Fiscal policy and financial crises – what are the actual effects of fiscal policy?

Nina Larsson Midthjell, doctoral fellow at the Department of Economics, University of Oslo[1]

This article discusses the extent to which the fiscal policy measures implemented in response to the financial crisis have had the intended effects on the real economy. There is considerable uncertainty surrounding the effects of fiscal policy. Estimates of fiscal policy effects are influenced by the choice of calculation method, fiscal policy instrument and monetary policy decisions. Moreover, the actual effects of a change in fiscal policy on the real economy will be influenced by cyclical conditions, economic agents' expectations and fiscal policy credibility. Fiscal leeway may be limited by the level of public debt and budget deficits. It is too early to draw conclusions about the long-term effects of the extensive use of fiscal policy in response to the financial crisis. However, there appears to be no doubt that fiscal policy measures have had short-term effects and prevented a sharp drop in demand in many countries.

1. Introduction

When the financial crisis reached its most critical stage after the collapse of Lehman Brothers in September 2008, the authorities in Norway and other countries faced a rare challenge. Money and capital markets seized up because banks were no longer willing to lend money to one another, and central banks worldwide had to make substantial interest rate cuts and provide almost unlimited liquidity to banks to keep them afloat. The collapse of financial markets had global macroeconomic consequences, in the form of rising unemployment and negative growth prospects. It became clear early on that monetary and liquidity policy instruments would be insufficient; there was also a need for fiscal policy measures. Fiscal stimulus packages were implemented in an effort to counteract the negative impact on economic activity. The stimulus packages were all designed following brief planning phases, involved huge sums and were primarily intended to take effect within two years.

Despite the numerous studies on the effects of fiscal policy on the real economy, considerable uncertainty prevails. A good understanding of the effect of fiscal policy is important, both for private economic agents who make consumption and investment decisions and for the conduct of monetary policy. Accordingly, it is of interest to assess the effects of fiscal policy instruments – combined with monetary and liquidity policy instruments – as financial-crisis related measures.

This article provides an overview of the different factors that contribute to uncertainty about the effects of fiscal policy, and analyses the available hypotheses and results in the light of the financial crisis. The rest of this article is organised as follows: Section 2 provides a short summary of the impact of the financial crisis on different countries and presents the fiscal stimulus packages of selected countries. Section 3 analyses the uncertainty relating to the scale of the effect of fiscal policy on the real economy, while Section 4 discusses whether the effect is influenced by the choice of fiscal policy instrument. Section 5 explores the importance of expectations and credible communication of future fiscal policy decisions. Section 6 analyses different situations that have a bearing on fiscal leeway. Section 7 provides conclusions.

2. Background

The financial crisis brought with it negative economic growth, high unemployment and weak macroeconomic prospects. In addition, the many bank collapses during the financial crisis generated great uncertainty, and greatly reduced the willingness of banks in most countries to provide loans. The US and the UK were directly affected by the crisis at an early stage, owing to their banks' considerable exposure to home mortgage finance products and a sharp drop in house prices. With large-scale investment in the housing market and rapidly rising house prices ahead of the crisis, Ireland and Spain were also directly hit by

[1] This article was written while a research fellow in the Research Department, Norges Bank Financial Stability. The views expressed in this article are mine, and do not necessarily reflect those of Norges Bank. My sincere thanks go to Ingimundur Friðriksson, Bent Vale, Steinar Holden, Qaisar Farooq Akram, Gunnvald Grønvik, Victoria Sparrman and Ylva Søvik for their useful comments and feedback. I would also like to thank Jens Olav Sporastøyl, Jørgen Heibø Modalsli and Andre Kallåk Anundsen for their thorough proofreading assistance, and Helle Snellingen for the translation into English. Any errors and omissions that remain are solely my responsibility. (Norwegian version published in Penger og Kreditt 2/2010.)

Chart 1a GDP in selected countries. Four-quarter change. Broken lines indicate projections. Per cent

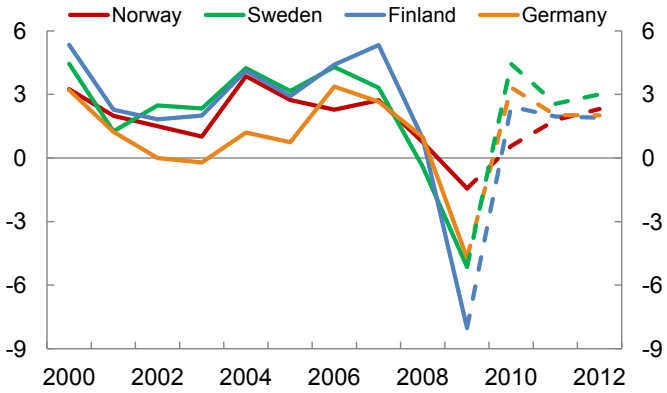


Chart 2a Unemployment in selected countries. Broken lines indicate projections. Per cent

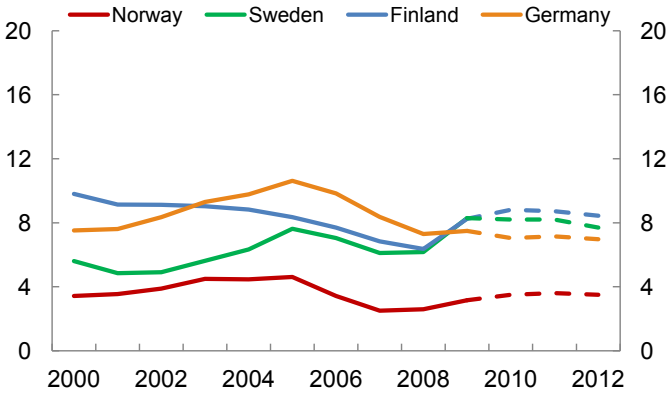
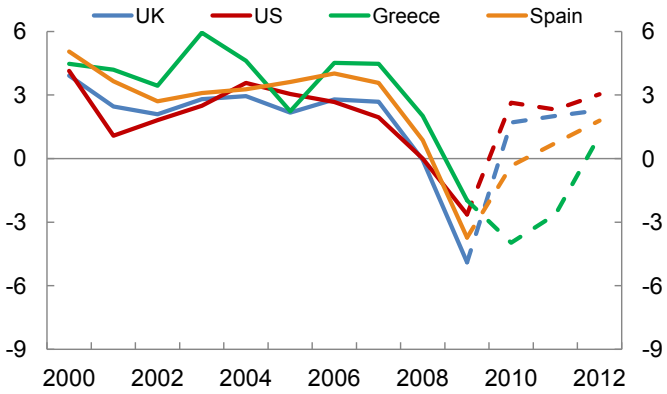
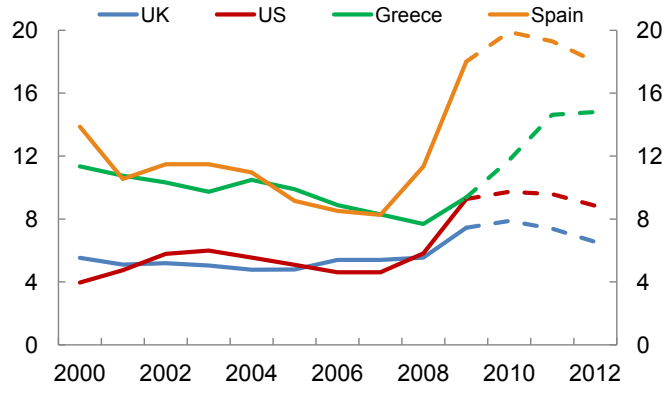


Chart 1b GDP in selected countries. Four-quarter change. Broken lines indicate projections. Per cent



Source: International Monetary Fund, World Economic Outlook Database, October 2010

Chart 2b Unemployment in selected countries. Broken lines indicate projections. Per cent



Source: International Monetary Fund, World Economic Outlook Database, October 2010

the crisis when the housing bubble burst. Falling house prices and stricter credit standards led to a fall in private consumption and investment. Countries like Greece, Italy, Spain, Ireland and Portugal were affected by the crisis not least because they found it difficult, to varying degrees, to service high public debt, while their fiscal leeway was limited by large budget deficits.[2] Germany was hit hard, both directly through the banking sector – due to substantial exposure to home mortgage finance products, including through the partly state-owned *Landesbanken* banking group – and indirectly through falling exports due to lower global demand. As major producers of capital goods, Sweden and Finland were severely, albeit indirectly, affected through lower demand for exports.

