdom in the past, and which opened up for manipulations, the Swedish government does not date the cycle.[18] Instead, it evaluates adherence to the target with the help of several indicators: a backward-looking average of actual net lending, a – partly – forward-looking average of actual net lending, and

cyclically adjusted net lending (for both individual years and longer time periods). Initially, it was not stipulated in the budget law that there should be a surplus target, but it is as of 2010. The level of the target is, however, left to discretionary policy-making.

3. A *ceiling for central government expenditure* which is set at least three years in advance. The ceiling applies to all central government expenditure except interest payments. Initially, it was not mandatory for the government to propose an expenditure ceiling, although there were regulations on how it should be used if it were decided (which it has been for every year since 1997). The stipulations require the government to take action if the ceiling is in danger of being breached. In 2009 it became mandatory for the government to propose an expenditure ceiling to the Parliament in the annual Budget Bill.

4. A *balanced budget requirement for local governments* (municipalities and counties/regions).[19] They must budget for an excess of revenues over expenditures. If there is a deficit ex post, it must be compensated for by a surplus within three years.

5. A reformed *pension system* designed to guarantee long-term sustainability as contributions, not benefits, are defined. Pensions are indexed to per-capita wage growth. This could involve sustainability risks due to unfavourable employment or demographic developments. To deal with this there is a balancing mechanism – the *brake* – which limits the degree of indexation if the long-run financial stability of the system is threatened: this occurs if the capitalised value of contributions plus the assets in the buffer funds falls below the value of pension liabilities. The balancing mechanism is automatic according to a predetermined formula and does not require any political decisions.[20]

6. A system for monitoring the government budget by a number of government agencies.[21] These include the *Swedish National Financial Management Authority* (which makes budget forecasts), the *National Institute for Economic Research* (which makes forecasts of macroeconomic developments, including for public finances) and the *National Audit Office* (which in addition to its main activities evaluates how the fiscal rules have

---

[16] Many of the features of the fiscal framework were first proposed by the so-called Lindbeck commission (named after its chair, professor Assar Lindbeck; Ekonomikommissionen 1993), a government commission given the remit to propose changes in both actual economic policy and the economic policy framework during the 1990s crisis.
[17] See Calmfors (2010, 2011a,b), Fiscal Policy Council (2010, 2011) and the Spring Fiscal Policy Bill (2010, 2011) for more detailed accounts of the fiscal framework.
[18] See Calmfors and Wren-Lewis (2011).

[19] There is a two-tier structure of local governments in Sweden with counties responsible for health care and public transports and municipalities for more local issues. A few counties have been amalgamated into larger regions.
[20] See EEAG (2007), Chapter 4, and Fiscal Policy Council (2009, 2010).
[21] See Calmfors (2010, 2011a,b) and Calmfors and Wren-Lewis (2011).

been respected). In 2007, a *Fiscal Policy Council,* consisting of independent (mostly academic) economists, was set up with the remit of monitoring the sustainability of fiscal policy, the adherence to the surplus target and the expenditure ceiling as well as how fiscal policy relates to the cycle. In addition, the council is to evaluate employment policy and the transparency of economic policy. There are special provisions to safeguard the council's independence, such as a stipulation that the council itself proposes its members to the government.

An interesting question is what motivated the choice in 1997 of a surplus of one percent of GDP as the fiscal target. No convincing motivations were initially given for that particular choice. Over the years, the government's motivations have also shifted (Finanspolitiska rådet 2008). Recently, the government has stressed three primary motives: social efficiency (tax smoothing), intergenerational equity and precautionary considerations. The social-efficiency argument has been backed up by annual fiscal sustainability calculations usually showing that, given current expenditure and tax rules and projected demographic developments, attainment of the one-percent surplus target will allow (marginal) tax rates to remain constant. In recent years, the government has placed great emphasis on the precautionary motive, arguing that large safety margins are required to preserve room for fiscal stimulus in the case of a deep and prolonged recession, although this argument has never been made very precise. Nor has a convincing case been made for why this target would be consistent with intergenerational equity; the Ministry of Finance, for example, does not publish any generational accounts.

The overall conclusion is that the government has never provided a very good explanation of why a surplus of one percent of GDP should be the appropriate fiscal target.[22] It was chosen quite arbitrarily in a situation when the government of the time was looking for a future anchor for fiscal policy after the budget consolidation of the 1990s. A broad consensus on this target has nevertheless evolved. Although there has been some critique that the target is too ambitious (from the left because it is thought to constrain government expenditure and from private business because it is seen to cause over-taxation), it has not

had a great impact in the public debate. This should be seen against the background of the deep fiscal crisis in the 1990s, which created a consensus on the merits of a *fiscal norm* as a way of reducing the risk of new such crises. It is widely believed that the very *existence* of a reasonable norm, rather than its exact formulation, is the key factor (Fiscal Policy Council 2010).

4.3.3 The effects of fiscal rules and transparency

Empirical studies have found that – controlling for other factors – fiscal rules and fiscal transparency are associated with favourable fiscal outcomes.[23] This applies especially to rules that combine fiscal balance targets with expenditure rules as in Sweden. These studies are, however, plagued by problems of causality. The question is whether a strict fiscal framework *causes* good fiscal outcomes or whether a strict fiscal framework and good outcomes are both *caused* by a third factor, such as a political determination to avoid future fiscal crises (perhaps resulting from previous crises). In the latter case, a strict fiscal framework might just be a sign of such determination. Studies which have taken this causality problem seriously, like Alt and Lassen (2006) and Fabrizio and Mody (2006), have, however, also found an independent effect from the fiscal framework. According to a recent study, sovereign interest rate spreads to Germany in the euro area are negatively related to the stringency of fiscal rules when government deficit and debt levels are controlled for (Iara and Wolff 2010). This can be interpreted as an indication that fiscal rules have a credibility effect on sovereign interest rates over and above their effects on (current) deficits and debts.

The fiscal rules in Sweden have been judged by the European Commission in different ways at different points of time. European Commission (2006) constructed an index of the stringency of fiscal rules. According to this index, Sweden was below the European median in terms of stringency. However, according to an updated version of this index in European Commission (2011), Sweden's fiscal rules are among the strongest in the European Union (Figure 4.6). The index is an aggregate measure of the number of rules, their "bite" and their coverage of general government finances. The "bite" of each rule reflects (1) its statutory base; (2) the scope for revising

---

[22] The sustainability calculations mentioned above should probably be regarded with healthy scepticism, since it is hard to escape the suspicion that assumptions have been chosen to give precisely the result that the surplus target is consistent with the government's intertemporal budget constraint.

[23] See, for example, European Commission (2006), Broesens and Wierts (2009) and IMF (2009).
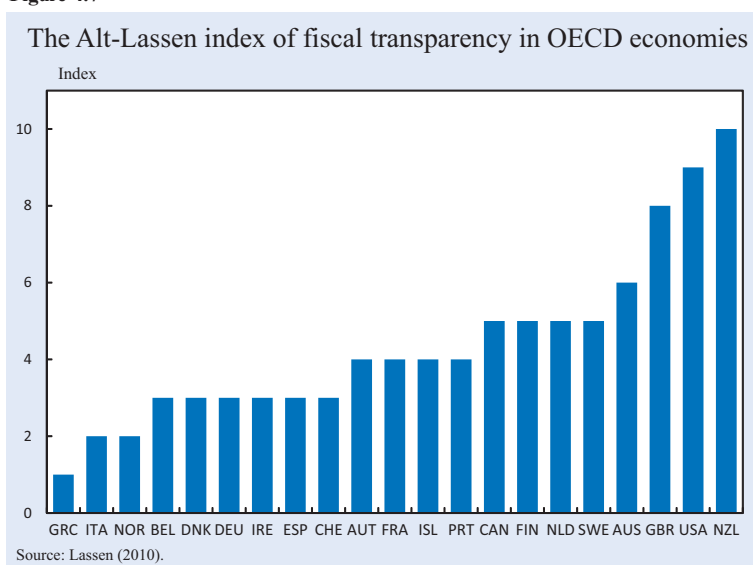
Figure 4.6

The stringency of fiscal rules in EU member states 2000, 2005 and 2009

Fiscal rule index

× 2000 □ 2005 ● 2009

BG LT ES NL EE SE DK LU PL DE FR CZ HU BE FI IT LV SK SI RO AT IE PT EL MT CY UK

Note: Points indicate the value of the index in 2000, 2005 and 2009. A higher value denotes a higher quality of rules-based fiscal governance. By comparing the score for different years, an indication of the evolution of the quality of fiscal governance can be obtained. Thus countries with long lines have introduced big changes in their fiscal rules. If the 2000 point is higher than the 2009 point, the fiscal rules index has decreased indicating a weakening of fiscal rules (and vice versa).

Source: European Commission (2011).

objectives; (3) the mechanisms for monitoring compliance with and enforcement of the rule; (4) the existence of pre-defined enforcement mechanisms; and (5) the media visibility of the rule.

Alt and Lassen (2006) tried to measure *fiscal transparency* rather than the stringency of rules. Their transparency index is based on the amount and quality of information provided and being required by the government and the existence of independent verification of this information. Figure 4.7 shows that Sweden scores high on this measure, although not as high as the Anglo-Saxon countries Australia, the United Kingdom, the United States and New Zealand. Alt and Lassen (2006) and Lassen (2010) find that there is a positive association between this transparency index and fiscal discipline.

Figure 4.7

The Alt-Lassen index of fiscal transparency in OECD economies

Index

GRC ITA NOR BEL DNK DEU IRE ESP CHE AUT FRA ISL PRT CAN FIN NLD SWE AUS GBR USA NZL

Source: Lassen (2010).

A related measure to the Alt-Lassen index has recently been provided by the European Commission (2011), which has constructed an index of the strength of independent fiscal watchdogs (fiscal councils) in the various EU countries. The analysis considers four areas of activity: (1) independent analysis of fiscal policy developments; (2) provision of macroeconomic and/or budgetary forecasts for budget preparation; (3) issuing of normative statements on fiscal policy; and (4) issuing of recommendations on the conduct of fiscal policy. A watchdog is considered stronger the more areas of activity it has. The score also becomes higher (although at a decreasing rate) if there are more watchdogs. Figure 4.8 shows that Sweden 2009 scored the highest among the OECD countries according to this index. This is because the country was considered to have two such watchdogs with all four forms of activity: the Fiscal Policy Council and the National Institute for Economic Research.

The degree of adherence to the rules

On the whole, respect for fiscal rules has been high in Sweden. This does not mean that it has been perfect. Formally, the central government expenditure ceiling introduced in 1997 has never been breached. However, creative accounting to circumvent the ceiling has been used. The Social Democratic governments in particular, which held office until 2006, made extensive use of *tax expenditure*, that is selective tax cuts (regarding payroll taxes for local governments only, for example, when hiring long-term unemployed) instead of expenditure increases.[24] Both the previous Social Democratic government and the current Liberal-Conservative government have also manipulated the timing of

[24] See, for example, Molander and Paulsson (2008).

EEAG Report 2012

Figure 4.8

The strength of fiscal watchdogs in EU member states in 2009

Source: European Commission (2011).
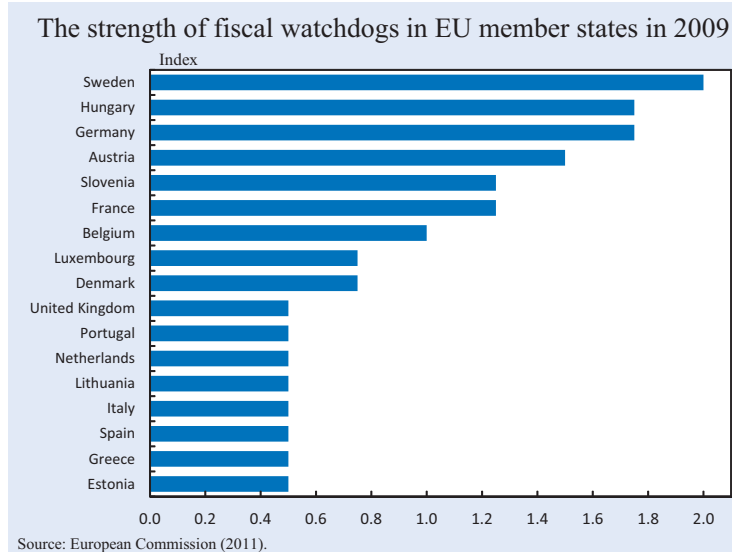
payments when the ceiling was threatened, meaning that expenditure relating to one year was booked in another year.[25] However, these manipulations bore a non-negligible political cost and have not resulted in a trend towards a laxer adherence to the rules.

There have also been some accommodating changes in the pension rules. When, during the recent crisis, the pension brake (see Section 4.3.2) implied that pensions had to be cut, the rules for computing the value of the pension system's assets were changed so that they were evaluated not at the end of the preceding year, but as a more favourable three-year average. Tax cuts only for people above 65 were also made to compensate pensioners for the cuts in pretax pensions.[26] Although the Swedish pension system on paper is robust to demographic changes and growth shocks, its long-run political viability may thus be more uncertain.

More importantly, fiscal policy has, however, adhered to the surplus target of one percent of GDP over a *business cycle.* Since the target started to apply fully in 2000 there has been one full cycle according to Bergman (2011), who used different methods to date the business cycle: 2000–2007(2008) if one mea-

sures from peak to peak and 2003–2009 if one measures from trough to trough. From peak to peak, average government net lending was 1.3 (1.4) percent of GDP and from trough to trough 1.2 percent. The results emerged regardless of the government's practice of using a host of indicators (see Section 4.3.2), which could enable it to jump between indicators when they show different outcomes.

It is also noteworthy that local governments have adhered to the balanced budget requirements despite the fact that violations trigger no sanctions. Figure 4.9 shows that the local government sector's net lending has varied around zero. This is important, as it has been found that sovereign debt crises in many countries have been triggered by regional governments' fiscal profligacy (Bordo et al. 2011).

The Swedish budget process and the "scope for reform"

The fiscal decision-making process may also be important to the favourable fiscal outcomes. It is based on an evaluation by the Ministry of Finance of the so-called *scope for reforms.* This is defined as the total sum of tax decreases and expenditure increases which can be actively decided by the Parliament and which are compatible with the target that general government net lending should show a

Figure 4.9

Net lending of local governments in Sweden

Note: There is a two-tier system of local governments: municipalities and counties. A few counties are amalgamated into regions.
Sources: Ameco, National Institute for Economic Research in Sweden, own calculations.

[25] Fiscal Policy Council (2009, 2010, 2011).
[26] Ibid.

surplus of one percent of GDP over a business cycle.

Without discretionary tax and expenditure decisions, the fiscal balance would gradually strengthen. The explanation is as follows. Most taxes are proportional to their tax bases. Tax revenues therefore grow automatically at about the same pace as GDP. In the absence of discretionary decisions, however, government expenditure grows more slowly than GDP. This is because only some expenditure, like pensions and sickness benefits, are tied to wages (which over time grow approximately at the same rate as nominal GDP). Other expenditure, like central government administration appropriations, grows more slowly than wages: it follows wage increases less expected productivity increases (approximated by productivity increases in the private sector). Some expenditure is indexed to the CPI, which rises more slowly than wages. Much expenditure, including, for example all central government grants to local governments, is not indexed at all and thus falls in real terms when prices rise. As a consequence, in the absence of discretionary decisions on "new reforms", there is an annual improvement in the structural fiscal balance of 0.5–0.6 percent of GDP. Without active decisions, there is thus a built-in *surplus bias* in the budget.[27]

The Ministry of Finance's estimate of the scope for reform forms the basis for the government's internal budget negotiations. In recent years, the estimate has also been accepted by the opposition parties, which have kept their budget proposals within the limits of the calculated scope for reforms.

The procedure with scope-for-reform calculations as a basis for fiscal policy is likely to have contributed to budget discipline. One way of looking at this procedure is as a way of combining the two approaches to dealing with the common-pool problem which have been proposed in the research literature on deficit bias (see Section 4.2.1): delegation of fiscal balance decisions to a strong finance minister and the contract approach whereby ministers and political parties commit to budget discipline *ex ante*.

The scope-for-reform calculations are also likely to have *framed* budgetary decision-making in a way that has facilitated a gradual reduction in government expenditure and taxes relative to GDP (see

Figure 4.4). It is well-known from psychological research that the framing of a decision problem often has a major effect (Tversky and Kahneman 1981, 1986; Kahneman and Tversky 1984). A process whereby discretionary budget decisions are based on an estimate of the scope for reform makes it natural to divide this scope between tax cuts and expenditure rises. Since the scope for reform emerges because government expenditure in the absence of discretionary decisions falls relative to GDP, the result is likely to be a gradual decline in both taxes and public expenditure in relation to GDP.

4.4 The importance of output growth

Discussions of fiscal performance naturally, as above, tend to focus on fiscal policy and how it is influenced by the fiscal framework. There is a risk, however, that such an analysis attributes too large a role to fiscal rules and transparency. Indeed, *output growth* is also of paramount importance. There are two reasons for this. Firstly, it is much less painful to improve the primary fiscal balance if the economy grows. Secondly, given the primary fiscal balance and the real interest rate, higher growth "dilutes" the debt-to-GDP ratio by making the denominator increase faster.

This section first discusses output developments in Sweden during the budget consolidation in the 1990s and goes on to analyse the importance of higher long-run growth during the whole period after the crisis in the 1990s.

4.4.1 Output growth during the fiscal consolidation in the 1990s

Slow or negative output growth and high unemployment constitute major difficulties for euro area counties that are currently experiencing deep fiscal crises. As a consequence, tax revenues are low and transfer payments to the unemployed are high. It has been claimed that, in such a situation, fiscal contractions can be *expansionary* (for example, Giavazzi and Pagano 1990, 1996 and Alesina and Perotti 1995). Possible explanations are that long-term interest rates fall because the credibility of fiscal sustainability increases, that the risk of future and more chaotic budget consolidations decreases and that very large, future tax increases with huge distortionary costs can be avoided if taxes are raised in the near future.

---

[27] Fiscal Policy Council (2011) analyses how various factors contribute to the scope for reform.
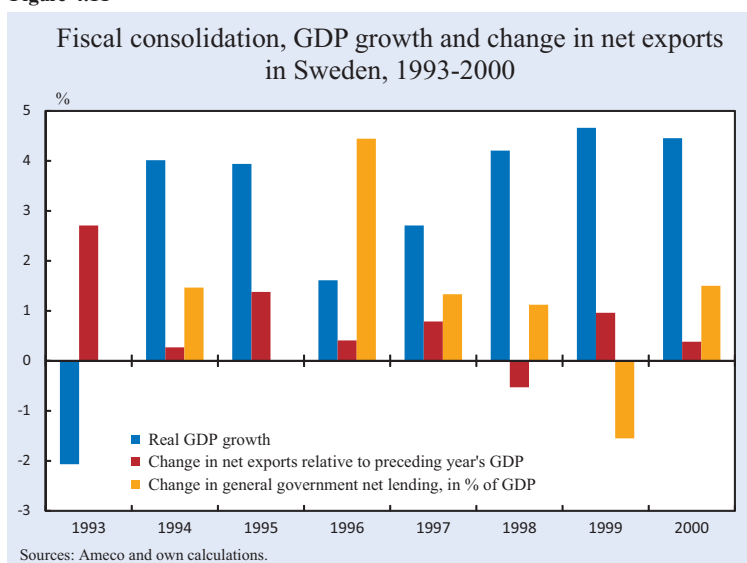
Figure 4.10

Nominal exchange rate and relative unit labour costs
vis-à-vis EU-15 for Sweden

Sources: Ameco and own calculations.

inal exchange rate depreciation. The real exchange rate depreciation gave a boost to net exports as can be seen in Figure 4.11. The stimulus effects from increasing net exports (including second-round multiplier effects on private consumption) made it possible for aggregate demand and output to grow in 1994–2000, despite harsh fiscal consolidation (reflected in the diagram by the increases in general government structural net lending).

Sweden managed to combine its tough fiscal consolidation in the 1990s with high output growth. Therefore, this episode has been cited as an example of an expansionary fiscal contraction. This is probably an incorrect inference. Indeed, Bergman (2010) could find no support for this hypothesis: instead he concluded that contractionary fiscal policy also had normal Keynesian demand-reducing effects during this episode.[28]

A more plausible explanation of why Sweden could combine fiscal consolidation with output growth is the large *real exchange rate depreciation* that took place (see Figure 4.10).[29] Between 1991 and 1995 relative unit labour costs vis-à-vis EU-15 fell by as much as 21 percent. This was caused by a large *nom-*

In fact, Sweden provides a vivid illustration of the importance of swift real exchange rate depreciations for economies caught up in a situation with large fiscal deficits, low output growth and an appreciated real exchange rate. Without a real exchange rate depreciation, tax rises and government expenditure cuts are bound to reduce aggregate demand and output. Hence, tax revenues will fall and fiscal consolidation will be very slow. This is the current predicament of the most crisis-ridden euro area countries. They are not able, like Sweden in the 1990s, to achieve export-led growth in the short run, since a real exchange rate depreciation within the euro area requires a fall in labour costs, which can only be achieved after a lengthy period of high unemployment.

4.4.2 Longer-term output growth

Table 4.3 gives a longer term perspective on Swedish GDP growth. Actual average GDP growth per year after the 1990s crisis until the recession in 2008 was 0.7 percentage points higher than before the crisis: 3.0 percent in 1995–2008 versus 2.3 percent in 1970–1990. The difference is accounted for by higher productivity growth after the 1990s

Figure 4.11

Fiscal consolidation, GDP growth and change in net exports
in Sweden, 1993-2000

■ Real GDP growth
■ Change in net exports relative to preceding year's GDP
■ Change in general government net lending, in % of GDP

Sources: Ameco and own calculations.

---

[28] Hjelm (2002) reaches a similar conclusion.
[29] See Andersen (1994) and Barry and FitzGerald (1999) for similar conclusions regarding the fiscal contractions in Denmark and Ireland in the 1980s.

crisis: 2.2 versus 1.4 percent. Potential GDP growth was also higher in 1995–2008 than in 1970–1990, but with a smaller margin: 2.7 versus 2.4 percent. Long-term growth in Sweden after 1995 also compares favourably with, for example, the three largest euro area countries. For France, Germany and Italy (EU-3), average output growth was more than one percentage point lower in 1995–2008 than in 1970–1990.

Table 4.3

Average growth rates in percent

	GDP	Potential GDP	GDP/hour
Sweden			
1970–1990	2.3	2.4	1.4
1995–2008	3.0	2.7	2.2
EU-3			
1970–1990	3.0	2.9	2.1
1995–2008	1.7	1.6	1.4

Note: EU-3 is a weighted average for France, Germany and Italy. Growth for GDP/hour is for 1971–1990.

Source: AMECO.

