Special Analysis

Restrictive fiscal policies in Europe: what are the likely effects?

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In Europe, fiscal policy will be distinctly more restrictive from 2011 onwards. The fiscal consolidation efforts scheduled for 2011 represent 1.2 percentage points of GDP in the Euro Zone, for example, and 1.8 percentage points in the UK. This report examines the impact of all these consolidation measures on growth in Europe.

Fiscal adjustments have an impact on activity via a large number of channels, some of them antagonistic. Traditionally, such adjustments hit short-term demand and depress activity by Keynesian effects. These negative effects are generally offset to some extent by a fall in interest rates and the depreciation of exchange rates, making economic activity more competitive. In addition, non-Keynesian effects known as "Ricardian" effects may appear during some periods of fiscal consolidation: if the adjustment in government finances is perceived as being credible, agents may revise their expectations of future taxes downwards and therefore reduce their savings ratio. This fall in the savings ratio can then attenuate, or even entirely offset the negative effects of the consolidation plans.

Most of the OECD countries emerged from the recession with high levels of government debt. This unusual deterioration in public finances must be taken into account when assessing the impact of fiscal consolidation plans, as this impact is not necessarily unrelated to the context in which the plans are implemented. In particular, one important question is raised: that of the "alternative" scenario, meaning the growth trajectory in the absence of any fiscal consolidation. In the current context, such a scenario would not necessarily be painless if it went hand-in-hand with a sharp rise in risk premiums on sovereign borrowing and increased uncertainty on financial markets. This type of scenario is very difficult to define, however, using the traditional macro-economic models.

We will not go so far as to quantify such a scenario here, but this report does take account of the standard effects of the economic and fiscal situation on the costs of financing public debt. The empirical analysis shows that in recent times, these factors have contributed to changes in risk premiums in European countries. In some countries, however, such as Greece or Ireland where the rise was very sharp and sudden in 2010, they do not explain the whole of the increase.

The impact of the different consolidation plans in Europe has therefore been evaluated using the NiGEM macro-economic model, enriched to take ac-

count of the effects of the economic and fiscal situation on public debt financing costs. This essentially Keynesian model also takes account of the cross-border effects of the different national plans. Compared to a scenario without fiscal consolidation, the mechanical effects of the consolidation plans would reduce Euro Zone growth in GDP by about 1/2 a percentage point this year. Their effect on French growth would be -0.6 points in 2011, with one-third of this effect being down to the fiscal adjustments being made in the other European countries.

This evaluation is based on the hypothesis that there are none of the "Ricardian" effects mentioned above, by which households might offset the restrictive impact of fiscal consolidation plans by a reduction in their savings ratio. If any such effects did emerge today, the negative impact on growth in the countries in question would be reduced. ■

Restrictive fiscal policies in Europe: what are the likely effects?

In 2011, the European countries are entering a phase of fiscal consolidation

After a sharp deterioration in their fiscal situations during the recession...

In most of the OECD countries, public finances have deteriorated considerably since the crisis began in 2008. Under the effects of the built-in stabilizers, the recession has had the mechanical effects of reducing fiscal revenues and increasing social expenditure, in particular spending on unemployment benefits. The stimulus plans introduced to boost activity have also had a negative impact on the budget balance of the advanced economies. In the Euro Zone [1] for example, public deficits should increase from 2% of GDP in 2008 to 6.3% of GDP in 2010.[2]

...the European countries are introducing consolidation policies from 2011 onwards

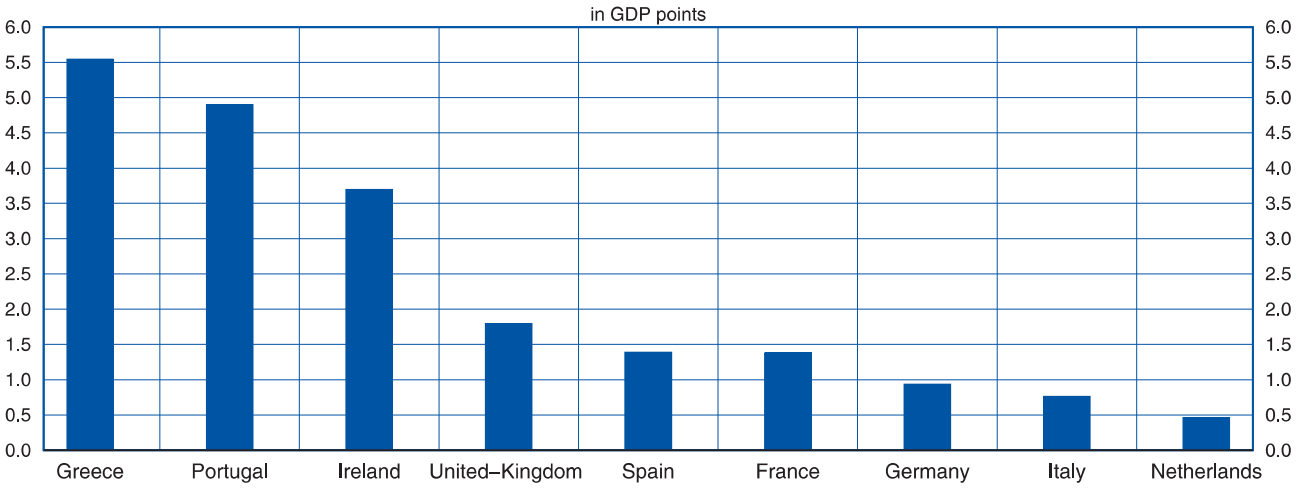
To get their public finances back onto a sustainable course, most European countries have decided to implement fiscal consolidation plans from 2011 *(see Graph 1)*. In the Euro Zone, such is the case of Germany, France, Italy, Spain and the Netherlands. The UK has also scheduled large-scale fiscal efforts for the coming years. In addition to this, some Euro-Zone countries also faced sovereign debt crises in 2010: the financing difficulties they encountered in this respect may have accelerated their consolidation efforts. For example, Greece, Ireland and Portugal are pursuing particularly restrictive fiscal policies in 2011.

The evaluation of the fiscal adjustment plans is based on the sum of the measures announced in national budgets

The evaluation of the fiscal consolidation plans in this report is based on a certain number of conventions. First of all, the evaluation of the size of the plans is based on national budget proposals:[3] we took the different public finance measures as presented in the national budgets, their amounts were classified by their nature (in different categories of revenue and expenditure, see *below*) and their sum was calculated. From a macro-economic point of view, one alternative would have been to take directly the evolution in the structural balances of the different Euro-

(1) Here and in the rest of the report, the "Euro Zone" refers only to the eleven main historic countries in the zone: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain.
(2) The deficit for 2010 is taken from the forecasts in OECD Economic Outlook n° 88.
(3) The plans taken into consideration in this report for the Euro Zone were those of Germany, France, Italy, Spain, the Netherlands, Portugal, Greece and Ireland. The report also took account of the fiscal policy conducted in the UK. The other consolidation plans are smaller and of less importance on the European scale and therefore were not taken into account.

1 - Scale of fiscal consolidation plans in Europe in 2011



Source: national budget bills, calculations by the authors on the basis of announcements in each country

pean countries for 2011, calculated by the OECD or the European Commission, for instance. However, structural balances are a less-than-perfect measurement of actual fiscal impulse (IMF, 2010), and the composition of the consolidation plans must be examined in addition to their scale in order to evaluate their macro-economic impact. In practice, however, the fiscal effort presented here is close to the expected improvement in the structural balance in 2011.

Next, only those measures that have an additional impact in 2011 were taken into account. Some of the Euro-Zone countries, notably Spain, had already started their fiscal adjustment process in 2010. These measures represented a fiscal effort in 2010, but are not taken into account here.

Finally, our method implies treating the end of the stimulus measures as consolidation measures, given that the withdrawal of these stimulus plans does contribute to a fiscal policy that is more restrictive on the whole in 2011.

A fiscal adjustment of about 1.2 percentage points of GDP in 2011 for the Euro Zone as a whole...

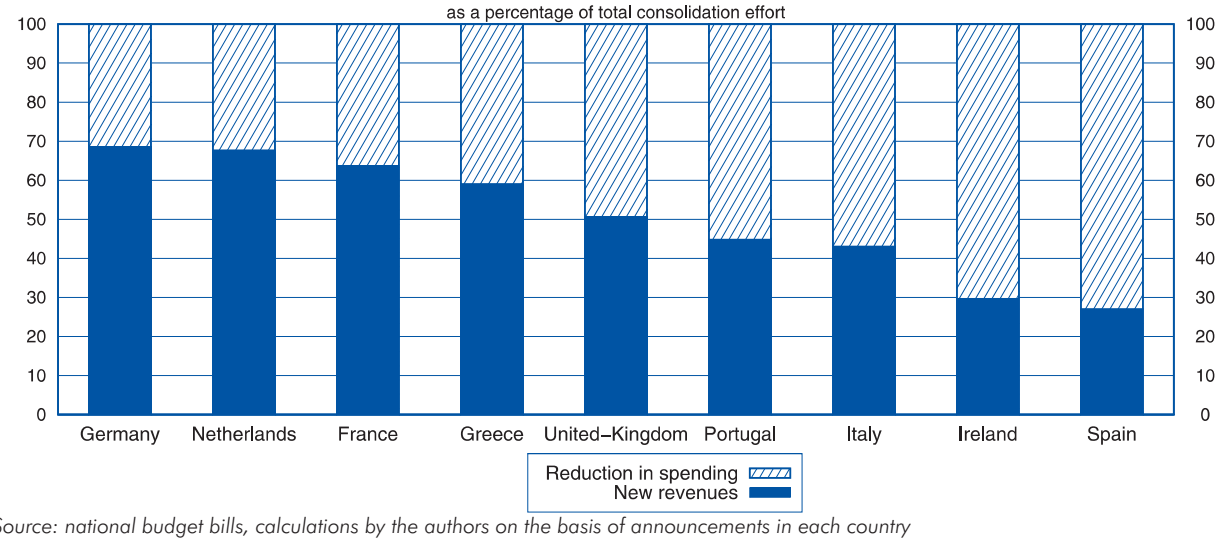
In 2011, for the Euro Zone as a whole, the fiscal consolidation measures represent an amount of about 1.2 percentage points of the Zone's GDP. To this must be added the measures taken in the UK, amounting to about 1.8 points of the UK's GDP. For the following years, this exercise will be more difficult: public finance forecasts for the next few years in all the European countries see a continuing improvement in the public finance situation through to 2013-2014, but they are unevenly documented and it is difficult to forecast the details of the various measures required to make this adjustment. In this report, we therefore focus exclusively on the decisions made for 2011.

