ARTICLES

THE IMPACT OF GOVERNMENT SUPPORT TO THE BANKING SECTOR ON EURO AREA PUBLIC FINANCES

In the wake of the financial turmoil, which escalated in September 2008, governments across Europe reacted swiftly to stabilise the financial system. Many governments embarked on bank rescue packages aimed at restoring confidence in the banking system and safeguarding the flow of credit. In addition, governments adopted fiscal stimulus measures aimed at stabilising the economy. This article analyses the impact of government support to the banking sector on euro area public finances and discusses its effects on fiscal sustainability. Against the backdrop of an unfavourable macroeconomic environment, rising deficit and debt ratios and the budgetary risks discussed in this article, it is essential that governments make a strong and credible commitment to a path of fiscal consolidation which fully respects the provisions of the Stability and Growth Pact. This will preserve trust in the sustainability of public finances and will support both the recovery and long-term economic growth.

1 INTRODUCTION

In the early stages of the financial crisis the implications for Europe were largely perceived as ultimately confined to a limited number of banks,[1] particularly those which were dependent on the wholesale markets for their financing or had either investments in structured finance products or substantial off-balance sheet structures. In September 2008, after the default of Lehman Brothers, the financial crisis intensified and an increasing number of European financial institutions experienced liquidity problems and were forced to undertake massive asset write-downs, with negative implications for their own credit quality. In response to the financial turmoil, at the ECOFIN Council meeting of 7 October 2008, the ministers of finance of the EU Member States agreed on common guiding principles to restore both confidence in and the proper functioning of the financial sector. It was agreed that national measures in support of systemic financial institutions would be adopted in principle for a limited time period and within a coordinated framework, while taking due account of the interests of taxpayers. Following the adoption of a concerted European action plan on 12 October 2008, euro area countries announced (additional) national measures[2] to support their financial systems and ensure appropriate financing conditions for the economy as a prerequisite for growth and employment.

This article analyses the impact of government support to the banking sector on euro area public finances and the implications for fiscal sustainability. Bank rescue operations have affected public finances through their direct impact on government accounts. In addition to deficit and debt developments, the assessment needs to take account of governments' contingent liabilities arising from the substantial state guarantees that have been provided. At the same time, developments in government bond yields for euro area countries have pointed to changing perceptions among investors with regard to countries' creditworthiness. A comprehensive assessment of the implications of financial sector support for public finances also requires a forward-looking perspective. In particular, the exit strategies that governments will adopt once confidence in and the proper functioning of the financial sector have been restored, their success in recovering the fiscal costs and their determination to return to sound fiscal positions will determine the long-term impact on public finances.

This article is structured as follows: Section 2 briefly reviews the experience of selected past banking crises with a focus on the tools of government intervention and their impact on public finances, taking account of the recovery

1 In the second half of 2007, IKB in Germany and Northern Rock in the United Kingdom had to be rescued as a consequence of the US sub-prime mortgage crisis. IKB suffered losses owing to its exposure to the US sub-prime mortgage market, whereas Northern Rock had difficulties in obtaining funding from the interbank market.

2 Between end-September and end-October 2008, ten euro area countries announced bank rescue packages.

of initial fiscal costs. Section 3 analyses the impact on government accounts of the interventions by euro area governments since September 2008.[3] Section 4 discusses developments in the government bond yields of euro area countries observed since the financial crisis intensified. Section 5 assesses the possible impact on the sustainability of euro area public finances. Section 6 concludes.

2 MEDIUM-TERM FISCAL COSTS OF SELECTED PAST BANKING CRISES

This section provides an overview[4] of the common features of several past banking crises and government reactions in advanced economies. "Systemic banking crises" can be defined as periods in which both the financial and corporate sectors experience a large number of defaults and financial institutions and corporations face great difficulties in fulfilling contractual obligations and repaying debt on time. This determines a sharp increase in non-performing loans and all or most of the aggregate banking system capital is exhausted.

Since the Second World War, systemic banking crises have been relatively rare occurrences in developed countries as compared with developing or emerging economies, where they have often been accompanied by currency or sovereign debt crises. In general, past banking crises tended to be local in nature and to be related to country-specific imbalances. In this respect, the recent period of financial turmoil is unprecedented owing to its global reach, and this limits the scope of comparability with past episodes.

Banking crises frequently occurred in the aftermath of pro-cyclical policies and exceptionally fast credit growth. In some cases, banks took excessive risks (often in the real estate or stock markets) during periods of strong economic growth that materialised when the economy was hit by internal or external shocks. In other cases, crises were related to the excessive dependence of banks on short-term financing.

Government intervention tended to be based on a combination of measures aimed at restoring confidence in the financial system and supporting the flow of credit to the domestic economy in order to prevent a credit crunch. A first line of defence usually consisted of a guarantee fund or a blanket guarantee. The nature of the guarantees varied depending on country-specific conditions. Capital injections were also provided to those institutions facing liquidity or solvency problems and for the purpose of restoring banks' required capital ratios. In exchange, governments acquired ownership of bank shares or proceeded to outright nationalisation. Non-performing bank assets were, in some cases, removed from bank balance sheets and transferred to asset management companies, which would later sell these assets again. In the case of publicly-owned asset management companies, the proceeds from the sale of assets partially offset the fiscal costs related to government interventions.