Norway was less affected than other countries. Few Norwegians felt the crisis personally as unemployment showed only a small decline and economic growth slowed moderately. Norway managed to avoid serious problems in the banking sector and a marked fall in domestic demand primarily because Norwegian banks were not exposed to risky residential mortgage-backed securities (as in the case of US banks in particular), as well as a combination of low interest rates, a generous compensation scheme for laid-off workers in exposed sectors like the export and construction materials sectors, a high proportion of public-sector employees whose jobs were not at risk and a solid banking system.

Chart 1 provides a summary of growth in selected countries. In the US, the decline in economic growth was considerably smaller than in many other countries, probably because monetary and fiscal policy measures were implemented early on, thus curbing the fall in economic growth (see discussion below). The pronounced decline in growth in countries like Sweden, Finland and Germany indicate that lower export activity as a result of reduced global demand was of considerable importance.[3] The increase in global demand, particularly from Asia, has led to favourable growth prospects for export economies, particularly in 2010. In the US and the UK, positive economic growth is expected from 2010 onwards. In Norway,

2 See Section 6 for further discussion of the importance of fiscal leeway.

3 In Germany, Sweden and Finland, exports account for almost 40 per cent of GDP.

Table 1 Summary of selected stimulus packages in response to the financial crisis

	Stimulus packages		
USA	***The Economic Stimulus Act of 2008*** – February 2008 **Amount:** USD 152 billion (1.06% of 2008 GDP) **Distribution:** USD 120 billion in *lump sum* payments to US taxpayers. USD 32 billion distributed between tax cuts for businesses and payments to veterans and pensioners.	***American Recovery and Reinvestment Act of 2009*** – February 2009 **Amount:** USD 787 billion (5.57% of 2009 GDP) **Distribution:** USD 288 billion in tax cuts and subsidies, USD 275 billion for public investments, USD 224 billion for health, education and social security payments.	***Extra stimulus package for infrastructure 2010*** **Amount:** USD 50 billion (0.34% of forecast 2010 GDP) **Distribution:** All for infrastructure.
EU centrally	***2008 European Union stimulus plan*** **Amount:** EUR 200 billion (1.8% of EU 2008 GDP) **Distribution:** Contributions to the member states to enable them to: - increase unemployment benefits and their duration, as well as support for households - reduce value added tax (VAT) and social security contributions for low-income households - provide loan and credit guarantees for companies.		
Germany	***Konjunkturpakete (economic stimulus packages) I – 2008*** **Amount:** EUR 32 billion (1.3% of 2008 GDP) **Distribution:** Public investment.	***Konjunkturpakete (economic stimulus packages) II – 2009*** **Amount:** EUR 50 billion (2% of 2009 GDP) **Distribution:** Public investment and tax cuts.	
UK **Sweden** **Norway**	**UK** ***Stimulus packages 2008–2009*** **Amount:** GBP 31 billion (2.2% of 2009 GDP) **Distribution:** GDP 20 billion to reduce value added tax (VAT), GBP 1 billion in support for the construction sector, GBP 10 billion for the construction of schools, hospitals and green energy. The objective was to create 100 000 jobs.	**Sweden** ***Stimulus packages 2009–2010*** **Amount 2009:** SEK 45 billion (1.45% of 2009 GDP) **Amount 2010:** SEK 60 billion (2% of forecast 2010 GDP) **Distribution:** Primarily support for counties and municipalities, plus increased funds for labour-market programmes.	**Norway** ***Stimulus package January 2009*** **Amount:** NOK 20 billion (0.84% of 2009 GDP) (1.08% of 2009 mainland GDP) **Distribution**: NOK 16.6 billion for increased public expenditure, NOK 3.3 billion in tax cuts. The increases in expenditure primarily related to the purchase of goods and services from the private sector, particularly from the construction industry, while NOK 6.4 billion transferred to municipalities.

Sources: The Joint Committee on Taxation, www.recovery.gov, EU Commission, Reuters, IMF, Regeringskansliet (the Government Offices of Sweden), Die Bundesregierung (the German Federal Government), Eurostat, own calculations.

the slowdown in economic growth was considerably less pronounced than in most advanced countries, and growth is expected to show a steady increase ahead.

Unemployment rose in most countries as a result of the crisis (see Chart 2). The sharp rise in Spain primarily reflects unemployment in the construction industry caused by the bursting of the housing bubble. In Germany, by contrast, unemployment did not increase as in other countries, but has been on the decline since June 2009. Spain and Germany thus show very different unemployment trends despite pursuing relatively similar labour market policies (see Darius et al. 2010). One reason for this may be that Spain was hit more directly by the crisis and suffered a permanent shock when the housing bubble burst. Germany was exposed to a temporary shock in the export sector. The fact that the German export sector is capital-intensive may also have dampened the rise in unemployment. Another factor may be that the German export sector expected a short-term slowdown in economic growth, and therefore considered the costs of dismissing experienced, skilful workers to exceed the costs of retaining them during the recession (referred to as *labour hoarding*).

The rise in unemployment appears to be more persistent than the decline in economic growth. This is not necessarily unexpected. Reinhart and Rogoff (2009) argue that recessions following banking and financial crises can be expected to feature an increase in unemployment of up to 7 per cent, and that the increase will last for more than four years on average. At the same time, a fall of up to 9 per cent in GDP can be expected, although it will only last for two years on average. These figures are fairly consistent with the economic developments observed during the financial crisis (see Charts 1 and 2). Economic growth in the US, the UK and all of the euro area countries fell, on average, by 5.6 per cent from peak to trough, while unemployment rose by 5 per cent on average during the financial crisis.[4] Except in Greece, positive economic growth is expected in 2010, following one to two years of recession, while unemployment is expected to remain high.

4 See IMF World Economic Outlook Database, October 2010.

Uncertainty remains about how large a proportion of the positive growth prospects can be accounted for by the fiscal stimulus packages, but a highly expansionary monetary and fiscal policy has undoubtedly helped to make the macroeconomic picture more positive already this year. In autumn 2008, policy makers stated that they would do everything in their power to prevent the economy from collapsing. This may also have had a positive effect on the expectations of private economic agents, and helped to ensure that the decline in consumption and investment has been smaller than might otherwise have been the case (see, among others, Auerbach and Gale 2009).

The fiscal stimulus packages were comprehensive and generous (see Table 1). The first US stimulus package, *Economic Stimulus Act of 2008*, is said to have had a positive effect on consumption and investment during the first quarter of 2008, and helped to soften the downturn in economic growth in the US (see, among others, Sahm, Shapiro and Slemrod 2009). In contrast to Germany and the UK, therefore, the US introduced a fiscal stimulus package at an early point in time, which may have helped to ensure that the decline in growth was less steep in the US. However, the size of the stimulus package (USD 152 billion), added to the budget deficit that was already too large. Moreover, the effect of the stimulus package may have been brief. The effect of the next US stimulus package, *American Recovery and Reinvestment Act* (ARRA), is a matter of debate among economists (see box 2.1).

In the UK, the stimulus packages were only introduced after the Lehman collapse in the autumn of 2008. It is expected that 75 per cent of the reduction in value added tax (VAT) will benefit households in the form of lower prices. The UK stimulus package may therefore have been a contributory factor to the expectation that negative economic growth would be brief in the UK (see Blundell 2009).

3. What is the multiplier effect on GDP of expansionary fiscal policy?

In the ongoing debate on the effects of fiscal policy on the economy, the findings vary widely. It is often assumed that an increase in public expenditure will not have a marked effect on GDP over time, due to a *crowding-out* effect on private consumption and investment (see, among others, Taylor 1993, Cwik and Wieland 2009 and Cogan et al. 2009). The argument is that an increase in public expenditure results in price pressure and higher interest rates, which reduce private consumption and investment with the consequence of neutralising the positive effect on GDP of increasing public expenditure. When monetary policy becomes passive because the key interest rate is

Box 2.1 Disputed effect of the American Recovery and Reinvestment Act

The US stimulus package in the *American Recovery and Reinvestment Act* (ARRA) originally amounted to USD 787 billion (see Table 1). The stimulus package comprises one-third tax cuts and two-thirds increased public expenditure. The effect of the crisis package on the real economy and whether it was appropriate to employ such a powerful economic stimulus as an instrument in addressing the financial crisis is a subject of debate among economists. The estimated effect of the package was presented in Bernstein and Romer (2009), on behalf of the authorities. ARRA was supposed to contribute to economic growth of 3.6 per cent in 2010, and to reducing unemployment by 2 per cent, from 10 to 8 per cent. A reduction of 2 per cent would imply a drop in the number of unemployed of 3.6 million. Before the package was implemented, the Congressional Budget Office (CBO) claimed that ARRA would stimulate the economy in the short term, but that the effect would shrink substantially starting in 2011 (see http://www.cbo.gov/doc.cfm?index=10008&zzz=38511). Recently, the CBO claimed that ARRA had made a very positive contribution to economic activity and resulted in an increase in the number of full-time jobs of between 2 and 5 million in 2010 (see http://www.cbo.gov/doc.cfm?index=11972&zzz=41393). Even though unemployment has not fallen significantly since the implementation of the package, the results may indicate that ARRA has prevented a further increase in unemployment.