... with differing compositions from one country to another

The composition of the European plans shows significant differences between countries *(see Graph 2)*. For example, Germany, Greece and France are basing a large part of the fiscal adjustment on an increase in revenues.[4] Spain, Ireland and Portugal, meanwhile, have focused more on reducing public expenditure.

(4) Notably the reform of Professional Tax and the reduction in tax loopholes in France.

2 - Composition of fiscal consolidation plans in Europe in 2011



Source: national budget bills, calculations by the authors on the basis of announcements in each country

Restrictive fiscal policies in Europe: what are the likely effects?

Fiscal adjustments *generally* have a negative impact on activity, but they do involve a large set of antagonistic mechanisms.

According to the "traditional" Keynesian mechanisms, fiscal adjustments can lead to a considerable fall in activity...

Contraction in demand...

In the short term, according to Keynesian mechanisms, fiscal consolidation measures slow down demand on the whole. For example, a reduction in government consumption or investment has a *direct effect* on GDP. A reduction in social benefits, an increase in tax or in employee social contributions lead to a fall in the disposable income of households and, in general, in their consumption. Finally, a reduction in grants to companies or an increase in their taxation can affect company profitability, leading them to reduce their investments or increase their prices. In all these cases, GDP is reduced in the short term, all other things being equal.

... amplified by multiplier effects...

The decline in demand for the products and services of companies affects their production levels and leads to a reduction in investment and employment. This leads to a fall in household income which in turn leads to a further decline in demand for the products and services of companies, and so on: this is the *Keynesian multiplier* mechanism. Its scale depends notably on the lever used to reduce the deficit. In particular, the multiplier effect is generally high in the short term in cases of reductions in government consumption or investment. It tends to be a little lower for fiscal adjustment measures that affect household income or those affecting companies, as the multiplier effects in these cases take longer to appear. Over the longer term, however, these measures do not amount to the same thing: measures making direct reductions in current expenditure would have little impact on activity, while tax increases can have an impact on labour supply or capital stock, for example, and reduce production potential (*see below*).

... but softened by the fall in interest rates and depreciation in exchange rates.

The fall in activity leads to a fall in interest rates that can be interpreted in two ways. On the one hand, it can be caused by a reduction in demand for loanable funds on financial markets, as the financing requirement of government decreases. On the other hand, it may be made directly by the Central Bank seeking to counter the slide in activity by reducing its rates. Monetary "support" for fiscal consolidation policies is therefore possible and can attenuate their negative effects on activity (*crowding out by interest rates*). In addition, adjustment plans are generally accompanied by the depreciation of the exchange rate, buoying up domestic activity by increasing exports (*crowding out by foreign trade*).

In a monetary union like the Euro Zone, where monetary policy is conducted for the zone as a whole, this monetary policy response will be stronger when fiscal adjustments are handled in a coordinated manner. However, when a consolidation plan is conducted by a country in isolation, the monetary policy response and its positive effects on activity are reduced.

Effects depend on the context

In the current context, the attenuating mechanisms may come into play to a lesser extent. They might be hindered by the current low nominal interest rates: it is indeed difficult to imagine a much more accommodating monetary policy than that applied since the beginning of the financial crisis. Also, with fixed exchange rates in the Euro Zone and simultaneous consolidation plans in a large number of OECD countries, there is a risk of limiting the positive effects of exchange rate depreciation. The "traditional" mechanisms therefore suggest that the combined impact of the fiscal consolidation plans in the OECD or in Europe will slow down growth in the advanced economies in 2011. However, other economic mechanisms based on expectations among agents do not necessarily have a negative impact on activity and might result, on the contrary, in fiscal consolidation having expansionary effects.

...but there are certain more positive effects based on expectations among agents.

"Non-Keynesian" effects might emerge

"Non-Keynesian" or even "anti-Keynesian" effects can be observed in some periods of fiscal consolidation, most of which concern consumption and labour supply (Alesina and Perotti, 1996). These different effects vary in scale according to the nature of the consolidation.

A "Ricardian" reduction in household savings ratios

These are notably effects linked to anticipation of future reductions in taxation, known as *Ricardian effects*. For instance, when faced with a fiscal adjustment effort that is deemed to be credible, households might reduce their savings ratio right away, thereby buoying up growth. Such anticipations would be stronger when the fiscal adjustment concerns a reduction in expenditure that is likely to be sustained and is the sign of a strong political will.(5) Symmetrically, a poor public finance situation might incite households to build up their savings as a precaution, in preparation for future fiscal adjustments. Implementation of a fiscal consolidation strategy could therefore allow reducing excessive precautionary savings.

These Ricardian effects are said to be full when the consolidation effects are entirely offset by the fall in private savings, leaving the level of activity unchanged. Econometric studies generally show that these effects are partial but can be significant.(6) A recent study by Röhn (2010) evaluated the fall in private saving at 40% of the amount of government fiscal consolidation, on average.

Supply effects

The reduction in the weight of government spending in the economy can also have expansionary effects if agents anticipate that the reduction in tax will reduce economic distortions, thereby increasing productivity and, ultimately, national income (Romer, 2006, p.579 and IMF 2010). Stabilisation of taxation rates over time is also likely to minimise the cost of economic distortion.

Finally, the composition of the plan to restore public finances is important. When the fiscal adjustment is made by a reduction in public-sector payroll, the consequence is that labour supply is transferred towards the private sector, reducing wage costs and therefore improving company competitiveness. In contrast, a rise in taxes on labour can lead to a fall in labour supply; depending on the formation of wages, this may lead to a rise in unit labour costs and have a negative impact on competitiveness (Alesina and Perotti 1996). Looking into the medium-term supply effects, fiscal adjustments based on reductions in government expenditure are generally considered to be more effective than those made by increasing taxes (IMF 2010).

The effects of fiscal adjustments also depend on the situation of public finances

The initial situation of public finances counts

The traditional effects of fiscal adjustments, Keynesian and anti-Keynesian alike, have been the focus of much attention since the beginning of the economic crisis. Most of the OECD countries emerged from the recession with degraded public finances and historically high levels of government debt. For the Euro Zone as a

(5) For Alesina and Perotti (1996) for example, fiscal adjustments made by cuts in social transfers and civil service wages are more credible than those based on cuts in investment spending, as the former are often deemed to be more sustainable than the latter.
(6) The Ricardian effects would not be full given notably the existence of certain liquidity constraints on households (Romer 2006): certain households who anticipate a rise in income and would like to borrow to smooth out their consumption are unable to do so because they cannot provide the banks with assurances of their future repayment capacities. According to some authors, Ricardian effects during consolidation would be strengthened when government debt is high, as it makes the possibility of a crisis less likely (Heylen Everaert, 2000).

whole, the context in which fiscal consolidation is being carried out is therefore a relatively new one. In these conditions, the efficiency of a fiscal consolidation strategy is not unrelated to the context in which it is implemented: the position of public finances at the outset and the imbalances that emerge must be taken into account.

The alternative scenario. Deteriorated public finances can have a cost in terms of growth...

This highlights a very crucial question: that of an alternative scenario in the absence of fiscal consolidation. In the current context, this scenario is not necessarily painless in terms of growth. Imbalances in public finances can weigh down on growth via increases in risk premiums on sovereign loans.

... through a rise in risk premiums on sovereign loans...

The traditional vision according to which the sovereign debt of industrialised countries is a risk-free asset has been changed as we come out of the recession. When a State's public finances are in a poor way, its public debt may be perceived as being unsustainable; in this case, government borrowing may be financed at a significantly higher risk premium on new bond issues. The rise in the rates on government securities increases debt costs and adds further to the deficit. In the most critical situations, it may even force the State to default on its debt by a *snowball effect*.[7] Transmission of the crisis to the private sector then becomes possible.

... and, more generally, by the loss of room for manoeuvre in managing the cycle or by crowding out private investment.

More generally, empirical indications suggest that high public debt can have costs in terms of growth: Reinhart and Rogoff (2010) indicate, for example, that over the long term, a debt level exceeding 90 percentage points of GDP is generally associated with distinctly weaker growth in developed countries. Aside from the rise in risk premiums, a number of factors can explain this phenomenon: on the one hand, a high level of government expenditure can crowd out private investment, drawing off the supply of loanable funds to the detriment of the private sector; on the other hand, fiscal room for manoeuvre can be narrowed making macroeconomic stabilization less efficient: this can generate irreversible losses in extended periods of weak activity, which then reduce growth potential (Champsaur and Cotis, 2010).