The estimated fiscal costs of direct government intervention in the banking sector vary substantially across studies depending on the methodology used for their derivation and the definition of fiscal costs.[5] Some studies recognise only government outlays as fiscal costs, whereas

3 The cut-off date for the data in this article is 29 May 2009.

4 For more detailed analyses, see G. Caprio and D. Klingebiel, "Bank Insolvencies: Cross-Country Experience", World Bank Policy Research Working Paper No 1620, July 1996; L. Laeven and F. Valencia, "Systemic Banking Crises: A New Database", IMF Working Paper 08/224, November 2008; F. Eschenbach and L. Schuknecht, "The fiscal costs of financial instability revisited", ECB Working Paper No 191, November 2002; L. Jonung, J. Kiander and P. Vartia, "The great financial crisis in Finland and Sweden: The dynamics of boom, bust and recovery, 1985-2000", European Economy Papers No 350, December 2008 and L. Jonung, "The Swedish model for resolving the banking crisis of 1991-93. Seven reasons why it was successful", European Economy Papers No 360, February 2009; C. Reinhart and K. Rogoff, "The Aftermath of Financial Crises", NBER Working Paper No 14656, January 2009.

5 Two approaches to estimating fiscal costs can be applied. The bottom-up approach sums up all government measures related to a crisis, although some of these measures are difficult to quantify, especially if they are carried out by institutions classified outside the general government sector. This approach was followed in L. Laeven and F. Valencia (2008) op. cit. The top-down approach starts with the government debt-to-GDP ratio before the crisis and assumes that any changes in the ratio are related to the financial crisis. This approach, which also includes debt changes which are unrelated to the crisis, is followed in C. Reinhart and K. Rogoff (2009) op. cit.

others also take into account the revenue side of government finances. The literature identifies three main channels through which to assess the fiscal costs of financial instability,[6] namely: (i) direct bailout costs (either excluding or including the future sale of financial sector assets acquired by the government); (ii) a loss of tax revenues from lower capital gains, asset turnover and consumption; and (iii) second-round effects from asset price changes on the real economy and the cyclical component of the budget balance and via government debt service costs. These fiscal costs have to be weighed against the economic and social benefits of stabilising the financial sector.

Table 1 shows the estimated gross fiscal costs as well as the recovery rates for selected past systemic banking crises in advanced economies (i.e. Finland, Japan, Norway and Sweden) using available estimates.[7] Gross fiscal costs are estimated over a period of five years following the occurrence of the financial crisis. The highest fiscal costs were recorded in Japan (around 14% of GDP within five years of the start of the crisis), while they were relatively modest in Norway and Sweden (around 3-4% of GDP).

The recovery rates in the last column of Table 1 indicate the portion of gross fiscal costs that governments were able to recover, by way of, for example, revenues from the sale of non-performing bank assets or from bank privatisations. Recovery rates usually vary significantly across countries, depending on country-specific features, such as the modality of government intervention, the quality of acquired financial sector assets, exchange rate developments and market conditions when the assets are sold by the government. IMF estimates[8] show that Sweden was able to reach a recovery rate of 94.4% of budgetary outlays five years after the 1991 crisis, while Japan had recovered only about 1% of the budgetary outlays five years after the 1997 crisis. However, by 2008 the recovery rate for Japan had increased to 54%.

The medium-term fiscal costs of financial support depended, to a large degree, on the exit strategies governments adopted to reduce their involvement in the financial system once the situation returned to normal and on the recovery rates from the sale of financial assets. The exit strategies can be seen as comprehensive programmes to reverse anti-crisis measures taken during a financial crisis. When deciding on an exit strategy, the key variables are time (i.e. the speed at which the government plans to reverse the measures, for example, by withdrawing government guarantees and other forms of support) and scale (i.e. the degree to which the government wishes to return to pre-crisis conditions, for example, by reducing government ownership in the banking sector). In the past banking crises, concrete exit strategies were rarely specified ex ante. If

6 See, for example, F. Eschenbach and L. Schuknecht (2007) op. cit.
7 Based on L. Laeven and F. Valencia (2008) op. cit.
8 IMF estimates show that average recovery rates for advanced economies are about 55% and are influenced, among other factors, by the soundness of the public financial management framework. For more details, see "The State of Public Finances: Outlook and Medium-Term Policies After the 2008 Crisis", IMF, 6 March 2009, p. 9.

Table 1 The fiscal costs of selected systemic banking crises

Country	Starting date of crisis	Gross fiscal costs (% of GDP)	Recovery rate of fiscal costs (% of GDP)	Recovery rate of fiscal costs (% of gross fiscal costs)
Finland	September 1991	12.8	1.7	13.3
Japan	November 1997	14.0	0.1	0.7
Norway	October 1991	2.7	2.1	77.8
Sweden	September 1991	3.6	3.4	94.4

Source: L. Laeven and F. Valencia (2008).
Notes: The starting date was identified by L. Laeven and F. Valencia (2008) based on their definition of systemic banking crises. The ratios are estimated over a period of five years following the occurrence of the financial crisis.

nationalisation of a substantial part of the banking sector occurred or the government acquired large amounts of assets, government holdings were sold once the crisis was over. As the Swedish experience shows,[9] the key determinants for the successful management of a financial crisis include swift policy action, an adequate legal and institutional framework for the resolution procedures, full disclosure of information by the parties involved, and a differentiated resolution policy that minimises moral hazard by forcing private sector participants to absorb losses before the government intervenes financially.