The proposition that ARRA has had a significant effect on economic activity in the short term is supported by, among others, Blinder and Zandi (2010), but has also encountered considerable opposition. Cogan et al. (2009) argue that the authorities' estimates are robust to different methods of calculations. Using various New-Keynesian models, they estimate that the effect of ARRA on the real economy was just one-sixth of the effect estimated by Bernstein and Romer (2009). Alesina and Ardagna (2009) argue that the package would have had a stronger effect if tax cuts had been given greater priority. Cogan and Taylor (2010) perform an empirical analysis of the different expenditure increases in connection with the package, and maintain that ARRA had had a very small effect during the six quarters for which it had been in place thus far, as a large part of the increase in expenditure comprised transfers to, among other things, health and education, rather than increased public purchases of goods and services.

kept close to zero, as during the financial crisis, the effect of fiscal policy may be strengthened because the *crowding-out* effect disappears (see Section 3.1).

The total effect on GDP of a change in a fiscal policy instrument is explained by the Keynesian multiplier. If the multiplier for public expenditure is 2, an increase in public expenditure of NOK 100 billion would increase GDP by NOK 200 billion in total. The term "total effect" is used in this context because the multiplier effect reflects the total effect on the real economy of the change in public expenditure (defined as public consumption, public investment and transfers). As the purpose of changes in the fiscal stance is, in theory, to affect the real economy, it will therefore be preferable for the multiplier effect to be greater than 1. A change in fiscal policy will then contribute to GDP by more than the actual increase in public expenditure, and thus have a significant effect on the real economy.

If the authorities have fiscal leeway, provided by low public debt and a budget surplus, the multiplier effect will probably be greater than if an expansionary shift is financed by debt. If, instead, an expansionary fiscal policy results in high public debt and a large budget deficit, as in many countries today, the change may increase uncertainty in the economy and induce economic agents to be more cautious, with the consequence that the desired effect on consumption and investment fails to materialise due to increased saving. In this case, the multiplier effect will be small (see, among others, Caballero and Pindyck 1996). If private agents choose to use an increase in disposable income resulting from an expansionary fiscal policy to repay debt, this will diminish the multiplier effect of an expansionary fiscal stance on economic activity (see Reinhart and Rogoff 2010). Moreover, the size of the multiplier may vary from country to country and period to period. Kirchner et al. (2010) argue that public expenditure became increasingly effective as an instrument for stabilising GDP and private consumption in the euro area throughout the 1980s, but that the effect has diminished since the beginning of the 1990s.

There is disagreement in the relevant literature both about what is a suitable theoretical framework and econometric method and about the size of the multiplier effect of increased public expenditure. Spilimbergo et al. (2009) find that the public-expenditure multiplier can vary from under 0.5 to 1.5, depending on the size of the country. Barro (2008) stated that an estimate of around 0.8 is probable. Most studies that use both a New-Keynesian approach featuring DSGE models and VAR models suggest that the estimated multiplier for public expenditure varies from 0.5 to just over 1 (see, for example, Blanchard and Perotti 2002, Burnside, Eichenbaum and Fisher 2004, Perotti 2005 and 2006, Galí et al. 2007, Ilzetzki and Végh 2008, Ramey 2008, Cogan et al. 2009 and chapter 3 of IMF WEO 2010). The fact that the size of the multiplier varies significantly from one study to another demonstrates how difficult it is to give a clear answer to the question of what effects fiscal policy actually has.

The variation in the estimates can have different causes. First, it may be difficult to distinguish between changes in public expenditure caused by changes in GDP, referred to as endogenous changes, and changes made on a discretionary basis to influence GDP, referred to as exogenous changes (see, among others, Eichengreen 1998 and Giavazzi and Pagano 1996).[5] Only exogenous changes may be employed when calculating the multiplier, and a lack of good instrument variables makes it difficult to isolate the direction of the causality between public expenditure and GDP. Moreover, the size of the multiplier is sensitive to the choice of parameter values (see Hall 2009). In calculating the effect of fiscal policy on the economy, assumptions are often made regarding various parameters, for example about how large a proportion of increased disposable income households will utilise for increased consumption, or about how large a proportion of investments are independent of income and the interest rate level. A small change in such parameter values may have a large effect on the size of the multiplier.

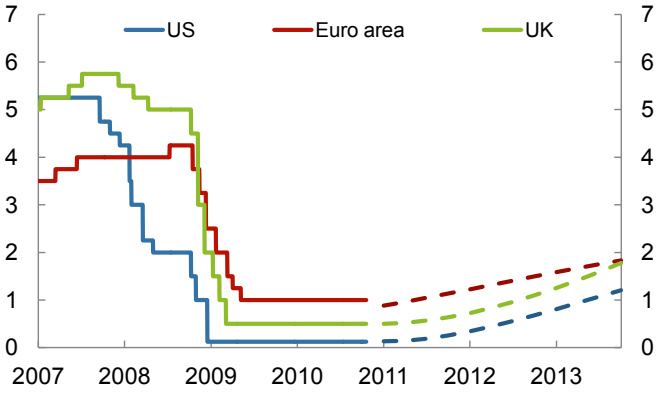
Further, there is often a significant time lag in the implementation of a decision to change public expenditure. A fiscal policy decision may be announced through the publication of a government budget, but be implemented at a completely different point in time. Romer and Romer (2010) argue that the effect of a tax change on the real economy is more closely linked to an actual tax change than to an announcement of future changes. An important factor as regards the size of the multiplier is therefore at what stage of the economic cycle the economy is when the change takes effect, something which may be difficult to calculate at the time the decision is made. Passive monetary policy resulting from an interest rate close to zero may produce stronger multiplier effects than would be produced under more normal conditions. A problem in this regard is that periods with and without a zero-interest-rate policy are difficult to combine in the same time series, as they will produce very different results with regard to the multiplier.

Many countries are now in a situation where a highly expansionary fiscal policy has resulted in large budget deficits and a heavy public debt burden. High, rapidly growing public debt may increase the risk of financial instability in various ways, for example through reduced

[5] Discretionary fiscal policy takes the form of explicit fiscal policy decisions that affect the budget balance directly, referred to here as exogenous changes. Changes in the budget balance that follow a rule or result automatically are called automatic stabilisers, referred to here as endogenous changes.

confidence in publicly issued means of payment, and increase the risk of heavy losses by financial institutions in connection with default on the public debt. At the same time, high public debt may lead to reduced fiscal policy credibility, which may reduce the effect of fiscal policy changes. Demands for higher returns as a result of increased default risk may infect other market rates, and this will have consequences for households and businesses. Given the consequences, it appears important to undertake a thorough analysis of the expected effect on the real economy before fiscal policy stimuli are used, particularly when the expansionary change is debt-financed. It appears sensible to check the robustness of the estimates when different methods are used to calculate the effect of fiscal policy on the real economy.[6]

Chart 3 Key policy rates[1]. Broken lines indicate estimated forward rates. Per cent



[1] EONIA for the euro area.

Sources: Bloomberg and Norges Bank

3.1 Stronger multiplier effect with a zero-interest-rate policy?

Despite the variation in estimates, it appears difficult to argue that the multiplier is always clearly greater than 1, in any event as long as central banks follow an interest rate rule, such as the Taylor rule, or other forms of flexible inflation management, when formulating monetary policy. This is because flexible inflation management will trigger an interest rate reaction to any change in GDP over and above the prevailing trend. If a country that pursues flexible inflation management has a positive output gap, i.e. if GDP growth exceeds trend growth, the interest rate will probably be raised, which will diminish the effect of an expansionary fiscal policy. However, an expansionary fiscal policy may have a stronger effect on the real economy when the output gap is negative, because interest rates are reduced at the same time. If a zero-interest-rate policy is applied, the central bank will be unable to implement an interest rate reaction, which will influence how a fiscal policy change affects the real economy.

In theory, an expansionary fiscal policy, for example in the form of increased investment, will stimulate economic activity, but it will probably also lead to higher marginal costs for businesses due to increased wage pressure, particularly if there is insufficient spare capacity in the economy. Increased wage pressure leads to higher inflation expectations and a lower real rate of interest. If the central bank is unable to make an adjustment for the drop in the real interest rate by raising the key interest rate, for example because a zero-interest-rate policy is being pursued, as during the financial crisis, private consumption may also increase. This helps to increase production further and to strengthen the multiplier effect.