Higher output growth facilitates fiscal consolidation in two ways:

1. By raising the denominator in the debt-to-GDP ratio at a faster pace, government debt is "diluted". Ceteris paribus (with given paths for the primary deficit and the real rate of interest), higher GDP growth reduces the government debt-to-GDP ratio. Over time the effects can be sizable, as illustrated by Table 4.4. The *ceteris paribus* effect of the higher real growth in Sweden in 1994–2007 than in 1970–1993 (at given paths for the primary deficit-to-GDP ratio and the real rate of interest) was a reduction in the consolidated government gross debt ratio of 13 percentage points: from 70.0 percent of GDP to 57.0 percent of GDP. A comparison with the average growth in EU-3 (France, Germany and Italy) in 1994–2007 gives almost the same effect.[30]

2. More importantly, higher output growth makes it easier to improve the primary fiscal balance. As discussed in Section 4.3.3, in the absence of discretionary fiscal decisions the fiscal balance strengthens with output growth as taxes are more or less proportional to GDP, whereas government expenditure does not automatically follow GDP. In gen-

eral, fiscal consolidation becomes politically less controversial with strong output growth, as it is easier to combine a strengthening of the fiscal balance with higher real disposable incomes and private consumption.

The relatively fast output growth in Sweden after 1994 has been the subject of much discussion. Although the large currency depreciation in 1992 started off a process with higher growth, it cannot possibly have had effects that lasted for at least a fifteen-year period. In the twenty-year period prior to the floating of the Swedish *krona* in 1992 there were several devaluations which all failed to trigger such a process. Instead, the Swedish economy was then caught in a *devaluation cycle,* whereby each devaluation triggered a few years of high growth until wages caught up again and then overshot, leading to a real appreciation, which had to be corrected through a new devaluation.

Table 4.4

Direct contribution of higher growth to decreases in Sweden's government debt-to-GDP ratio in 1994–2007

Fall in debt-to-GDP ratio	
Cumulated contribution from higher growth than in 1970–1993	13.0
Cumulated contribution from higher growth than in EU-3 1994–2007	13.1

Note: The government debt ratio is the ratio of consolidated government gross debt to GDP. Absent stock-flow adjustments and valuation changes, the change in the government debt-to-GDP ratio is $d_t - d_{t-1} = p_t + (r_t - g_t)d_{t-1}$, where d is the government debt ratio, p is the primary deficit-to-GDP ratio, r is the real rate of interest and g is the real GDP growth rate. The entries in the table give the accumulated contribution to the decrease in the debt ratio from higher growth than in the reference period, i.e. $\sum_{1994}^{2007}(g_t - \bar{g})\,d_{t-1}$, where $\bar{g}$ is the average growth rate in Sweden in the reference period or in EU-3 (France, Germany and Italy) in 1994–2007.

Sources: AMECO, own calculations.

[30] In general it holds that: *Change in the Government Debt-to-GDP Ratio = Primary Deficit-to-GDP Ratio + (Real Interest Rate – Real Growth Rate) × Government Debt-to-GDP Ratio + Residual.* The residual captures, for example, valuation changes in shares held by the government and sales of such shares. The residual is often referred to as stock-flow adjustments.

To understand the long period of favourable growth after 1992, one instead has to look at other factors. A number of such factors have been identified (see, for example, EEAG 2007, Chapter 4):

- Schumpetarian *creative destruction* during the 1991–1993 crisis, which led to the close-down of many stagnating firms and freed up labour and capital for use in firms with a potential for long-run expansion.
- *Comprehensive tax reform* in 1990–1991, which broadened tax bases and reduced marginal tax rates, thus creating a socially more efficient tax system. Although there were subsequently a number of amendments to the system, which in some cases violated the basic principles behind the reforms, the reformed system has on the whole survived (Fiscal Policy Council 2011).
- Extensive *product market deregulation*, which took place mainly in the first half of the 1990s, was earlier than in most continental European economies. The deregulations encompassed in particularly important network industries such as rail transport, taxi services, domestic air traffic, postal services, telecommunications, and electricity generation and distribution.
- A high level of *R&D expenditure*: the ratio of R&D expenditure to GDP (around 4 percent) has been the highest in the European Union.
- Reforms of the *wage bargaining system*: In the 1980s, the centralised wage bargaining system, which had earlier delivered aggregate real wage restraint, but also compressed wage differentials, began to crumble. In the late 1990s, more co-ordinated wage bargaining, contributing to wage restraint, was reintroduced. However, the co-ordination is now more informal and permits greater individual wage flexibility, allowing the individual's wage to be better linked to her productivity (EEAG 2004, Chapter 3).
- For historical reasons, such as the strong position of *Ericsson* in the telecom industry, Sweden may have been well placed to take advantage of the growth potential associated with IT.

As discussed in Section 4.2.2, there have recently also been fundamental labour market reforms (less generous unemployment insurance, sickness insurance and early retirement, as well as the introduction of an earned income tax credit) aimed at raising aggregate employment. Yet such reforms were not made until in 2007 and cannot account for growth developments before that year.

The relative importance of various factors that may explain the favourable Swedish growth record after the 1990s crisis is not clear. Our discussion nevertheless highlights the potential importance of growth-enhancing reforms for fiscal performance in general.

4.5 Conclusions

Our discussion has emphasised two sets of explanations for Sweden's strong fiscal performance in recent years:

1. A strict fiscal framework and a broad political consensus on the merits of fiscal discipline.
2. High output growth, which has reduced the costs of fiscal discipline.

There is an effective fiscal framework in Sweden with a fiscal balance (surplus) target, a government expenditure ceiling and a top-down approach for budgetary decisions. However, there are no strong commitment devices or sanction mechanisms in the case of violations of the rules. There are no stipulations that past deviations from the fiscal balance target must be compensated for in the future, as is the case with the Swiss and German debt brakes and is now envisaged in the new EU fiscal compact. Instead, the system relies to a large extent on a high degree of *fiscal transparency*. This includes relevant follow-ups of the attainment of fiscal targets and long-run sustainability calculations provided by the government, as well as monitoring of fiscal policy by several independent or semi-independent bodies. All this imposes high *reputation costs* on governments that renege on their own targets and gives voters access to *good information* on fiscal policy.

It is not obvious why this system works. One possible explanation is that economists in Sweden have traditionally enjoyed high status and are listened to in the public debate. This means that criticism of government policy by economists probably has a greater impact than in most other countries.

There is probably also a deep respect for rules in Swedish society in general, which contrasts starkly with the situation in Greece and some other South European countries. This is illustrated by the fact that the risk of being subjected to sanctions in the case of monetary union membership played an important role in the Swedish discussion on whether or not to join. It was never seen as an option that the three-per-

cent-of-GDP deficit ceiling stipulated in the stability pact would be violated. Instead, before the referendum on membership of the monetary union (which resulted in a "no" to the euro) in 2003, a government commission looked into the requirements of fiscal policy that would be imposed by switching to the euro (Commission on Stabilisation Policy 2002). The commission concluded that the surplus target should be raised in the event of membership of the monetary union to minimise the risk that the deficit ceiling would be breached in a cyclical downturn. This recommendation was based on an analysis of the probabilities that the stability pact's deficit ceiling would be breached under assumptions of different fiscal balance targets (Ohlsson 2002). To our knowledge, there was no similar discussion before the adoption of the euro in Greece, for example.

Sweden's current government has used a desire to avoid breaching the EU deficit ceiling in downturns as an argument for maintaining the surplus target of one percent of GDP over a business cycle, although Sweden is not a member of the monetary union and thus cannot be exposed to fines (Budget Bill 2011).

A difficult question is to what extent Sweden's recent favourable fiscal performance depends on the fiscal framework in place, and to what extent its fiscal performance (as well as its fiscal framework) are consequences of the political consensus on fiscal discipline that emerged in the wake of the 1990s crisis. It is important not to give too much credit for this performance to the new fiscal framework and too little to the change in mind-set that may also have manifested itself in the absence of framework reforms (at least as long as the earlier crisis is fresh in the public's memory). The lessons learned during the crisis in the 1990s were probably necessary for the successful implementation of the stricter fiscal framework. At the same time, the rules may have helped create an institutionalised memory that fades more slowly than the purely political memory.

Our discussion emphasises that good fiscal performance does not depend only on decisions in the fiscal sphere. Macroeconomic conditions are also of crucial importance. Fiscal discipline is much easier to achieve with high output growth than with a stagnating economy. This holds true both in the long run and in the short run and is vividly illustrated by the case of Sweden. Higher growth than achieved previ-

ously or in the large EU economies after 1994 helped to create a downward trend in the government debt-to-GDP ratio. Budget consolidation in the 1990s was greatly facilitated by a large real exchange rate depreciation that boosted both net exports and output. The real exchange rate depreciation was achieved through a large currency depreciation, an option not available to countries like Greece, Ireland, Italy, Portugal and Spain vis-à-vis the other euro area countries.

To sum up, Swedish fiscal experiences suggest the following lessons:

- A deep fiscal crisis may help to forge a broad consensus on the merits of budget discipline with long-lasting effects.
- Well-defined fiscal objectives, fiscal transparency and a qualified economic-policy debate may be more important to fiscal discipline than binding rules and automatic correction mechanisms.
- The framing of the budget decisions, particularly a well-defined process for evaluating the scope for active tax and expenditure decisions, may be of great importance.
- Fiscal sustainability does not only depend on decisions taken within the fiscal sphere. High output growth greatly facilitates fiscal consolidation. In the long run this requires growth-enhancing reforms. In the short run, the ability to achieve large real exchange rate depreciation, stimulating net exports, is of paramount importance to open economies with serious competitiveness problems.

References

Agell, J., Calmfors, L. and G. Jonsson (1996), "Fiscal Policy When Monetary Policy Is Tied to the Mast", *European Economic Review* 40, pp. 1413–40.

Alesina, A. and G. Tabellini (1990), "A Positive Theory of Fiscal Deficits and Government Debt", *Review of Economic Studies* 57, pp. 403–14.

Alesina, A. and R. Perotti (1995), "Fiscal Expansions and Fiscal Adjustments in OECD Countries", *NBER Working Paper* 5214.

Alt, J.E. and D.D. Lassen (2006), "Fiscal Transparency, Political Parties and Debt in OECD Countries", *European Economic Review* 50, pp. 1403–39.

Andersen, T. M. (1994), "Disinflationary Stabilization Policy – Denmark in the 1980s", in: Åkerholm, J. and A. Giovannini (eds.), *Exchange Rate Policies in the Nordic Countries*, CEPR, London.

Barro, R. and D.B. Gordon (1983a), "Rules, Discretion and Reputation in a Model of Monetary Policy", *Journal of Monetary Economics* 12, pp. 101–21.

Barro, R. and D.B. Gordon (1983b), "A Positive Theory of Monetary Policy in a Natural Rate Model", *Journal of Political Economy* 91, pp. 589–610.

Barry, F. and J. FitzGerald (1999), "Irish Fiscal Policy in EMU and the Brussels-Dublin Controversy", Trinity College, Dublin.

Bergman, U.M. (2010), "Har finanspolitik omvända effekter under omfattande budgetsaneringar?" *Studier i finanspolitik* 2010/2, Swedish Fiscal Policy Council, Stockholm.

Bergman, U.M. (2011), "Tidsbestämning av vändpunkterna i svensk konjunktur 1970–2010", *Studier i finanspolitik* 2011/2, Swedish Fiscal Policy Council, Stockholm.

Blanchard, O. and J. Wolfers (2000), "The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence", *Economic Journal* 110, pp. C1–C33.

Bordo, M.D., Markiewicz, A. and L. Jonung (2011), "Fiscal Union for the Euro: Some Lessons from History", *NBER Working Paper* 17380.

Broesens, T. and P. Wierts (2009), "The Surplus Factor", in: Ayusi-i-Casals, J., Deroose, S. Flores, E. and L. Moulin (eds.), *Policy Instruments for Sound Fiscal Policies,* Palgrave, Macmillan, London.

Budget Bill (2011), Swedish Parliament, Stockholm.

Calmfors, L. (2010), "The Role of Independent Fiscal Policy Institutions", *CESifo Working Paper* No. 3367.

Calmfors, L. (2011a), "The Swedish Fiscal Policy Council", *Staatsschuldenausschuss, Wirtschaftspolitische Blätter* 1, Austrian Chamber of Commerce.

Calmfors, L. (2011b), "The Swedish Fiscal Policy Council – Watchdog with a Broad Remit", Institute for International Economic Studies, Stockholm University.

Calmfors, L. and S. Wren-Lewis (2011), "What Should Fiscal Councils Do?", *Economic Policy* 27, pp. 649–95.

Castellani, F. and X. Debrun (2005), "Designing Macroeconomic Frameworks: A Positive Analysis of Monetary and Fiscal Delegation", *International Finance* 8, pp. 87–117.

Commission on Stabilisation Policy (2002), *Stabilisation Policy in the Monetary Union – A Summary of the Report*, SOU 2002:16, Fritzes, Stockholm.

EEAG (2004), *Report on the European Economy,* CESifo, Munich 2004, *http://www.cesifo-group.de/DocDL/EEAG-2004.pdf.*

EEAG (2007), *Report on the European Economy,* CESifo, Munich 2007, *http://www.cesifo-group.de/DocDL/EEAG-2007.pdf.*

Ekonomikommissionen (1993), *Nya villkor för ekonomi och politik,* SOU 1993:16, Stockholm.

Englund, P. (1999), "The Swedish Banking Crisis: Roots and Consequences", *Oxford Review of Economic Policy* 15, pp. 80–97.

European Commission (2006), Public Finances in EMU 2006 – The First Year of the Revised Stability and Growth Pact, *European Economy* 3, Brussels.

European Commission (2010), Public Finances in EMU 2010, *European Economy* 4, Brussels.

European Commission (2011), Public Finances in EMU 2011, *European Economy* 3, Brussels.

Fabrizio, S. and A. Mody (2006), "Can Budget Institutions Counteract Political Indiscipline?", *Economic Policy* 21, pp. 689–739.

Finanspolitiska rådet (2008), *Svensk finanspolitik 2008*, Stockholm.

Fiscal Policy Council (2009), *Swedish Fiscal Policy 2009,* Stockholm.

Fiscal Policy Council (2010), *Swedish Fiscal Policy 2010,* Stockholm.

Fiscal Policy Council (2011), *Swedish Fiscal Policy 2011,* Stockholm.

Flodén, M. (2009), "Automatic Fiscal Stabilizers in Sweden 1998–2009", *Studier i finanspolitik 2009/2,* Swedish Fiscal Policy Council, Stockholm.

Galí, J. (1994), "Government Size and Macroeconomic Stability", *European Economic Review* 38, pp. 748–56.

Giavazzi, F. and M. Pagano (1990), "Can Severe Fiscal Contractions Be Expansionary? Tales of Two Small European Economies", *NBER Macroeconomics Annual* 5, Cambridge, MA.

Giavazzi, F. and M. Pagano (1996), "Non-Keynesian Effects of Fiscal Policy Changes: International Evidence and the Swedish Experience", *Swedish Economic Policy Review* 3, pp. 67–103.

Girouard, N. and C. André (2005), "Measuring Cyclically-adjusted Budget Balances for OECD Countries", OECD Economics Department, Working Paper 434, Paris.

Hallerberg, M. and J. von Hagen (1999), "Electoral Institutions, Cabinet Negotiations and Budget Deficits in the European Union", in: Poterba, J. and J. von Hagen (eds.), *Fiscal Institutions and Fiscal Performance,* University of Chicago Press.

Henriksson, J. (2007), *Ten Lessons about Budget Consolidation,* Bruegel Essay and Lecture Series, Brussels.

Hjelm, G. (2002), "Is Private Consumption Growth Higher (Lower) during Periods of Fiscal Contractions (Expansions)", *Journal of Macroeconomics* 24, pp. 17–39.

Iara, A. and G.B. Wolff (2010), "Rules and Risk in the Euro Area: Does Rules-based National Fiscal Governance Contain Sovereign Bond Spreads?", *European Economy* 433/2010.

IMF (2009), *World Economic Outlook: Crisis and Recovery,* April.

IMF (2010), *Sweden: Article IV Consultation,* Staff Report 10/220.

Jennergren, P. and B. Näslund (1997), *Bankkriser och deras hantering,* Rapport till Riksdagens revisorer.

Jonung, L. and T. Hagberg (2005), "1990-talskrisen – hur svår var den?", *Ekonomisk Debatt* 8, pp. 30–45.

Jonung, L., Schuknecht, L. and M. Tujula (2009), "The Boom and Bust Cycle in Finland and Sweden in an International Perspective", in: Jonung, L., Kiander, J. and P. Vartia (eds), *The Great Financial Crisis in Finland and Sweden. The Nordic Experience of Financial Liberalization,* Edward Elgar, Cheltenham.

Kahneman, D. and A. Tversky (1984), "Choices, Values, and Frames", *American Psychologist* 39, pp. 341–50.

Kydland, F. and E. Prescott (1977), "Rules Rather Than Discretion: The Inconsistency of Optimal Plans", *Journal of Political Economy* 85, pp. 473–90.

Lassen, D.D. (2010), "Fiscal Consolidations in Advanced Industrialized Democracies: Economics, Politics, and Governance", *Studier i finanspolitik 2010/4*, Swedish Fiscal Policy Council, Stockholm.

Molander, P. and G. Paulsson (2008), "Vidareutveckling av det finanspolitiska regelverket"*Studier i finanspolitik* 2008/5, Swedish Fiscal Policy Council, Stockholm.

Ohlsson, H. (2002), "Finanspolitik i en valutaunion", bilaga 4 till SOU 2002:16, Fritzes, Stockholm.

Persson, T. and L.E.O. Svensson (1989), "Why a Stubborn Conservative would Run a Deficit: Policy with Time-Inconsistent Preferences", *Quarterly Journal of Economics* 104, pp. 325–45.

Reinhart, C.M. and K.S. Rogoff (2009), *This Time Is Different,* Princeton University Press, Princeton.

Spring Fiscal Policy Bill (2010), Swedish Parliament, Stockholm.

Spring Fiscal Policy Bill (2011), Swedish Parliament, Stockholm.

Swedish Parliament (2001), *Finans- och penningpolitiskt bokslut för 1990-talet*, bilaga 5, Proposition 2000/01:100, Stockholm.

Tversky, A. and D. Kahneman (1981), "The Framing of Decisions and the Psychology of Choice", *Science* 211, pp. 453–8.

Tversky, A. and D. Kahneman (1986), "Rational Choice and the Framing of Decisions", *Journal of Business* 59, pp. 251–78.

Velasco, A. (1999), "A Model of Endogenous Fiscal Deficits and Delayed Fiscal Reforms", in: Poterba, J. and J. von Hagen (eds.), *Fiscal Institutions and Fiscal Performance,* NBER, London: University of Chicago Press.

Velasco, A. (2000), "Debts and Deficits with Fragmented Fiscal Policymaking", *Journal of Public Economics* 76, pp. 105–25.

von Hagen, J. and I.H. Harden (1995), "Budget Processes and Commitment to Fiscal Discipline" *European Economic Review* 39, pp. 771–9.

The Hungarian Crisis

5.1 Introduction

Hungary was initially the front-runner among the former socialist countries of Central and Eastern Europe in terms of market reforms and gradually liberalised its economy in the 1980s. At the beginning of the 1990s, it seemed to be in the best position to converge fast with the European Union both in terms of income level and institutional quality. However, this convergence has stalled since the mid-2000s, with recent policy measures undermining the security of property rights and private contracts. Hungary was the first country to apply for an International Monetary Fund (IMF) administrated international bail-out during the latest financial crisis in the European Union (see Table 5.1 for a summary of Hungary's macroeconomic data). By the end of 2011 it was one of the most financially vulnerable countries in Europe outside the euro area.

This chapter summarises recent developments in Hungary and aims to shed some light on why Hungary failed to live up to the expectations of the early 1990s. Section 5.2 analyses Hungary's growth performance since 1990, and is followed by an analysis of its labour markets in Section 5.3. Section 5.4 assesses its fiscal policy and Section 5.5 explains why Hungary was one of the first countries in Europe to be bailed-out, and how the Hungarian economy responded to crises. Lastly, Section 5.6 assesses the economic policy measures implemented by Hungary since mid-2010, and their implications for future growth and employment. The chapter closes with some general conclusions.

5.2 Growth performance

Hungary's GDP grew annually by about three percent over the period of 1995–2008 (see Table 5.1). The GDP of the old EU member states[1] grew annually by 2.2 percent on average during the same period. This difference in growth rates is not large enough to close the income gap between Hungary and the old EU members in the foreseeable future. To shed more light on why GDP growth in Hungary was relatively low, we first present the evolution of Hungary's income gap defined as GDP per capita relative to the old EU

[1] Old EU member states are defined as the 15 members in 1995.

Table 5.1

Macroeconomic statistics for Hungary

	Average 1995–2001	Average 2002–2008	2009	2010
Growth rates, in %				
GDP	2.9	3.1	− 6.8	1.3
Private consumption expenditure	1.7	3.2	− 6.2	− 2.2
General government consumption expenditure	− 0.3	1.7	− 0.6	− 2.1
Gross fixed capital formation	5.0	3.5	− 11.0	− 9.7
Exports of goods and services	14.4	10.9	− 10.2	14.3
Imports of goods and services	12.7	10.1	− 14.8	12.8
Inflation, CPI, in %[a]	16.2	5.4	4.0	4.7
Unemployment rate, in %	8.0	6.8	10.1	11.2
Government finances, in % of GDP				
General government net lending	− 5.5	− 6.9	− 4.5	− 4.3
General government gross debt	63.6	62.7	78.4	80.2
Current account, in % of GDP	− 5.5	− 7.5	− 0.2	1.1
Foreign direct investment, in % of GDP	6.3	4.6	1.6	1.2

[a] OECD data for 1995–2001 and Eurostat for all other periods.

Source: OECD, Eurostat, last accessed on 19 October 2011.

member states, and the evolution of its labour productivity gap similarly defined as GDP per hour worked relative to the old EU member states.[2] Secondly, we provide a decomposition of the income gap and use classical growth accounting to understand the factors behind Hungary's growth performance.

The first panel of Figure 5.1 shows the time evolution of the income gap for Hungary and for the other three Visegrad Group countries[3] measured in GDP per capita. After initially falling in the early 1990s, relative GDP increased in all four countries. Since 2005, however, Hungary's relative income has stagnated. By 2010 it was the poorest member of the Visegrad Group due to the strong growth perfor-mance of Slovakia and Poland since 1995. The sec-ond panel of Figure 5.1 shows the evolution of the labour productivity gap. Firstly, it is important to note that the income gap and labour productivity gap of Hungary display the same flat pattern after 2005. Secondly, Hungary only exhibited strong labour productivity growth between 2000 and 2005

Figure 5.1

Convergence to EU-15

Source: Total Economy Database, Conference Board 2011.
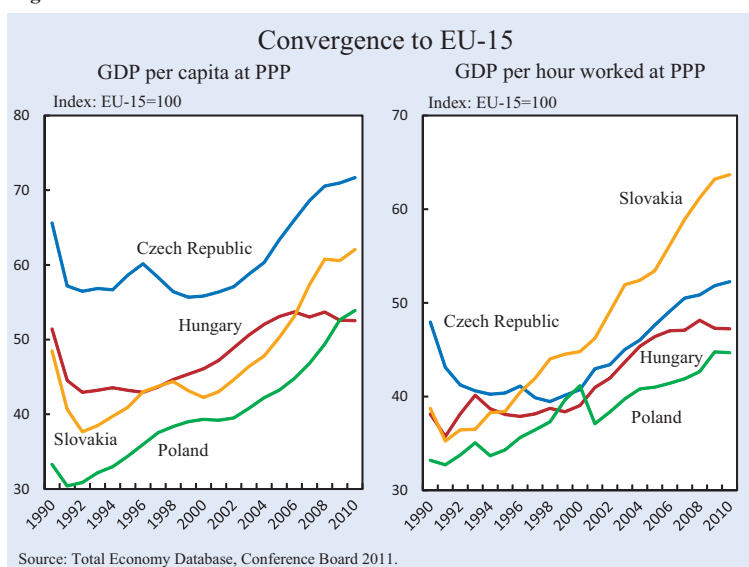
when it closed the labour productivity gap by eight percentage points. In the other periods, the Hungarian labour productivity gap was flat. Slovakia, on the other hand, has exhibited strong labour productivity growth since the early 1990s, and closed its labour productivity gap by 25 percentage points.