An effective consolidation strategy can therefore reduce the sovereign risk premium...

Above what threshold does government debt begin to be considered unsustainable? In practice, this threshold is quite blurred, although sustainability indicators do exist *(see Box 1)*, and tensions on sovereign debt did emerge in certain Euro Zone Member States in the course of 2010. Against a backdrop of imbalanced public finances, fiscal adjustments can therefore make it possible to ease risk premiums, thereby lowering interest rates not only by the fall in demand for loanable funds, but also by reducing the sovereign risk premium. Their negative effects on activity can therefore be softened.

..., reduce uncertainty...

Also, the rise in risk premiums on sovereign debt issues increases uncertainty on financial markets in general, and could lead to an increase in the risk premiums paid by private investors (Cottarelli et al., 2010). It could also have repercussions on the behaviour of households and companies, insofar as it encourages *precautionary savings* (Romer, 2006, p.579). Likewise, uncertainty as to the composition of the anticipated fiscal adjustment can give rise to additional precautionary savings. Placing public finances on a sound footing could therefore make it possible to reduce uncertainty, to restore household and investor "confidence" and to buoy up private consumption and investment.

(7) This is the scenario that the support mechanisms for countries in difficulty set up in Europe in 2010 are seeking to prevent.

Box 1: How can we address the notion of government finance sustainability?

Solvency refers to a State's ability to face its commitments to its creditors. In general, sovereign States are solvent because they have the possibility of raising taxes: this ability to raise taxes constitutes a form of implicit financial asset as collateral for the debt raised on the markets. In practice, however, in certain circumstances solvency crises can occur: in economic history, there have been total or partial examples of sovereign States default. A solvency crisis generally manifests itself by a liquidity crisis, which is to say difficulties or even the impossibility for a State to finance itself at interest rates that are not prohibitive.

The *sustainability* of government finances is a somewhat broader concept: it designates the ability of a State to be solvent at any time in the future, through to a more or less distant time horizon. As such, it integrates a prospective and normative dimension. There is no single measure of government finance sustainability, but there are indicators that allow the notion to be outlined.

Most sustainability indicators are based on the dynamics of the debt and the equation of the accumulation of government debt. The variation in the government debt to GDP ratio is written as follows:

$$\Delta d_t = \frac{i_t - \gamma_t}{1+\gamma_t} d_{t-1} - p_t \qquad (1)$$

where

- d_t is the (net) debt in percentage points of GDP and $\Delta d_t = d_t - d_{t-1}$
- p_t is the primary balance in percentage points of GDP, which is to say the government deficit excluding debt interest charges
- γ_t is growth in GDP in value
- i_t is the average nominal interest rate on the debt.

We also note

$$p_t^* = \frac{i_t - \gamma_t}{1+\gamma_t} d_{t-1}$$

the debt-stabilising primary balance, the balance which stabilises the government debt ratio. It depends on the level of the debt ratio, and on the gap between the interest rate and growth rate: for example, when the interest rate is higher than economic growth (which is generally the case over the long term), it is necessary to obtain a primary surplus to stabilise the debt ratio, and the higher that debt ratio, the greater that surplus will have to be.

In practice, the current gap between the primary balance and the debt-stabilising primary balance, which gives a signal as to the dynamics of government debt, is the first government finance sustainability indicator.

This is, however, a snapshot indicator that does not take account of forward-looking prospects for government finances. This can be something of a limitation, especially in Europe where ageing of the population is going to give rise to growing social spending in coming years. The European Commission has therefore developed other sustainability indicators that take account of demographic factors (European Commission, 2009).

Although it is relatively basic, the debt-stabilising balance gap can illustrate the cost of delaying the adjustment of government finances: the more the debt ratio grows, the greater the primary balance required to stabilise it or begin to reduce it, in particular via larger increases in the tax burden or more drastic public spending cuts.

Koutsogeorgopoulou and Turner (2007) also illustrate the costs of delaying budgetary consolidation. All other things being equal, postponing consolidation efforts increases government debt, which increases the sovereign risk premium (spread). If we include such a premium in the equation (1), such that the interest rate on the debt takes the form $i_t = i_{0t} + s_t$ where the spread s_t grows with the level of government debt, then the debt-stabilising primary balance becomes:

$$p_t^* = \frac{s_t + i_{0t} - \gamma_t}{1+\gamma_t} d_{t-1}$$

and its growth is not linear in relation to debt.

This additional cost is referred to as the "deadweight cost of debt": in this situation, simply stabilising the government debt to GDP ratio implies an effort on the primary balance that increases sharply the higher the debt level. This situation is even more difficult to turn around if we are seeking not merely to stabilise debt in percentage points of GDP, but also to return to a given level of debt, such as the 60% target featured in the European treaties, for example.

The empirical results obtained in this report (*see below*) show that one additional percentage point of debt over and above 100 percentage points of GDP can result in an increase of about 8 basis points in the spread. If we take Italy, for example, such an increase in spread would imply an increase in debt service and therefore in the "deadweight" cost of debt of about 2%. Debt service currently represents one-tenth of total government revenues, and offsetting this weight would therefore require a rise of close to 0.2% in government revenue to restore the budget balance. ■

... and generate positive wealth effects

The economic literature (Ardagna (2009), Heylen Everaert (2000)) also highlights the *wealth effect* that can result from a reduction in risk premiums on financial markets: the fall in interest rates should increase asset prices and therefore household wealth, which can boost their consumption by a wealth effect. [8] On the whole, a consolidation plan can therefore have less of a negative impact in a period of sovereign default risk (IMF 2010).

Such a virtual scenario for the whole of the Euro Zone, combining rising financing costs and growing uncertainty, is obviously difficult to define and calibrate in the usual macro-economic models built largely on Keynesian mechanisms. In the rest of this report, however, we will attempt to quantify the relationship between the situation of public finances and the risk premiums for all the Member States in the Euro Zone. An impact evaluation will then be made using the NiGEM macro-economic model, inputting these relationships into the model to take explicit account of risk premium effects.

What are the determinants of the risk premiums on sovereign bonds in Europe?

Widening risk premium spreads in the Euro Zone in 2010

In the Euro Zone, the risk premiums demanded by lenders on sovereign debt issues can be seen in the gap or spread between long-term rates on the government debt of the different countries in the Euro Zone and that of Germany which is considered to be "risk-free". In the course of 2010, the range of such spreads widened considerably, notably with a sharp rise in risk premiums in Greece, Ireland and Portugal *(see Graph 3)*. In this part, we seek to identify the economic determinants of risk premiums, and to quantify their effects through econometric estimates. Box 2 provides a detailed presentation of the method used and the results of the estimates.

Two types of risk premiums on sovereign securities

For each Member State of the Euro Zone, the risk premium on government borrowing rates comprises two different risk premiums:

- the *liquidity risk* premium: when the size of the market for the debt of a given country is large, it is easier for an investor to buy or sell debt instruments given the number of players present on the market in question. The investor therefore faces less of a risk of not finding a buyer when they wish to sell these debt instruments, thereby reducing the liquidity risk premium. *De facto*, market size effects are confirmed by empirical estimates, with the large countries that issue more liquid bonds paying a lower liquidity premium. Conversely, small countries have more difficulty attracting lenders because of the lower liquidity of their issues.

- the *sovereign default risk* premium: investors can demand a premium to cover the possible risk of default by a State. The higher the probability of default estimated by lenders, the higher this premium will be. In our estimates, the effects of the default risk premium are captured by two groups of variables: on the one hand, criteria relating to the situation of government finances; on the other hand, more general criteria relating to imbalances, including in the private sector *(see Box 2)*.

Public debt levels: threshold effects

Regarding the effect of public finances, the economic estimate pinpoints two types of factors: both the level of public debt and its trends through a debt-stabilising balance indicator. More precisely, the level of government debt influences risk premiums, but subject to a threshold effect: when debt is less than 100 percentage points of GDP, the effect on the spread of one percentage point of additional debt would be small, at around one basis point. However, when debt exceeds 100 percentage points of GDP, the marginal effect would be about 7 to 8 basis points.

Government deficits: a sustainability indicator

Empirical analysis also confirms the pertinence of a sustainability indicator *(see Box 1)*. For example, the government deficit would only cause an increase in the spread if it were large enough for debt to build up beyond the 100 percentage points of GDP mark. A robust implicit reference would seem to be the balance stabilising net government debt at 100 percentage points of GDP. In our empirical analysis, the deficit only has an effect in terms of the difference in relation to this reference. Therefore, those countries where growth is weak and the deficit is high have greater difficulties stabilising the level of government debt. All other things being equal, they therefore pay a higher sovereign risk premium. This being the case, for a given growth value, one more percentage point of GDP in their deficit would lead to an increase of about 4 to 5 basis points in the spread *(see Box 2, Table 2)*.

Private-sector imbalances also have an influence

Furthermore, imbalance indicators including the private sector were tested: the empirical analysis confirmed the sensitivity of risk premiums to such indicators. For example, 1 percentage point of GDP of dissaving in the private sector would lead to an increase in spreads of about 2 basis points.

These results offer a clearer understanding of recent developments in European spreads, going some way towards explaining the differences observed between the countries in the Euro Zone since the start of the financial crisis and the resurgence of sovereign debt risk.