As a result of pursuing highly expansionary monetary policies during the financial crisis, leading economies like those of the UK, the euro area and the US currently have interest rates close to zero (see Chart 3). Cautious increases in key interest rates are expected from 2011 onwards.

If the claim that the multiplier effect is greater when a zero-interest-rate policy is being pursued were correct, one would expect the fiscal stimulus packages implemented in the US, the UK and euro area countries to have a large effect. Christiano et al. (2009) find that the public-expenditure multiplier may be as high as 4 when a zero-interest-rate policy is being pursued, and have estimated that an increase in US public expenditure over eight quarters would produce a multiplier of 2 if the interest rate were kept constant and close to zero. Hall (2009) finds that, in an economy in which the multiplier is just below 1 under normal conditions, the multiplier will rise to 1.7 in periods during which a passive monetary policy is followed. Davig and Leeper (2009) find that the estimates are 0.8 under normal conditions and 1.8 in the case of a zero-interest-rate policy, respectively. The estimated size of the multiplier will vary depending on how long the zero-interest-rate policy is expected to be applied – the longer monetary policy remains passive, the greater the multiplier effect of an expansionary fiscal policy. In the US, the key interest rate has been between 0 and 0.25 per cent since December 2008, and is not expected to move outside this range until 2012. Three years with a zero-interest-rate policy have probably helped to ensure that the US stimulus packages have had a stronger effect than they would otherwise have had, an argument supported by Woodford (2010).

Key interest rates of close to zero may be a problem when a contractionary fiscal policy is pursued, as the

[6] In the relevant literature, robustness checks are commonly carried out in respect of the results relating to fiscal policy effects (see, for example, Galí et al. 2007, Blanchard and Perotti 2002, Romer and Romer 2010, Cogan et al. 2009 and Fatás and Mihov 2001).

central bank will be unable to dampen the effect on economic activity of reducing interest rates. In this kind of situation, fiscal policy may have a greater negative effect on economic activity in the short term. Tightening strategies are now being implemented in various European countries in an attempt to reduce large budget deficits. As economic growth remains weak in a number of countries, it will be preferable to make the cutbacks with the smallest possible negative effect on economic activity. Even if central banks are prevented from cutting interest rates further, they can help to reduce the negative effect on economic activity by keeping the key interest rate at historically low levels for longer than they would have done if there was no need for fiscal consolidation.

Referring to Japan's lost decade, Taylor (2009) argues that discretionary changes in fiscal policy will not have the desired effect on economic activity, even if key interest rates are kept close to zero. After 10 years of nominal interest rates of around zero and negative economic growth, it was only once quantitative easing was undertaken that the Japanese economy showed signs of improvement. Discretionary fiscal policy changes appear to have had little or no effect.

4. Changes to public expenditure or taxes – what has the greatest effect?

The authorities have two main fiscal policy instruments available to them: taxes and public expenditure, split into public consumption, public investment and transfers. Fiscal policy aims to balance the use of the instruments so that the desired effect is achieved. However, achieving the appropriate balance is difficult, as it is uncertain which of the two instruments has the strongest effect on economic activity. Traditional Keynesian theory holds that a change in public purchases of goods and services (i.e. in public consumption and public investment), is a more effective fiscal policy instrument than a tax change. This is because public purchases of goods and services affect GDP directly, while taxes have an indirect effect through the consumption and investment decisions of households and businesses. Since it is assumed that households will also save, the effect of tax cuts will be smaller. However, if private economic agents have limited liquidity, the multiplier effect may be large even in the case of reduced tax on labour income or a reduction in value added tax, as households in this position may prefer to utilise a larger proportion of the increase in their disposable income for consumption.

It is also conceivable that GDP may be affected positively by a change in business taxation. Lower business tax may boost investment. Lower tax on factor inputs may reduce firms' production costs and stimulate increased production and employment as needed. A markedly lower tax level than in other countries may attract foreign investment and boost both GDP and production capacity. The final choice of fiscal policy instrument will depend on the objective of the fiscal policy change and the effects that the authorities expect the various instruments to have on the real economy.

Several studies support the hypothesis that using tax as a fiscal policy instrument can also have a large effect on economic activity. Using panel data, Alesina and Ardagna (2009) analysed the effect of large increases in budget deficits due to fiscal policy stimulation, finding that the stimulus packages that had a visible effect on economic activity were those that focused on lower tax on labour and business income, while the packages that did not work focused on increased public expenditure.[7] Using VAR analysis, Mountford and Uhlig (2008) find that using tax as a fiscal policy instrument has a stronger effect than using public expenditure. They argue that an increase in public expenditure does not necessarily boost private consumption, that both a tax increase and increased public expenditure reduce private investment, and that a deficit-financed tax reduction is the best way to stimulate the real economy. Romer and Romer (2010) did not compare the two instruments, but did identify tax changes using both VAR analysis and case studies (i.e. studies based on speeches and reports). They found that an exogenous tax increase of 1 per cent of GDP could reduce GDP by almost 3 per cent, which is higher than most public-expenditure multipliers.

The stimulus packages launched in response to the financial crisis have had a strong focus on expenditure (see Table 1). However, the results above indicate that a more tax-oriented policy might have been preferable. One argument in support of using tax cuts when there is a need for immediate fiscal policy measures, as during the financial crisis, is that little advance planning is required (see Mankiw 2010). Increasing public expenditure can be a time-consuming process, regardless of whether the focus is on investing in infrastructure, building daycare facilities or amending complicated transfer schemes like the pension system. Good planning is required to ensure quality. Accordingly, it may be necessary to weigh up quality against time consumption when public expenditure is used as the main instrument in a stimulus package. Once a crisis has arisen and immediate action is required, quick solutions may therefore be implemented at the expense of quality, with the result that the fiscal policy measure fails to achieve the desired effect. A temporary

7 The study uses OECD data and the authors look at both the effects of such stimulus on the economy and debt dynamics.

change to the tax system, for example in the form of a temporary reduction in indirect taxes, a reduction in the tax level applicable to businesses or in the tax on labour income, may have an immediate effect without reducing anything other than public revenues.[8]

To avoid curbing economic activity unnecessarily in connection with necessary budget cuts, or to achieve the greatest possible effect on the real economy of a fiscal policy change, it is important that the authorities choose to employ a suitable fiscal policy instrument. Alesina and Ardagna (2009) argue that tax cuts will have the greatest effect in a stimulus situation, but that a reduction in public expenditure may stabilise public debt much more effectively than a tax increase when there is a need for fiscal tightening and, simultaneously, the negative effect on the real economy must be minimised, as in many countries today. In an analysis of what macroeconomic effects can be expected in connection with fiscal consolidation, the IMF argues that tax changes have a greater contractionary effect on economic activity than changes in public expenditure (see chapter 3, IMF WEO 2010). The difference is significant: the multiplier effect of increasing taxes is estimated at –1.3, while the multiplier effect of reducing public expenditure is estimated at –0.5 under normal conditions and –1 during periods when key interest rates are close to zero. The interplay with monetary policy may be one reason why, in a tightening situation, the tax multiplier is larger than the public-expenditure multiplier. A tax increase, for example in the form of an adjustment of VAT, will increase inflation expectations, as businesses are expected to factor in the additional cost associated with the increased tax rate by raising their prices (see chapter 3, IMF WEO 2010). If the central bank operates an inflation target, an increase in inflation expectations may result in an interest rate increase, which will amplify the negative effect on economic activity.[9] If the authorities instead reduce the budget deficit by cutting expenditure, the central bank may seek to counteract an expected fall in inflation by reducing interest rates. This effect is eliminated if the key interest rate is close to zero.

As the use of taxes and the use of public expenditure have different multiplier effects, the choice of fiscal policy instrument will depend on the reason for fiscal tightening. If the aim is to reduce the budget deficit and debt as much as possible with the smallest possible negative effect on economic activity, as in the case of most countries today, the most appropriate approach is to use the fiscal policy instrument which is assumed to have the smallest negative effect on the real economy, but simultaneously a large effect on budgetary and debt obligations. If, instead, the country in question is experiencing an upturn, with pressure on production capacity, and the objective of a contractionary fiscal policy is to reduce economic activity, it will be more appropriate to use the instrument which is assumed to have the strongest negative effect on the real economy.

In other words, there is uncertainty not only about the effect of fiscal policy, but also about which fiscal policy instrument is best to use when implementing fiscal policy. Much of the uncertainty is due to a lack of clarity about how private economic agents react to changes in fiscal policy. If households and firms were informed ahead of any fiscal stimulus where future cutbacks will be made, some of this uncertainty might be reduced. Credible, detailed communication by the authorities of future fiscal policy measures may thus be crucial for achieving the intended fiscal policy effects in the short term.