Let us now breakdown the income gap into three parts: the worker-to-population-ratio gap, the hours-per-worker gap and the labour-productivity gap. This breakdown is performed for 1995 when the shock due the reform and liberalisation in the early 1990s had already dissipated, and for 2008, the last year before the full force of the financial crisis' impact was felt. The result of the breakdown is displayed in Table 5.2.

[2] We loosely use the term "gap" here to refer to these relative mea-sures. In this context, "closing the gap" means that the measure moved closer to 100.
[3] The Visegrad Group is an alliance of four Central-Eastern European states: the Czech Republic, Hungary, Poland and Slovakia, formed in 1991 for the purposes of cooperation and sup-porting their European integration. These countries provide a useful comparison for Hungary.

Table 5.2

Accounting for GDP per capita gap relative to EU-15

	GDP per capita gap	Worker to population ratio gap	Hours per worker gap	GDP per hour worked gap
1995				
Czech Republic	− 53.4	19.5	17.8	− 90.7
Hungary	− 83.9	− 4.7	17.3	− 96.5
Poland	− 106.8	− 6.9	7.1	− 107.0
Slovakia	− 89.4	− 4.3	10.6	− 95.7
2008				
Czech Republic	− 34.9	13.1	19.6	− 67.6
Hungary	− 62.2	− 9.9	20.8	− 73.1
Poland	− 70.6	− 10.4	25.0	− 85.2
Slovakia	− 49.8	− 9.9	9.2	− 49.1

Note: Gaps are calculated as log differences multiplied by 100 to preserve additivity. A negative (positive) entry in the table is equivalent to the relevant ratio being below (above) 100 percent.

Source: Total Economy Database, The Conference Board 2011.

As Figure 5.1 also shows, GDP per capita is closer to that of the old EU members than labour productivity. This is primarily accounted for by employees in the Visegrad countries working longer hours than those in the old EU member states. The worker-to-population-ratio[4] gap plays a lesser role in explaining the income gap, and unlike hours per worker, the worker-to-population ratio is lower in the old EU member states than in the Visegrad countries, except for the Czech Republic. The breakdown highlights that the relatively small Czech income gap is largely explained by longer hours worked and by a higher employment rate. One important implication of this breakdown exercise is that longer hours worked play an important role in three out of these four countries in raising relative income. However, further increases in the number of hours worked per worker are unlikely to lead to a sustained income convergence.

Sustained labour productivity growth is the key to convergence. Growth accounting helps us to understand the main factors that drive it. Table 5.3 presents the results of a growth accounting exercise comparing two periods: 1995–2001 and 2002–2008. The growth rates of real GDP per hour worked are broken down into the contribution of the labour composition,[5] into two types of capital and total factor productivity (TFP). The analysis suggests that the primary source of Hungary's labour productivi-

ty growth was growth in capital stock and, to a lesser extent, growth in TFP. Capital accumulation contributed 2.0 percent and 2.4 percent respectively to the 3.0 percent and 3.2 percent growth of real GDP per hour worked in Hungary in the first and second period. In contrast, TFP growth was the primary source of labour productivity growth in both periods in Poland and in Slovakia, and in the second period in the Czech Republic. Weak and declining TFP growth in Hungary suggests serious structural problems, which inhibit faster productivity growth. Unless TFP picks up, we expect Hungary to eventually diverge from the rest of Europe, as margins of convergence through hours worked and capital accumulation are gradually exhausted.

Kónya (2011) provides explanations for why growth in capital stock is a more important source of labour productivity growth than in the other Visegrad countries. He calibrates a one-sector real business cycle model to assess the size of distortions in the Czech Republic, Hungary and Poland.[6] The labour wedge distorts the labour and leisure choice, and the investment wedge distorts saving-investment decisions. A high labour wedge means that labour taxes deter people from working, implying that the amount of total hours worked is sub-optimally low. Similarly, the investment wedge is the gap between the total and private return on investment. The greater that wedge, the lower the productive investment relative to the optimal level. Kónya finds that the labour wedge on average was significantly higher in Hungary than in the

---

[4] Workers here are measured as the number of persons engaged in production, and include full-time workers, full-time equivalent, part-time workers and the self-employed.
[5] The change in labour composition is calculated as the weighted change in the skill composition of the workforce where labour compensation for each skill group is used as weight.

[6] Distortions are formally defined as wedges between marginal rates of substitution and the corresponding prices.

Table 5.3

Growth accounting for the Visegrad countries

	GDP per hour worked growth	Contribution of			
		labour composition	ICT capital services[a]	non-ICT capital services	TFP
Average 1995–2001					
Czech Republic	2.7	0.2	1.1	1.9	− 0.5
Hungary	3.0	0.2	0.8	1.2	0.8
Poland	3.8	0.1	0.4	0.9	2.4
Slovakia	4.2	0.1	0.5	0.9	2.7
Average 2002–2008					
Czech Republic	3.9	0.3	0.2	1.5	1.9
Hungary	3.2	0.6	1.5	0.9	0.2
Poland	3.6	0.3	0.7	0.7	1.9
Slovakia	5.7	0.2	1.1	0.8	3.6
[a] ICT refers to "information and communication technologies".					

Source: Total Economy Database, The Conference Board 2011.

other two countries.[7] If distortions in the labour markets are relatively large, firms will substitute capital for labour.[8] This can lead to a faster increase in capital services for a prolonged period of time in a country with high labour market distortions, even if distortions in the labour markets only affect the level of GDP and not its growth rate in the long run. Moreover, it also follows that once firms have adjusted their technology to accommodate a distorted labour market, capital accumulation will slow down, implying a further decline in labour productivity growth. In other words, the large contribution of capital accumulation to Hungarian growth may just be a transitory, and not particularly welcome, phenomenon of capital/labour substitution, similar to the experiences of many Western European countries following increases in labour costs in the early 1970s.

However, this does not account for the lower TFP growth. One factor that may explain it is sectoral change.[9] If productive resources are reallocated to sectors with low productivity growth, aggregate growth falls. Bah and Brada (2009) study structural change in the Central and Eastern European countries. They point out the stylised fact that central planning generated a higher share of agriculture and industry in output than observed in market economies. This is documented in the left panel of Figure 5.2, which shows that the shares of agriculture and industry (construction, manufacturing, mining and utilities) of GDP were significantly higher and the share of services significantly lower in 1990 in the former socialist countries than the share that their level of development would imply. In 2008 the shares of the three sectors in the former socialist countries were more or less in line with the

Figure 5.2

Structural transformation in Europe

Note: Quadratic curves are fitted to the pooled annual data of the periods 1990−2008.
Source: World Development Indicators, September 2011.
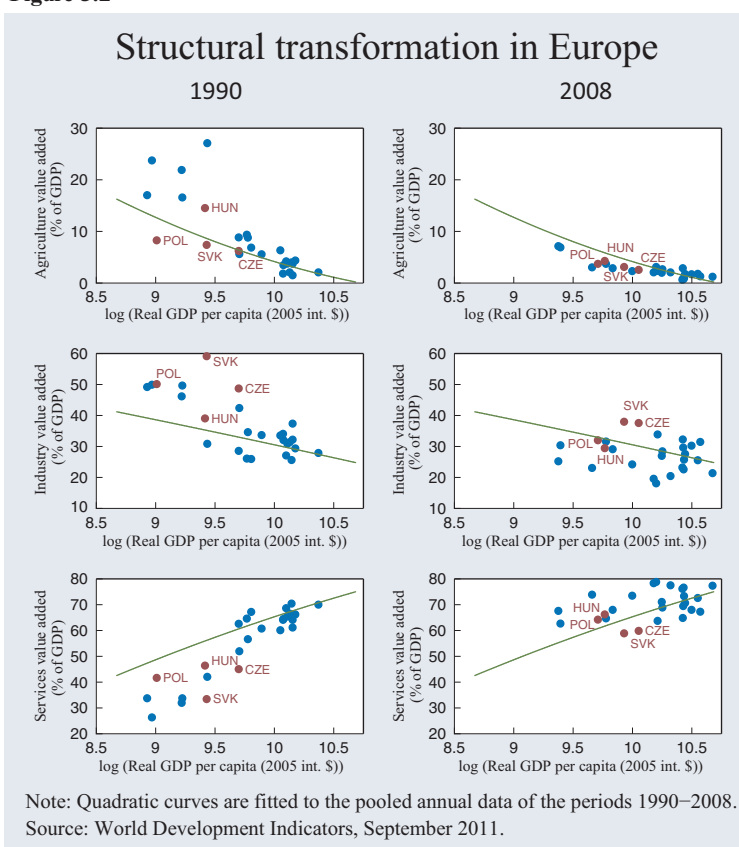
shares implied by their level of development. There was therefore a reallocation towards the service sector. Since the service sector tends to have lower productivity growth than manufacturing, this reallocation could be a source of lower TFP growth in Hungary.[10] A related explanation is that distortions within these broad sectors are the sources of low TFP growth in Hungary. Since such distortions can have a large effect on TFP,[11] its growth in Hungary is likely to depend on

[10] This effect can be offset by reallocation if the resources devoted to agriculture and industry were inefficiently high before liberalisation, and the reallocation improved efficiency significantly in agriculture and industry afterwards. However, this offsetting effect is more likely to be important in the periods shortly after liberalisation i.e., in the 1990s and not in the 2000s.
[11] Hsieh and Klenow (2009) found that the effect of misallocation of production factors at a firm level on aggregate TFP is substantial.

[7] The difference in average investment wedges across the three countries is much smaller than the labour wedge.
[8] See Blanchard (1997) on this type of substitution after the mid-1970s in Europe.
[9] See Duarte and Restuccia (2010) and Herrendorf and Valentinyi (2011).

Table 5.4

Growth rate of real gross fixed investment

	Average 1995–2001	Average 2002–2008	2009	2010
Czech Republic	1.6	5.4	− 11.5	0.2
Hungary	6.5	2.9	− 11.0	− 9.7
Poland	8.6	9.0	− 1.3	− 0.1
Slovakia	5.7	6.3	− 19.7	12.4

Source: Eurostat, last accessed on 21 November 2011.

Figure 5.3

Labour market trends

Source: OECD, last accessed on 19 October 2011.
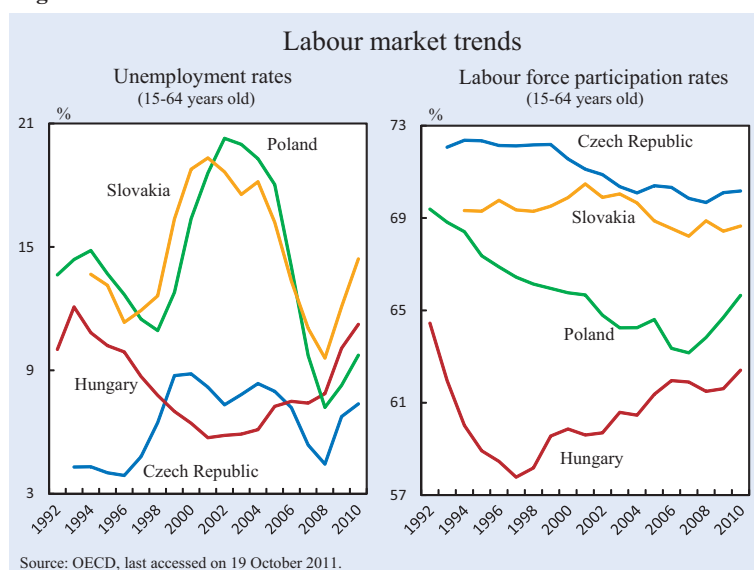
rate remained below 9 percent between 1993 and 2010. In Poland and Slovakia, on the other hand, unemployment increased drastically in the late 1990s, remaining above 15 percent for several years and only dropping after 2005. However, it increased again due to the impact of the financial crisis of 2008.

The Hungarian labour market is flexible.[13] Union coverage is low and declining, and the unions have little power. Hungary's employment protection index is also the lowest in the region, while hiring and firing costs are low by international comparison. The adjustment of wages is also relatively easy.[14]

The more striking feature of the Hungarian labour market is displayed in the right panel of Figure 5.3. Labour force participation is significantly lower in Hungary than in other Visegrad countries. It fell from about 65 percent in 1993 to about 58 percent in 1997. It subsequently increased, but still stood at a low 62 percent in 2010. Labour force participation was in 2010 in the Czech Republic and in Slovakia about 8 percentage points higher than in Hungary. The rapid initial decline of participation in Hungary can be primarily explained by two factors: privatisation that affected labour demand, and pension and benefit policy that affected labour supply.

Privatisation in Hungary led to a change in the composition of labour demand: demand for skilled workers increased relative to demand for unskilled workers. Unlike some other Central and Eastern European countries, Hungary did not adopt a mass privatisation scheme whereby state assets were distributed among its citizens. Instead, it sold its assets on a case-by-case basis to investors, primarily foreigners. This led to increased competition among firms and generated a massive restructuring and a reallocation of resources across different activities. This can also be seen in Figure 5.2, which shows reallocation among broad

whether these distortions can be eliminated in the years ahead.

Finally, if TFP growth is driven by technology adoption, and technology adoption requires investment, then declining investment can be a source of lower TFP growth. Table 5.4 shows that the growth of fixed investment was relatively high in Hungary compared to the other Visegrad countries in 1995–2001, but was lowest in 2002–2008.[12] Moreover, Hungary experienced the largest fall in investment in 2009–2010, and the quarterly data suggest that this fall in investment continued into 2011. To the extent that investment itself is a source of TFP growth, the declining investment in Hungary may constitute an explanation of low TFP growth.

5.3 Labour market trends

The Hungarian labour market is characterised by a moderate unemployment rate, a relatively low participation rate and flexible labour market institutions. The left panel in Figure 5.3 shows the evolution of unemployment, whereas the right panel illustrates the participation rates in the Visegrad countries. The Hungarian unemployment rate hovered around 7.5 percent between 1995 and 2008, which is not particularly high in Europe. The Czech unemployment

---

[12] Note that figures in Table 5.4 measure the growth rate of investment. In contrast, Table 5.3 measures the contribution of growth in capital services to the growth rate in GDP per hour worked. Although growth in capital services is related to investment, the figures across the two tables are not directly comparable. Hence it is possible that the contribution of capital services to the growth rate in GDP per hour worked is high, while the growth rate of investment is low in the same period.

[13] See Köllő (2011) for a discussion.
[14] Kátay (2011) finds that Hungary has the lowest downward real wage rigidity among the European countries that participated in the International Wage Flexibility Project (IWFP). It also has lower then average downward nominal wage rigidity. The IWFP was sponsored by the European Central Bank and its goal was to provide micro-economic evidence of the costs and benefits of inflation in labour markets for a number of advanced economies.

sectors. Between 1990 and 1995 employment in Hungary fell by 10 percentage points in agriculture and by 4 percentage points in industry. During this process a lot of jobs, primarily low skilled ones, were destroyed. Ceteris paribus this shifted labour demand towards skilled workers. Secondly, the new owners invested in modern technology inducing a rapid skill-biased technological change, which also shifted labour demand towards skilled workers.[15] If only these factors affecting labour demand were at work, however, we would expect the employment rate to eventually recover, since they are transitory factors associated with the restructuring of the Hungarian economy from a centrally planned to a market economy.

There is, however, a second factor that negatively affects labour supply and contributes to the low participation rate in Hungary, namely the pension and benefit policies of successive governments. Until 1996 the legal retirement age was 55 for women and 60 for men. After 1996, the legal retirement age was gradually increased to 62 for both sexes. The retirement age is 62 for men as of 2001 and the same age for woman as of 2009. This is still relatively low by international standards. Furthermore, with a sufficiently long employment history, it was possible to retire up to three years earlier than the legal retirement age with

no or little penalty in terms of a lower pension. Not surprisingly, the average effective retirement age in Hungary was about two and a half years lower than the legal one according to OECD data. In addition, there was also the option of retiring on health grounds and drawing disability pension, which was the equivalent to a regular old age pension after 25 years of work. Cseres-Gergely (2007) estimates that the financial incentive built into the pension system had a significant impact on labour supply among the older population. One of the driving forces behind the rise in labour force participation after 1996, depicted in Figure 5.3, was the gradual rise of the retirement age.[16]

The transition to a market economy and privatisation may explain the sharp drop in the participation rate in the first half of the 1990s, while anomalies in the pension system may account for the lower participation rate among 55 and 64 year olds. However, Figure 5.4 indicates that there must be other factors affecting labour force participation in Hungary. The diagram breaks down labour force participation into three age groups: 15–24 years old, 25–54 years old and 55–64 years old. In addition, it shows the average labour force participation in each group over

---

[15] Kézdi (2002) documents a sharp rise in skill premium during the 1990s. He also documents that there was an additional premium not captured by measuring education levels for working at a foreign-owned company.

[16] Kátay and Nobilis (2009) provide a full decomposition of rising labour force participation into different explanatory factors. They found that, in addition to transfers, demographic factors and education play an important role in explaining changes in labour participation in Hungary. Among transfers, old age pension is the most important.

Figure 5.4

Labour force participation rates
average 2000-2010, in %

Source: OECD, last accessed on 19 October 2011.
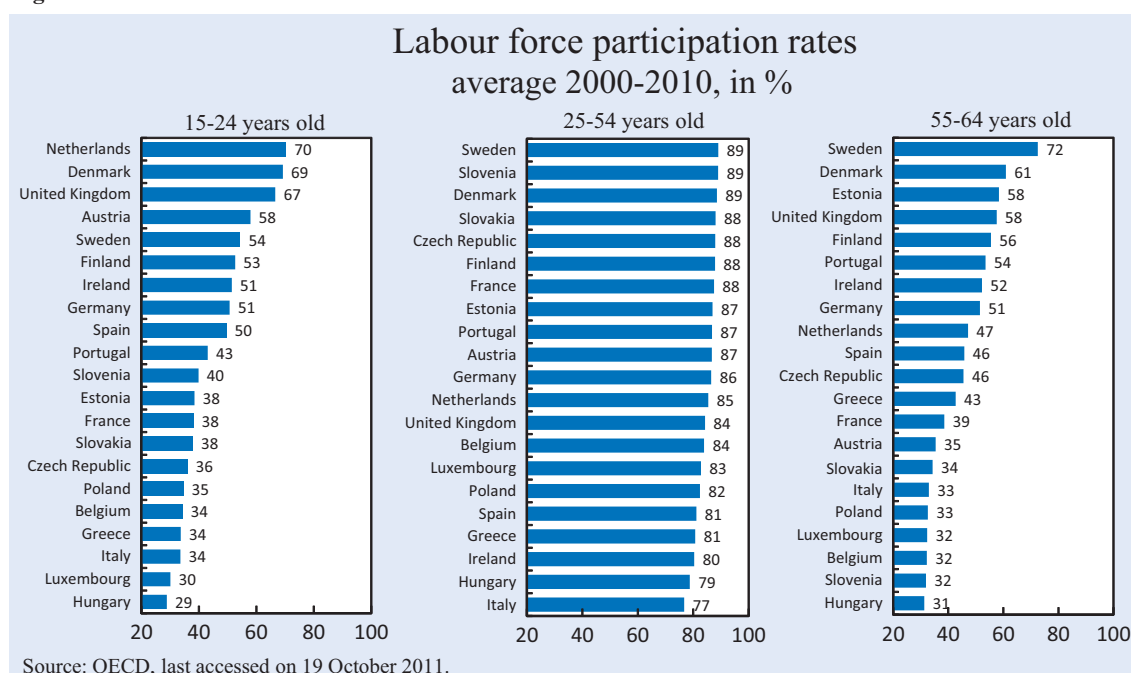
2000–2010 across EU countries. The figure shows that, in terms of labour force participation, Hungary ranks lowest both in the young and in the old age group, and second to last in the prime age, 25–54 years old group. The variation within the prime age group is significantly smaller than in the others. The lowest participation rate is 77 percent and the highest is 89 percent. The participation rate in Hungary nevertheless remains 6 percentage points lower than the median of the group. This difference is 11 percentage points in the young and 15 percentage points in the old age group.

Figure 5.5

Labour tax wedges in the European Union
average 2000-2008

Country	%
Belgium	56
Hungary	53
Germany	52
France	50
Austria	48
Sweden	47
Italy	46
Slovenia	45
Finland	45
Czech Republic	43
Denmark	41
Estonia	40
Slovakia	40
Spain	39
Netherlands	38
Portugal	37
Poland	37
Greece	36
Luxembourg	35
United Kingdom	33
Ireland	30

Note: Tax wedge in each year refers to the average tax wedge for a single person at 100% of average earning without children.
Source: OECD, last accessed on 19 October 2011.

A more disaggregated accounting for cross-country differences in labour force participation reveals that Hungary's lower participation rate is mainly due to three welfare dependent subgroups: the low skilled, the working age population aged fifty or over and women of child-bearing age.[17]

One of the key questions facing Hungarian policy makers is how to increase labour force participation. Higher employment would increase income in Hungary relative to the old EU member states for a given level of labour productivity. It would also increase the tax base and reduce government expenditure on benefits and pensions. Here we discuss two policy instruments: taxes on labour and the minimum wage. Let us begin by looking at taxes on labour. The stylised facts on this topic are summarised in Figure 5.5 which shows the average labour tax wedges for 21 EU countries. The tax wedge measure is defined as the difference between the total labour cost to the firm and take-home pay, as a fraction of the former. Hungary has the second highest average tax wedge after Belgium. The other Visegrad countries are behind Hungary by at least 12 percentage points in terms of average tax. In 2011 the wedge declined due to the introduction of a flat income tax at a 16 percent rate, but it will rise again in 2012 due to the increase in labour related taxes levied on firms.

The average tax wedge is a measure of the total tax burden on labour. The greater that wedge is, the lower

the take-home pay for a given total labour cost. Lower take-home wages reduce labour supply at the extensive margin primarily for younger and older workers. Benczúr et al. (2011) estimate a structural model of labour supply on Hungarian household surveys to provide more precise estimates of labour supply responses at the extensive margin. They break down the effect of net income changes into changes in take-home wages, taxes and transfers. Firstly, they find substantial heterogeneity in terms of labour supply responsiveness across different subgroups. More importantly, they find that labour supply responsiveness is high in all three subgroups, which account for the most differences in labour force participation between Hungary and other EU countries. Therefore changing the benefit and transfer system or increasing take-home wages are likely to have a significant positive effect on labour supply at the extensive margin, and hence on participation.