In France and Italy, these economic determinants provide a good explanation of the evolution in spreads since the start of the crisis

The spreads observed over the period 2008Q1-2010Q3 between Germany and the other large countries in the Euro Zone *(see Graphs 4 to 7)* can be explained in different ways according to the characteristics of the countries in question. For example, the spread for Italy mainly comes from the high level of its debt, notably because it exceeds 100 percentage points of GDP. It has been contained, however, thanks to the good liquidity of the Italian debt market. France benefits from comparable liquidity effects to those of Italy, but also from a lower level of debt. During the crisis, however, the deficit effects placed stronger upwards pressure on French risk premiums because the increase in its government deficit was greater. In France and Italy, risk premium determinants account very effectively for their trends, including in 2010 during the sovereign debt crisis.

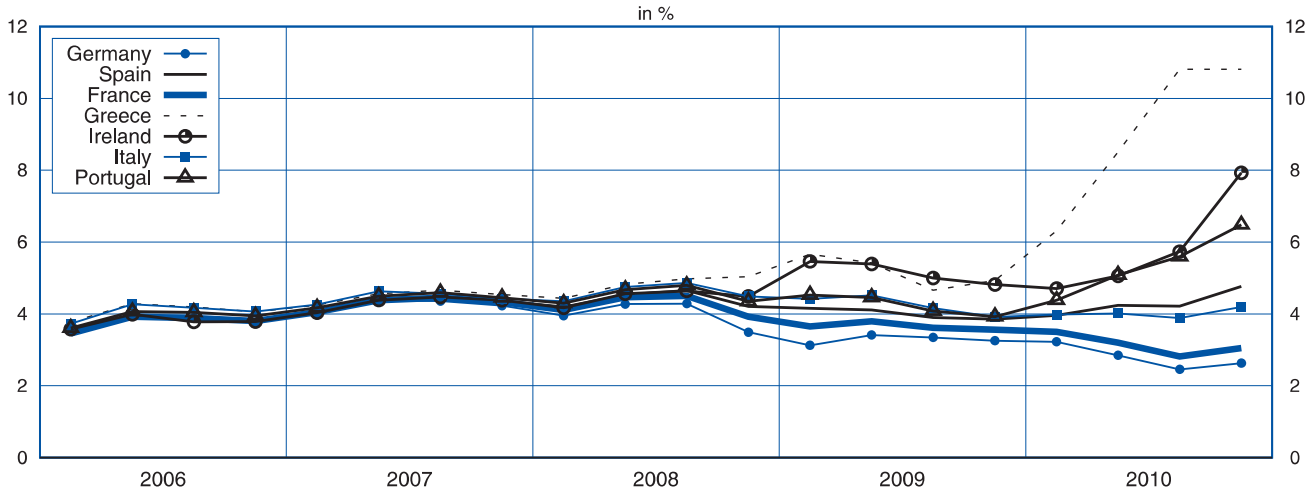
Part of the trend unexplained in countries like Spain, and even more so in Greece

Spain went into the crisis with a government debt level lower than those in France and Italy, but the deterioration in the sustainability of its public finances contributed greatly to the rise in spreads from mid-2008. However, since Q2 2010, almost half of the rise in Spanish spreads remains unexplained by their economic determinants. It is true that the model does not capture the possibility of a sudden and massive loss of confidence as occurred with Greece and Ireland, both of whom benefitted from the solidarity mechanisms established between the Euro Zone countries. For Greece in particular, a very large part of the rise in the risk premium in 2010 is thus unexplained by the model.

Next, we will evaluate the impact of fiscal adjustments in the Euro Zone, incorporating these risk premium determinants into the NiGEM macro-economic model. For a given fiscal adjustment effort, the impact on the long-term rate spread will therefore differ according to the economic and fiscal situation in the different Euro Zone countries.

(8) Wealth effects are known to be weak in France (Aviat et al, 2007), but might be greater in other European countries. See, for example, the overview by Philip Davis (2010).

3 - 10-year sovereign rates in the Euro Zone

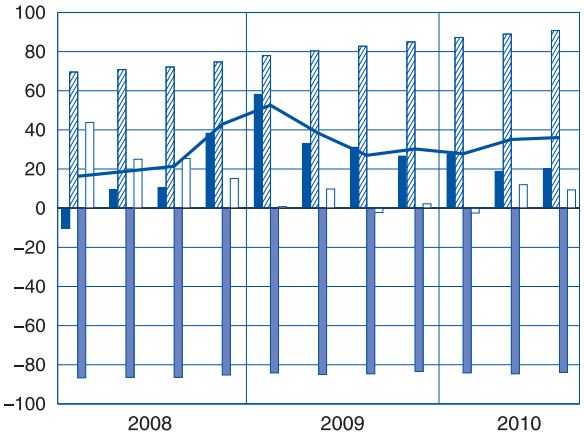


Note: the graph shows the interest rates on 10-year government bonds. For each Member State of the Euro Zone, the risk premium on government securities, or spread, is represented by the difference between the interest rate for the country in question and the interest rate for Germany.
Source: Datainsight, national central banks, OECD

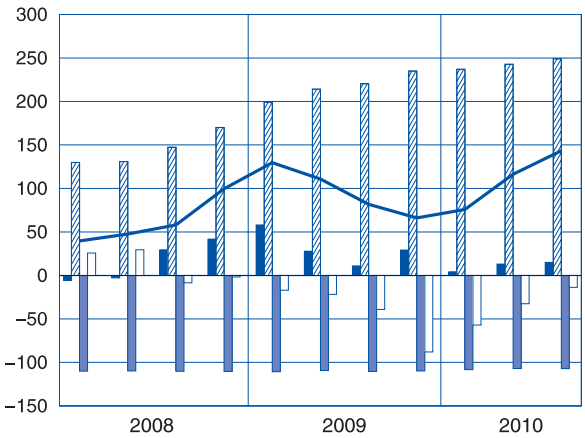
Graphs 4 to 7 - Contributions of deficit, debt and liquidity to the spreads on 10-year government issues as compared to Germany, for France, Italy, Spain and Greece

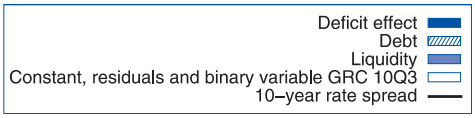
in basis points

4 - France

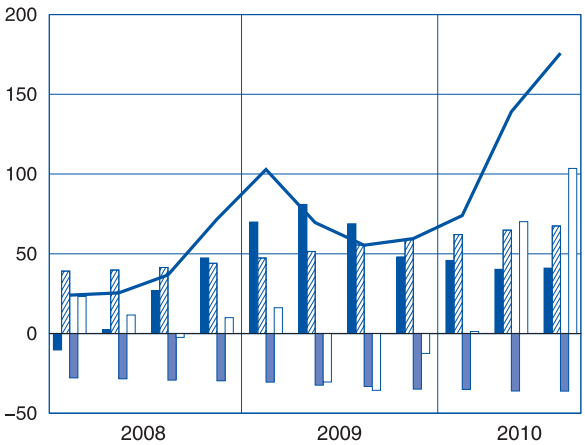


5 - Italy

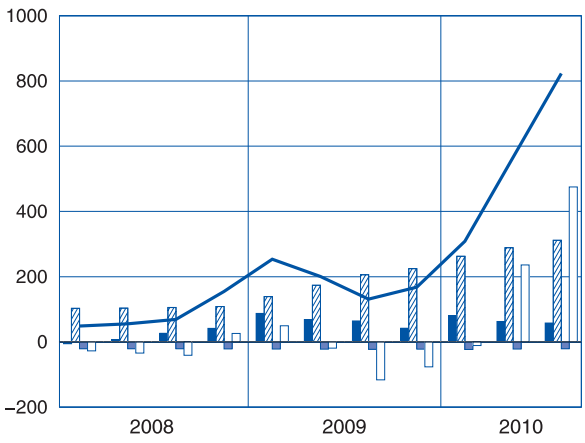




6 - Spain



7 - Greece



Source: calculations by the authors, according to equation 1 in table 2, box 2

Box 2: Estimation of spread determinants

We are looking here at long-term government rates within the Euro Zone. Among other things, this enables us to eliminate spread determinants linked to the risks of devaluation of one currency against another (exchange rate risk, inflation rate differential risk) that usually come into play outside a monetary union (Haugh et al., 2009). Panel regression techniques were used on quarterly data for ten countries in the Euro Zone (the ten countries in question were Austria, Belgium, Finland, France, Greece, Ireland, Italy, the Netherlands, Portugal and Spain).

- To understand the divergences in the long-term government rate spreads observed since 2008, it was necessary to take an indicator of government debt market liquidity and determinants of sovereign default risk.
- To capture the liquidity risk premium, we took the share of the country in the total sovereign debt in Euros traded on financial markets as our indicator.

Regarding perceived default probability, we tested a number of variables concerning the government finance situation, in some cases completed by information on private debt.

The definition of the variables used is specified in the following table *(see Table 1)*.