5. The importance of expectations and credible communication

There has long been discussion about whether economic agents expect to pay for current expansionary fiscal policy in the future, and therefore internalise the authorities' budget conditions by saving additional income resulting from a tax cut in order to be able to pay for a future tax rise (Ricardian equivalence). As discussed in the previous section, it is not certain that economic agents necessarily save an increase in disposable income resulting from a tax cut. Moreover, since many countries consistently operate with budget deficits, high public debt and little communication of future fiscal policy decisions, it is not particularly easy for households and businesses to predict the authorities' actions. This is simpler with regard to monetary policy. In the last 10 years, it has become increasingly common to use inflation targets. The purpose of inflation targets is, not least, to make it easier for households, banks and businesses to predict the central bank's actions. Although it is impossible to predict an individual interest rate change correctly, an inflation target makes it easier to predict the direction of future interest rate movements. If monetary policy is credible and actual inflation is higher than the target, economic agents can expect interest rates to rise in future, and can adapt their decisions accordingly. Such adaptation reduces the volatility of economic movements, as uncertainty is reduced. The fiscal policy stability criteria that apply in the euro area (see discussion in Section 6), and the Nor-

8 It is unlikely that a temporary tax cut would have undesirable distortionary effects during an economic downturn.

9 This argument is not relevant when the inflation target is based on a consumer price index which is adjusted for the effect of indirect taxes, such as the CPI-ATE in Norway.

wegian budgetary rule are similar examples of tying oneself to the mast in a fiscal policy context. It is of vital importance that fiscal policy decision-makers manage to stay within the borders drawn up by such guidelines. The guidelines will be of little relevance if there is no credibility.

When budget deficits grow as large as they have during the financial crisis, the question may be raised as to whether economic agents are actually adapting their behaviour so that the theory of Ricardian equivalence holds true to some degree. Despite large stimulus packages, households and firms have been hesitant about increasing their consumption and investment, an effect which has been particularly prominent in the US. This hesitancy may be due to uncertainty about how the authorities will reduce the enormous US budget deficit in the future, particularly since the increase in public expenditure is debt-financed. Given that unemployment benefits are limited in the US, another plausible explanation is that US households have reined in their consumption because the risk of unemployment remains high. Surveys have shown that only one-fifth of US taxpayers intended to use the extra income they received through the stimulus package *The Economic Stimulus Act of 2008* (see Table 1) to increase consumption, while over half intended to use the extra income to repay debt (see Shapiro and Slemrod 2009 and Sahm, Shapiro and Slemrod 2009). When a large proportion of a fiscal policy stimulus is used to repay debt rather than to increase consumption and investment, the effect on economic activity may be small. In the aftermath of the financial crisis, the repayment of private debt in the US reached its highest level since World War II (see Reinhart and Rogoff 2010). The repayment of debt, along with a large number of personal bankruptcies, has contributed to a significant reduction in the debt burden of households as a proportion of private disposable income, from a historically high level at the end of 2007.

A debt-financed stimulus must be paid for in the future, through tax increases, cuts in public expenditure or a combination of these measures. If, when launching a stimulus package, the authorities simultaneously announce how they intend to cut back again in the medium term, economic agents will be able to plan current and future consumption and investment with a greater degree of certainty. The choice of medium-term fiscal policy consolidation strategy therefore appears to be important in order to achieve the desired short-term fiscal policy effect, both as regards the choice of fiscal policy instrument and as regards the timing of the communication of the consolidation strategy. It is crucial that this communication is deemed credible by economic agents. Increased public expenditure in the short term may push up long-term interest rates, as the expansionary adjustment is expected to increase the level of activity in the economy. An expected saving on the expenditure side in the medium term may diminish this effect on long term-interest rates. As higher long-term interest rates may lead households and firms to save more today in order to cover higher borrowing costs in the future, credible communication of future cutbacks may reduce the level of future-oriented saving (see, among others, Corsetti et al. 2010).

When fiscal policy leeway is limited by a high debt burden and large budget deficits, as in many countries today, there is a need for tightening measures. The success of cutbacks in such countries is largely determined by fiscal policy credibility. Credible communication of why tightening is needed and of how the measures will affect economic agents may dampen the often negative reactions to contractionary fiscal policies. If households and firms understand the scope of and reasons for fiscal policy decisions, changes may be more easily accepted.

Table 2 provides a summary of the stimulus packages implemented in selected countries. If the hypothesis that it is important to communicate a credible consolidation strategy is applied early on, for example to clean up after the financial crisis, it follows that the economic prospects should be more positive in European countries than in the US. This is because various European countries have combined short-term stimuli with clear communication of medium-term tightening plans. Germany is a prime example in this regard, with its detailed, credible tightening plan totalling EUR 20 billion annually until 2014. In the US, by contrast, the timing and composition of fiscal tightening have not been communicated. However, the economic prospects for the US and European countries do not differ markedly (see Charts 1 and 2). This does not necessarily mean that communication of a medium-term tightening plan cannot have a stimulatory effect on economic activity in the short term, but rather that other factors also play a role, such as growing concern in financial markets that certain euro area countries will be unable to meet their debt obligations, as in the case of Greece and Ireland, or that the announced tightening measures appear to lack credibility, as in the case of Portugal.[10] The size of debt obligations may also be an explanatory cause. The accumulated gross debt obligations of European countries are more than twice as large as those of the US (see Reinhart and Rogoff 2010).

[10] Portugal's tightening measures are not considered credible. During the first 10 months of 2010, the budget deficit increased by 1.8 per cent, and the required rates of return in the government bond market are now at the level they reached in Greece before the Greek crisis package was implemented in May 2010; see http://www.eurointelligence.com/index.php?id=581&tx_ttnews[tt_news]=2962&tx_ttnews[backPid]=901&cHash=90a5b9eaaa.

Table 2 Summary of selected austerity packages implemented in 2010

	Austerity packages	
Germany	***Austerity package for 2011–2014*** **Amount:** EUR 20 billion annually, EUR 80 billion in total (0.77% of forecast 2011 GDP) **Summary of content:** - increase in aviation taxes and tax increases in the energy sector generally - new tax on nuclear fuels and withdrawal of support for heating - withdrawal of additional support for the unemployed and pensioners - lower maternity leave payments	
United Kingdom	***Austerity package 2010–2011*** *Launched in May 2010* **Amount:** GBP 6.2 billion (0.42% of forecast 2010 GDP) **Summary of content:** - GBP 1.7 billion cut by stopping or postponing investment projects - GBP 2.8 billion through a public-sector recruitment freeze and restrictions on the use of consultancy services, travel, IT services, etc. - cuts in the municipal budget of GBP 1.17 billion	***Spending Review Statement*** *Launched in October 2010* **Amount:** 19% budget cuts over four years **Summary of content:** - GBP 6 billion cut from administrative budgets in year 1 - 490,000 fewer public-sector employees within four years - increase in the retirement age - annual cut in the municipal budget of 7.1% - increased focus on the privatisation of public services - cut in the defence budget of 8%
Spain	***Austerity package I for 2010–2013*** *Launched in February 2010* **Amount:** EUR 50 billion (4.76% of forecast 2010 GDP) **Summary of content:** - labour market reforms - lower pay for public employees - increased retirement age - cuts in subsidies, transfers and public investment	***Austerity package II for 2010–2013*** *Launched in May 2010* **Amount:** EUR 15 billion (1.43% of forecast 2010 GDP) **Summary of content:** - pay cuts for public employees of 5% in 2010, pay freeze in 2011 - pensions frozen in 2011 - tax increase for the richest
Greece	***Greek EU and IMF crisis package with associated austerity measures*** *Launched in May 2010* **Amount crisis package:** EUR 110 billion (46.6% of forecast Greek 2010 GDP) (1.05% of forecast EU 2010 GDP) **Distribution:** Funding provided by the EU in cooperation with the IMF. EUR 80 billion from the EU and EUR 30 billion from the IMF were allocated to Greece in the form of a loan to ease the Greek refinancing situation. The loan was made at a significantly lower interest rate than Greece would have had to pay for refinancing on the open market. The crisis package was issued on the condition that Greece implement tightening measures. ***Austerity plan for 2010–2013*** **Amount**: EUR 30 billion (12.7% of forecast 2010 GDP) **Summary of content:** - increase the retirement age from 53 to 67 years - three-year pay freeze for public employees - withdrawal of two months' extra salary per year paid to public employees - public sector recruitment freeze - cancellation of short-term contracts and closing down of several hundred outdated public bodies - increase in value added tax (VAT) of 2 to 3 percentage points.	
Ireland	***Irish EU and IMF crisis package with associated austerity measures*** *Launched November 2010* **Amount crisis package:** Up to EUR 85 billion (51.2% of forecast Irish 2010 GDP) (0.8% of forecast EU GDP) **Distribution:** EUR 45 billion financed by the EU, EUR 22.5 billion financed by the IMF and EUR 17.5 billion financed by Ireland itself. Approximately EUR 50 billion allocated to the Irish authorities in the form of a loan to allow austerity measures equivalent to EUR 15 billion to be implemented over a period of four years. The remaining EUR 35 billion are a bank rescue package.	