3 THE FISCAL COSTS OF BANK SUPPORT IN THE EURO AREA

The concerted European action plan of the euro area countries adopted on 12 October 2008 paved the way for a broadly coordinated effort at the EU level to stabilise the financial system. Governments provided support in the form of: (i) government guarantees for interbank lending and new debt issued by the banks; (ii) recapitalisation of financial institutions in difficulty; (iii) increased coverage of retail deposit insurance; and (iv) asset relief schemes. These government measures complemented the extensive liquidity support provided by the ECB and have generally been implemented in accordance with specific guidance from the ECB and the European Commission.[10]

3.1 RECORDING PRINCIPLES

The impact of government support to the banking sector on government accounts is assessed on the basis of the statistical recording principles defined in the ESA 95.[11] In order to ensure that the compilation of government deficit and debt statistics is carried out consistently and homogeneously across Member States, Eurostat is developing further methodological guidance on how to record the operations carried out in response to the financial crisis, on the basis of the ESA 95. As part of this process, Eurostat has consulted the Committee on Monetary, Financial and Balance of Payments Statistics (CMFB)[12] to determine how the accounting rules should be applied.

The CMFB has compiled a typology of interventions and a number of recording principles. While Eurostat has not yet issued a decision on the recording principles to be applied to the interventions, the opinions issued by the CMFB have already served as useful guidance for most Member States in the compilation of the government deficit and debt data reported to Eurostat for the years 2005-08 in the spring 2009 excessive deficit procedure notification. However, it cannot be ruled out that some Member States may need to revise their deficit and debt statistics once Eurostat has issued its decision. The principles for the different types of government intervention are presented below.

GENERAL PRINCIPLES

1. Government guarantees represent contingent liabilities and are recorded off-balance sheet in the ESA 95 framework, unless they are called or are very likely to be called. A call on a guarantee will usually result in a deficit-increasing government capital transfer being recorded.

2. Recapitalisations through purchases of new equity at market prices are recorded as "financial transactions" without an (immediate) impact on the government budget balance. If the purchase price indisputably

9 See L. Jonung (2009), op. cit.

10 The following recommendations have been issued by the ECB: (i) recommendations on government guarantees for bank debt (http://www.ecb.int/pub/pdf/other/recommendations_on_guaranteesen.pdf); (ii) recommendations on the pricing of recapitalisations (www.ecb.int/pub/pdf/other/recommendations_on_pricing_for_recapitalisationsen.pdf) and guiding principles for asset support schemes (http://www.ecb.int/pub/pdf/other/guidingprinciplesbankassetsupportschemesen.pdf).

11 The ESA 95 was adopted by Council Regulation (EC) No 2223/96. The ESA 95 is available at http://circa.europa.eu/irc/dsis/nfaccount/info/data/esa95/en/titelen.htm.

12 The CMFB is composed of senior management representatives of the national statistical institutes and the national central banks of the EU Member States, the European Commission and the ECB. See also www.cmfb.org.

exceeds the market price, a capital transfer for the difference is recorded, thereby negatively affecting the government budget balance. The purchase of unquoted shares in banks (for instance, preferred shares) is recorded as a financial transaction as long as the transaction is expected to yield a sufficient rate of return under EU state aid rules.

3. Loans are recorded as financial transactions as long as the financial institution has a contractual obligation to pay interest and to repay the loan. If there is documented evidence that the loans are very unlikely to be repaid (in full or in part), a government capital transfer is recorded.

4. Asset purchases involve the acquisition of impaired assets or loans, the market value of which is difficult to determine. Governments may decide to create a defeasance structure in charge of purchasing the impaired assets or loans. If the government has paid more than the market price for the assets, a capital transfer is to be recorded for the difference, at the time of purchase. If no market or auction price can be established, the book value of the assets (based on suitable business accounting principles) close to the time of transaction or an independent valuation (founded on a market-based technique) may be considered an adequate approximation of the market value. If the government sells the asset in the year following the transaction, and if the market can be considered to be operating under similar conditions to those prevailing at the time of the original purchase, a capital transfer may be imputed if the selling price is lower than the original purchase price of the asset.

5. Exchanges (swaps) of assets of equal value and standard securities lending arrangements without cash collateral are, in principle, off-balance sheet operations affecting neither government deficit nor debt.

6. If the government agrees to cancel the debt of a financial institution to which it has made a loan or if the government assumes the debt of a financial institution, a deficit-increasing capital transfer is recorded.

7. The fees, dividends or interest payments the government receives from the banks as a result of its interventions are recorded as revenues and improve the government balance.

CLASSIFICATION OF UNITS AND POSSIBLE REARRANGEMENT OF TRANSACTIONS

In some cases, governments have created new units to support the financial sector. It is important to determine the appropriate sector classification of these new units. If a new unit is classified within the government sector, its debt will add to government debt.