The use of Gap100 to capture the effect of the current government finance situation is legitimised by the fact that if we add the deficit or the debt-stabilising balance into the equations in Table 2, neither of them are significant in any robust way. The results are not modified if an autocorrelation-robust variance-covariance matrix is used, or a matrix that is robust to correlation between the residuals of different countries at each date. Nor are they modified by introducing fixed effects for each quarter. The use of quantile regressions for the median, less sensitive to extreme observations than least squares, also gives very similar results, although the effects found on debt and liquidity risk are slightly reduced. Different types of quasi-generalised least squares procedures also provide very similar results, as does use of a sample beginning in 2005. Conversely, the direct introduction of various particular government spending or revenue items providing details of economic policies generally did not prove to be robust. Various demographic indicators regarding the sustainabi-

Table 1

Definitions of the explanatory variables of rate spreads

Variable	Definition	Source
SPR10[a]	Spread between the 10-year interest rate on national bonds and the 10-year interest rate on German bonds, in interest rate percentage points	Datainsight, national central banks, OECD
Debt	Government debt as defined by the Maastricht treaty, in percentage points of GDP	OECD
Gap100	Difference between the budget balance of government and the budget balance that would stabilise net public debt at 100 percentage points of GDP, in percentage points of GDP	OECD
Liq	The long-term issues of the country as a proportion of the total long-term sovereign tradable debt of the Euro Zone, as a %	ECB
DebtServ	Debt service to total government revenue ratio, as a %	OECD
CA	Current account balance, situation in Q1 2008, in percentage points of GDP	OECD
CAPriv	Share of the current account balance associated with the private sector, situation in Q1 2008, in percentage points of GDP [b]	OECD, Eurostat, calculations by the authors
Bin_consolidation	Binary variable corresponding to the ability of a State to significantly reduce its deficit after a period of budget crisis [c]	OECD, calculations by the authors
Bin_CAPriv	Binary variable equal to 1 if the accumulation since 2000 of the current account balance associated with the private sector is positive, 0 if not [d]	OECD, Eurostat, calculations by the authors
GRC10Q3	Binary variable capturing the spread for Greece in Q3 2010	

a. Some annual data has been converted to quarterly data. This is not the case of GDP, however. All the data has been annualized to be more easily interpreted.
b. Equal to the current account balance *less* government saving *plus* government investment.
c. This variable is used in Haugh et al. (2009). It is zero in countries for which a history of sustained deficits can be observed without any large consolidation episode. In concrete terms, this variable is 1 for all the countries in the Euro Zone except Italy, Greece and Portugal, for which its value is 0.
d. This is the case of Greece, Ireland, Spain and Portugal

lity of pensions spending were also integrated into the regressions, without providing a robust result. The change in the marginal effect of debt was found at 100 percentage points using the following method:- the 60 percentage point threshold was tested but did not prove significant, - then the threshold was raised successively by 10 points until the first robustly significant threshold was reached, at 100 percentage points.

Finally, it must be pointed out that these regressions only go some way towards capturing the very large spread gaps between Germany and those countries that accepted the international aid plan (Greece and Ireland). This is because this type of linear model is unsuited to capturing a sudden loss of confidence on financial markets in the ability of States to cope with repayment of their debt. ■

Table 2

Empirical results: Explained variable: SPR10a

	Eq1	Eq2	Eq3	Eq4	Eq5	Eq6
Constant	-0.060 (0.147)	0.010 (0.139)	-0.033 (0.128)	-0.163 (0.143)	0.036 (0.130)	0.085 (0.157)
Gap100	-0.046*** (0.005)	-0.043*** (0.005)	-0.030*** (0.004)	-0.037*** (0.005)	-0.069*** (0.015)	-0.042*** (0.009)
Debt	0.011*** (0.003)	0.001 (0.004)	0.010*** (0.002)	0.012*** (0.003)	0.009*** (0.002)	0.011*** (0.002)
(Debt-100)*$\mathbf{1}_{(Debt>100)}$	0.069** (0.030)	0.062** (0.030)	0.059** (0.029)	0.064** (0.030)	0.059* (0.031)	0.060** (0.030)
DebtServ		0.094** (0.039)				
CA			-0.012 (0.008)			
CAPriv				-0.020* (0.011)		
CA*Gap100			0.002*** (0.001)			
CAPriv*Gap100				0.002 (0.001)		
Bin_CAPriv						-0.313** (0.145)
Bin_consolidation *Gap100					0.027 (0.016)	
Bin_CAPriv*Gap100						0.021** (0.010)
Liq	-0.042*** (0.010)	-0.035*** (0.010)	-0.035*** (0.010)	-0.041*** (0.010)	-0.037*** (0.010)	-0.030*** (0.009)
GRC10Q3	4.827*** (0.706)	4.873*** (0.717)	4.814*** (0.706)	4.836*** (0.714)	4.910*** (0.722)	4.829*** (0.715)
Nobs	110	110	110	110	110	110
Period	2008Q1 - 2010Q3	2008Q1 - 2010Q3	2008Q1 - 2010Q3	2008Q1 - 2010Q3	2008Q1 - 2010Q3	2008Q1 - 2010Q3
R^2	0.766	0.776	0.792	0.783	0.772	0.795
SE	0.535	0.527	0.509	0.521	0.531	0.506
BIC	1.789	1.789	1.754	1.799	1.805	1.743

*Source: calculations by the authors (ordinary least squares method); robust standard errors in brackets; ***, ** and * indicate coefficients that are significant at the 1%, 5% and 10% significance level, respectively.*

An evaluation of the impact of consolidation plans in Europe

The NiGEM multinational model can take account of several mechanisms, but is essentially Keynesian by nature

Short-term Keynesian mechanisms

We used the NiGEM macro-economic model of the National Institute of Economic and Social Research (NIESR) to assess the impact of the consolidation plans in Europe, focusing on the measures decided on for 2011. This model mainly takes account of the "Keynesian" mechanical impact of the plans via their short-term impact on demand, and enables a distinction to be made between consolidation by reducing government expenditure or by increasing revenues, affecting households or companies, these being components for which the multiplier effects may differ *(see Methodology Note)*.

The model also takes account of the cross-border impact of the fiscal adjustment plans via trade between the different European countries: a restrictive fiscal policy in one country has a negative impact on demand there and therefore on imports and on the demand for products and services from other European countries.

However, the model does not include some of the other "anti-Keynesian" effects mentioned previously. Although such behaviour has rarely been observed in Europe in the past, the novel situation of European public finances could lead to a modification in the behaviour of private agents.

Financial channels taken into account: response of interest rates, exchange rates and spread effects

The model also takes account of the response of the European Central Bank (ECB) and the Bank of England (BoE) to the adjustment plans through a reduction in base rates to boost activity. Depreciation in the exchange rate can also occur. Finally, a sovereign risk spread has been included in the dynamics of the long-term rates on government debt, which is reduced with the implementation of fiscal consolidation policies. Its effect on GDP is a modest one, however, to the time horizon of this analysis.

A relatively painless "alternative" scenario for the European economies

The "alternative" scenario in which there are no fiscal consolidation efforts does not include any major financial tensions. The impact of the adjustment plans presented in this report is therefore measured against a situation in which uncontrolled debt would be relatively painless for the economy, as was observed during the period of "great moderation" that preceded the financial crisis. It includes only the "mechanical", possibly non-linear effects on the costs of financing government debt, which are related to the economic and fiscal situation of each country, in line with the empirical estimates presented earlier (*see above*). In the current context, however, the absence of consolidation might prove to be more costly that envisaged here. Such would be the case if risk premiums were greater than those forecast by the estimated models, as was observed in certain European countries in 2010, or if major financial tensions were to appear and have an impact on the financing of private agents via the banking system.

The consolidation plans should have a negative impact on activity in Europe...

A loss of activity of about 1/2 a percentage point of GDP in the Euro Zone in 2011

The evaluation was focused on 2011, but also studied a 5-year time window to illustrate the effects transmitted via the different channels. In 2011 in the Euro Zone as a whole, fiscal consolidation plans should weigh down on activity by about 1/2

a percentage point of GDP *(see Table 1)*. Their impact should be relatively uniform from one country to another. In France, the adjustment measures should have a negative effect on GDP of -0.6 percentage points in 2011.

Cross-border effects

In each country, the relative fall in activity is explained both by domestic adjustment measures and by the effects of consolidation strategies in neighbouring countries imported via international trade. In France notably, the fiscal consolidation plans in the rest of Europe should weigh down on activity by about 0.2 percentage points of GDP in 2011.

The UK should be particularly affected in the short term by large-scale consolidation

The UK plans to introduce a particularly restrictive plan and should see its activity slowed down by about 0.8 percentage points of GDP in 2011 as against a scenario without consolidation. The impact on GDP should then ease, however, from the following year under the effect of the gradual response of base interest rates.

...despite the reaction of the ECB and BoE

The reaction of the central banks should soften the negative impact of the consolidation plans

This evaluation of the consolidation plans supposes that there will be a reaction from the ECB and BoE, which are likely to conduct a more accommodating policy than in the scenario without fiscal consolidation in order to support activity.[9] A fall in the exchange rates of the Euro and Sterling, as against the scenario without fiscal adjustment, would accompany that in base rates (to respect the *uncovered interest rate parity*), with a positive impact on the trade balance and, ultimately, on GDP.

Although likely to be modified little in 2011 in response to fiscal adjustment, [10] ECB base rates should change more thereafter. From 2012, ECB base rates should therefore be some 50 basis points (bp) lower than in the scenario without consolidation. In France, the long-term rates should also be lower by over 30 bp to a five-year time horizon, again compared to the scenario without consolidation, thanks to the progressive transmission of the fall in base rates and a slight reduction in the spread on French sovereign debt of about 10 bp points over this period *(see Table 2)*.