Sources: IMF, Deutsche Bundesregierung (the German Federal Government), HM Treasury, Reuters, Eurostat, own calculations.

6. Fiscal policy leeway

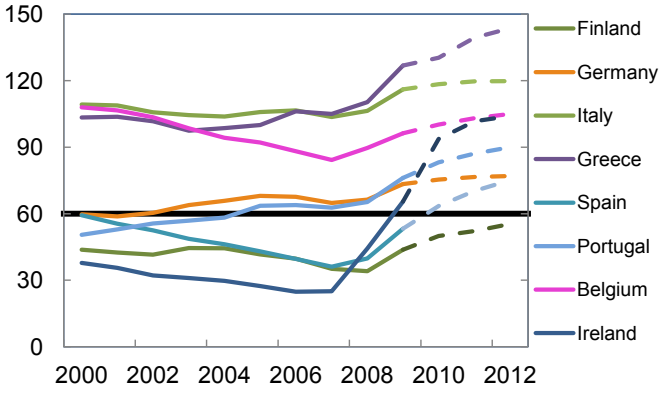
As fiscal policy has consequences for economic agents and economic activity, it is important to formulate policy responsibly. The definition of responsible fiscal policy is not necessarily a matter of general agreement. Politicians often use the term *responsible fiscal policy* when budget management is counter-cyclical and there is a strong focus on discretionary changes, often with a short-term effect. However, in the past ten years, it has been more common in the relevant literature to associate the term *responsible fiscal policy* with situations in which policy makers allow fiscal policy to be counter-cyclical through automatic stabilisers, employing discretionary fiscal policy only for more long-term objectives (see, among others, Eichenbaum 1997, Feldstein 2002 and Taylor 2000). The idea is that attempts to implement counter-cyclical discretionary fiscal policy are just as likely to have a destabilising effect on economic activity as a stabilising effect, as it is difficult to estimate when the fiscal adjustment will have an impact.

The fiscal stimulus packages implemented in response to the financial crisis are typical examples of discretionary fiscal policy intended to have short-term effects. Taylor (2009) defends previously held views, asserting that an optimal fiscal policy is still one that relies on automatic stabilisers in the short term and uses discretionary fiscal policy only for more long-term objectives. In order to secure fiscal policy leeway during a recession, the authorities must nevertheless show restraint during upturns and generally manage fiscal policy in a manner that avoids large, permanent budget deficits and high public debt.

If, through its fiscal policy, a country ensures that the public debt is not high for prolonged periods, and avoids large, permanent budget deficits, it would seem appropriate to describe the fiscal policy as responsible. Applying this definition, a country that pursues a responsible fiscal policy and operates an inflation-targeting monetary policy will, in theory, be well-equipped to deal with a recession. A problem arises when the country deviates from this path. Such deviations are rarely linked to excessive spending during downturns. Most commonly, unwillingness to cut back during upturns is the direct cause of countries deviating from the path of responsible fiscal policy.

Large budget deficits and high public debt at the start of a downturn are particularly serious for a monetary union like the euro area, as the spillover effects can be severe due to the common currency.[11] In an attempt to prevent this kind of situation from arising, stability criteria were defined for countries in the euro area. The debt criterion sets an upper limit of 60 per cent of GDP for the accumulation of gross public debt, while the deficit criterion sets an upper limit of 3 per cent of GDP for budget deficits.[12] Both criteria permit deviations in extraordinary circumstances, when there is a need to expand fiscal leeway. In 2009, permission was granted to deviate from the criteria in order to implement fiscal policy measures in the aftermath of the financial crisis. However, it is clear that few countries satisfied the debt criterion before the financial crisis, as they were obliged to (see Chart 4). As a result of granting permission in 2009 to deviate from the criteria limits, this distance increased further. Countries like Greece, Belgium and Italy have had public debt levels of close to or more than 100 per cent of GDP, both during the financial crisis and during earlier upturns, for example during the period 2004–2006.

Chart 4 Gross public debt in selected euro area countries. Percentage of GDP. Broken lines indicate projections. 60 per cent criterion limit highlighted in black



Sources: Eurostat, November 2010. All projections: IMF, World Economic Outlook Database, October 2010

When public debt is high, it is difficult to counteract a recession, as debt costs as a proportion of income increase, due both to a drop in income caused by reductions in the direct and indirect tax bases and, often, to higher interest rates as a result of an increased risk of debt default. The result is restriction of the fiscal leeway because a large proportion of the public funds have to be used to service debt rather than for fiscal policy measures. If public expenditure is generally debt-financed, there will be a need during a recession to increase public debt further to enable the financing of benefits schemes and job-creation activities required due to higher unemployment.

Before the financial crisis, many countries outside the euro area had smaller gross public debt as a proportion of

[11] The euro area has a common monetary policy, which is implemented by the European Central Bank (ECB). Fiscal policy is the responsibility of the national authorities of each country.

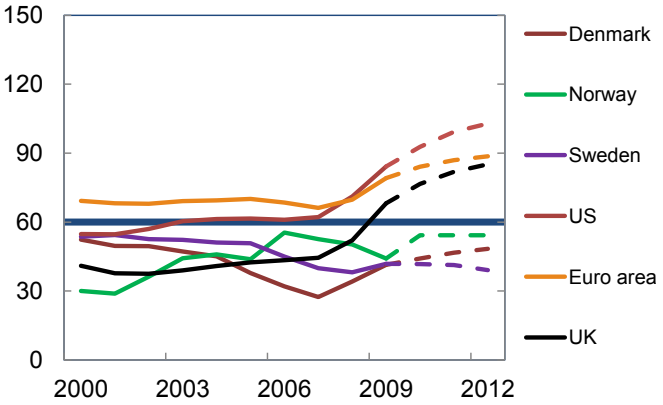
[12] For a detailed description of the stability criteria, see articles 140(1) and 126 of the Treaty on the Functioning of the European Union and its protocols 12 and 13 here: http://eur-lex.europa.eu/JOHtml.do?uri=OJ:C:2010:083:SOM:EN:HTML.

GDP than most euro area countries (see Chart 5). As in euro area countries, public debt is still rising in the US and the UK. Annual interest costs for the UK is around 3 per cent of GDP, and are expected to rise by almost 50 per cent by 2015.[13] US gross public debt is expected to reach 100 per cent of GDP in the course of 2011, and to continue growing to over 115 per cent in 2015. The expected growth in public debt levels in the years ahead has not necessarily come as a surprise. Reinhart and Rogoff (2008) conclude that public debt rises in real terms by an average 86 per cent in the first three years after a banking crisis, and argue that the main reason for this is not expenditure in connection with bank rescues or recapitalisation of banking systems, but rather a considerable drop in tax revenues and a large increase in public expenditure, both through automatic stabilisers and through discretionary expansionary adjustments.

When the debt burden rises, it becomes increasingly difficult to generate economic growth. Reinhart and Rogoff (2010) argue that countries are seldom able to grow themselves out of high debt, and that public debt of more than 90 per cent of GDP has a clear detrimental effect on growth prospects. While public debt as a percentage of GDP was relatively low in the US, the UK and major euro area countries, such as Germany and France, before the crisis, Greece's gross public debt has been above 90 per cent for over 10 years (see Chart 4). The fact that high public debt can reduce economic growth in the short term may indicate that a credible debt consolidation strategy can stimulate growth in the longer term. The IMF finds that for every 10 per cent reduction in public debt as a proportion of GDP, GDP rises by 1.4 per cent in the long term (see chapter 3 of IMF WEO 2010).