When establishing the sector classification of a newly created entity, the first step is to assess whether it should be seen as a separate institutional unit. This requires that the unit has autonomy of decision in respect of its principal function according to the criteria set out in the ESA 95. These criteria are, however, subject to interpretation and the CMFB has not expressed a preference for any specific interpretation. On the other hand, the CMFB has issued an opinion that a new financial body which is deemed to be a separate institutional unit and whose equity stakes are mainly owned by non-government units should nonetheless be classified within general government if the government predetermines its activities and assumes all or most of the risks associated with the body's activity (e.g. by granting a guarantee for all or most of the entity's financing) or if the unit mainly provides non-market goods or services for the benefit of the whole community.

Publicly owned corporations do not belong to the government sector in the ESA 95. However, if an existing public corporation undertakes a rescue operation, this operation may still be recorded in the government accounts. This is the case if the operation is considered to be carried out "on behalf of government". The CMFB considers that such rearrangement of the recorded transactions can only be applied under the conditions

specified in the ESA 95 or if there is irrefutable evidence (such as a written instruction) that the government required the public corporation to carry out the rescue operations. Central bank liquidity operations to preserve financial stability are deemed to fall within the traditional remit of central banks and should, therefore, not affect the government accounts.

3.2 THE IMPACT ON GENERAL GOVERNMENT DEFICIT AND DEBT

On the basis of the recording principles explained in Section 3.1, the various measures to support the financial sector are expected to have only a small direct impact on government deficits in the short to medium term. The direct impact on government debt will largely depend on the borrowing requirements of the government to finance the interventions. Table 2 provides an overview of the interventions by euro area governments in 2008 and the interventions that are so far known for 2009. As a result of these interventions, euro area government debt is expected to increase in total by 3.3% of GDP by the end of 2009. Belgium, Luxembourg and the Netherlands may witness the most noticeable increases in government debt, of 7.4%, 8.3% and 18.2% of GDP respectively.

In addition to the direct impact on deficit and debt, the assessment of the fiscal implications of these interventions needs to take account of governments' contingent liabilities (e.g. guarantees). By the end of 2009, the contingent liabilities related to the interventions are expected to be around 7.5% of GDP for euro area governments (excluding government guarantees on retail deposits). The potential fiscal risks are sizeable for all countries that have provided a guarantee scheme. The government of Ireland has taken on more contingent liabilities than any other euro area government (around 215% of GDP, excluding guarantees on retail deposits).

Table 2 Cumulated interventions and their fiscal impact in euro area countries

(2008-09; percentage of 2009 GDP)

	Type of intervention							Fiscal impact		
	Guarantees	Capital injections		Asset purchase	Asset swaps/asset lending	Debt assumptions/ cancellations	Other measures	Government debt	Government contingent liabilities	
		Acquisition of shares	Loans						Provided	Ceiling
Belgium	21.0	4.0	2.1	0.0	0.0	0.0	0.0	7.4	21.0	34.6
Germany	6.3	1.3	0.0	1.7	0.0	0.0	0.0	2.9	6.3	18.7
Ireland	214.8	4.2	0.0	0.0	0.0	0.0	0.0	4.2	214.8	242.0
Greece	0.6	1.6	0.0	0.0	1.8	0.0	0.0	1.6	0.6	6.1
Spain	3.1	0.0	0.0	1.8	0.0	0.0	0.0	1.8	3.1	18.9
France	1.1	0.7	2.9	0.0	0.0	0.0	0.0	3.8	1.1	16.8
Italy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Cyprus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Luxembourg	12.8	8.3	0.0	0.0	0.0	0.0	0.0	8.3	12.8	-
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
The Netherlands	5.0	6.5	7.6	3.9	0.0	0.0	0.2	18.2	5.0	35.0
Austria	6.6	1.7	0.0	0.0	0.0	0.0	0.0	1.7	6.6	27.8
Portugal	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	12.4
Slovenia	0.0	0.0	0.0	0.0	0.0	0.0	3.6	3.6	0.0	33.2
Slovakia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Finland	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	28.1
Euro area	7.5	1.3	1.1	0.9	0.0	0.0	0.0	3.3	7.5	19.9

Source: Eurosystem.
Notes: Data as at mid-May 2009. Guarantees on retail deposits are not included.

4 THE IMPACT ON GOVERNMENT BOND YIELDS

Government interventions in the banking sector have been successful in safeguarding the stability of the financial system. The price of this success is that the governments have assumed substantial fiscal costs and credit risks. Indeed, the recent developments in government bond yields for euro area countries have pointed to changing investor perceptions of countries' creditworthiness.