These lower base rates of the various central banks should have a significant influence on GDP trajectories. Although its effect should be marginal in 2011, over a five-year period this reaction of base rates should offset the negative impact of the fiscal adjustment plans by 0.7 percentage points of GDP in the Euro Zone, including the effect of the variation induced in the exchange rate; the effect of monetary policy should be comparable in France and in the other countries studied

(9) This more accommodating monetary policy is possible because, in the scenario without fiscal adjustment, base rates would rise progressively, in particular due to the continuing economic recovery and the emergence of tensions on commodity prices.
(10) The ECB should react to increases in indirect taxation, notably to VAT in Spain, which would have a slightly inflationary impact on the whole of the Euro Zone.

Table 1
Total effect of European plans on GDP in 2011
as a % of GDP

	Effect on GDP	of which: foreign trade effect due to foreign plans
Germany	-0.4%	-0.2%
Spain	-0.6%	-0.1%
France	-0.6%	-0.2%
Italy	-0.4%	-0.1%
Euro Zone	-0.6%	0.0%
United Kingdom	-0.8%	-0.2%

here *(see Graphs 8 to 13)*. In contrast, the favorable reaction of spreads should have a modest effect on GDP, especially in the short term. That of long-term rates should also contribute to reducing government debt to GDP ratios in all the European countries via the reduction in interest charges *(see Box 3)*.

Unlike the situation in the Euro Zone, the BoE is set to face a sharp increase in inflation due to the rise in VAT in the UK. However, the current standpoint of the BoE is that this shock is of a temporary nature and does not call for a response from monetary policy in the UK. [11] The BoE should then soften the effect of consolidation by reducing its base rates sharply as compared to a scenario without any adjustment in public finances. This fall should be passed on quickly to long-term rates according to the model and then to the British economy which is traditionally responsive to improvements in financial conditions. To a five-year time horizon, the monetary policy response should considerably soften the mechanical negative impact of the British consolidation plan by more than one percentage point *(see Graph 14)*.

These attenuating effects in the UK depend on the decision of the BoE

According to the IMF (IMF, 2010), consolidation plans based on rises in indirect taxes have had a particularly negative effect on activity on average in the past. This type of measure creates a dilemma for the central banks, torn between the objective of countering the slide in activity and fighting against the rise in prices. Again according to the IMF, the central banks have had, on average in the past, a restrictive policy in the face of rises in indirect taxes.

If the BoE should therefore choose to increase its base rates in 2011 in response to the VAT shock, the negative effect of the consolidation plans on UK GDP would initially be stronger. Unlike in the main scenario presented above, the Bank of England base rates would follow the upturn in inflation resulting from the rise in VAT and would therefore increase in 2011 by about 50 bp. The negative effect of the consolidation plans would then be 1.2 percentage points of PIB in 2011 in the UK *(see Graph 14)*. However, the BoE would then reduce its base rates sharply. To a five-year time horizon, the consequences on GDP of this initial choice of monetary policy would be small.

"Non-Keynesian" effects may soften these negative effects

This evaluation of the impact of consolidation plans in Europe does not take account of the various "non-Keynesian" positive effects studied in the literature, and notably Ricardian effects. According to these effects, the fiscal plans that are applied may lead households to anticipate an improvement in government finances

(11) Currently, the majority of the BoE monetary policy committee considers the impact of the rise in VAT on inflation to be temporary, and therefore not requiring a rise in base rates.

Table 2

Effects of consolidation on ECB and BoE base rates and on the long-term rates of France and the UK

en points de base

	ECB base rate	Long-term rate France	of which fall in spread	BoE base rate	Long-term rate UK
2011	3	-1	-2	-11	-6
2012	-43	-15	-3	-53	-47
2013	-54	-23	-4	-18	-25
2014	-52	-29	-6	-36	-31
2015	-45	-33	-8	-33	-35
2016	-35	-36	-10	-20	-22

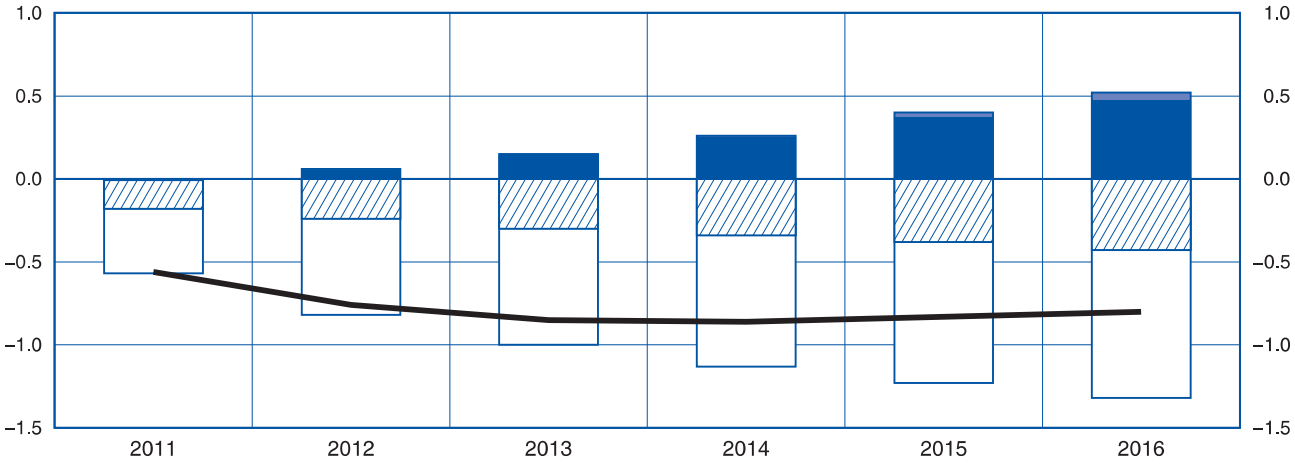
Source: calculations by the authors using the NiGEM model

Restrictive fiscal policies in Europe: what are the likely effects?

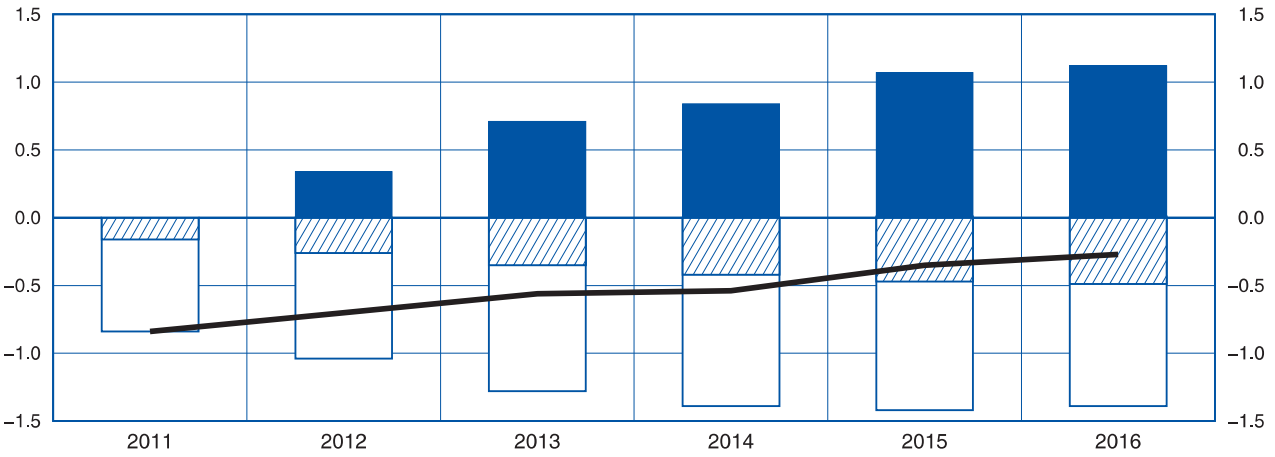
Graphs 8 à 13 - Effects of the adjustment plans on GDP