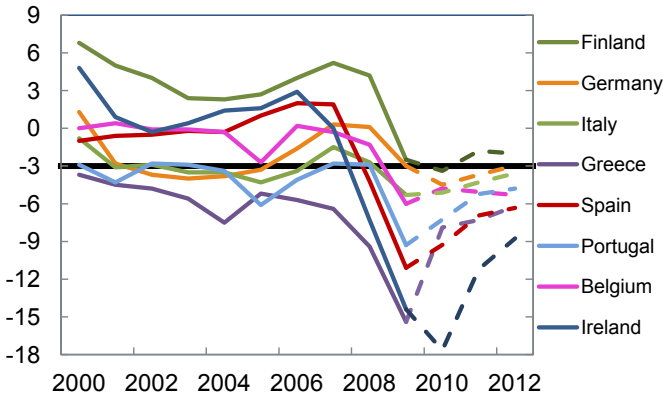
Chart 6 shows the public budget balance as percentage of GDP for selected euro area countries. Even though the countries are expected to exceed the budget deficit limit in 2010, greater respect was shown for the budget deficit limit than for the debt limit in the years preceding the financial crisis. In 2009, all euro area countries were granted permission to increase budget deficits to enable the implementation of stimulus packages, but conditional upon frequent reporting regarding how quickly the budgets could be tightened again. Most countries report that they expect to be back to a maximum deficit of 3 per cent in the course of 2013, partly owing to the fiscal consolidation packages implemented (see Table 2 for selected countries). However, it is uncertain how quickly the countries will be able to reduce their deficits in reality. The Spanish authorities have reported good progress, while the Portuguese authorities reported an increase in the budget deficit in 2010. In Greece, the 2009 deficit has been found to be even larger than previously assumed. The situation in Greece is discussed in Box 6.1.

Chart 5 Gross public debt in selected countries. Percentage of GDP. Broken lines indicate projections



Sources: Eurostat, November 2010. For Norway: Statistics Norway. For US and all projections: IMF, World Economic Outlook Database, October 2010.

Chart 6 Public budget balance in selected euro area countries. Percentage of GDP. Broken lines indicate projections. 3 per cent criterion limit highlighted in black



Sources: Eurostat, November 2010. All projections: IMF, World Economic Outlook Database, October 2010

Chart 7 shows the budget deficit as a percentage of GDP in selected countries outside the euro area and in the euro area as a whole. The UK and the US both have large deficits as a result of the highly expansionary measures introduced in response to the the financial crisis. The UK has announced austerity measures, and is planning to reduce the deficit to less than 5 per cent by 2015 (Table 2). Thus far, the US has only announced stimulus packages, without signalling the timing or composition of a necessary consolidation. The Scandinavian countries have avoided large budget deficits during this period.

In addition to the level of budget deficits and public debt, a country's fiscal leeway will be influenced by the monetary and fiscal policy decisions made by the country's trading partners. If an expansionary fiscal adjustment is made in Norway but Norway's trading partners

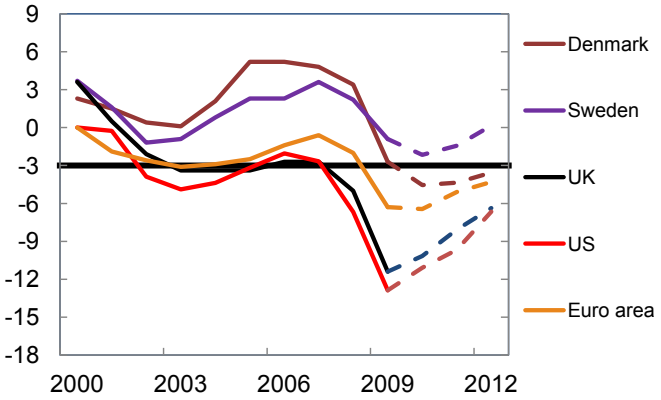
[13] See HM Treasury Spending Review 2010: http://www.hm-treasury.gov.uk/spend_sr2010_documents.htm.

do not make a similar adjustment, the Norwegian krone will appreciate in value, assuming that a change in the fiscal stance results in an interest rate increase. An appreciation of the krone will weaken Norwegian competitiveness and reduce net exports. Accordingly, in an open economy, fiscal leeway is limited by the impact on the balance of trade. However, the fiscal leeway may be greater, and the effect of fiscal policy may be stronger, the greater the coordination of fiscal policy decisions, because a currency appreciation and a resulting drop in net exports cannot occur in all countries simultaneously (see, among others, Spilimbergo et al. 2008 and chapter 3, IMF WEO 2010). The cross-border coordination of the expansionary monetary and fiscal policies implemented in response to the financial crisis has probably contributed to the fact that most countries appear to be emerging from the crisis at the same time (see Chart 1).

When studying fiscal policy effects on the real economy and fiscal policy leeway, it may also be useful to look at potential spillover effects across borders. If an expansionary fiscal policy in Norway leads to a real appreciation of the krone, demand for imports will increase, thus contributing to increased production and employment in Norway's trading partners. This is a positive cross-border spillover effect – the exporting countries become non-paying beneficiaries of fiscal stimulus in Norway. However, a negative spillover effect may arise if the country that pursues an expansionary fiscal policy is large enough to influence international interest rates and thus dampen global economic activity. Negative spillover effects can also arise if a budget deficit is debt-financed externally and the country finds it difficult to service its debt, as in the case of Greece. Whether the overall effect of spillover effects is positive or negative will depend on country size, the degree of openness, the proportion of externally financed debt and debt-servicing ability. The overall effect will also depend on the degree to which the shift in the fiscal stance deviates from the fiscal stance of other countries. If the measures are coordinated with the measures of other countries, the spillover effects will be smaller.[14]

Whether coordinated decisions entail the same gains in connection with fiscal consolidation depends on the objective of the tightening. If the objective is to reduce a positive output gap, coordinated measures may be ben-

Chart 7 Public budget balance in selected countries. Percentage of GDP. Broken lines indicate projections



Sources: Eurostat, November 2010. For Norway: Statistics Norway. For US and all projections: IMF, World Economic Outlook Database, October 2010.

Box 6.1 Greece in trouble: high public debt and a large budget deficit

The situation in Greece over the past two years illustrates how damaging a high public debt burden and a large budget deficit over a longer period can be to a country. Greek debt and budget statistics have been revised several times recently, and Greece has been accused of not providing correct statistics. According to new figures from Eurostat (November 2010), gross public debt is at 126.8 per cent of 2009 GDP, i.e. 11.7 per cent higher than in the previous publication. The debt level is expected to rise further (see Chart 4). As a result of the debt and budget situation, Greece has had very little fiscal leeway. Greek debt equivalent to more than NOK 1 000 billion will mature before the end of 2012. Due to very high required rates of return in the market, refinancing was almost impossible ahead of the Greek crisis package implemented in May 2010 (see discussion in Table 2). The uncertainty spread to private banks and the business sector. As the risk premium increases substantially when debt reaches historic levels, it is sensible for countries to make substantial budget cutbacks in order to appear creditworthy to investors, even if the country is in fact able to service its debt. Greece was unable to service its debt without support, and had to promise considerable budget cuts in connection with emergency-aid agreements. The tightening measures which were introduced in May 2010 correspond to 12.7 per cent of projected 2010 GDP, and are significantly larger than the austerity measures implemented in other countries (Table 2).

[14] A coordinated expansionary shift in fiscal policy may be particularly positive in a monetary union like the euro area, as individual fiscal adjustments make interest rate decisions difficult. An individual fiscal tightening in a major member state, such as Germany or France, may result in a higher interest rate and an appreciation of the euro, which will affect all member states. However, Cwik and Wieland (2009) find that minimal spillover effects result between three large euro area countries (Germany, France and Italy), from such individual fiscal adjustments.

eficial, as a real depreciation of the currency is avoided which would have resulted in increased net exports and thus diminished the reduction in the output gap. However, if, on the other hand, the objective is to reduce the budget deficit and public debt with the least possible negative effect on economic activity, as in the case of most countries today, coordination of the tightening measures may be a disadvantage, as net exports do not rise.

7. Conclusion

When the financial crisis escalated in 2008, large fiscal stimulus packages were implemented. Less than two years later, many countries required substantial austerity packages, because the stimulus packages resulted in high public debt and large budget deficits. The extensive use of fiscal policy both during and after the crisis has revealed a need for increased understanding of the actual effect of fiscal policy.

Despite extensive studies in this area, considerable uncertainty remains about the effects of fiscal policy. Tax and expenditure changes affect the real economy, and have an indirect effect on monetary policy decisions through their effect on inflation expectations. Inappropriate fiscal policies can potentially threaten financial stability if the debt burden reaches very high levels and the country finds it difficult to service government debt. The effect of fiscal policy may be stronger than under normal conditions when the interest rate is close to zero, as the leeway of the central bank is limited. A credible communication of the medium-term consolidation strategy may be appropriate in order to achieve the intended effect of a fiscal policy stimulus in the short term, particularly if the expansionary fiscal policy is financed by debt, meaning that economic agents expect future tightening. If the timing and content of tightening measures are known, it is easier for households and firms to make consumption and investment decisions. Fiscal credibility may be decisive as regards the effectiveness of such communication.