Between end-September and end-October 2008, when many governments across the euro area announced substantial bank rescue packages, an adverse shift in market sentiment towards sovereign borrowers occurred. This caused sovereign credit default swap (CDS) premia for euro area countries to increase sharply, whereas the CDS premia for European financial corporations (i.e. those covered by the iTraxx financial index)[13] started to decline. This is illustrated in Chart 1, which depicts the cumulative changes since mid-September 2008 in average five-year sovereign CDS premia for euro area countries and in the CDS premia for European financial institutions covered by the iTraxx financial index. The vertical bars denote the dates on which bank rescue packages were announced. The chart shows that at the time of announcement of the packages sovereign CDS premia increased, whereas CDS premia for financial institutions declined. This suggests that the broad-based rescue packages have alleviated some credit risk in the banking sector and brought about an immediate transfer of credit risk from the financial to the public sector.[14]

GOVERNMENT BOND YIELD SPREADS

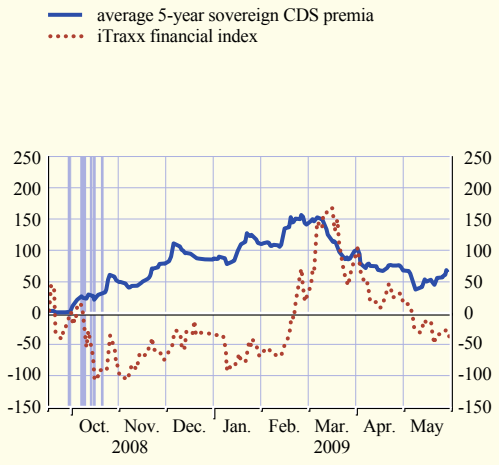
While all euro area countries have faced a rise in sovereign CDS premia, some countries have been affected more than others. This cross-country difference has been mirrored by the trend in government bond yields relative

13 A credit default swap (CDS) is a contract in which a "protection buyer" pays a periodic premium to a "protection seller" and, in exchange, receives a pay-off if the reference entity (a firm or a government issuer) experiences a "credit event", for example, a failure to make scheduled interest or redemption payments on debt instruments (typically bonds or loans). The iTraxx financial index contains the CDS spreads of 25 European financial institutions, including institutions from the United Kingdom and Switzerland.

14 See also the box entitled "How have governments' bank rescue packages affected investors' perceptions of credit risk?" in the March 2009 issue of the Monthly Bulletin.

Chart 1 Cumulative changes in average five-year sovereign CDS premia for euro area countries and the iTraxx financial index

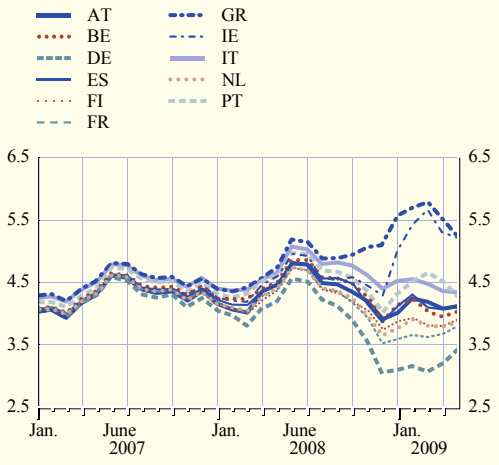
(basis points)



Sources: Datastream and ECB staff calculations.
Note: The vertical bars indicate the dates on which bank rescue packages were announced in euro area countries.

Chart 2 Ten-year government bond yields of euro area countries

(monthly averages; percentages per annum)



Sources: Bloomberg and ECB staff calculations.

to Germany.[15] Chart 2 depicts ten-year sovereign bond yields for most euro area governments from January 2007 to May 2009. Before the intensification of the financial turmoil in September 2008, government bond yields moved quite closely together. Since then, developments have differed across countries to a great extent and only since March 2009 have government bond spreads started tightening again.

Compared with January 2007, ten-year bond yields have, on balance, fallen for five countries (i.e. Germany, France, the Netherlands, Belgium and Finland), remained broadly stable for four countries (i.e. Austria, Spain, Italy and Portugal) and increased for two countries (i.e. Greece and Ireland). This suggests that, although all countries have announced broad-based bank rescue packages, investors have differentiated between countries mainly on the basis of other, more country-specific factors.[16] In particular, the literature on the determinants of long-term bond yields provides evidence that a country's macroeconomic and fiscal fundamentals affect investors' perceptions of its creditworthiness and that this is likely to influence developments in government bond markets.[17,18]

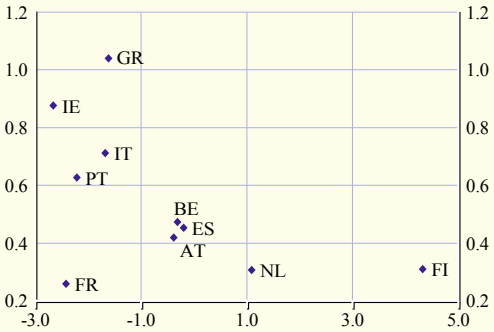
In the fourth quarter of 2008, economic growth prospects deteriorated and, as a result, the budgetary outlook across euro area countries worsened rapidly, reflecting the impact of automatic stabilisers, revenue shortfalls, underlying spending growth and the discretionary fiscal stimulus packages adopted by some countries, as well as rising debt-to-GDP ratios. This resulted in budget deficits above the reference value of 3% of GDP for several euro area countries. The fiscal outlook for the individual countries may thus have caused investors to discriminate more strongly among sovereign borrowers by asking for higher risk premia from countries perceived to be especially vulnerable (see the box).[19]

Chart 3 provides further support for these arguments. The ten-year government bond yield spreads over Germany for the euro area countries under consideration are plotted against their expected budget balance relative to that of Germany. The chart shows that countries that are expected to have a less favourable budget balance than Germany have experienced larger bond yield differentials. France is an outlier in this respect, as it has experienced only a slight increase in its ten-year government bond

Chart 3 Ten-year government bond yield spreads of euro area countries over Germany and the expected budget balance relative to Germany

(percentage points)

x-axis: average expected budget balance (% of GDP) relative to Germany
y-axis: ten-year government bond spreads relative to Germany



Sources: Bloomberg, European Commission and ECB staff calculations.
Note: For each country, the average expected budget balance for 2007, 2008 and 2009 is computed using vintages of the European Commission forecasts available at each point in time. Data for bond spreads relate to the average between 31/07/2007 and 29/05/2009.