effects as a % of GDP

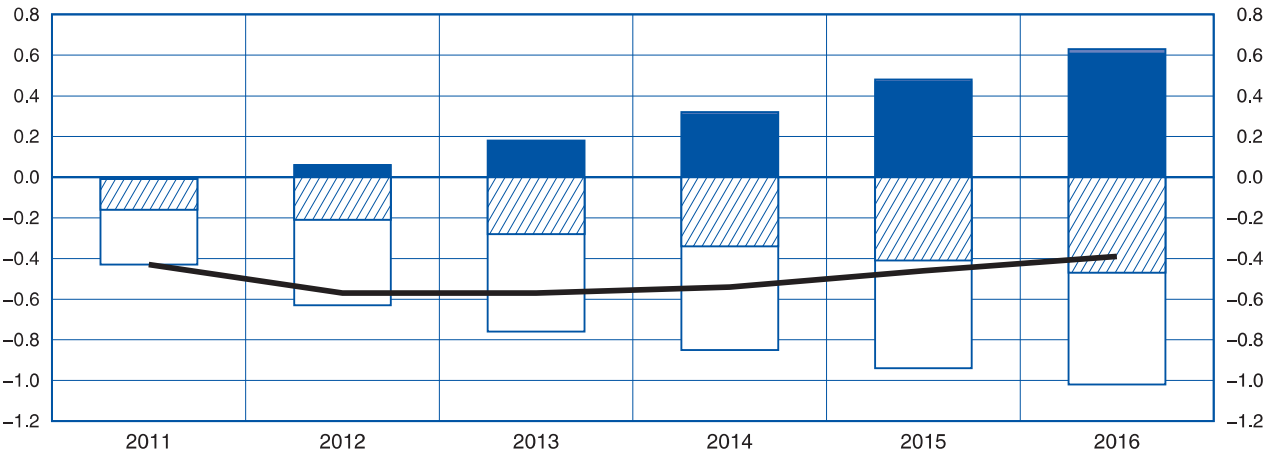
8 - France



9 - United Kingdom

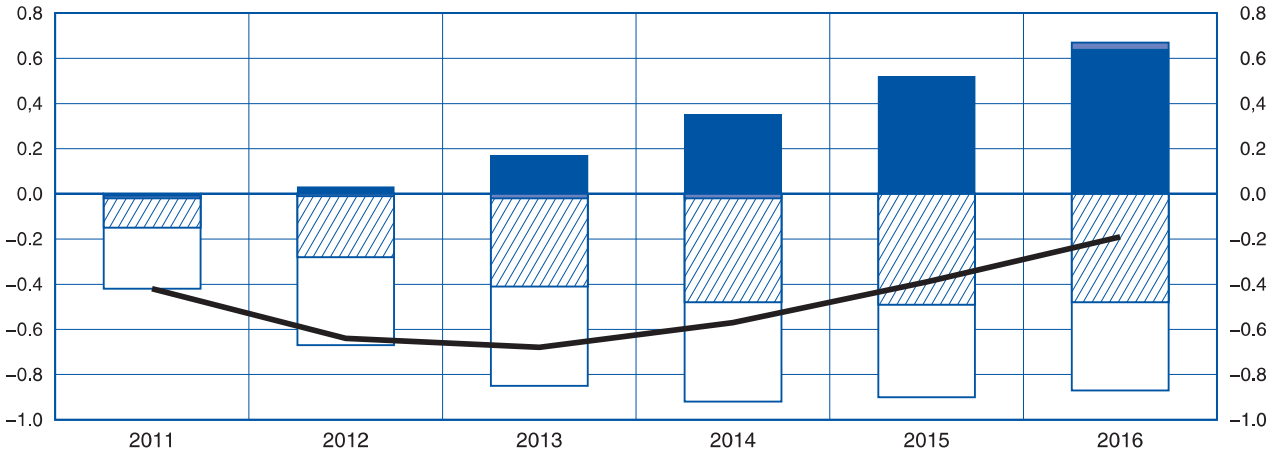


10 - Germany

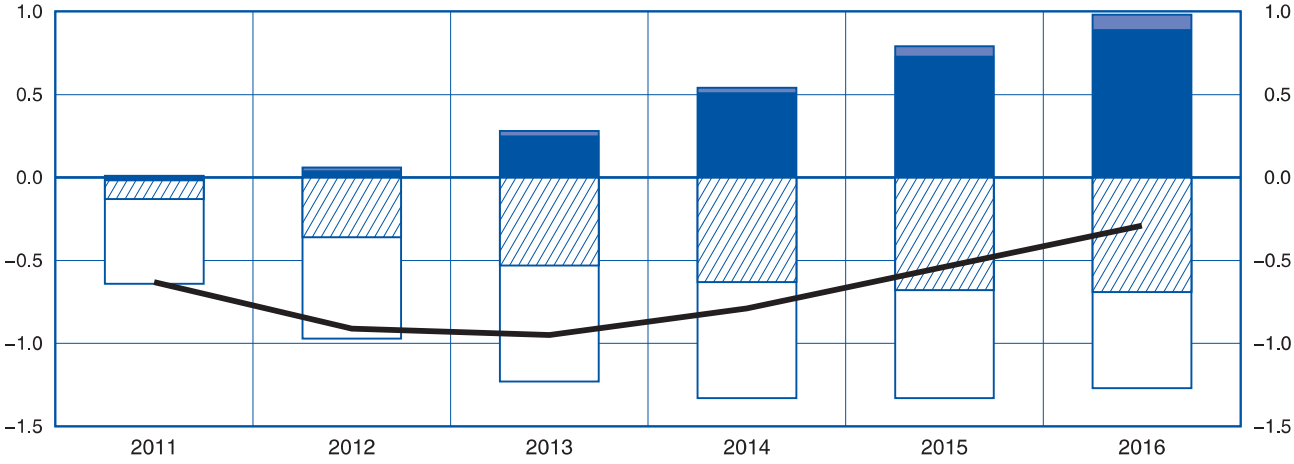


Restrictive fiscal policies in Europe: what are the likely effects?

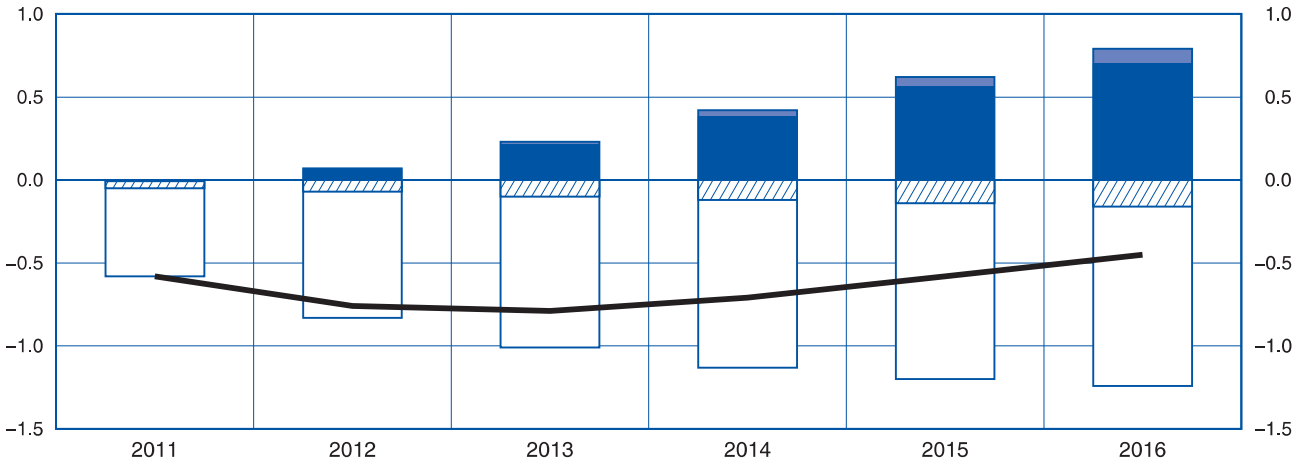
11 - Italy



12 - Spain



13 - Euro Zone



For countries (graphs 8 to 12) :

Pure effect of the national plan
Imported effect of foreign shocks
Effect linked to Euro Zone spreads
Effect of monetary policy (all central banks) and exchange rates
Total effect on GDP (%)

For Euro Zone (graph 13) :

Pure effect of the Euro Zone plans
Imported effect of the shocks from the UK
Effect linked to Euro Zone spreads
Effect of monetary policy (all central banks) and exchange rates
Total effect on GDP (%)

Source: calculations by the authors using the NiGEM model

and future tax cuts, thereby reducing their tendency to save. According to the NiGEM model, a fall of 1 percentage point in the savings ratio of households in France leads to a rise in GDP of about 0.5%. The measures announced by France would weigh down on activity by 0.4 percentage points in 2011 if the consolidation plans of the other European countries are not taken into account. To offset this effect of France's own consolidation measures, a Ricardian fall in the savings ratio of 0.8 percentage points would be necessary in 2011. (12)

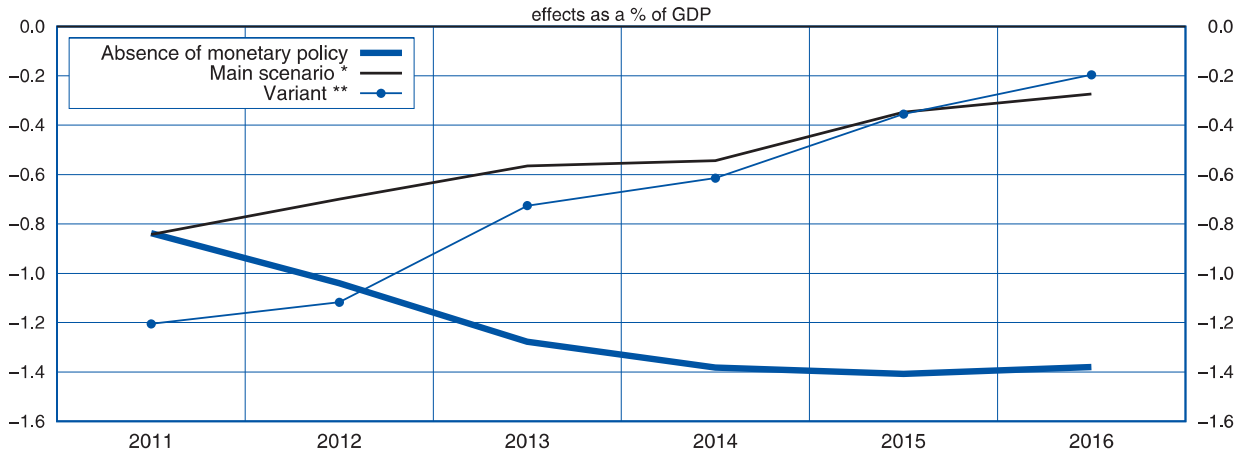
In effect, French households increased their savings ratio from 15% in Q3 2008 to 16.3% in Q3 2010, as a precaution in the face of the economic crisis and possibly, if we take a "Ricardian" view, in response to growing government deficits and the rise in public debt. Also, compared to the main European countries, the savings ratio of households in France is relatively high (*Graph 15*). This may suggest that a significant reduction in the savings ratio is possible in the medium term, as long as households do foresee an improvement in public finances and take account of this anticipation in their consumer spending. Because they need to reduce their debt levels further, British and Spanish households may have smaller margin for increasing their consumption, however.