The effect of a minimum wage on the labour supply is ambiguous. An increase in the minimum wage raises the take-home wage, but lowers the probability of finding work because firms are less likely to hire at the higher minimum wage. The overall effect on expected wage and hence on labour supply is ambiguous. Minimum wage usually affects unemployment, but it can also impact participation through the discouraged worker effect. However, the effect of minimum wage on labour supply is non-standard in Hungary[18] as in several other Central and Eastern European

---

[17] See National Bank of Hungary (2008). As far as the labour supply of woman is concerned, it is important to note that the benefit per child relative to GDP per capita in Hungary is the highest among OECD countries. Hence, there is a strong incentive for women of child-bearing age to drop out from the labour force. See Bálint and Köllő (2008).

[18] Hungary has a two-tier minimum wage system. Minimum wage applies to unskilled workers, and the so called wage minima, which is higher than the minimum wage, applies to skilled workers with a well-defined educational degree.

countries. The reason for this is that in these countries the minimum wage interacts with tax evasion. Firms and workers may decide to under-report worker's earnings to avoid taxes and social security contributions. In this case, workers receive cash-in-hand wages in addition to their reported wages. Minimum wage legislation affects the decision about how much of workers' earnings could be reported i.e., firms have to report at least the minimum wage.[19]

Tonin (2011) provides a theory and evidence as to the effect of such interaction on employment and take-home wages. He constructs a model whereby minimum wage and tax evasion interact. Firstly he shows that wages are underreported resulting in a large fraction of workers reporting the minimum wage. Secondly, he also shows that an increase in the minimum wage is equivalent to an increase in labour income tax. This is because a rise in minimum wage increases the fraction of workers' earnings that has to be reported, and hence increases the proportion of these earnings subject to taxation and social security contributions. To provide empirical evidence, he analyses changes in the food consumption of households affected by the 2000–2001 minimum wage hike[20] compared to those unaffected. He finds that food consumption fell in the treatment group relative to the

control group. This fact is consistent with a decline in take-home wages due to the minimum wage hike. This has a negative effect on labour supply.

Direct evidence of the employment effect of the minimum wage in Hungary can be found in Kertesi and Köllő (2002). They estimated a significant negative effect of the minimum wage hike on employment at small firms, but did not find a significant effect at large firms. The reason for this difference is that 37.5 percent of employees at firms with 5–10 employees, 28.2 percent of employees at firms with 11–20 employees, and 17.2 percent of employees at firms with 21–50 employees were paid the minimum wage.[21] Hence a minimum wage hike affects the take-home wage of a much larger proportion of workers at small firms than at their large counterparts. Thus, the finding of Kertesi and Köllő (2002) is consistent with the theory of Tonin (2011).

5.4 Fiscal policy

Hungary has been under the Excess Deficit Procedure of the European Union ever since it joined the

---

[19] Such under-reporting is relatively wide spread in Central and Eastern Europe. According to a recent European Commission Report (see European Commission 2007), 8 percent of Hungarian workers reported receiving cash-in-hand wages in the previous twelve month period. Other Central and Eastern European countries had similar or higher figures. In contrast, only one percent of workers in Germany, France or United Kingdom reported such incidents.

[20] The 2000–2001 minimum wage hike was drastic. When the minimum wage hike was announced in 2000, 32.7 percent of total private sector employees earned less than the new minimum wage (see Elek et al. 2011, p. 5). Over this two-year period the minimum wage doubled in nominal terms, and increased by more than 50 percent in real terms. The minimum wage had risen by 20 percent in nominal terms by January 2012, which amounts to an increase of around 13–15 percent in real terms.

[21] The figures are from a wage survey in 2003. See Table 5 in Elek et al. 2011, p. 30. Please also note that this fact means that there is a spike in the wage distribution at the minimum wage as the theory of Tonin (2011) predicts.

Box 5.1

Hungarian experiment with the Fiscal Council

The Hungarian Parliament passed a Fiscal Responsibility Act in 2008, which called for a Fiscal Council, an independent fiscal watchdog, to be established. The council had three members nominated by the President of the Republic, the Governor of the National Bank of Hungary, and the President of the State Audit Office and confirmed by the parliament for a non-renewable tenure of nine years. The council had its own analysts (Office of the Fiscal Council) and was required to evaluate the consequences of the budget bill, to prepare macroeconomic and fiscal forecasts and to scrutinise whether the budgetary practice of the government was consistent with the accounting principles described in the Fiscal Responsibility Act. The council was also required to assess quantitatively the effect of any legislative proposal with budgetary implications, including the effects of structural reforms. However, it did not have the legislative power to enforce its assessment. It relied on communication and the dissemination of information concerning the implications of the proposals as an enforcement instrument.

After the 2010 elections, the new government, having won a two thirds majority in Parliament, abolished the Office of the Fiscal Council and narrowed the council's remit to the requirement that the council state its broad opinion on the budget bill. The composition of the council also changed. The President of the Republic now appoints the Chair for a six year term on a part-time basis, and two other members are the Governor of the central bank and the President of the State Audit Office. The new constitution passed in 2010 limits the public debt to 50 percent of GDP and the Fiscal Council also has to judge whether the budget bill satisfies constitutional requirements.

Box 5.2

Constitutional ceiling on general government debt in Hungary

In spring 2011 a new constitution was passed which came into effect on 1 January, 2012. It puts a ceiling on the general government debt at 50 percent of GDP. In addition, it stipulates that if the debt-to-GDP ratio exceeds 50 percent, the parliament cannot pass a budget bill for the central government that would lead to an increase in the debt-to-GDP ratio. The government can deviate from this rule if the economy is in a prolonged and deep recession. On December 23, 2011 the parliament passed a Financial Stability Act. It stipulates that if GDP declines in real terms, it should be understood that the economy is in a prolonged and deep recession. It also requires that, as long as the debt-to-GDP ratio exceeds 50 percent, the growth rate of nominal debt cannot exceed the difference between inflation and half of the growth rate of real GDP. However, this formula will not come into effect until 2015.

European Union in 2004. The left panel in Figure 5.6 shows the evolution of its deficit since 1990. As we can see, there is a strong election cycle in fiscal policy: the deficit increased significantly prior to every single election since 1990. This very strong election cycle was broken by the financial crisis in the run up to the 2010 election, when a politically weak government continued to implement the fiscal consolidation program started in 2007. In addition, very little fiscal correction took place after the 2002 election, hence the general government deficit exceeded 5 percent of GDP until 2007 and was accompanied by a rapid accumulation of public sector debt between 2001 and 2007.

Hungarian fiscal institutions are unable to credibly commit politicians to a sustainable fiscal policy. This fact is highlighted by the experiment with a Fiscal Council in Hungary (see Box 5.1). As a result of the deterioration in government finances in 2005 and 2006, fiscal adjustment was necessary. As part of the adjustment program, the Parliament passed the Fiscal Responsibility Act in 2008, establishing an independent Fiscal Council. After winning a two thirds majority in April 2010, the new centre-right government abolished the council in its existing form and set up a new body. In particular, the new Fiscal Council was stripped of its staff and its remit was drastically narrowed. Without independent forecasts and analyses, it is impossible for the new council to provide the kind of fiscal transparency and evaluation of sustainability that the original council was able to. For example, the three members of the Fiscal Council approved the budget proposal for 2012 with a two-to-one majority,[22] while the European Commission expressed strong reservations.[23]

In addition to creating a weak Fiscal Council, the Hungarian parliament passed a new constitution, which limits the debt-to-GDP ratio to 50 percent (see Box 5.2).[24] The problem is that the actual debt-to-GDP ratio according to Figure 5.6 is over 80 percent. The legislation stipulates that the Parliament pass budget proposals aimed at reducing public debt levels. In addition, it instructs the Fiscal Council to evaluate whether or not the proposed budget fulfils this criterion. However, the new Financial Stability Act passed subsequently weakened the constitutional requirement by making the debt ceiling applicable from 2015 onwards, and stipulating that it does not apply whenever GDP declines. Enshrining fiscal rules in the constitution can help to make fiscal policy sustainable and restore its credibility. However, without independent monitoring, evaluation and forecasting as conducted by the

Figure 5.6

Hungarian general government balances and debt

Note: Vertical lines indicate election years.
Sources: Barabás et al. (1998) for the period 1990-1994, Eurostat for the period 1995-2010, last accessed on 19 October 2011.
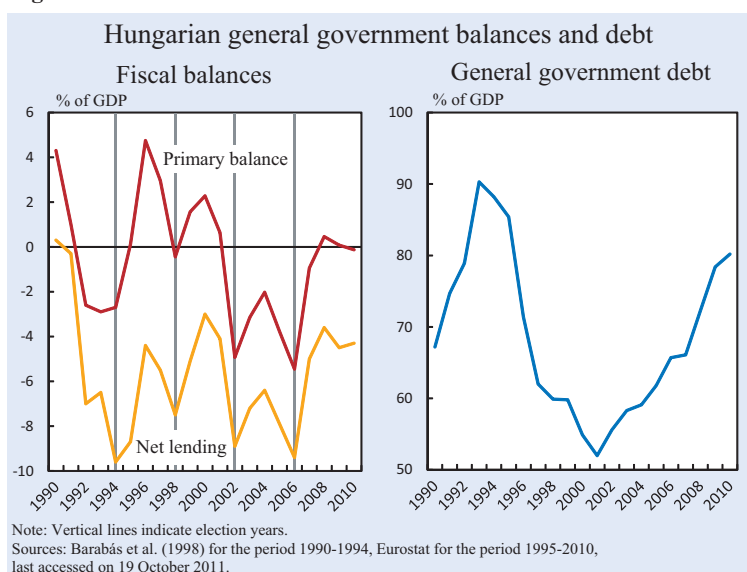
[22] The two members of the council who approved the proposal have recently been appointed and have close ties to the government.

[23] The European Commission's Excessive Debt Procedure report on Hungary published on 11 January 2012 states that the structural deficit in 2012 will exceed the 3-percent-of-GDP Treaty threshold. In addition, the assessment of the European Commission is that "no effective action has been taken to bring the deficit below 3 percent of GDP in a sustainable manner".

[24] A debt limit in the constitution is not particularly meaningful economically. It specifically implies a strong pro-cyclical fiscal policy.

Hungarian Fiscal Council in its original form, it is hard to see how one can credibly verify whether the government actually follows those rules.[25]

Despite the lack of a commitment device, significant fiscal adjustment took place in 2007–2010 due pressure from the markets and the European Commission. The financial crisis made it impossible for Hungary to continue its ill-disciplined fiscal policy, as borrowing became more difficult and costly. However, putting the deficit reduction on a solid footing turned out to be a difficult task because of the size of the public sector in Hungary. There are few criteria to judge whether the size of the public sector is small or large, but one of empirical regularity is that its size tends to increase with average income levels. Figure 5.7 plots the government expenditure-to-GDP ratio against the log of per capita GDP for countries in the European Union. The size of the Hungarian public sector appears to be larger than would be implied by its income level.[26] The graph also reveals that only five countries in Europe had larger public sectors than Hungary over the period between 2000 and 2008. In addition, the public administration in Hungary is one of the least efficient in the OECD countries.[27] Hence downsizing the government in Hungary can potentially lead to efficiency gains.

Despite fiscal consolidation efforts since 2007, government expenditure remained high. The implied high overall tax burden and the inefficiency of government spending may be one impediment to economic growth in Hungary. In addition, the strong election cycle increases volatility in aggregate demand. The higher aggregate uncertainty in the economy generated by

fiscal uncertainty is another impediment to economic growth.

5.5 Financial crisis and bail-out

The financial crisis of 2008 hit Hungary early on, leading the country to request IMF assistance in late October 2008. It is easy to see why Hungary felt under pressure at that time. Figure 5.8 plots the net external debt of a number of emerging countries (public and private) against their public debt. At the end of 2007 most emerging economies either had high external debt or high government debt. Hungary was the only country with both high external and high government debt.

High external debt makes a country financially vulnerable, particularly if a substantial fraction of that debt is denominated in foreign currency. It has been argued, and also documented, that private sector debt, particularly bank debt, is a contingent liability of the government. In times of crisis, the government is likely to bail-out the private sector.[28] If the country's external debt is high but government debt is low, the government has the ability to bail-out the private sector when an adverse external shock hits the private sector's balance sheet. However, if both external and the public debt are high, then the government may be unable to bail-out the private sector or if it does, it may default soon afterwards unless there is external assistance in place.[29] The international financial crisis found Hungary in such a financially vulnerable state in October 2008.
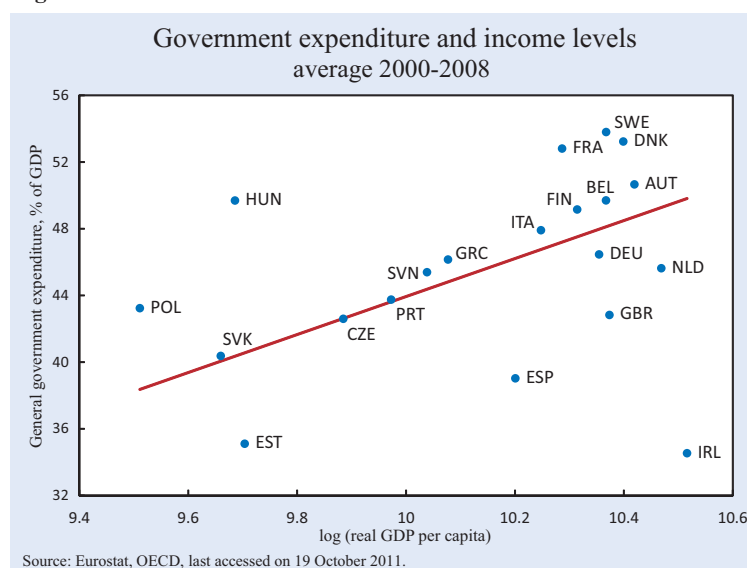
We discussed above how Hungary accumulated a relatively high level of public debt prior to 2008. We will now proceed to explain the origin of this high external debt. During the run up to accession to the European Union, Central and

Figure 5.7

Government expenditure and income levels
average 2000-2008

Source: Eurostat, OECD, last accessed on 19 October 2011.

[25] See Calmfors and Wren-Lewis (2011) for an overview of what fiscal councils do, and why the change in Hungary is a poor example of the development of fiscal councils.
[26] Income level is not the only factor, which may affect the size of the public sector. See Rodrick (1998).
[27] OECD (2010).
[28] This idea was originally emphasised by Diaz-Alejandro (1985), and later formally modelled by Velasco (1987). More recently, Kaminsky and Reinhart (1999) and Reinhart and Rogoff (2010, 2011) presented evidence, which is consistent with this contingent liability hypothesis.
[29] Reinhart and Rogoff (2010) document that high external debt is a good predictor of sovereign default.

Figure 5.8

Public debt and external debt in emerging markets in 2007

Note: Net external debt = gross external debt − international reserves excluding gold.
Source: Quarterly External Debt Data Base at the World Bank, last accessed on 19 October 2011,
World Development Indicators, September 2011.
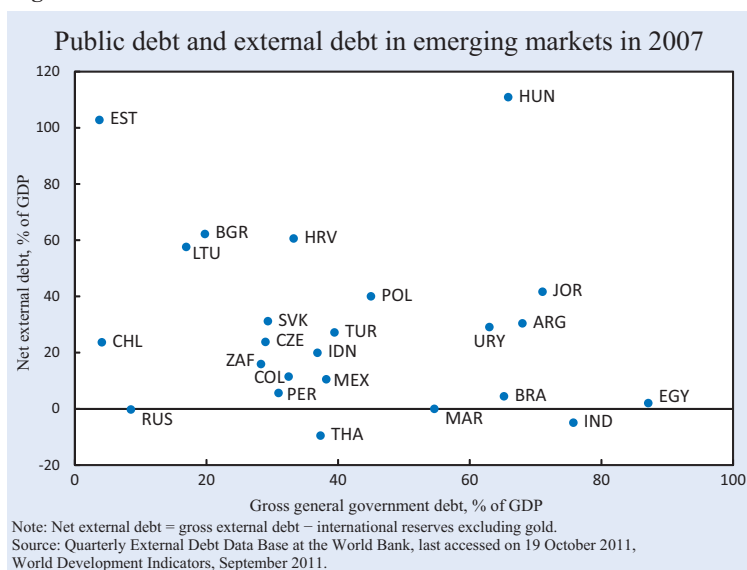
foreign currency borrowers were firms, and even that stock did not exceed 10 percent of GDP. In contrast, the foreign currency debt-to-GDP ratio in Hungary reached 30 percent, which means that about half of the credit to the private sector was denominated in foreign currency. In the case of households, foreign currency debt amounted to almost 70 percent of total household debt in Hungary at the onset of the financial crisis in September 2008. Macro-prudential regulation in Hungary failed to address the problem of systemic risk generated by foreign currency loans, which made Hungary vulnerable.[31]

Eastern European countries liberalised capital movements. Privatisation in the corporate and the banking sector led to a large presence of multinationals in Hungary. These multinationals had easy access to international capital markets. In particular, banks funded at low costs by their parent banks offered low-cost mortgage loans to households denominated in foreign currencies, primarily in Swiss francs. Underestimating exchange rate risk, firms and households, particularly liquidity-constrained households to which the size of their monthly payment was important, borrowed in foreign currency.[30] As a result, Hungarian households built up a large unhedged foreign currency position. The difference between this currency mismatch and that built up in East Asia in the 1990s is that this mismatch did not appear explicitly on the banks' balance sheets.

Figure 5.9 gives an idea of the problem in Hungary. The left panel shows total foreign currency loans relative to GDP, while the right panel shows the foreign currency loans of households relative to total household debt between 2002 and September 2008. Firstly, we see that foreign currency loans featured in all four Visegrad countries. However, in the Czech Republic and Slovakia the dominant

The large stock of foreign currency loans created a new channel for the exchange rate to have a significant direct effect on the balance sheet of the private sector. To see how hard the private sector in Hungary was hit by the depreciation of its currency after September 2008, we can consult Figure 5.10, which displays the exchange rate of the forint, vis-à-vis the euro and the Swiss franc. Between September 2008 and March 2009, the forint depreciated by 24 percent relative to the euro and 34 percent relative to the Swiss franc. The euro exchange

---

[31] IMF (2011) provides a broad overview of the problem of foreign currency loans during the current financial crisis.

---

[30] See Csajbók et al. (2010), Rosenberg and Tirpák (2008), Brzoza-Brzezina et al. (2010) and Ranciere et al. (2010).

Figure 5.9

Foreign currency loans

of the private sector

of households

Source: National central banks, last accessed on 20 June 2010.

rate has not changed too much since; but the depreciation of the forint vis-à-vis the Swiss franc between September 2008 and November 2011 reached 66 percent. Ceteris paribus the foreign-currency-loans-to-GDP ratio would have risen from the 30 percent of GDP in the third quarter of 2008 shown in Figure 5.9 to almost 50 percent of GDP. Moreover, the depreciation also led to a significant rise in monthly repayments over time and an increase in loan delinquency. In addition, Hungarian banks face a rollover risk. Banks primarily lent in Swiss francs because the demand for Swiss franc loans was higher than the demand for euro loans due to the lower interest rate on Swiss franc loans. The banks, however, were holding funds in euros. They swapped their euro funds for Swiss francs on the swap market. These swap contracts needed to be rolled over periodically since their maturities were shorter than the maturities of the mortgage loans. As the international financial market came under growing strain in autumn 2008, however, the maturity of the swap contracts drastically shortened, requiring more frequent rollovers and increasing the rollover risk. Finally, the Hungarian sovereign did found it increasingly difficult to issue bonds; thus increasing the rollover risk of the sovereign. All in all, both the default risk of households and the rollover risk of banks and the sovereign made it potentially worthwhile to withdraw Hungarian assets. Such a run manifested itself in a sharp depreciation of the currency in October 2008. Eventually Hungary turned to the IMF, which together with the EU Commission provided a 20 billion euro bail-out.

Figure 5.10

Average monthly exchange rate of the Hungarian currency

Source: National Bank of Hungary, last accessed on 16 December 2011.

5.6 Recent policy measures and their probable long-term impact

The centre-right government won a two thirds majority in the 2010 election and embarked on a series of unorthodox policy measures. These policies are unorthodox in the sense that most of them are usually not implemented in developed countries, but they are not unorthodox in the sense that they are new or particularly innovative.

To keep the budget deficit on target in 2010, the new government introduced exceptional taxes on the financial, telecommunication and the retail industries, which are predominantly foreign-owned. Taxes on the financial sector were based on past assets and about an order of magnitude higher than taxes discussed in Europe. To boost economic growth, the government cut the corporate tax rate for small and medium size enterprises. More importantly, in 2011 it introduced a 16 percent flat tax rate on wage income. To support this drastic tax cut, private pensions were nationalised at the beginning of 2011, and the assets of the pension funds, among others, were used to cover the revenue shortfall in 2011. The government also announced a plan to cut expenditure of which relatively little had been implemented by the end of 2011. Since economic growth did not increase and tax revenues did not rise, the Hungarian government announced an increase in the VAT rate from 25 percent to 27 percent, as well as increases in the social security contributions paid by firms and several other taxes in 2012.

The government also aimed to solve the problems of the foreign exchange mortgage loans. Firstly, it introduced a temporary moratorium on the repossession of real-estate whose owners had fallen behind mortgage payments. It also passed several pieces of legislation in order to ease the problems of foreign currency debtors (see Box 5.3). More specifically, a legislation passed in September 2011 unilaterally changed the terms of all foreign currency loan contracts by allowing debtors to make a one-off repayment of their loan at a discounted exchange rate. The costs of this scheme are to be born entirely by

---
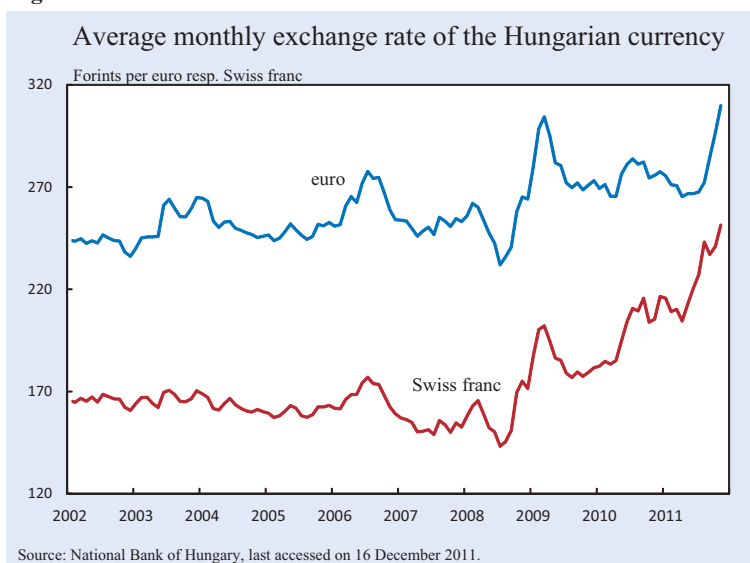
Box 5.3

Dealing with the problems of foreign currency loans

During 2011, the Hungarian government introduced a series of measures to ease the problems faced by households with foreign currency loans. The three schemes below now run concurrently.