15 Movements in sovereign bond yield spreads reflect two main factors: liquidity risk and credit risk. For an in-depth analysis of the role of these two factors in explaining the widening of sovereign bond yield spreads, see the box entitled "Recent widening in euro area sovereign bond yield spreads" in the November 2008 issue of the Monthly Bulletin.

16 The movement in government bond spreads has not been limited to the euro area countries. The financial turmoil has also led to the widening of bond spreads for individual US states over US Treasury bonds.

17 In addition, the size of the financial sector relative to the size of the economy may affect investors' perceptions of a country's vulnerability to the financial crisis. A large financial sector may point to larger revenue shortfalls from the asset price bust as well as to larger upfront fiscal costs from bank support measures.

18 See, for example, L. Schuknecht, J. von Hagen and G. Wolswijk, "Government risk premiums in the bond market: EMU and Canada", ECB Working Paper No 879, March 2008, and G. Caporale and G. Williams, "Long-term nominal interest rates and domestic fundamentals", *Review of Financial Economics*, Vol. 11, pp. 119-130, 2002.

19 IMF estimates also indicate the importance of fiscal variables in affecting sovereign bond spreads during the current crisis. Since September 2008 changes in sovereign bond spreads are found to be sensitive to a country's projected change in debt, as well as to the expected default frequency of a country's median financial institution. See the IMF's Regional Economic Outlook: Europe, May 2009 "Addressing the Crisis", p. 40.

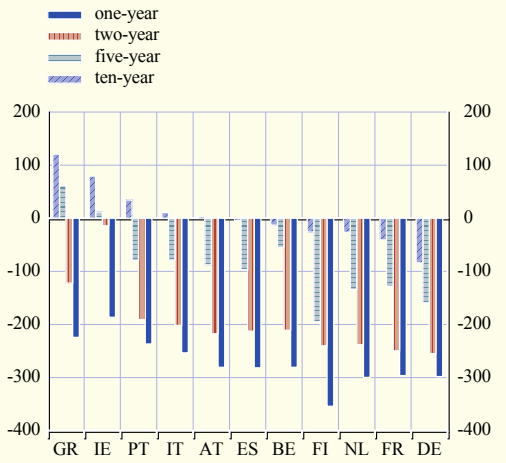
yield differential to Germany despite its less favourable budget balance. This can possibly be explained by the relatively lower liquidity premium which France may face as compared with other countries under consideration.

IMPACT ON GOVERNMENT BORROWING COSTS

From a public finance point of view, rising long-term government bond yields represent a cause for concern as they may signal a reduced willingness on the part of investors to provide long-term funding and they may translate into higher debt servicing costs, depending on the maturity structure of both outstanding and newly issued debt. Chart 4 depicts the change in the level of sovereign bond yields for maturities of one, two, five and ten years from January 2007 to May 2009, for those euro area governments for which information is available. As the chart shows, one and two-year government bond yields have fallen substantially for all countries, whereas the direction of change in five and ten-year bond yields has not been uniform across countries. The generalised reduction in short-term bond yields may be related partly to the reduction in monetary policy rates. Furthermore, the deterioration in investors' appetite for riskier private financial assets may have supported the demand for low-yield but safer government assets of all maturities, while taking account of cross-country differences in creditworthiness. Against the backdrop of lower interest rates, borrowing costs would fall the higher the share of debt that governments can and wish to finance at those rates.

Chart 4 Changes in euro area government bond yields

(May 2009 compared with January 2007; monthly averages; basis points)



Sources: Bloomberg and ECB staff calculations.

Box

THE DETERMINANTS OF LONG-TERM SOVEREIGN BOND YIELD SPREADS IN THE EURO AREA

Long-term government bond yield spreads over Germany have widened markedly since September 2008 in most euro area countries (see Chart 2 in the main text). This box introduces an empirical model aimed at exploring potential determinants of these developments during the recent period of financial turmoil.