Disagreement about the choice of fiscal policy instrument heightens uncertainty about the effects of fiscal policy. Whether, in a stimulus situation, it is most effective to focus on various forms of tax cuts or an increase in public expenditure will depend, among other things, on the state of the economy, the objective of the fiscal adjustment and the fiscal policy leeway. In view of this uncertainty, it is important that estimates of fiscal policy effects are robust to different calculation methods.

It is too early to draw conclusions about the long-term effects of the fiscal adjustments made in the past two years, but several studies indicate that the effects on the real economy will be reduced significantly as early as in 2011, and that a high debt level may result in reduced economic activity in the long term. However, there appears to be no doubt that fiscal policy measures have had short-term effects and prevented a sharp contraction in demand in many countries.

References

Alesina, Alberto F. and S. Ardagna, 2009: "Large changes in fiscal policy: Taxes versus spending", *NBER Working paper,* No. 15438

Auerbach, A. and William G. Gale, 2009: "Activist Fiscal Policy to Stabilize Economic Activity", *NBER Working paper,* No. 15407

Barro, Robert J., 2009: "Voodo multipliers", *Economists' voice*, Berkeley Economic Press

Blanchard,O. and R. Perotti, 2002: "An empirical Characterization of the dynamic effects of Changes in Government Spending and Taxes on Output", *Quarterly Journal of Economics,* Vol. 117, No. 4, pp. 1329–68

Blinder, Alan S. and M. Zandi, 2010: "How the great recession was brought to an end", Unpublished paper, Economy.com, July 27

Blundell, R., 2009: "Assessing the Temporary VAT Cut Policy in the UK"*, Fiscal Studies,* Vol. 30, No. 1, pp. 31–38

Burnside, C., M. Eichenbaum and J. Fisher, 2004: "Fiscal shocks and their consequences", *Journal of Economic Theory,* Vol. 115, No. 1, pp. 89–117

Caballero, Ricardo J. and Robert S. Pindyck, 1996: "Uncertainty, Investment, and Industry Evolution", *International Economic Review,* Vol. 37, No. 3, pp. 641–62

Christiano, L., M. Eichenbaum and S. Rebelo, 2009: "When is the Government Spending Multiplier Large?", *NBER Working Paper,* No. 15394

Cogan, John F., T. Cwik, John B. Taylor and V. Wieland, 2009: "New Keynesian versus Old Keynesian Government Spending Multipliers", Working Paper Series No. 1090, European Central Bank

Cogan, John F. and John B. Taylor, 2010: "What the Government Purchases Multiplier Actually Multiplied in the 2009 Stimulus Package", *NBER Working paper,* No. 16505

Corsetti, G., A. Meier and Gernot J. Müller, 2010: "Cross-border spillovers from fiscal stimulus", *International Journal of Central Banking*, Vol. 6, No. 1, pp. 5–38

Cwik, T. and V. Wieland, 2009: "Keynesian Government Spending Multipliers and Spillovers in the Euro Area", *CEPR Discussion Paper,* No. 7389

Darius, R., M. Nkusu, A. Thomas, A. Vamvakidis, E. Vidon and F. Vitek, 2010: "Cross-Cutting Themes in Employment Experiences during the Crisis", *IMF Staff Position Note,* 2010/18

Davig, T. and E. Leeper, 2009: "Monetary-Fiscal Policy Interactions and Fiscal Stimulus", *NBER Working Paper* No. 15133

European Central Bank, 2010: ECB Monthly Bulletin, August

Eichenbaum, M., 1997: "Some Thoughts on Practical Stabilization Policy", The American Economic Review, Vol. 87, No. 2, pp. 236–239

Eichengreen, B., 1998: "Comment on 'The Political Economy of Fiscal Adjustments'", *Brookings Papers on Economic Activity,* Vol. 7, pp. 255–62

Fatás, A. and I. Mihov, 2001: "The Effects of Fiscal Policy on Consumption and Employment: Theory and Evidence", *CEPR Discussion Paper*, No. 2760

Feldstein, M., 2002: "The Role for Discretionary Fiscal Policy in a Low Interest Rate Environment", *NBER Working Paper* No. 9203

Galí, J., J. David López-Salido and J. Vallés, 2007: "Understanding the Effects of Government Spending on Consumption", *Journal of the European Economic Association,* Vol. 5, No. 1, pp. 227–270

Giavazzi, F. and M. Pagano, 1996: "Non-Keynesian Effects of Fiscal Policy Changes: International Evidence and the Swedish Experience", *Swedish Economic Policy Review,* Vol. 3, No. 1, pp. 67–103

Hall, R., 2009: "By how much does GDP rise if the Government buys more Output?", *NBER Working paper,* No. 15496

HM Treasury, 2010: *Spending Review* 2010

Ilzetzki, E. and Carlos A. Végh, 2008: "Procyclical Fiscal Policy in Developing Countries: Truth or Fiction?", *NBER Working Paper,* No. 14191

International Monetary Fund, 2010: "Will it hurt? Macroeconomic effects of fiscal consolidation", *World Economic Outlook,* October, Chapter 3

Kirchner, M., J. Cimadomo and S. Hauptmeier, 2010: "Transmission of Government Spending Shocks in the euro area: Time Variation and Driving Forces", *Tinbergen Institute Discussion Paper,* Vol. 21, No. 2

Mankiw, N. G., 2010: "Questions about Fiscal Policy: Implications from the Financial Crisis of 2008–2009", *Review*, Federal Reserve Bank of St. Louis, May/June

Mountford, A. and H. Uhlig, 2008: "What are the effects of fiscal policy shocks?", *NBER Working Paper,* No. 14551

Perotti, R., 2005: "Estimating the Effects of Fiscal Policy in OECD Countries", *CEPR Discussion Paper,* No. 4842

Perotti, R., 2006: "Public Investment and the Golden Rule: Another (Different) Look", *IGIER Working Paper,* No. 277

Ramey, Valerie A., 2009: "Identifying Government Spending Shocks: It's All in the Timing", *NBER Working paper,* No. 15464

Reinhart, Carmen M. and Kenneth S. Rogoff, 2010: "Growth in a time of debt", *American Economic Review,* Vol. 100, No. 2, pp. 573–78

Reinhart, Carmen M. and Kenneth S. Rogoff, 2008: "Banking Crises: An Equal Opportunity Menace", *NBER Working Paper,* No. 14587

Reinhart, Carmen M. and Kenneth S. Rogoff, 2009: "The Aftermath of Financial Crisis", *American Economic Review,* Vol. 99, No. 2, pp. 466–72

Romer, C., and J. Bernstein, 2009: "The Job Impact of the American Recovery and Reinvestment Plan", 9. January

Romer, C. and D. Romer, 2010: "The Macroeconomic Effects of Tax Change: Estimates Based on a New Measure of Fiscal Shocks", *American Economic Review,* Vol. 100, No. 3, pp. 763–801

Sahm, Claudia R., Matthew D. Shapiro and Joel S. Slemrod, 2009: "Household Response to the 2008 Tax Rebate: Survey Evidence and Aggregate Implications", *NBER Working Paper,* No. 15421

Shapiro, Matthew D. and Joel S. Slemrod, 2008: "Did the 2008 Tax Rebates Stimulate Spending?", *American Economic Review: Papers & Proceedings*, Vol. 99, No. 2, pp. 374–379

Spilimbergo, A., S. Symanski, Olivier J. Blanchard and C. Cottarelli, 2008: "Fiscal Policy for the Crisis", *IMF Staff Position Note,* 08/01

Spilimbergo, A., S. Symanski and M. Schindler, 2009: "Fiscal Multipliers", *IMF Staff Position Note,* 09/11

Taylor, John B., 1993: "Macroeconomic Policy in a World Economy: From Econometric Design to Practical Operation", WW Norton, New York

Taylor, John B., 2000: "Reassessing Discretionary Fiscal Policy", *The Journal of Economic Perspectives,* Vol. 14, No. 3, pp. 21–36

Taylor, John B., 2009: "The lack of an Empirical Rationale for a Revival of Discretionary Fiscal Policy", Article presented at *The Annual Meeting of the American Economic Association Session*, 4 January

Treaty on the Functioning of the European Union (formerly EC Treaty)

Wieland, V., 2010: "Fiscal Stimulus and the Promise of Future Spending Cuts", *International Journal of Central Banking*, Vol. 6, No. 1, pp. 39–50