1. The government and representatives of the financial sector agreed on an exchange rate protection scheme in which households could participate from mid-August 2011. Under this scheme the monthly repayments of foreign currency loans are calculated at a discounted fixed exchange rate (250 forints per euro, 180 forints per Swiss franc) until the end of 2014. The difference between the repayment at the market and the fixed exchange rate is accumulated as a local currency debt of the household on which it pays the interbank rate. Repayment of such loans does not start until 2015.

2. In September 2011 the government, without consulting representatives of the financial sector, passed legislation enabling households which could afford to do so to make a one-off repayment of their foreign currency loans can do so at a discounted exchange rate of 250 forints per euro and 180 forints per Swiss franc between mid-September 2011 and the end of February 2012. The banks are to bear all of the losses resulting from these transactions.

3. The government and representatives of the financial sector agreed in mid-December 2011 that:
a) in cases where the foreign currency mortgage debtor with loans is delinquent for more than 90 days, its loan will be converted into local currency and 25 percent of the loan will be cancelled by 15 May 2012, provided that the value of the real-estate serving as collateral did not exceeded 20 million forint when the mortgage loan contract was concluded. Banks can deduct 30 percent of the losses due to this cancellation from the exceptional taxes they have to pay in 2012.
b) Foreign currency mortgage debtors with loans delinquent for less than 90 days can apply to participate in the exchange rate protection scheme until the end of 2012. This scheme is like the exchange rate protection scheme discussed above with two important differences. Firstly, the household pays no interest on the local currency debt accumulated due to the difference between the market and the discounted fixed exchange rate. The loss due to the interest free nature of this debt is shared equally between the banks and the government. Secondly, the repayment of this loan will not start until 2016.

---

the banks. In mid-December 2011 the government and the banks agreed on additional arrangements to ease the problems of foreign currency debtors. The cost of these new arrangements was shared between the government and the banks. None of these arrangements has led to bank failures so far, but they have certainly worsened the banks' capital positions. Banks can adjust to this by either raising capital or reducing their balance sheet. They appear to be doing both in Hungary. The reduction of balance sheets implies slow or even negative credit growth in the near future, which is likely to have a negative impact on growth.

Introducing flat taxes has its merits. Several Central and Eastern European countries followed this course during the boom years. However, introducing flat taxes during a recession is unwise because it may have short-run recessionary effects. This is because moving to a flat tax reduces the net income for low income, high-propensity-to-consume households who faced a lower tax rate before the reform, and increases the net income for high income, low-propensity-to-consume households. This effect was likely to be strong in Hungary where the minimum wage was tax-free

before the reform. The beneficial effect of lower labour taxes may materialise in the longer run once labour supply has adjusted to the lower taxes, but this is of little help in the short run. Taxing the financial sector so heavily during such a deep recession and a financial crisis also slows down economic growth – one does not want to increase the cost of credit in a situation where it is feared that there might be a credit crunch. Such fiscal consolidation measures may backfire as they ultimately make it more difficult to meet the deficit target that investors view as sustainable. Doubts about the Hungarian government's ability to bring deficits and public debt under control are reflected in the gradual rise of Hungary's CDS spread since mid-2011 (see Figure 5.11). Reflecting the higher sovereign risk, the rating agency Moody's downgraded Hungarian government bonds below investment grade on 25 November 2011, which was followed by a downgrade by Standard & Poor's on 22 December 2011.

The rapid deterioration in the outlook of the sustainability of Hungarian government debt forced the government to call for IMF assistance once again. This marks an important policy shift in Hungary because

the government had refused to communicate with the IMF after September 2010. However, events and the consequences of its policies finally forced it to resume talks. However, it is unclear at the time of writing (15 January 2012) under what conditions the IMF together with the European Commission is willing to step in with a new loan. One of the reasons is that the European Commission objects to several pieces of recent government legislation including the Financial Stability Act and the National Bank of Hungary Act. The proposed changes in the latter are viewed as a serious infringement of central bank independence.[32] However, the Hungarian government has made it clear that it has no intention of changing the proposed legislation. Both pieces of legislation were passed by the Hungarian parliament by the end of December 2011.[33]

The Hungarian government's policies do not seem to address the main problems of the Hungarian economy, and may actually make them worse. Firstly, sector specific taxes will increase rather than decrease distortions, which are a prime suspect for low TFP growth in Hungary. Secondly, flat taxes will not reduce the average labour tax wedge because the reduction in revenues is compensated for by higher social security contributions. This will not help to increase labour force participation. Thirdly, over-taxing the financial sector leads to lower growth and makes the recovery from recession even longer. Finally, and probably most important-ly, nationalising private pensions, as well as the invalidation of private contracts by governments (as in the above mentioned forced conversion of foreign

currency contracts) increases expropriation risk and undermines property rights. This may act as a deter-rent to investment in the long run and hence reduce growth. Moreover, the collective reputation of Europe as a whole may suffer as a result of some member countries not playing by the rules of the Single Market.

5.7 Conclusions

Hungary was initially the front-runner of market reforms in Central and Eastern Europe, but by the end of the 2000s its economy showed serious struc-tural problems, which manifest themselves in slow growth, low investments and low labour force partic-ipation. Moreover, its fiscal institutions do not appear to be strong enough to eliminate the electoral cycle in government spending. The financial crisis hit its economy the hardest among the Visegrad coun-tries. We can draw several lessons from the Hun-garian crisis.

Firstly, a fiscal policy that varies strongly with the election cycle may sufficiently increase uncertainty in an economy to have a negative effect on investment, which ultimately reduces total factor productivity and economic growth. Hence the creation of a fiscal framework that ensures prudent and sustainable fis-cal policies is not only important to avoid financial crises, but is also important to ensure sustained growth. The Excess Deficit Procedure of the Euro-pean Union was unable to enforce fiscal discipline in Hungary or in other EU member states. The Hun-garian crisis indicates that an independent national fiscal watchdog may be an important component of an effective fiscal framework. Such a watchdog probably acted as an effective constraint on fiscal policy in the case of Hungary. If it had not, the Hungarian government would not have abolished it after it criticised the government's budget for over-optimistic as-sumptions and a lack of trans-parency.

Figure 5.11

Sovereign credit default swaps
5-year maturity

Basis points

Hungary

Poland

Slovakia

Czech Republic

Source: Datastream, last accessed on 17 December 2011.
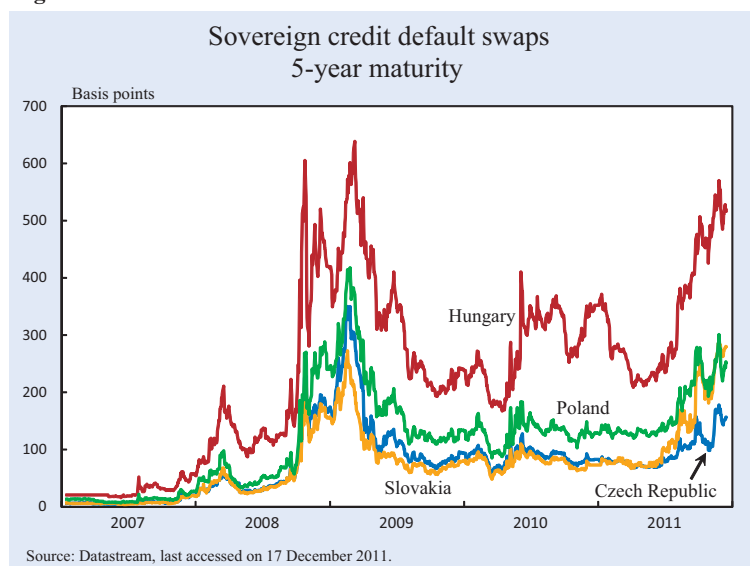
[32] The European Central Bank also expressed its strong reservation about the proposed National Bank of Hungary Act.
[33] On 17 January 2012 the European Com-mission started accelerated infringement proceedings against Hungary over three issues including the independence of its central bank.

Secondly, the absence of labour market rigidities does not necessarily ensure positive labour market outcomes. Recurrent fiscal problems keep taxes on labour high, which ultimately make take-home wages low. This can have a negative effect on labour supply, and eventually on labour force participation. Minimum wage legislation interacting with tax evasion can have similar effects. This, in turn, keeps government expenditure on transfers to those out of the labour force high because it is difficult to change politically. The equilibrium of high labour taxes, low labour force participation and high transfers can be difficult to change.

Thirdly, a financial crisis and a perilous fiscal position often lead to government policies, which are not conducive to long-term growth. For example, sovereign crises are often followed by financial repression in developing countries during which the government raises revenues from the financial sector. This reduces credit growth, which has a negative effect on growth.[34] The Hungarian government introduced exceptional taxes on the financial sector, which is likely to have a negative effect on economic growth. In addition, the Hungarian government also introduced other measures, which undermined property rights and private contracts. Strong economic institutions are crucial to prevent governments from introducing such policies. These institutions were not strong enough in Hungary. Hence its longer-term growth is likely to suffer.

Finally, Hungary has implemented several policy measures since mid-2010, which were greeted by strongly-worded protests from the European Commission and the European Central Bank. These measures were nevertheless implemented. In particular, the Hungarian government turned down a specific request from the European Commission in December 2011 to put on hold two pieces of legislation until further consultation. This highlights that the European Union lacks mechanisms to enforce "good behaviour" on the part of its member states in the short run. Hence actions undertaken by some member states may have negative spill-over effects on other members.[35] Without enforcement mechanisms, it is hard to see how the European Union can handle a crisis more effectively the next time one occurs.

---

[34] As long as firms are credit constrained, economic growth and credit growth are linked. See Levine (2005) for an overview.
[35] The change of the terms of the foreign currency loan contracts in Hungary leads to losses for banks in Hungary, but also for their parent banks in other countries, which undermines their financial stability as well.

References

Bah, E. and J. C. Brada (2009), "Total Factor Productivity Growth, Structural Change and Convergence in: Transition Economies", *Comparative Economic Studies* 51, pp. 421–46.

Bálint, M. and J. Köllő (2008), "The Labour Supply Effects of Maternity Benefits", in Fazekas, K., Cseres-Gergely, Z. and Á. Scharle, (eds), *The Hungarian Labour Market Review and Analysis,* Budapest Institute of Economics.

Barabás, Gy., Hamecz, I. and J. Neményi (1998), "Fiscal Consolidation, Public Debt Containment and Disinflation", MNB Working Papers 1998/5, National Bank of Hungary, Budapest.

Benczúr, P., Kátay, G., Kiss, A. and O. M. Rácz (2011), *Income Taxation, Transfers and Labor Supply at the Extensive Margin,* National Bank of Hungary, Budapest, mimeo.

Blanchard, O.J. (1997), "The Medium Run", *Brookings Papers on Economic Activity*, pp. 89–158.

Brzoza-Brzezina, M., Chmielewski T. and J. Niedźwiedzińska (2010), "Substitution between domestic and foreign currency loans in Central Europe. Do central banks matter?", *ECB Working Paper* 1187, European Central Bank, Frankfurt.

Calmfors, L. and S. Wren-Lewis (2011), "What Should Fiscal Councils Do?", *Economic Policy* 26, pp. 649–95.

Csajbók, A., Hudecz, A. and B. Tamási (2010), "Foreign Currency Borrowing of Households in New EU member states", *MNB Occasional Papers* 87, National Bank of Hungary, Budapest.

Cseres-Gergely, Zs. (2007), "Inactivity in Hungary – the persistent effect of the pension system", *Budapest Working Papers on the Labour Market* 2007/1, Institute of Economics, Hungarian Academy of Sciences, Budapest.

Diaz-Alejandro, C. (1985), "Goodbye Financial Repression, Hello Financial Crash", *Journal of Development Economics* 19, pp. 1–24.

Duarte, M. and D. Restuccia (2010), "The Role of the Structural Transformation in Aggregate Productivity", *Quarterly Journal of Economics* 125, pp. 29–173.

Elek, P., Köllő, J., Reizer, B. and P. A. Szabó (2011), "An Attempt to Identify Grey Employment Estimation of Wage Under-reporting and Tests of the Predictions", manuscript, Institute of Economics, Hungarian Academy of Sciences.

European Commission (2007), "Undeclared Work in the European Union", *Special Eurobarometer* 284.

Herrendorf, B. and A. Valentinyi (2011), "Which Sectors Make the Poor Countries so Unproductive?", Forthcoming: *Journal of the European Economic Association*, 2012.

Hsieh, C. and P. J. Klenow (2009) "Misallocation and Manufacturing TFP in China and India", *The Quarterly Journal of Economics* 124, pp. 1403–48.

IMF (2011), "The Multilateral Aspects of Policies Affecting Capital Flows – Background Paper", Prepared by the Monetary and Capital Markets Department and the Strategy, Policy, and Review Department in consultation with the Research Department, IMF, Washington, October 2011.

Kaminsky, G. L. and C. M. Reinhart (1999), "The Twin Crises: The Causes of Banking and Balance of Payments Problems", *American Economic Review* 89, pp. 473–500.

Kátay, G. (2011), "Downward wage rigidity", *MNB Working Papers* 2011/9, National Bank of Hungary, Budapest.

Kátay, G. and B. Nobilis (2009), "Driving Forces Behind Changes in the Aggregate Labour Force Participation in Hungary", *MNB Working Papers* 2009/5, National Bank of Hungary, Budapest.

Kertesi, G. and J. Köllő (2002): Labour Demand with Heterogeneous Labour Inputs after the Transition in Hungary, 1992–1999 – and the Potential Consequences of the Increase of the Minimum Wage in 2001 and 2002. Budapest Working Papers on the Labour Market 2002/5, Institute of Economics, Hungarian Academy of Sciences, Budapest.

Kézdi, G. (2002), "Two Phases of Labor Market Transition in Hungary: Inter-Sectoral Reallocation and Skill-Biased Technological Change", *Budapest Working Papers on the Labour Market* 2002/3, Institute of Economics, Hungarian Academy of Sciences, Budapest.

Köllő, J. (2011), "Employment, Unemployment and Wages in the First Year of the Crises", in: K. Fazekas and Gy. Molnár (eds.), *The Hungarian Labour Market Review and Analysis,* Institute of Economics, Hungarian Academy of Sciences, Budapest.

Kónya, I. (2011), "Convergence and Distortions: the Czech Republic, Hungary and Poland between 1996-2009", *MNB Working Papers* 2011/6, National Bank of Hungary, Budapest.

Kopits, G. (2011), "Independent Fiscal Institutions: Developing Good Practices", *OECD Journal of Budgeting* 11, October, pp. 29–46.

Levine, R. (2005), "Finance and Growth: Theory, Evidence, and Mechanisms", in: Aghion, P. and Durlauf, S. N. (eds.), *Handbook of Economic Growth,* Elsevier, Amsterdam, 2005.

National Bank of Hungary (2008), *Convergence Report,* Budapest.

OECD (2010), *Economic Survey of Hungary 2010*, OECD, Paris.

Ranciere, R., Tornell, A. and A. Vamvakidis (2010), "Currency mismatch, systemic risk and growth in emerging Europe", *Economic Policy* 25, pp. 597–658.

Reinhart, M.C. and K.S. Rogoff (2010), "From Financial Crash to Debt Crisis", *National Bureau of Economic Research Working Paper Series,* No. 15795.

Reinhart, M.C. and K.S. Rogoff (2011), "A Decade of Debt", *National Bureau of Economic Research Working Paper Series,* No. 16827.

Rodrick, D. (1998), "Why Do More Open Economies Have Bigger Governments?", *Journal of Political Economy* 106, pp. 997–1032.

Rosenberg, C.B. and M. Tirpák (2008), "Determinants of Foreign Currency Borrowing in the New Member States of the EU", *IMF Working Paper* 08/173, International Monetary Fund, Washington.

Tonin, M (2011), "Minimum Wage and Tax Evasion: Theory and Evidence", *Journal of Public Economics* 95, pp. 1635–51.

Velasco, A. (1987), "Financial Payment Crises, and Balance-of-Payment Crises", *Journal of Development Economics* 27, pp. 263–83.

PRICING CLIMATE CHANGE

6.1 Introduction

Burning of fossil fuel is the main reason behind man-made climate change. By burning the carbon content, carbon dioxide is produced and quickly spreads in the global atmosphere. This increases the greenhouse effect, thereby changing the earth's energy balance. Concern over the negative consequences of climate change has led to a vast array of policy measures aimed at reducing the use of fossil fuel. This chapter examines some aspects of these policies. It discusses the arguments for taxes and quantity restrictions on CO_2-emitting activities, and especially on the burning of fossil fuel, as well as policies to subsidise substitutes for these activities, particularly the use and development of technologies producing non-fossil based "green energy".

Before moving on to discuss policy, the next section describes important aspects of the production and use of energy in the European Union.

6.2 Energy production and use in the European Union

Europe is heavily dependent on fossil fuel. Figure 6.1 shows energy consumption in the European Union by primary source. The main primary sources are:

- fossil fuels, consisting of coal and lignite, oil and gas,
- nuclear,
- renewables.

Figure 6.1 shows that over the last twenty years, fossil fuel has represented a fairly stable share of around 80 percent of our total energy consumption. There has only been a modest decline over this period: from 83 percent in 1990 to 77 percent in 2008. Meanwhile total energy consumption has increased moder-

ately over this period, by 0.4 percent per year, which is substantially less then GDP growth over the same period. Thus, energy efficiency, measured as GDP per unit of energy use has increased.

While the share of fossil energy has remained stable, there have been some changes in its composition. The share of coal and lignite has fallen from around 33 percent to 20 percent of fossil energy, while gas has increased by nearly the same amount, from 21 percent to 32 percent, leaving oil to account for a stable share of slightly below half of total fossil energy consumption.

Non-fossil energy sources as a share of energy consumption have increased somewhat over the period. Nuclear power's share increased from 12.2 percent in 1990, peaking at 14.5 percent in 2002 and then falling slightly to 13.4 percent. Renewables have almost doubled relative to their initial share of 4.4 percent, but remain a minor source of energy accounting for just 8.4 percent of total energy consumption in 2008.

Figure 6.2 shows the components of renewable energy over the same period of time. Biomass and wastes increased over the period from 61 percent to 70 percent of total renewable energy. The fastest growth *rate*, however, occurred in wind energy, which increased from practically zero in 1990 to account for

Figure 6.1

Energy consumption by source in the EU-27

Source: European Environment Agency, "Total primary energy consumption by energy source in 2008, EU-27".

Figure 6.2

Renewable energy consumption by source in the EU-27

Source: European Environment Agency, "Total primary energy consumption by energy source in 2008, EU-27".
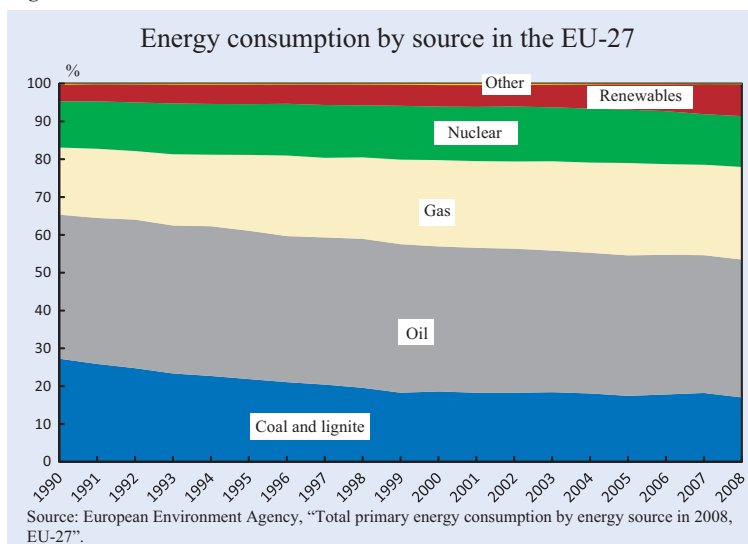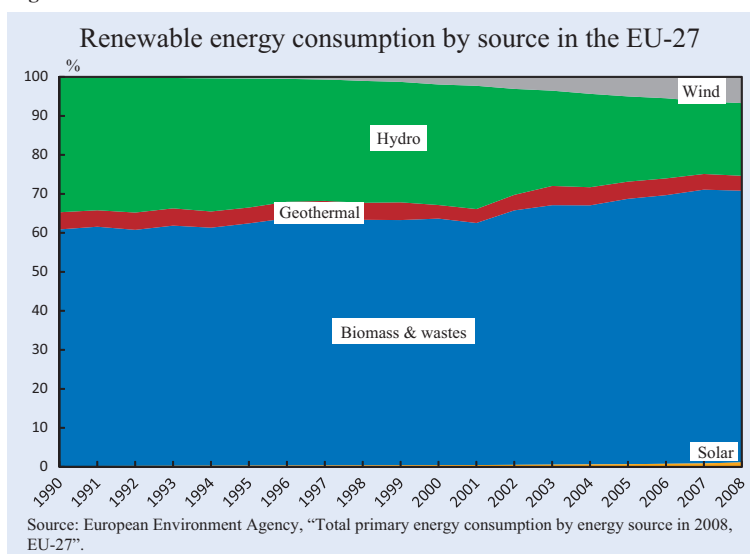
7 percent of renewable energy in 2008. It is worth noting, however, that this figure only represents 0.56 percent of total energy consumption. Hydro power has remained constant in terms of total energy provision and has thus fallen as a share of renewable energy, from 35 percent to 19 percent over the whole period. Geothermal energy, on the other hand, has grown at the same rate as renewables overall, remaining a constant share of around 4 percent. Solar power has experienced high growth, but at the end of the period it still only accounted for 1 percent of the 8.4 percent total for renewables.

Finally, let us break down the biomass and wastes component. Figure 6.3 shows that wood and wood waste is the largest component, although other wastes, biogas and biofuels have all increased. For example, biofuels and biogas together account for 18 percent of biomass

Figure 6.3

Breakdown of biomass and wastes energy consumption in the EU-27

Source: European Environment Agency, "Total primary energy consumption by energy source in 2008, EU-27".
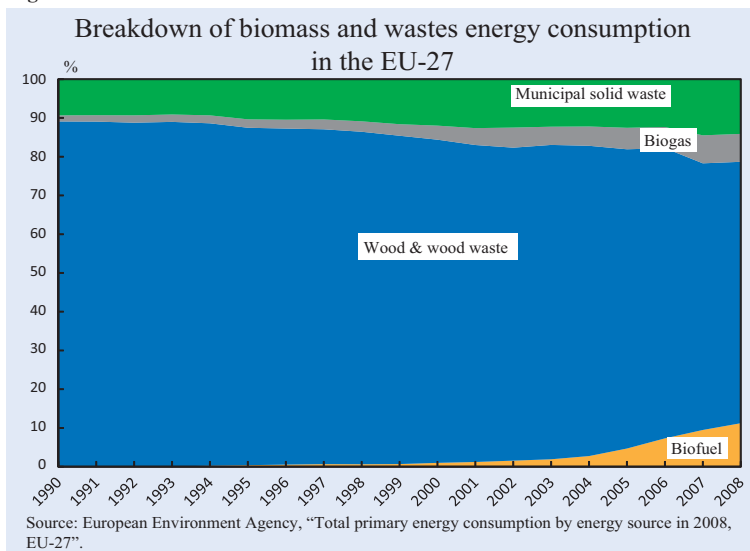
and wastes, implying that they represent 1.5 percent of total energy consumption.