As discussed in the November 2008 issue of the Monthly Bulletin[1] and in the academic literature,[2] euro area long-term government bond yield spreads are likely to depend on factors such as

1 See the box entitled "Recent widening in euro area sovereign bond yield spreads".

2 See, for example, L. Codogno, C. Favero and A. Missale, (2003), "Yield Spreads on EMU Government Bonds", *Economic Policy*, October, pp. 505-532; J. Lemmen and C. Goodhart, (1999) "Credit risks and European government bond markets: a panel data econometric analysis", *Eastern Economic Journal* 25, pp. 77-107; A. Geyer, S. Kossmeier, and S. Pichler (2004), "Measuring Systematic Risk in EMU Government Yield Spreads", *Review of Finance*, 8, p. 171; K. Bernoth, J. von Hagen and L. Schuknecht, (2004), "Sovereign Risk Premia in the European Government Bond Market", ECB Working Paper, No 369; L. Schuknecht, J. von Hagen and G. Wolswijk, (2008) "Government risk premiums in the bond market: EMU and Canada", ECB Working Paper No 879; OECD Economic Outlook, March 2009, Box 3.2 entitled "What drives sovereign bond spreads in the euro area?"; IMF's Regional Economic Outlook: Europe May 2009, "Addressing the Crisis" p. 40.

investors' perceptions of countries' credit risk (as captured, in particular, by the relative soundness of expected fiscal positions or other indicators of creditworthiness), market liquidity risk (which may be related to the relative size of sovereign bond markets), and the degree of international risk aversion on the part of investors (which in times of heightened uncertainty could be higher for some euro area countries than for others). In addition, given the particular nature of the period of financial turmoil covered in this analysis, government announcements of substantial bank rescue packages may explain the widening of euro area sovereign bond yield spreads.

The following empirical model is used to explain the ten-year government bond yield spreads of ten euro area countries[3] over Germany (*spread*):

$$spread_{it} = \alpha + \rho\, spread_{it-1} + \beta_1 ANN_{it} + \beta_2 FISC_{it} + \beta_3 IntlRisk_t + \beta_4 LIQ_{it} + \varepsilon_{it}$$

In this model, *ANN* denotes the announcements of bank rescue packages made by individual euro area governments (this variable takes the value 1 after the date of the announcement and the value 0 before); *FISC* denotes the expected general government budget balance and/or gross debt as a share of GDP, relative to Germany, over the next two years, as released biannually by the European Commission; *IntlRisk* is a proxy for international investor risk aversion, as measured by the difference between the ten-year AAA-rated corporate bond yield in the United States and the US ten-year Treasury bond yield; *LIQ* is a proxy for the degree of liquidity of euro area government bond markets, measured by the size of a government's gross debt issuance relative to Germany; ε_{it} is the unexplained residual.

The table below shows the estimation results, using daily data, as well as monthly averages for the dependent variable[4] for the period from 31 July 2007 to 25 March 2009.

According to this model, apart from the high levels of persistence in the daily and monthly government bond yield spreads, higher spreads in the euro area countries are mainly explained by higher expected budget deficit and debt ratios, higher international risk aversion and lower liquidity in the government securities markets relative to Germany. The announcements of bank rescue packages appear to have increased, on average, the risk of long-term government borrowing compared with Germany.

To conclude, this empirical evidence indicates that euro area governments with more favourable expected fiscal positions may benefit from relatively lower borrowing costs in times of crisis. This gives them greater room for manoeuvre in terms of the additional costs of debt issuance and the budgetary risks incurred through the bank rescue operations that have proved to be critical in safeguarding confidence in and the stability of the financial system.

Dynamic panel estimation results for the dependent variable *spreads*

Explanatory variables	Daily data	Monthly data
Spread (t-1)	0.9829***	0.9704***
Announcement of bank rescues	0.0046**	0.0582**
Expected budget balance	-0.0007**	-
Expected government debt	0.0001**	0.0008**
International risk aversion	0.0041***	0.0262*
Liquidity proxy	-0.0037***	-0.0233***
Constant	0.0024*	0.0074
No. of observations	4212	196

Sources: European Commission, Bloomberg, ECB and ECB calculations.
Notes: The dependent variable ($spread_{it}$) is expressed in percentage points. The table shows the estimated coefficients and their significance level (*10%, **5%, ***1%). The estimation technique is feasible generalised least squares, in the presence of AR(1) autocorrelation within panels and heteroskedasticity across panels.

3 Belgium, Ireland, Greece, Spain, France, Italy, the Netherlands, Austria, Portugal and Finland.
4 Where available, explanatory variables are also expressed in daily and monthly frequencies. Data on the expected government balance and expected gross government debt varies according to European Commission releases (mostly biannually); liquidity data are quarterly. The correction of the estimated standard errors (by clustering) to account for various data frequencies does not change the conclusions.

5 IMPLICATIONS FOR FISCAL SUSTAINABILITY

Fiscal sustainability is generally defined as the ability of a government to service its debt obligations in the long term.[20] This requires that the current policies of the government satisfy the intertemporal budget constraint, which implies that the discounted present value of future primary balances (i.e. the budget balance excluding net interest payments) should be at least equal to the outstanding stock of government debt.[21]

In principle, the evolution of the government net debt-to-GDP ratio is affected by three main factors: (i) the current debt ratio; which represents the legacy of past fiscal policies; (ii) the primary budget balance ratio; and (iii) the difference between the nominal (implicit) interest rate and nominal GDP growth. If the nominal interest rate is higher than the growth rate of nominal GDP, a primary budget surplus is needed to maintain the government debt ratio at its current level (and a higher one in order to reduce the debt ratio). In addition to these factors, the debt ratio may also increase as a result of transactions which are recorded "below the line", i.e. financial transactions which do not affect the government deficit (such as the stock-flow adjustment).