Over the period renewable energy has enjoyed substantial growth. It has increased at an average growth rate of 4.2 percent, while overall energy consumption has only grown by 0.4 percent per year. By the laws of mathematics, this means that the share of renewables will continue to grow if these trends continue. Unfortunately, achieving a substantial share will take a long time at this growth rate. By extrapolating current trends, the 20 percent target of the European Union will not be reached until 2035. To increase the share faster than this, trends have to be broken: either via slower growth in total energy consumption and/or via faster growth in renewable energy production. This can surely only be achieved at a substantial, arguably prohibitive, cost, unless policy is constructed in a clever way. We will return to this issue in the next section.

Let us now turn to the composition of energy uses. Here we focus on final energy consumption, i.e., after transmission and conversion losses in energy producing sectors. Figure 6.4 shows that there has been a fairly strong decline in the share of energy consumption used by industry. This figure fell from 35 percent to 25 percent over the sample period. Most of this decrease was balanced by an increase in transport use: from 26 percent to 34 percent. The household share of energy consumption remained fairly stable at 25 percent. Finally, there was a slight increase in energy consumption by the service sector and a small decline in agriculture.

Renewable energy accounts for a small share of energy consumption in the European Union. However, there are very large differences between the different member states. This is shown in Table 6.1 where the member states are listed from highest to lowest share of renewable energy at the end of the sample period. While the overall share of renew-

Figure 6.4

Energy consumption by sector in the EU-27

Source: European Environment Agency, "Total primary energy consumption by energy source in 2008, EU-27".

modest increase from an initial situation that basically involved no renewable energy at all.

It is largely the countries at the top of the table that have changed their shares the most. With the exception of Portugal, the ten countries with the largest increases are also the countries with the highest shares. Of course, this is partly due to the fact that countries which increase their shares also end up with higher shares. In a regression of the change of renewable energy on its initial share, the initial share is positively associated with a subsequent increase, but the coefficient is statistically insignificant.

ables is 8.4 percent, Austria, Finland, Latvia and Sweden have shares of above 25 percent. Clearly, this partly reflects the availability of natural resources. Hydropower accounts for 36 percent and 42 percent in Sweden and Austria,[1] well above the EU average of 19 percent in renewables. At the other end of the spectrum are Belgium, Ireland, Cyprus, Luxembourg, the United Kingdom and Malta, with shares below 4 percent. Although Denmark has basically no hydropower, its share of renewable energy is still above average. This is partly because of the high share of wind power, and partly due to a larger than average share of biomass and wastes. Latvia has the next highest share of renewable energy after Sweden, but below-average shares of hydropower and practically no wind power. Instead, it relies heavily on biomass and wastes.

Some countries have also increased their share of renewables fairly dramatically over the 20-year period. The countries marked green are the ten countries that increased their share of renewable energy the most during the period, while the ten countries with least change appear in red. Denmark, for example, increased its share from 6.7 to 18.1 percent, while Latvia increased its share from 13.2 percent to 30.1 percent. Sweden, Finland and Germany (whereby the latter two have less hydropower energy than the EU average), have also seen sizeable increases, as have some of the new EU-member states like Romania and Lithuania. In contrast, France, Spain and Greece (all with hydropower above the EU average) had basically no increases and Portugal even saw its share of renewable energy decrease. The United Kingdom experienced a very

cient is statistically insignificant.

The European Union has committed itself to increase the share of renewable energy in final energy consumption to 20 percent by the year 2020. Individual targets have also been set for each member country. The targets are set up based on historical shares and on GDP and vary substantially between countries, from 10 percent (Malta) to 49 percent (Sweden). Also some large countries have targets substantially below the aggregate target, e.g., the United Kingdom for which the target is 15 percent. In the final column of Table 6.1 we show how much is left of the 2020 target.[2] We see that with the exception of Sweden, Latvia, Denmark, Romania and Estonia, more is left than what has been achieved in the preceding two decades.

There is a negative correlation between what remains to the target and the share of renewable energy in 2008. Thus, those countries that now have the lowest shares of renewable energy are the ones expected to have the highest further expansion. This could reflect a sound allocation if the costs of expanding the share of renewable energy are lowest in the countries with currently low shares of renewable energy. However, the administrative targets may not reflect an economically efficient allocation. In order to counter this, the European Union will allow countries that do not achieve their targets to buy "excess" shares from other countries. The idea behind this is that countries in which it is cheaper to increase the renewable energy share above the target can do so and sell the "excess" shares to countries with higher costs. Taking the overall target as given, this mechanism

---

[1] Data for shares of renewable energy are from Eurostat and apply to 2008.

[2] Note, however, that the target variable is defined in a slightly different way than the figures in the first four columns of Table 6.1.

Table 6.1

Share of renewable energy in total gross energy inland consumption

	1990 (in percent)	2000 (in percent)	2008 (in percent)	Change 1990–2008 (in percentage points)	Left to 2020 target[a] (in percentage points)
EU-27	4.4	5.7	8.4	4.0	11.6
EU-15	4.9	5.8	8.6	3.7	NA
Sweden	24.9	31.6	32.1	7.2	4.6
Latvia	13.2	31.8	30.1	16.9	10.2
Austria	20.0	22.9	25.3	5.3	5.7
Finland	19.0	23.8	25.2	6.2	7.5
Denmark	6.7	10.9	18.1	11.4	11.3
Portugal	18.7	15.3	17.8	− 1.0	8.0
Romania	4.1	10.9	13.5	9.4	3.7
Estonia	4.5	10.2	11.0	6.5	6.1
Slovenia	4.6	12.3	11.0	6.4	9.9
Lithuania	2.0	9.2	9.3	7.3	8.1
Germany	1.6	2.8	8.6	7.0	9.1
Italy	4.2	5.2	7.8	3.6	10.4
Spain	7.0	5.7	7.7	0.7	9.3
France	6.9	6.5	7.4	0.4	12.0
Hungary	1.8	2.1	6.1	4.3	6.4
Poland	1.6	4.2	5.7	4.1	7.2
Slovakia	1.6	2.8	5.5	3.9	5.7
Greece	4.9	5.0	5.0	0.1	10.1
Czech Republic	0.2	1.5	5.0	4.8	5.8
Bulgaria	0.6	4.2	4.9	4.3	6.7
Netherlands	1.4	2.4	4.2	2.8	10.8
Belgium	1.3	1.3	3.7	2.4	9.7
Ireland	1.6	1.6	3.6	1.9	12.2
Cyprus	0.4	1.8	3.0	2.6	8.9
Luxembourg	1.3	1.5	2.6	1.3	8.9
United Kingdom	0.5	1.1	2.6	2.1	12.8
Malta	0.0	0.0	0.0	0.0	9.8
World	12.8	13.2	13.0		
Africa	50.5	51.1	49.4		
Middle East	1.1	0.7	0.5		
United States	5.2	4.8	5.4		
China	24.3	20.2	12.2		
India	43.8	33.8	28.1		
Russia	3.0	3.4	3.0		

[a] Targets in last column refer to renewable energy in final energy consumption. Source: Europes Energy portal, *www.energy.eu.*

Source: Eurostat, IEA.

may increase overall efficiency. However, the mechanism requires credibility. Unless countries that plan not to satisfy their targets believe that the cost of simply breaking the rules are higher than paying for excess shares, there will be no demand for excess shares.

6.3 Energy policies for mitigating climate change and fossil dependence

Coping with climate change poses a tremendous challenge to society. The previous section showed that the

European Union remains heavily dependent on fossil fuel for its energy needs. Reaching the target for 2020 of a renewable energy share of 20 percent requires an increase about three times as large as was achieved over the last 15 years. The magnitude of this task means that we cannot afford to approach it with inefficient policies. Transforming our energy production and usage to make it more climate-friendly will be a costly process, even if implemented in an optimal way.[3] Any sub-opti-

[3] In a recent paper, Bretschger et al. (2011) calculate the cost for Switzerland of a policy to reduce CO_2-emissions by 30 percent by the year 2020 and by 80 percent by the year 2050. They find that the cost is equivalent to a permanent reduction of GDP of 2.6 percent. This

mal transformation may prove too costly to be politically feasible and may perhaps incur more costs than benefits. Despite this, there is a lack of a comprehensive plan for the transformation of our energy systems. This is particularly true of policies targeted at promoting so called "green technologies", which are often assumed to mean renewable energy.

Two central arguments for why governments should intervene in the market for energy will be discussed in this section.[4] The first is that emitting CO_2, by burning fossil fuel, for instance, is a true global externality. Emitted CO_2 mixes quickly in the atmosphere and any effect this has on the climate and the economy is completely independent of who is responsible for the emission and where it occurred. Since the benefits of using the fuel that produced the emissions are enjoyed by the emitter, while the costs of global climate change are born by everyone, policies to make the emitter internalise the global costs are called for. By taxing the externality, markets can be relied upon to lead to an efficient use of fossil fuel. Before discussing the arguments for policies to restrict fossil fuel use, the next subsection looks at how such policies might affect prices and quantities. A more detailed discussion can be found in EEAG (2008), Chapter 5.

6.3.1 Supply of and demand for scarce resources

Any analysis of the effects of taxation and quantity restrictions requires a full understanding of the underlying markets. It is a well-known, but unfortunately often forgotten truth that the effects of taxing a good depend crucially on both supply and demand.

Fossil fuel is a resource that exists in limited supply. This

continued footnote 3:
figure is in line with Grubb et al. (2006) who compare different estimates of the global cost of limiting climate change to tolerable levels. Their conclusion is that the cost is "unlikely to exceed one year's foregone economic growth". These figures indicate large yet arguably manageable costs, but they rely on policies being chosen in an optimal way.
[4] Another argument, which is not dealt with in this chapter, is that energy systems often feature increasing returns to scale and network externalities. Thus, the production and/or delivery may be so called natural monopolies or feature very few suppliers, in which case it is well known that regulation may be needed to ensure economic efficiency.

implies that the fossil fuel market has important dynamic and forward-looking elements. A unit of fossil fuel extracted and sold today could have been saved to use later instead. Analysing such markets requires fairly advanced mathematical tools like dynamic, stochastic optimisation. However, many key results can actually be illustrated in a simple static model.

Let us consider the oil market based on the assumption that there is a finite amount of oil in the ground. Let us also, again only as a starting point, assume that the extraction cost is negligible relative to the value of oil. In the real world, the latter assumption is naturally violated, but the oil reserves of Saudi-Arabia satisfy it reasonably well.

Figure 6.5 illustrates the situation just described. The supply of oil is vertical at Q, which is the amount existing in the ground. When interpreting this as representing the oil market, we should think of this supply curve as representing the supply aggregated over all future time periods, rather than as the supply during an individual year.

The downward sloping line D_1 represents demand at the outset. The price is P_1 and the quantity Q. Now consider the effect of introducing a tax τ on oil (or, equivalently, on the by-product of using it – CO_2). At every market price excluding the tax, the demanded quantity is now lower. We can illustrate this as a shift downwards in the demand curve, where the shift downward is equal to the value of the tax. The new equilibrium is a price P_2 that has the property that

Figure 6.5

Supply of and demand for fossil fuel with negligible extraction costs

$P_2 + \tau = P_1$. The quantity remains at Q. As we see, the price has fallen exactly as much as the tax, and the quantity has not changed.

In a dynamic model with the same features, it is straightforward to show that if a constant tax rate is introduced in every period, we obtain the same result as in the static example. Nothing happens to quantities and the price falls in every period by a percentage amount equal to the tax rate. By deviating from the constant tax rate, the *extraction path* may be affected, but not the overall amount extracted. For example, a tax rate that falls over time induces resource owners to postpone extraction, i.e., to extract less today and more in the future.[5]

We can also analyse the effects of policies to reduce demand. Such policies can come in different forms. One such form is a unilateral policy that reduces demand in some, but not all, oil consuming countries. Such a policy would shift demand inwards, resulting in a new, lower price. At this lower price, the additional demand from other countries exactly off-sets the reduction in demand in the countries that introduced the policy. The policy would then have no aggregate effect. This finding that reductions in resource use in one region leads to an increase in other regions is sometimes called "leakage". In the case of an inelastic supply, we find complete leakage. Below we discuss a situation in which there is partial, but not complete leakage.

A result related to leakage occurs if non-fossil technologies for energy production are introduced. The effects of such policies can be analysed as a leftward shift in demand leading to a lower price, but no change in quantity. A striking variant of this argument is the so-called "Green Paradox", a term first coined by Hans-Werner Sinn in his book of the same title (Sinn 2012). Let us

assume that an alternative technology will replace fossil fuel at some point in the future. Let us suppose, furthermore, that this point is brought forward in time, thanks to a subsidised R&D program, for example. Thinking of the graph as representing supply and demand per period, we now have *more* oil per period to spend before the alternative becomes available – supply is shifted outward. Therefore, the price falls and extraction is accelerated.

So far we have discussed oil. The major threat to the climate is, however, not oil, at least not traditional, low extraction cost oil, but coal. BP (2010) reports that globally proved reserves of oil total 181.7 gigatons. If this was the only fossil fuel to be burnt, climate change would not be a worry. Adding this amount of CO_2 to the atmosphere would, according to standard estimates of climate sensitivity, be likely to lead to additional heating of well below one degree Celsius. However, there are large amounts of coal and other sources of fossil fuel that typically are fairly expensive to extract. Rogner (1997) estimates global reserves taking into account technical progress and ends up with an estimate of over 5,000 gigatons of oil equivalents. Burning even a small share of this reserve will most certainly be detrimental for the climate.

With coal and non-traditional oil resources it is less reasonable to neglect extraction costs. IEA (2010) reports the average cost of producing coal at 43 US dollars per ton, while the average coal price 2005–2009 was 74 US dollars.[6]

Figure 6.6

Supply of and demand for fossil fuel with increasing extraction costs

---
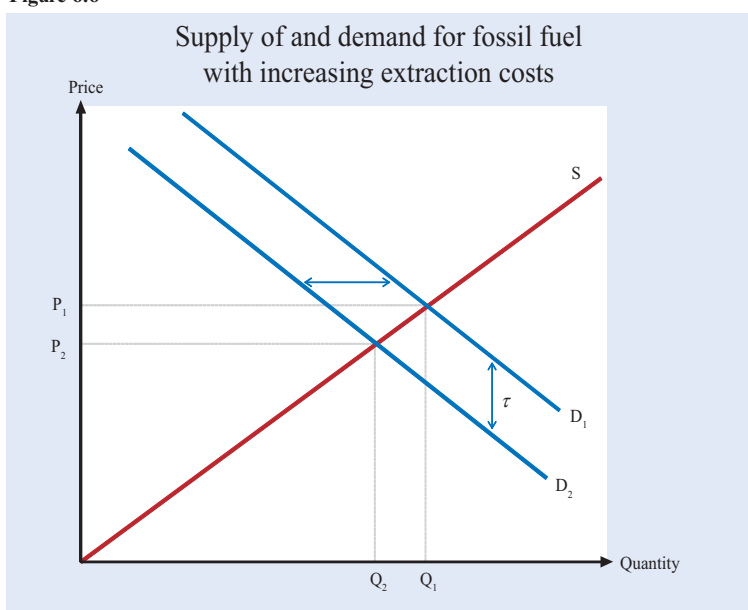
[5] However, Hassler and Krusell (2011) recently showed that such a tax has both income effects and substitution effects. Under reasonable assumptions regarding preferences and technology, these effects can cancel each other out unless tax receipts are transferred to the resource owners (oil exporters). Taxing oil and giving the proceeds to citizens of oil consuming countries then has no effect on the path of extraction, regardless of whether the tax is time-variant or not.
[6] US Central Appalachian coal, see BP (2010).

Figure 6.6 illustrates an upward-sloping supply schedule for fossil fuel representing the case whereby more aggregate use requires the extraction of more costly resources. The interpretation of the figure is that the equilibrium determines how much fossil fuel will be used in total. If demand is given by D_1, the total extracted volume will be Q_1. Reserves with higher costs will not be used, at least not as fuel. We see in the figure that taxes and demand reductions now have an effect both on prices and quantities. A shift in the demand curve, regardless of the reason for the shift, affects the price as well as the quantity. In this case, unilateral demand reductions will lead to some leakage, but this will not be complete. The "Green Paradox" will also be partly mitigated. The last unit extracted before the alternative technology takes over will have an extraction cost equal to its price. Reducing the time until the alternative fossil free technology becomes available leads to a reduction in the fossil fuel price. This has an effect on the total quantity extracted, but also speeds up extraction. A likely outcome is therefore higher emissions, but for a shorter period of time so that total emissions aggregated over time fall.

The conclusion of this section is that measures to reduce demand may be ineffective or even counterproductive. To analyse their effects, we need to model both supply and demand. Unfortunately and surprisingly, this point has been almost absent from policy discussion to date. We therefore currently have no clear indications as to the effects of policies like CO_2-taxes and emission quotas, in particular not of unilateral policies introduced by the European Union. It has so far been impossible to reach internationally binding agreements on CO_2-reductions with wide coverage. Some positive signs have recently been seen, particularly the agreements reached during the United Nations Climate Change Conference in Durban in 2011, which may lead to agreements with more substantial effects on global CO_2-emissions.

6.3.2 The size of the climate externality

Great uncertainty surrounds the cost of emitting CO_2. We simply do not know the exact dynamic mapping from CO_2-emissions to climate change. Similarly, we do not know exactly which costs climate change will generate in the short or in the long run.

There are also several conceptual issues which do not have scientific answers, but require value judgments. Among them is the issue of how to compare costs and

benefits accruing to different individuals living in different time periods or in different countries. Since the costs of climate change, as well as that of policies to mitigate or adapt to climate change, are unevenly spread over the world and over time, any aggregate number for the social costs of global warming explicitly or implicitly relies on how these interpersonal comparisons are performed.

It is an inescapable fact that we do not and will not fully know the consequences of continuing to burn fossil fuel, or those of using alternative technologies to produce energy. Despite this, decisions must be taken and these decisions should be based on the best knowledge available and with value judgments stated explicitly.

Fortunately, the number of studies on the social costs of emitting CO_2 is growing. Of course, these studies arrive at different numbers, but in total, they imply that we have valuable, albeit limited knowledge on which to base our calculations. Tol (2008) summarises the result of 211 estimates of the social costs of carbon emissions. Using the half of the sample that was published in peer-reviewed scientific journals, he finds that the mean of the estimates lies between 49 US dollars and 71 US dollars, depending on the aggregation method used.[7] The standard deviation is large and amounts to around two to four times the mean. Expressing these numbers in euros/tonCO2 we arrive at values of between 10 and 14.[8]

There are many differences responsible for the different results in terms of the costs. However, as shown in Golosov et al. (2011), three separate factors are the key determinants of the social cost of emitting carbon, namely:

- How long CO_2 is staying in the atmosphere.
- How much damage a given CO_2-concentration causes.
- How the welfare of future generations is discounted.

The first factor is largely determined by what is called carbon circulation, i.e., how carbon circulates between the atmosphere, the biosphere and the oceans. A good approximation of this according to IPCC (2007) and Archer (2005) is that a share of around 50 percent is absorbed quickly (within a few

---

[7] These numbers represent the purchasing power of US dollars in 1995.
[8] The mole weights of carbon and oxygen are 12 and 16, respectively. To get the cost per mass unit of carbon from the cost per mass unit of CO_2, we therefore need to multiply by $(2*16+12)/12=3.67$.

decades) by plants and the upper layers of the oceans. One quarter stays for thousands of years while the remainder decays slowly, with a half-life of a few hundred years.

The second factor depends both on climate sensitivity, i.e., how much climate change is caused by a change in CO_2-concentrations, and how sensitive the economy is to climate change. It is a well-established fact that the direct greenhouse effect can be reliably approximated by a logarithmic function.[9] A typical result from complicated climate models is that a doubling in CO_2-concentrations leads to an increase of around three degrees Celsius in the global mean temperature. Given the logarithmic relationship, a quadrupling of the CO_2-concentration would then lead to an increase of six degrees. It is important to note that this means that a marginal increase in CO_2-concentration has a smaller impact on the temperature the higher the current CO_2-concentration.

The most comprehensive quantitative investigation of the sensitivity of the economy to climate change to date is provided by Nordhaus (2008). Nordhaus findings imply that a marginal temperature rise has larger negative effects on the economy the higher the global mean temperature is. This finding, combined with the findings of the natural science literature mentioned above, implies that the marginal damage of a unit of emitted CO_2 is largely independent of how much has already been emitted.[10] This simplifies the calculation of marginal climate externalities substantially. Using these results, Golosov et al. (2011) show that the marginal externality cost can be calculated with a very simple formula. The optimal tax in period t is:

$$\tau_t = Y_t E_t \sum_{s=0}^{\infty} (1 + \rho)^{-s} (1 - d(s)) \gamma$$

The left-hand side is the tax per unit of emitted fossil carbon. On the right-hand side, Y_t is global GDP in period t, E_t indicates that what comes after in the expression may be uncertain and the expected values of these uncertain values should be used. ρ is the subjective discount rate,[11] $d(s)$ is the amount of a marginal unit of emitted carbon that has left the atmosphere after s periods and γ measures the strength of the damage caused by climate change. As we see, new information about how long carbon stays in the atmosphere, how sensitive temperature is to CO_2-

emissions or how much damage we should expect from a given temperature change can easily be incorporated into the formula by changing γ and the structure of $d(s)$.

Given a value of the externality, an optimal policy is easily devised. The conceptually simplest policy is to introduce a tax on emitted fossil carbon equal to the climate externality. As is seen in the formula, the externality is proportional to current global GDP. Therefore, as long as no new information about carbon circulation or damages arrives, the tax per unit of emitted carbon should follow the development of world GDP. A tax equal to the externality is not the only possible optimal policy. An alternative is quantity restrictions, for example, by introducing a fixed number of emissions permits. The amount of such permits should then be set so that the price of the permit equals the climate externality. If more evidence emerges regarding the existence of so-called tipping points, where the climate becomes very sensitive to additional emission, the case for using emission permits rather than taxes is strengthened since such a policy may make the emission volume easier to control.

Calibrating γ to the work on damages done by Nordhaus (2008) and $d(s)$ to recent work on the carbon circulation, Golosov et al. (2011) compute the climate externality per ton of fossil carbon emitted in the atmosphere as a function of the subjective discount rate ρ. The results, expressed in euros per ton of emitted fossil CO_2 are shown in Figure 6.7. On the x-axis different values of the subjective discount rate ranging from 0.1 percent per year to 3.4 percent per year are represented.

---

[9] Feedback mechanisms are very important for the total effect. See footnote 9.

[10] There is certainly a great deal of uncertainty surrounding the assumptions behind this finding. More specifically, it is well known that the climate system has many non-linearities due to feed-back mechanisms. Examples include the melting of ice in the Arctic, Antarctica and Greenland. Since ice reflects sunlight better than sea water and ground, melting reinforces an initial increase in temperature. Such non-linearities can even be strong enough to induce locally unstable dynamics. At some point, a minimal direct disturbance to the system then leads to a large discrete change. Such "tipping points" are analysed in Lenton et al. (2008) who find that, according to current knowledge, melting of ice on Greenland and in the Arctic are the most worrisome tipping points. If a consensus on such tipping points arises, the argument for limiting the temperature increase to levels below them is strengthened. Furthermore, it would make the social costs of carbon depend on current and expected future stocks of atmospheric CO_2, invalidating the simple formula for the tax described in the main text.

[11] Note that this measures how much we prefer to consume at earlier dates all else equal. It therefore compares the value of consuming equal amounts at different dates. The market discount (interest) rate, on the other hand, measures the value at actual consumption levels. When the economy and consumption grows, the market interest rate is higher than ρ since the future value of consumption is discounted for two reasons: the subjective time-preference captured by ρ and since the value of a marginal unit of consumption is lower when consumption is higher.

Box 6.1

<center>**The optimal CO₂-tax**</center>

This box describes in some detail the equation determining the formula for the optimal CO₂-tax given in the text. The formula rests on strong simplifying assumptions and should be considered as a back-of-the-envelope calculation. Nevertheless, it transparently demonstrates key considerations behind the calculation of the social cost of carbon emissions. Details can be found in Golosov et al. (2011).

Firstly, consider how to model climate damages. A typical way to do this is to assume that we can associate a given increase in the global mean temperature with a form of damage, expressed as proportional loss of output. A common functional form for such a damage function is:

$$D(T) = 1 - \frac{1}{\theta T^2}.$$

where T is the increase in the global mean temperature and θ is a parameter capturing the strength of the damage effect. Secondly, assume that the temperature increase is a function of the carbon content in the atmosphere. The long-run response is typically modelled as:

$$T(S_t) = \lambda \ln\left(\frac{S_t}{S_0}\right)/\ln 2.$$

Here, S_t is the amount of atmospheric carbon at time t. S_0 is the preindustrial atmospheric carbon content and λ is the so called climate sensitivity. The latter quantifies how much heating we get from a doubling of the carbon content. A typical value is three degrees Celsius. Combining the two equations above, we can write the proportional damage as a function of the carbon content $D(T(S))$. Golosov et al. (2011) show that this mapping is close to linear for reasonable parameters. This comes from the combination of $D(T)$ being convex and $T(S)$ concave. Thus, an increase in the amount of carbon in the atmosphere by one unit has a constant proportional effect on world GDP. Let us denote that constant with the letter γ.

The next consideration is the carbon cycle. When CO₂ is emitted into the atmosphere, it enters a circulation system, where carbon flows between the biosphere, the atmosphere and the oceans. IPCC (2007) concludes that: "About half of a CO₂ pulse to the atmosphere is removed over a timescale of 30 years; a further 30 percent is removed within a few centuries; and the remaining 20 percent will typically stay in the atmosphere for many thousands of years" while Archer (2005) concludes that a good approximation is that 75 percent of an excess atmospheric carbon concentration has a mean lifetime of 300 years and the remaining 25 percent stays forever. This can be represented by a linear deprecation structure $d(s)$. The value $d(s)$ describes how large a share of an emitted unit of carbon has left the atmosphere after s periods.

The output loss of a unit of carbon emitted in time period t incurred $s \geq 0$ periods ahead can now be expressed as $(1-d(s))\gamma Y_{t+s}$. The first term, $(1-d(s))$, captures how much of the emitted carbon is left in the atmosphere after s periods. γ denotes the damage share caused by a marginal unit of carbon and Y_{t+s} is output at date $t+s$.

We can now easily price the damage by expressing the present discounted value of damages caused by a unit of carbon emitted at period t. Allowing for uncertainty, this equals:

$$E_t \sum_{s=0}^{\infty} R_t^{t+s}(1-d(s))\gamma Y_{t+s}$$

where E_t denotes mathematical expectations at time t and R_t^{t+s} is the discount factor to be applied between period t and $t+s$.

We can go further than this by using the standard macroeconomic result that the discount factor is given by:

$$R_t^{t+s} = \left(\frac{1}{1+\rho}\right)^s \frac{u'(C_{t+s})}{u'(C_t)}$$

where $u'(C)$ is the marginal utility of consumption and ρ is the subjective discount factor. Finally, let us assume that utility is logarithmic and that consumption is a constant fraction σ of output, then $u'(C_{t+s}) = (\sigma Y_{t+s})^{-1}$. Using this in the expression for the present discounted value of marginal damages yields:

$$\tau_t = Y_t \sum_{s=0}^{\infty} \left(\frac{1}{1+\rho}\right)^s (1-d(s))\gamma$$

Plugging values for the depreciation structure (the $d(s)$'s), γ and current world output for Y_t we arrive at an expression that only depends on the subjective discount rate. The result is depicted in Figure 6.7.

As we can see, future output does not enter into the formula for τ_t. This is important and the intuition is straightforward. Let us suppose that future output goes up in some period. In that case, since damages ceteris paribus are proportional to output, damages measured in output in that period increase. However, with increased output, consumption also increases and this reduces the relative value of consumption at that date. These two effects exactly cancel out, leaving the present discounted value of damages constant.

Finally, we should note that the formula relies on strong simplifications. The consequences of relaxing the simplifications in the economic model are fairly well known. Moving away from logarithmic utility implies that future growth rates are no longer neutral with respect to the tax rate. With higher risk aversion, a higher growth rate leads to faster falling marginal utilities and thus lower optimal tax rates, for example. Distributional issues may also be important and the absence of a possibility to compensate particularly hard-hit regions may lead to a stronger need for mitigation and higher taxes (see e.g., Hassler and Krusell 2011). The point of arguably the greatest importance is that stronger convexities in the mapping from temperature to damages may imply that optimal taxes depend on expected future emission paths and thus also on technology and fossil fuel availability (cf. also footnote 9).

Figure 6.7

Optimal tax as a function of the subjective discount rate

Euros/ton CO_2

discount rate in % per year

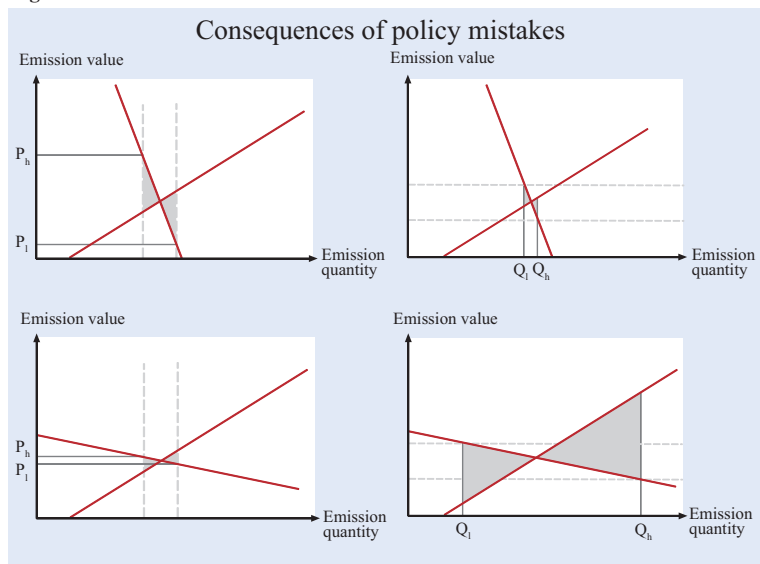Source: Golosov et al. (2011) and own calculations.

ple, but it is instructive to make this comparison.

The European Union introduced an emission trading system in 2005. The system covers about half of the CO_2 emissions in the European Union and requires covered emitters to keep track of their emissions and annually deliver emission rights to the government that equal their accumulated emissions. Since these emission rights are traded on exchanges, daily market prices can easily be observed.[13] The market price of emission rights has varied substantially since the introduction of the system. During the first year, it ranged between 20–30 euros/tonCO_2. During the financial crisis, it fell dramatically and subsequently recovered during 2009 to a level of around 15 euros/tonCO_2. Lately the price has fallen somewhat to a level of just above 10 euros/tonCO_2.

As we can see in the figure, the value of the climate externality and thus of the optimal tax, is sensitive to the value of the discount rate. This is easy to understand: much of a unit of emitted carbon stays in the atmosphere and causes potential damage for a very long time. The way we discount this future damage therefore strongly impacts the valuation of the stream of damage. For example, we see that if the discount rate is 1.5 percent per year, the optimal tax is 11 euros/tonCO_2. With a discount rate as low as 0.1 percent per year, the optimal tax is close to 100 euros/ tonCO_2.

Currently, fossil fuel is taxed at quite different rates depending on who uses it. Gasoline for private use is typically the most heavily taxed. In addition to VAT, the average additional tax on gasoline is 0.53 euros/liter. The lowest tax is applied in Cyprus at 0.35 euros/liter. and the highest is levied in the Netherlands at 0.75 euros/liter. Expressing these numbers as a tax on CO_2-emissions[12] yields the following numbers: the average tax is 227 euros/tonCO_2, while in Cyprus and the Netherlands the corresponding figures are 150 and 322. Of course, gasoline taxes have other purposes too like paying for roads, for exam-

The variability in emission prices is worrisome and may indicate that variability in demand for emission rights (fossil fuel) varies and that the elasticity of demand is low. A possible explanation for this is that industry demand for energy is very inelastic in the short run. In fact, energy is needed in quite fixed proportions to industrial output in the short run. A business cycle upturn may then increase the demand for energy and fossil fuel, causing a steep rise in the price

Figure 6.8

Consequences of policy mistakes

Emission value

Emission value

P_h

P_l

Emission quantity

Q_l Q_h

Emission quantity

Emission value

Emission value

P_h
P_l

Emission quantity

Q_l

Q_h

Emission quantity

[12] A liter of gasoline contains around 0.63 kg of carbon producing about 2.33 kg of CO_2.
[13] See, e.g., *http://www.eex.com,* the web page of the European Energy Exchange.

of emission rights. Such business cycle variability is likely to be inefficient since the social costs of carbon are not sensitive to short run business cycle fluctuations. In fact, a low elasticity of demand for emission rights indicates that quantity restrictions of a cap-and-trade type have disadvantages relative to CO_2-taxes.

Regardless of whether policy is formulated in terms of setting quantities (cap-and-trade) or prices (CO_2-taxes), we cannot trust that the policy formulation is exactly correct. However, the consequences of such mistakes are not necessarily independent of the type of policy used. This is illustrated in Figure 6.8. In the two upper panels we study the consequences of policy mistakes when the demand for emission rights is inelastic. The downward sloping curve represents demand for emission rights and the upward sloping curve is the marginal social externality cost. The welfare maximising output is reached where the two curves cross and if the curves and policy are set optimally, this can be achieved either by allowing the right quantity of emission rights or using the right tax.

Let us now consider mistakes in policy. In the upper left panel, we consider two sub-optimal quantity restrictions indicated by the vertical dashed lines. One restriction is set too low and one too high. The social loss induced by such mistakes is given by the shaded area between the demand curve and the social cost curve. Let us now instead consider policy mistakes when taxes are used. For illustrative purposes, we take the size of the mistake to be the same. The two dashed horizontal lines indicate an excessively high and an excessively low tax respectively. Again, the welfare loss is the area between the two curves, which is shaded in the graphs. As we can see, the shaded areas are much smaller in the case where taxes are used as the policy instrument.

In the two lower panels, we repeat the experiment, but now assume that the elasticity is high. In this case, we see that our conclusions are reversed. Quantity restrictions lead to much smaller welfare losses. A similar exercise can be performed by changing the elasticity of the marginal social externality. In fact, our reasoning above indicates that the marginal social externality is close to constant, in which case the arguments above are strengthened. However, we need to reiterate that if more evidence on tipping points accumulates, this conclusion can be reversed. With strong tipping points, the marginal social externality is very sensitive to whether a marginal unit of emissions can push the climate system over the tipping point. In such a case, quantity restrictions on emissions seem to be the more appropriate policy instrument.

A small number of countries in the European Union have introduced CO_2-taxes on final consumers. In Sweden, this tax is approximately 100 euros/tonCO2. Finland, Denmark and Ireland have also introduced CO_2 taxes. Last year, the European commission proposed the introduction of a uniform European CO_2-tax of 20 euros/tonCO2. The proposal is that if this tax is introduced, other energy taxes should not be discriminatory against any particular source of energy, but should only be based on energy content.

Let us finally discuss the issue of which discount rate to use. Here, one can use two lines of reasoning. The first is to use market data, for example, interest rates and average returns on shares. As noted in footnote 10, these market rates are not the same as the subjective discount rates. Given a subjective discount rate, the market interest rate increases in line with economic growth. This reflects the fact that postponing consumption to a later date is worth less if consumption growth is high. Thus, market rates have to be adjusted by subtracting the effect of growth.[14] Furthermore, insofar as risky market returns are used, a proper risk adjustment must be carried out. Doing these adjustments, typical estimates of ρ are in the range of 1–2 percent per year. This approach is advocated by Nordhaus (2008), for example.

A completely different approach is to argue that we cannot use market data to find proper values of the subjective discount rate. Instead moral judgments must be used, and these cannot justify such a high discount rate as is usually extracted from the market. This approach is proposed by the Stern report (Stern 2007), for example, which arrives at a discount rate of only 0.1 percent per year. Stern's argumentation that we need to make moral judgments when it comes to valuing the effects on future generation has a clear appeal. However, one should note that if policies are to be based on a discount rate that is much lower than the rate that seems to exist in the market, interventions outside the area of climate policy may also be required. To the extent that capital accumulation is decided by market forces, savings and investment subsidies may be called for if the market discount rate is deemed to be too high.

---

[14] One can show that the market interest rate is equal to $\rho + \sigma g$, where σ is the inverse of the intertemporal elasticity of substitution and g is the growth rate of consumption. A widely-used assumption is that $\sigma = 1$ (logarithmic utility).

Although we appreciate that it may be possible to argue that we should use discount rates lower than the 1–2 percent that can be extracted from markets, we do believe that reasonable values for ρ are spanned by the *x*-axis in Figure 6.7. Given current knowledge of the consequences of global warming, it is then hard to argue that CO_2-taxes should be lower than 10 euros/tonCO_2 or higher than 100 euros/tonCO_2. Although this is a wide range, we can easily rule out several existing tax schemes as being too high and some as too low (particularly outside the European Union). It is also worth noting that in the calculations, we have not at all touched upon the fact that the European Union is only a small part of the world, particularly when it comes to CO_2-emissions. Existing studies do show that Europe may belong to a group of regions that are harder hit by climate change than others (like, for example, China and the United States). However, the externality costs calculated above are global and the cost of European emissions will largely fall on other regions. Perhaps more importantly, our calculations have not taken into account the fact that supply factors are critical to an understanding of the effect of taxes. Specifically, a unilateral introduction of a tax reduces demand and will lower world market prices. This increases the use of fossil fuels in the parts of the world that have not introduced the tax. Under some circumstances, this implies that a unilateral tax only shifts the use of fossil fuel from tax countries to the other countries, without affecting total use at all. This distorts world production and consumption without having any effect on the climate. This is the leakage problem discussed above.[15]

6.3.3 The size of learning externalities

The second argument for why governments should intervene in the market for energy is that the development of new technologies may suffer from market failures since the benefits of improving technologies are seldom or never fully born by the developer of superior technologies. Relying fully on patents to provide incentives to develop better technologies may, particularly in the case of green technologies, be problematic or even counterproductive, since patents lead to high prices and less use of the improved technology. It may also be argued that in some cases, there are substantial amounts of non-propitiatory learning-by-doing that do not only benefit the doer. Some of the green technologies may arguably be in an early phase

---

[15] See also EEAG (2008), Chapter 5.

of development where such an external learning curve is particularly steep.

It is clear that these two arguments in favour of policies to promote green technologies are logical and rest on sound economic theory. However, they cannot be used to justify all policies favouring green technologies. In particular, emitting one unit of CO_2 has a cost that is independent of how it was emitted. Consequently, reducing emissions by one unit has the same value regardless of how it is achieved. This value is certainly not fully known, but this does not change the argument that policies that work by putting a price on emissions should be neutral with respect to the way emissions are reduced. Such a "law of one price" is of key importance for economic efficiency, but is widely violated, as we will show below.

The argument that learning-by-doing externalities exist in some green technologies is a quantitative argument. It is clear that learning externalities are different for different technologies. The maturity of the technologies is a key factor behind differences in the size of the learning externality. In young technologies, there is more to be learnt than in old. Box 6.2 shows a simple quantitative example of how large subsidies for various green technologies can be motivated with learning externalities. Table 6.2 uses the IEA's estimates of learning rates for different technologies to produce green electric power. The learning rate is defined as the cost reduction implied by a doubling of the installed capacity. This learning rate is highest for photovoltaic solar power (17 percent), but is negligible for hydropower. It is reasonable to assume that part of these cost reductions are externalities. When one firm produces solar panels, the knowledge acquired cannot be completely appropriated by the individual firm. Instead, parts of the knowledge are dissipated to the industry as a whole. Thus, the incentive to accumulate such knowledge is weakened, creating a cause for government intervention such as subsidies.

Table 6.2 shows the value of learning for different values of learning rates and installed stocks of capacity. These values should be taken as upper bounds on the learning externality that would occur only in the hypothetical case when production is undertaken by a large number of producers, each so small that it has a negligible effect on total learning. In that case, a subsidy to investments represented by the numbers in the table can be justified. In reality, it is of course the case that many of the firms producing the different tech-

Box 6.2

Learning externalities and optimal subsidies

In IEA (2010) estimates of learning rates are provided. These learning rates are defined as the percentage reduction in investment costs that occur as the installed capacity doubles. If the learning rate is 7 percent (as is estimated for onshore wind), a doubling of the installed capacity reduces the cost by 7 percent while a quadrupling leads to 14 percent cost reductions.

Given a learning rate δ, we can write the investment cost at time t as a function of accumulated installed capacity at t, denoted X_t. Then, the cost function can be written

$$p(X_t) = p(X_0)(1 - \delta)^{\frac{\ln\left(\frac{X_t}{X_0}\right)}{\ln(2)}},$$

where $p(X_0)$ is the cost at some initial date 0 and δ is the learning rate. Letting x_t be the investment rate at time t and r be a constant discount rate, the total discounted value of all future investment costs, given current (period t) accumulated installed capacity is then:

$$P(X_t) = \int_t^\infty e^{-r(s-t)} p(X_s) x_s ds,$$

where $X_t = X_0 + \int_0^t x_s ds$. Let us now consider a constant investment flow $\underline{x}$ normalised to unity and normalise $p(X_0) = 1$. Then the normalised discounted value of future investment costs at time 0 is:

$$P_n(X_0) = \int_0^\infty e^{-rs} (1 - \delta)^{\frac{\ln\left(\frac{s+X_0}{X_0}\right)}{2}} ds.$$

We can now easily calculate how much $P_n(X_0)$ falls for a marginal unit of extra investment at time 0 for different values of the learning rate. This value depends on the initial stock of installed capacity. This is easy to understand: a given rate of investment has a larger impact on the accumulated stock of capacity the smaller the latter is. Thus, the learning externality is larger, the smaller the stock of installed capacity is. In Table 6.2 the marginal reduction in $P_n(X_0)$ of a unit of extra investment at time zero is presented for different learning rates and for different stocks of accumulated capacity. The discount rate is set to 4 percent and the learning rates are taken from IEA (2010, Table 10.1). The numbers in the table represent the discounted value of the cost reduction a unit of investment causes relative to the cost of the investment. Take, for example, solar photovoltaic learning rates, which are estimated at 17 percent per doubling of installed capacity. When the stock of installed capacity is equal to one year of investments, the value of the incurred cost reduction is 50.8 percent of the installation cost. After five years, the reduction has fallen to 31.6 percent. This is discussed in the main text. These numbers can be taken as upper bounds for the learning externalities.

nologies are large enough to take into account their own effect on the learning curve. For example, the international wind turbine market is dominated by only a few manufacturers. Therefore, the entries in the table are upper bounds on reasonable values of subsidisation. Nevertheless, the numbers in Table 6.2 are not very high.

Only in the case of photovoltaic solar power very early in the learning phase, is the upper bound on subsidy rates above one third. Needless to say, our calculations should only be taken as a back-of-envelope attempt to judge what are reasonable ranges for subsidies based on the argument of learning externalities. Furthermore, they assume that introduction of the new technology is warranted, which is of course not necessarily the case. Instead, the cost of power generation, taking into account the learning externality must be

compared across different production technologies and the cheapest should be chosen. Since there is learning, the currently cheapest technology is not necessarily the one with the lowest costs when learning rates are taken into account. However, there are quantitative limits to this argument: even with the most generous assumptions on learning rates, like for photovoltaic electricity early in the development phase, current costs of more than twice the cost of the cheapest technology should not be accepted.

Table 6.2

Cost reductions of future investments due to learning externalities in % of current investment costs

Learning rate	Installed capacity in terms of years of investment flow			
	1	5	10	20
Hydro, δ =0.01	4.0	2.1	1.5	1.0
Biomass, δ =0.05	18.4	10.3	7.4	4.9
Onshore wind δ =0.07	24.8	14.2	10.2	6.9
Offshore wind, δ =0.09	30.8	17.9	13.0	8.8
Geothermal, δ =0.05	18.4	10.3	7.4	4.9
Solar photovoltaic, δ =0.17	50.8	31.6	23.5	16.3
Concentrated solar, δ =0.10	33.7	19.8	14.3	9.7

Source: IEA (2010) for learning rates and own calculations.

Table 6.3

Feed-in tariffs for "green" electricity, euros/kWh

Country	Wind onshore	Wind offshore	Solar photovoltaic	Biomass	Hydro
Austria	0.073	0.073	0.29–0.46	0.06–0.16	n/a
Bulgaria	0.07–0.09	0.07–0.09	0.34–0.38	0.08–0.10	0.045
Cyprus	0.166	0.166	0.34	0.135	n/a
Czech Republic	0.108	0.108	0.455	0.077–0.103	0.081
Denmark	0.035	n/a	n/a	0.039	n/a
Estonia	0.051	0.051	0.051	0.051	0.051
France	0.082	0.31–0.58	n/a	0.125	0.06
Germany	0.05–0.09	0.13–0.15	0.29–0.55	0.08–0.12	0.04–0.13
Greece	0.07–0.09	0.07–0.09	0.55	0.07–0.08	0.07–0.08
Hungary	n/a	n/a	0.097	n/a	0.029–0.052
Ireland	0.059	0.059	n/a	0.072	0.072
Italy	0.3	0.3	0.36–0.44	0.2–0.3	0.22
Latvia	0.11	0.11	n/a	n/a	n/a
Lithuania	0.10	0.10	n/a	0.08	0.07
Luxembourg	0.08–0.10	0.08–0.10	0.28–0.56	0.103–0.128	0.079–0.103
Malta	n/a	n/a	n/a	n/a	n/a
Netherlands	0.118	0.186	0.459–0.583	0.115–0.177	0.073–0.125
Poland	n/a	n/a	n/a	0.038	n/a
Portugal	0.074	0.074	0.31–0.45	0.1–0.11	0.075
Slovakia	0.05–0.09	0.05–0.09	0.27	0.072–0.10	0.066–0.10
Slovenia	0.087–0.094	0.087–0.095	0.267–0.414	0.074–0.224	0.077–0.105
Spain	0.073	0.073	0.32–0.34	0.107–0.158	0.077
United Kingdom	0.31	n/a	0.42	0.12	0.23

Source: Europe's Energy Portal, *http://www.energy.eu/,* last accessed: October 18, 2011.