Government support to the banking sector in the form of capital injections or asset purchases conducted at market price do not affect the government deficit but would affect the gross debt ratio if the government needed to issue new debt to finance the transaction. However, the net debt ratio would also increase if the value of the financial sector assets acquired by the government were to decline after the purchase. According to Table 2, the cumulated increase over 2008 and 2009 in the euro area government debt ratio on account of capital injections and asset purchases in the banking sector so far amounts to 3.3% of GDP and is substantially higher in a number of euro area countries. Looking ahead, the risk of the debt ratio rising further cannot be ruled out in the light of the possibility that additional support will be provided to the banking sector or that government guarantees will be called, as well as the uncertainty regarding the future valuation of acquired financial sector assets. The fiscal costs of support to the banking sector may be partially offset by the fees, dividends and interest paid by the banks to the governments in exchange for financial support. In the medium term, the net fiscal costs will also depend on the proceeds from the sale by governments of financial sector assets. As shown in Section 2, experience shows that the recovery rates tend to be considerably below 100%.

Developments in government bond yields may only have a gradual impact on the nominal (implicit) interest rate on outstanding debt, as changes in interest rates only affect the cost of newly issued debt and debt at variable interest rates. As discussed above, most euro area countries have so far enjoyed relatively low interest rates on new government debt issuance, despite facing considerably more difficult market conditions. Looking ahead, as the economy recovers and competition for financing increases, governments may face higher bond yields again.

The financial crisis can also affect the sustainability of public finances owing to its implications for the real economy. The unfavourable macroeconomic environment has contributed to rapidly increasing primary deficits leading to further accumulation of debt. The increase in primary deficits is due to the operation of automatic stabilisers and tax revenue shortfalls arising from falling real GDP growth, underlying spending growth as well as the discretionary fiscal stimulus measures adopted in response to the economic recession. A prolonged period of low real GDP growth could lead to a further increase in the debt-to-GDP ratio. Moreover, given the declining asset values in the funded components of private and

20 See, for example, N. Giammarioli, C. Nickel, P. Rother and J.P. Vidal, "Assessing fiscal soundness – theory and practice", ECB Occasional Paper No 56, March 2007.

21 See the article entitled "Challenges to fiscal sustainability in the euro area" in the February 2007 issue of the Monthly Bulletin.

public pension systems, there may be increasing pressure on public finances to compensate for these losses, which could reduce primary balances and increase the risks to fiscal sustainability. Finally, sizeable implicit liabilities related to the ageing of the population add significant further risks to fiscal sustainability over the longer term.[22]

The European Commission's spring 2009 forecasts point to a marked deterioration in public finances for the euro area, with the general government balance projected to be -5.3% and -6.5% of GDP in 2009 and 2010 and the debt ratio expected to stand at 77.7% and 83.8% of GDP respectively. In 2009 and 2010, 13 out of 16 euro area countries are expected to have a budget deficit above the 3% of GDP reference value. Government debt ratios for most euro area countries are also expected to increase rapidly.[23]

6 CONCLUSION

Based upon the principles of statistical recording of government interventions, the impact of government measures to support the banking sector on the euro area government deficit has so far been limited, whereas the impact on government debt and contingent liabilities has been considerable and differs across euro area countries to a large extent. Since the possibility of further interventions cannot be ruled out and budgetary risks arising from contingent liabilities may still materialise, additional effects on deficits and debt may occur in the future. However, the net fiscal costs also depend on the proceeds from the future sale by governments of the financial sector assets that they have acquired. These net fiscal costs for taxpayers have to be weighed against the economic and social benefits of stabilising the financial sector. In addition, governments face high deficits as a result of the operation of automatic stabilisers and revenue shortfalls related to the unfavourable macroeconomic environment. Furthermore, budgetary positions have deteriorated owing to the built-in momentum of government spending growth as well as discretionary fiscal stimulus measures aimed at supporting the economy.

The analysis of developments in euro area sovereign bond yields shows that different factors affect investors' perceptions and that there are differences across both countries and maturities. Apart from the impact on government borrowing costs, which so far has been moderate, the most important finding is that during the period of heightened financial turmoil financial markets increasingly discriminated among countries on the basis of their perceived creditworthiness, which is determined, among other factors, by differences in the macroeconomic and fiscal fundamentals.

The full impact of rising government deficits, debt and contingent liabilities on fiscal sustainability will be felt in the medium to long term. Against this backdrop, it is essential that governments make a strong and credible commitment to a path of consolidation in order to return to sound fiscal positions, respecting fully the provisions of the Stability and Growth Pact. This will preserve trust in the sustainability of public finances and will support both the recovery and long-term economic growth. The credibility of fiscal consolidation commitments will be strengthened if they are part of national policy frameworks oriented to the medium term.

22 According to the "2009 Ageing Report" prepared by the European Commission and the Economic Policy Committee's Ageing Working Group, the total age-related public spending-to-GDP ratio is projected to rise by 5.2 percentage points in the euro area over the period 2007-60.

23 For a more detailed discussion, see the "Fiscal developments" section of the June 2009 issue of the Monthly Bulletin.