Instead, however, policy in many countries has been based on the principle that the costlier a particular technology is, the heavier it should be subsidised. This is absurd and inefficient.

Table 6.3 shows current feed-in tariffs in EU countries. These tariffs are what local small producers, typically households, receive if they produce electricity and "feed" it back to the electricity grid. The tariffs are typically fixed over long-horizons so as to guarantee the return to investing in a technology that would not be profitable without the subsidy. The tariffs are very high, in many cases around 0.50 euros per kWh. As a comparison, the average production cost of wind power in the European Union is 0.06 euros per kWh (see EEA (2009), Table 6.7). The large sums spent on the subsidies implied by the high feed-in tariffs are, in the best of cases, simply a waste. However, they may very well also be directly counter-productive (Sinn 2012).

6.4 Conclusions

Let us now summarise the conclusions that can be drawn from this chapter in bullet form.

- Europe is heavily dependent on fossil fuel. Over the last two decades energy consumption has been roughly constant. The share of fossil fuel has been roughly constant at a high 80 percent with only a modest decline from 83 percent in 1990 to 77 percent in 2008. The share of energy generated by renewable sources has increased at a fairly high rate, almost doubling from 4.4 to 8.4 percent. If these trends continue, however, the EU target of 20 percent renewable energy by the year 2020 will not be reached until 2035.
- Targets regarding the share of renewable energy production set for individual member countries cannot be expected to ensure an efficient allocation. The rule that individual countries can sell

excess renewable shares to countries that have not achieved their targets is good, but lacks credibility.

- It is not at all clear that a policy to reduce fossil fuel use unilaterally in the European Union has any effect at all on global emissions. By reducing demand in Europe, world market prices may fall, spurring higher use in other parts of the world. Gaining a better understanding of such leakage effects should be a top priority, along with finding ways of reaching binding agreements on mitigation policies with wide international coverage.

- Provided that demand reductions in the European Union have positive effects on global emissions, the CO_2 trading system is a way of efficiently allocating CO_2-reductions. However, there may be reasons to consider a mechanism to stabilise prices. If the prices of permits are not in line with reasonable estimates of the social cost of carbon, volumes should be changed. The current rule that the owner of an emission right is allowed to save the right and use it at any later point is appropriate and may help to stabilise prices by increasing the demand for emission rights during business cycle downturns, for example, when fuel demand is low and may also increase the supply of emission rights when fuel demand is high.

- Based on current knowledge, the global social cost of emitting CO_2 is likely to be in the range 10–100 euros/tonCO2. A more exact figure requires value judgments on how to value the welfare of future generations and greater knowledge of climate change and its consequences. Implementing measures so that these costs are internalised is not likely to have a dramatic effect on the economy. However, poorly-constructed policy can easily lead to much higher costs, as well as smaller effects on climate change. A comprehensive climate policy for all EU member states is therefore necessary.

- It is essential that policies are based on the *one-price principle*. This principle states that the cost of reducing emissions by one unit should be the same regardless of how and where this is done. Policies that deviate from this like feed-in tariffs that make it several times more valuable to reduce emissions via solar panels on private houses than, for example, to use large offshore wind power farms, are very costly and hinder the technological development that could make us less fossil fuel dependent. Learning externalities may differ between different technologies, but are not large enough to motivate any substantially different treatment of them. Both different technologies and mitigation efforts, however, are currently treated inconsistently by individual EU member states. The European Union should swiftly harmonise these policies. A first and simple step would be to introduce a common CO_2 tax.

References

Archer, D. (2005), "The Fate of Fossil Fuel CO_2 in Geologic Time", *Journal of Geophysical Research* 110, doi 10.1029/2004JC002625.

Bretschger, L., Ramer, R. and F. Schwark (2011), "Growth effects of carbon policies: Applying a fully dynamic CGE model with heterogeneous capital", *Resource and Energy Economics* 33, pp. 963–80.

BP (2010), *BP Statistical Review of World Energy,* June, *http://bp.com/statisticalreview.*

EEA (2009), *Europe's onshore and offshore wind energy potential,* EEA Technical report No 6/2009, Copenhagen, Denmark, 2009.

EEAG (2008), *The EEAG Report on the European Economy,* CESifo, Munich 2008, *http://www.cesifo-group.de/DocDL/EEAG-2008.pdf.*

Golosov, M., Hassler, J., Krusell, P. and A. Tsyvinski (2011), "Optimal Taxes on Fossil Fuel In General Equilibrium", *NBER Working Paper* 17348.

Grubb, M., Cavarro, C. and J. Schnellnhuber (2006), "Technological Change for Atmospheric Stabilization: Introductory Overview to the Innovation Modeling Comparison Project", *The Energy Journal,* Special Issue 2006, pp. 1–16

Hassler, J. and P. Krusell (2011), "Economics and Climate Change: Integrated Assessment in a Multi-Region World", *mimeo,* IIES, Stockholm University.

IEA (2010), *World Energy Outlook 2010,* International Energy Agency, Paris, France, 2010.

IPCC (2007), "Climate Change 2007: The Physical Science Basis", in: Metz, B., Davidson, O., Bosch, P., Dave, R. and L. Meyer (eds.), *Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change,* Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2007.

Lenton, T.M., Held, H., Kriegler, E., Hall, J.W., Lucht, W., Rahmstorf, S. and H.J. Schnellnhuber (2008), "Tipping elements in the Earth's climate system", *Proceedings of the National Academy of Sciences* 105, pp. 1786–93.

Nordhaus, W., (2008), *A Question of Balance: Weighing the Options on Global Warming Policies,* Yale University Press, New Haven, 2008.

Rogner, H.-H. (1997), "An Assessment of World Hydrocarbon Resources", *Annual Review of Energy and the Environment* 22, pp. 217–62.

Sinn, H.-W. (2012), *The Green Paradox,* MIT Press, Cambridge, MA, 2012.

Stern, N. (2007), *The Economics of Climate Change: The Stern Review,* Cambridge University Press, Cambridge, United Kingdom, 2007.

Tol, R. (2008), "The Social Cost of Carbon: Trends, Outliers and Catastrophes", *Economics: The Open-Access, Open-Assessment E-Journal* 2, 2008-25.

LIST OF FIGURES

LIST OF TABLES

LIST OF BOXES

The Members of the European Economic Advisory Group at CESifo

Lars Calmfors

(Ph.D Stockholm School of Economics, 1978) is Professor of International Economics at the Institute for International Economic Studies, Stockholm University. He is a Fellow of the European Economic Association and a Member of the Board of the Swedish Research Council. He has chaired the Economic Council in Sweden (1993–2001), the Swedish Government Commission on the EMU (1995-96), the Scientific Council of the Swedish Center for Business and Policy Studies (1999–2007) and the Swedish Fiscal Policy Council (2007–2011). He has been a Member of the Council of the European Economic Association, the Scientific Council of the Labour Market Board in Sweden, the Committee for the Prize in Economic Sciences in Memory of Alfred Nobel, the Board of the Office of Labour Market Policy Evaluation in Sweden, the Board of the Royal Swedish Academy of Sciences, the Academic Advisory Council of the Anglo-German Foundation and the Swedish Government's Globalisation Council. He has done consultancy work for inter alia the Finnish, Norwegian, Swedish and UK governments, the OECD and the European Parliament. His research has focused on labour economics and macroeconomics. He is currently researching fiscal policy institutions, the effects of earned income tax credits, pattern bargaining and attitudes to international trade in services.

Lars Calmfors
Stockholm University
Artillerigatan 40
SE-114 45 Stockholm
Sweden
Lars.Calmfors@iies.su.se

Giancarlo Corsetti

(Ph.D. Yale, 1992) is Professor of Macroeconomics at Cambridge University. He has taught at the European University Institute, University of Rome III, Yale and Bologna. He is director of the Pierre Werner Chair Programme on Monetary Unions at the Robert Schuman Center for Advanced Studies, as well as a fellow of CESifo and CEPR, a member of the Council of the European Economic Association, and is regularly a visiting professor in central banks and international institutions. His main field of interest is international economics and open-economy macroeconomics with contributions that cover a wide range of issues: currency and fiscal instability, international transmission mechanism, monetary and fiscal policy, financial and real integration and global imbalances. His articles have appeared in the Brookings Papers on Economic Activity, Economic Policy, European Economic Review, Journal of International Economics, Journal of Monetary Economics, Quarterly Journal of Economics, and the Review of Economic Studies, among others. He is currently co-editor of the Journal of International Economics and the International Journal of Central Banking.

Giancarlo Corsetti
Cambridge University
Faculty of Economics
Sidgwick Avenue
Cambridge CB3 9DD
United Kingdom
Gc422@cam.ac.uk

John Hassler
(Ph.D. Massachusetts Institute of Technology, 1994) is Professor of Economics at the Institute for International Economic Studies, Stockholm University. He is associate editor of the Review of Economic Studies and Scandinavian Economic Review and an adjunct member of the Prize Committee for the Prize in Economic Sciences in Memory of Alfred Nobel. He has served as consultant to the Finance Ministry of Sweden and is currently vice-chairman of the Swedish Fiscal Policy Council.

His research covers areas in macroeconomics, political economy, economic growth and public economics. He has published extensively in leading international journals like the American Economic Review, Journal of Economic Theory, Journal of Economic Growth, Journal of Monetary Economics and Journal of Public Economics. John Hassler is a fellow of the CESIfo, IZA and CEPR networks.

John Hassler
IIES, Stockholm University
SE-106 91 Stockholm
Sweden
John@hassler.se

Gilles Saint-Paul
(Ph.D. Massachusetts Institute of Technology, 1990) is Professor of Economics at the University of Toulouse, GREMAQ-IDEI. He was researcher at DELTA and CERAS, Paris, 1990–1997, and professor at Universitat Pompeu Fabra, Barcelona, 1997–2000. He has held visiting professorships at CEMFI, Madrid, IIES, Stockholm, UCLA and MIT. He was previously a consultant for the IMF, the World Bank, the European Commission, and the British, Portuguese, Spanish and Swedish governments. He is a fellow of CEPR, CESifo and IZA. He is also a fellow of the European Economic Association, and a member of the Conseil d'Analyse Economique, the main economic advisory board to the French prime minister. In 2007, he was awarded the Yrjö Jahnsson medal for the best European economist below 45 years of age by the European Economic Association. His research interests are economic growth, income distribution, political economy, labour markets, unemployment, and fiscal policy. Selected publications include "Research cycles", Journal of Economic Theory (2010), "Some evolutionary foundations for price level rigidity", American Economic Review (2005); "The Political Economy of Employment Protection", Journal of Political Economy (2002); The Political Economy of Labour Market Institutions (Oxford University Press, 2000); The Tyranny of Utility (Princeton University Press, forthcoming).

Gilles Saint-Paul
MF 206
GREMAQ-IDEI
Manufacture des Tabacs
Allée de Brienne
31000 Toulouse
France
gilles.saint-paul@univ-tlse1.fr

Hans-Werner Sinn

Hans-Werner Sinn is Professor of Economics and Public Finance at the University of Munich (LMU) and President of the CESifo Group. He has been a member of the Council of Economic Advisors to the German Ministry of Economics since 1989 and is a fellow of a number of learned societies. From 1997 to 2000 he was president of the German Economic Association (Verein für Socialpolitik) and from 2006–2009 President of the International Institute of Public Finance. He holds honorary doctorates from the University of Magdeburg (1999) and the University of Helsinki (2011), and an honorary professorship from the University of Vienna. He has taught at the University of Western Ontario, Canada, and held visiting fellowships at the University of Bergen, the London School of Economics, Stanford University, Princeton University, Hebrew University and Oslo University. He received awards from Mannheim University for his dissertation and habilitation theses as well a number of other prizes and awards from various institutions including the international Corinne Award for his best seller "Can Germany be Saved". In 2005 he was awarded the Officer's Cross of the Order of Merit of the Federal Republic of Germany and in 2008 the Bavarian Maximiliansorden (order of knights). In 1999 he gave the Yrjö Jahnsson Lectures, in 2000 the Stevenson Lectures, in 2004 the Tinbergen Lectures, in 2005 the World Economy Annual Lecture at the University of Nottingham, in 2007 the Thünen Lecture, and in 2010 the D.B. Doran Lecture at the Hebrew University. Sinn has published in the American Economic Review, the Quarterly Journal of Economics, the European Economic Review, the Journal of Public Economics and many other international journals, covering a wide range of fields and topics. He has published 9 main and 13 smaller monographs in six languages. They include titles such as Economic Decisions under Uncertainty, Capital Income Taxation and Resource Allocation, Jumpstart – The Economic Unification of Germany, The New Systems Competition, Casino Capitalism and The Green Paradox.

Hans-Werner Sinn
Ifo Institute – Leibniz Institute for Economic Research at the University of Munich
Poschingerstr. 5
81679 Munich
Germany
sinn@ifo.de

Jan-Egbert Sturm

(Ph.D. University of Groningen, 1997) is Professor of Applied Macroeconomics, Director of the KOF Swiss Economic Institute at the ETH Zurich and President of the Centre for International Research on Economic Tendency Surveys (CIRET). He was a researcher at the University of Groningen, The Netherlands, until 2001, and taught as Visiting Professor at the School of Business, Bond University, Gold Coast, Australia, in 2000 and 2005. As Head of the Department for Economic Forecasting and Financial Markets at the Ifo Institute for Economic Research, he was also Professor of Economics at the University of Munich (LMU) at the Center for Economic Studies (CES), 2001–2003. He held the Chair of Monetary Economics in Open Economies at the University of Konstanz, Germany, which was coupled with the position of Director of the Thurgau Institute of Economics (TWI) in Kreuzlingen, Switzerland, 2003–2005. In his research, Jan-Egbert Sturm relies heavily on empirical methods and statistics, concentrating on monetary economics, macroeconomics as well as political economy. His applied studies have focused on, for example, economic growth and central bank policy. He has published several books, contributed articles to various anthologies and international journals like Applied Economics, Economics & Politics, European Economic Review, European Journal of Political Economy, Journal of Banking and Finance, Journal of Development Economics, Journal of Macroeconomics, Kyklos, Oxford Economic Papers, Public Choice, and the Scandinavian Journal of Economics. Jan-Egbert Sturm headed the Ifo research team in the Joint Analysis of the Six Leading German Economic Research Institutes, 2001–2003. Since 2001 he has been member of the CESifo Research Network and since 2003 Research Professor at the Ifo Institute. In 2006 he was appointed member of the User Advisory Council of the Ifo Institute.

Jan-Egbert Sturm
ETH Zurich
KOF Swiss Economic Institute
WEH D 4
Weinbergstr. 35
8092 Zurich
Switzerland
sturm@kof.ethz.ch

Akos Valentinyi

(Ph.D. European University Institute, 1997) is a Professor of Economics at Cardiff Business School, a fellow of CEPR and a senior research fellow at the Institute of Economics of the Hungarian Academy of Sciences. He was previously Professor at the University of Southampton and Head of Research at the National Bank of Hungary. He has also been a visiting professor at the Central European University in Budapest and Universidad Carlos III in Madrid. His research focuses on macroeconomics, economic growth, productivity differences and structural change. He has published in leading international journals like the Review of Economic Studies, the Review of Economic Dynamics, and the Journal of the European Economic Association.

Akos Valentinyi
Cardiff Business School
Aberconway Building, Colum Drive
Cardiff, CF10 3EU
United Kingdom
ValentinyiA@cardiff.ac.uk

Xavier Vives

(Ph.D. in Economics, UC Berkeley) is Professor of Economics and Finance at IESE Business School. He is a member of the Economic Advisory Group on Competition Policy at the European Commission; a Research Fellow of the Center for Economic Policy Research, where he served as Director of the Industrial Organization Program in 1991–1997, and Research Fellow of CESifo as of 2006. He has also been a Fellow of the Econometric Society since 1992 and of the European Economic Association since 2004, and was President of the Spanish Economic Association for 2008. From 2001 to 2005 he was The Portuguese Council Chaired Professor of European Studies at INSEAD, a Research Professor at ICREA-UPF in 2004–2006, and Director of the Institut d'Anàlisi Econòmica, CSIC from 1991 to 2001. He has taught at Harvard University, Universitat Autònoma de Barcelona, Universitat Pompeu Fabra, the University of California at Berkeley, the University of Pennsylvania and New York University. His fields of interest are industrial organization and regulation, the economics of information, and banking and financial economics. He has published in the main international journals and is the author of Information and Learning in Markets (PUP, 2008), and Oligopoly Pricing (MIT Press, 1999). He has been the Editor of the Journal of the European Economic Association, and is Co-editor of the Journal of Economics and Management Strategy. He has been awarded an Advanced European Research Council Grant for the period 2009–2013 and has received several research prizes. Xavier Vives has been a consultant on competition, regulation, and corporate governance issues for the World Bank, the Inter-American Development Bank and the European Commission, as well as for major international corporations. Recently he was appointed Special Advisor to the Vice-President of the European Commission and Commissioner for Competition, Mr. Joaquín Almunia.

Xavier Vives
IESE Business School
Avda. Pearson 21
08034 Barcelona
Spain
XVives@iese.edu

The **EEAG** Report
on the European Economy
PREVIOUS REPORTS

The EEAG Report on the European Economy 2011

Macroeconomic Outlook
A New Crisis Mechanism for the Euro Area
Greece
Spain
Taxation and Regulation of the Financial Sector

The EEAG Report on the European Economy 2010

The European Economy: Macroeconomic Outlook and Policy
A Trust-driven Financial Crisis. Implications for the Future of Financial Markets
From Fiscal Rescue to Global Debt
Implications of the Crisis for US Adjustment Needs
The Financial Crisis: Risks and challenges for the euro area

The EEAG Report on the European Economy 2009

The European Economy: Macroeconomic Outlook and Policy
Financial Crisis
Private Equity
Country Chapter: France

The EEAG Report on the European Economy 2008

The European Economy: Macroeconomic Outlook and Policy
How Much Real Dollar Depreciation is Needed to Correct Global Imbalances?
The Effect of Globalisation on Western European Jobs: Curse or Blessing?
Industrial Policy
Global Warming: The Neglected Supply Side

The EEAG Report on the European Economy 2007

The European Economy: Macroeconomic Outlook and Policy
Macroeonomic Adjustment in the Euro Area – the Cases of Ireland and Italy
The New EU Members
Scandinavia Today: An Economic Miracle?
Tax Competition
Economic Nationalism

The EEAG Report on the European Economy 2006

The European Economy: Macroeconomic Outlook and Policy
Global Imbalances
Economic Growth in the European Union
Prospects for Education Policy in Europe
Mergers and Competition Policy in Europe

The EEAG Report on the European Economy 2005

The European Economy: Current Situation and Economic Outlook for 2005
Outsourcing
Longer Working Hours – the Beginning of a new Trend?
Pensions and Children
House Prices in Europe

The EEAG Report on the European Economy 2004

The European Economy: Current Situation and Economic Outlook
Labour Market Reform in Europe
Pay-setting Systems in Europe: On-going Development and Possible Reforms
The Economics of Discrimination: Equity, Equality and Diversity in the New European Constitution
The 2004 EU Enlargement: Key Economic Issues
Acceding Countries: The Road to the Euro

The EEAG Report on the European Economy 2003

The European Economy: Current Situation and Economic Outlook
Fiscal Policy and Macroeconomic Stabilisation in the Euro Area: Possible Reforms of the Stability and Growth
Pact and National Decision-Making-Processes
Rethinking Subsidiarity in the EU: Economic Principles
Financial Architecture
Should We Worry about the Brain Drain?

The EEAG Report on the European Economy 2002

The European Economy: Current Situation and Economic Outlook
The Weakness of the Euro: Is it Really a Mystery?
Fiscal and Monetary Policy
Prices, Wages and Inflation after the Euro – What Europeans Should or Should not Expect
Growth and Productivity
Welfare to Work
CAP Reform

THE AUTHORS

Lars Calmfors

Stockholm University

Professor of International Economics at the Institute for International Economic Studies, Stockholm University. Fellow of the European Economic Association and Member of the Board of the Swedish Research Council. Former Chair of the Economic Council of Sweden (1993–2001), the Swedish Government Commission on the EMU (1995–1996) and the Swedish Fiscal Policy Council (2007–2011). Former Member of the Committee for the Prize in Economic Sciences in Memory of Alfred Nobel and of the Board of the Royal Swedish Academy of Sciences.

Giancarlo Corsetti

Cambridge University
EEAG Vice-Chairman

Professor of Macroeconomics at Cambridge University and co-director of the Pierre Werner Chair Programme on Monetary Union at the Robert Schuman Centre for Advanced Studies at the EUI. Consultant to the European Central Bank. Co-editor of the Journal of International Economics and the International Journal of Central Banking.

John Hassler

Stockholm University

Professor of Economics at the Institute for International Economic Studies, Stockholm University. Associate editor of the Review of Economic Studies and Scandinavian Economic Review and an adjunct member of the Prize Committee for the Prize in Economic Sciences in Memory of Alfred Nobel. Previously served as consultant to the Finance Ministry of Sweden and currently the vice-chairman of the Swedish Fiscal Policy Council.

Gilles Saint-Paul

Université des Sciences Sociales, Toulouse

Professor of Economics, GREMAQ-IDEI, at the University of Toulouse. Former researcher at DELTA and CERAS, Paris, and professor at Universitat Pompeu Fabra, Barcelona. Visiting professorships at CEMFI, IIES, UCLA and MIT. Fellow of the European Economic Association, and a member of the Conseil d'Analyse Economique, the main economic advisory board to the French prime minister.

Hans-Werner Sinn

Ifo Institute and Ludwig-Maximilians University of Munich

Professor of Economics and Public Finance at the Ludwig-Maximilians University of Munich and President of the CESifo Group. Member of the Council of Economic Advisors to the German Ministry of Economics and a fellow of the National Bureau of Economic Research.

Jan-Egbert Sturm

KOF, ETH Zurich
EEAG Chairman

Professor of Applied Macroeconomics and Director of the KOF Swiss Economic Institute, ETH Zurich. President of the Centre for International Research on Economic Tendency Surveys (CIRET) and the European Public Choice Society (EPCS). Previously Professor of Monetary Economics at the University of Konstanz and Professor of Economics at the University of Munich.

Akos Valentinyi

Cardiff University

Professor of Economics at Cardiff Business School, a fellow of the Centre of Economic Policy Research, and a senior research fellow at the Institute of Economics of the Hungarian Academy of Sciences. Formerly head of research at the National Bank of Hungary.

Xavier Vives

IESE Business School

Professor of Economics and Finance at IESE Business School. Fellow of the Econometric Society since 1992 and of the European Economic Association since 2004. Member of the Economic Advisory Group on Competition Policy at the European Commission and editor of the Journal of the European Economic Association (1998–2008). Previously involved in teaching at INSEAD, Harvard, NYU, UAB, UPF and the University of Pennsylvania. Research Professor at ICREA-UPF (2003–2006) and Research Professor and Director of the Institut d'Anàlisi Econòmica-CSIC (1991–2001).