Finally, it should be remembered that the impact of consolidation plans measured here supposes that the scenario without any adjustment would be relatively painless, with moderate risk premiums on the whole. Such a scenario is no doubt acceptable if we take a short-term view, as is the case in this report, but we cannot rule out the possibility that it might lead to a sharp rise in risk premiums in certain Euro Zone countries which would weigh down on growth: with such a central scenario, the reduction in risk premiums allowed by the consolidation plans would be greater than that taken into account here.

All in all, if all the "non-Keynesian" factors came into play, carrying out no consolidation in Europe would have a distinctly higher cost for growth than that taken into account here, through a modest effect on interest rate spreads. In this case, the cost of budget adjustment would be less than the half a percentage point of GDP estimated for the Euro Zone countries and the 0.8 percentage points of GDP estimated for the UK. ■

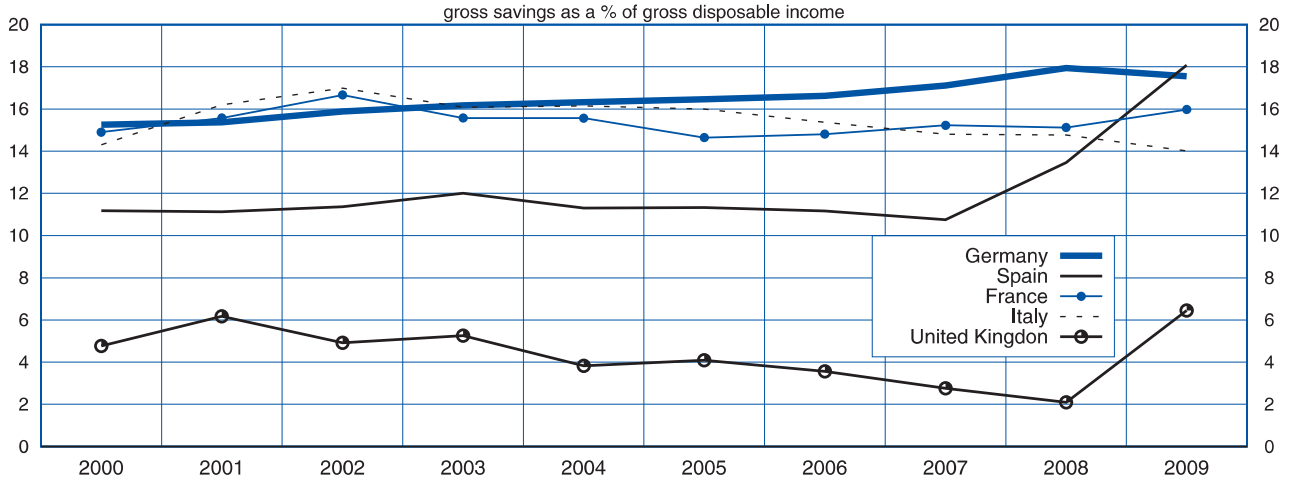
(12) Assuming that there is a comparable reaction among European households, the imported effect would then also be cancelled out.

14- Effects of the consolidation plans on UK GDP, according to monetary policy response



**Main scenario: monetary policy with no response by a rise in base rates to address the VAT shock*
***Variant: monetary policy according to NiGEM (monetary policy rule) implying a temporary rise in the base rate further to the VAT shock*
Source: calculations by the authors using the NiGEM model

15 - Gross savings ratio of households in certain European countries



NB: the gross savings ratio supplied by Eurostat is only available for all the countries if non-profit institutions serving households (NPISH) are included, but Conjoncture in France publishes a savings ratio for French households *without* NPISH.
Source: Eurostat

Box 3: Impact of consolidation plans on public debt

The consolidation plans should lead to a reduction in the public debt to GDP ratio *(see Table)*. This should fall by almost 5 percentage points of GDP in France and almost 9 percentage points of GDP in the UK by 2016. In contrast, Italy should see its public debt in percentage points of GDP increase slightly over the short term, because the improvement in the budget deficit is likely to be offset by the negative impact on GDP, notably due to the imported effects of the other plans. The reduction in its debt ratio through to 2016 should thus be around 1 percentage point of GDP.

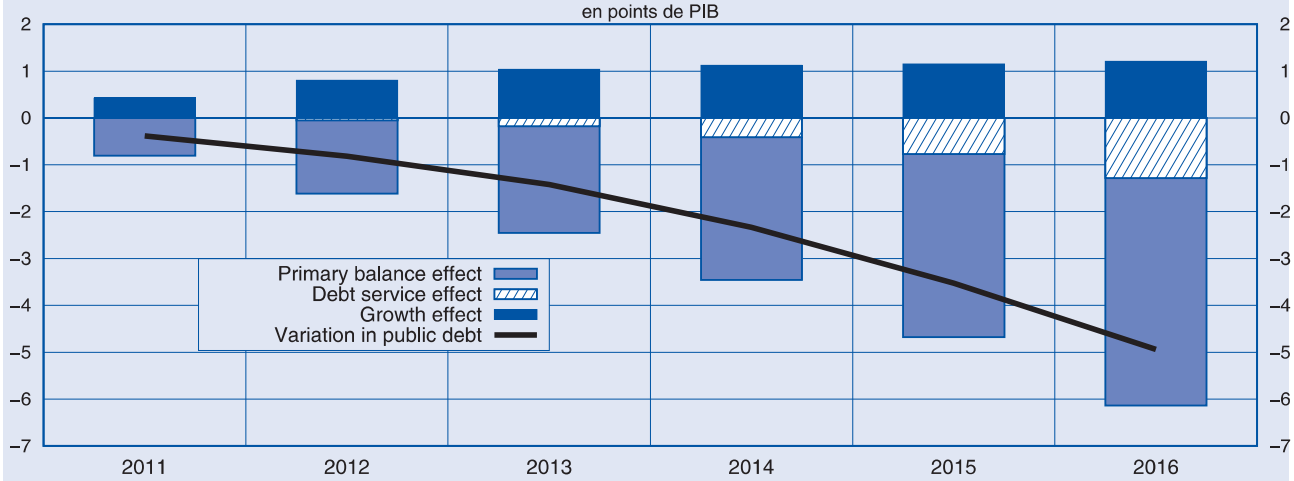
The evolution in debt in percentage points of GDP can be broken down into three factors *(see Graph)*: a "deficit" effect due to the improvement in the primary balance, an effect due to the reduction in the debt burden (decrease in the amount of debt, or "volume" effect, and of the interest rates on that debt, or "rate" effect), and finally a "growth" effect due to the negative shock on GDP, according to the equation (1) in Box 1. This breakdown is presented below for the Euro Zone. Over the first years, the effect of the improvement in the primary balance is moderated by the negative effect on growth. However, a virtuous circle is then established thanks to the reduction in the debt burden, while the effect due to growth levels out. ■

Effect of the consolidation plans on public debt to 2016
in GDP points

Germany	-.,5
Spain	-4.2
France	-4.6
Italy	-1.2
Euro Zone	-4.9
United Kingdom	-8.6

Source: calculations by the authors using the NiGEM model

Contributions of debt service, growth and the primary balance to variations in public debt in the Euro Zone



Source: calculations by the authors using the NiGEM model

Methodology Note - Shocks and their propagation mechanisms in NiGEM

NiGEM is a multinational model in which all the countries mentioned in this Report are included individually. All the economies in the model are linked to each other by trade and financial flows. The budget balance equation contains three types of fiscal revenues (direct taxes on people, indirect taxes and taxes on companies), three primary public spending items (government consumption, government investment and social transfers) and debt servicing. The impact of the consolidation plans can therefore be calculated according to their composition in terms of these six budget items. It should be noted, however, that shocks on direct taxes and on social transfers have an identical effect on household income.

The endogenous variables of the model were all left endogenous. It should therefore be emphasised that by various crowding-out effects, the variation in the primary balance in percentage points of GDP is not necessarily equal to the scale of the plan that is announced. For example, the reduction in activity resulting from a given shock may reduce tax revenues from households and companies and therefore reduce the impact of the measure on the budget.

Main fiscal policy shock propagation mechanisms in NiGEM

Direct taxes have an impact on the disposable income of households and, ultimately, on their consumption. Social transfers have the same effect; *de facto*, the line is sometimes fine between these two items in the classification of consolidation measures. In NiGEM, taxes on businesses weigh down on companies through the cost of capital. They also have an effect on the financial assets of households via share prices. Indirect taxes, modelled in the form of a VAT rate, have an influence on the consumer spending deflator, export prices, real wages, the gross operating surplus of companies and, consequently, on share prices and therefore also on household wealth.

A government consumption shock has a direct (accounting) impact on GDP, on national payroll in proportion to the size of the public sector and therefore on household income. A government investment shock has an accounting influence on GDP, but also on public capital stock and therefore on potential GDP. It is therefore the only fiscal shock that has a long-term multiplier effect.

In addition, the simulation exercise excluded certain measures of different nature likely to have a negligible impact on European GDP. These were a variety of minor measures including a reduction in international cooperation (Spain, Netherlands) and the sale of wireless frequencies in Italy (positive effect of €2.4 billion in 2011).

The table below indicates the multipliers for several standard fiscal consolidation shocks in NiGEM.

Compared to a fiscal shock on the national level, a shock for the Euro Zone affects French GDP via two channels. In the short term, the shocks of the other countries reinforce the negative impact on French GDP through international trade. In the longer term, the shocks of the other Euro Zone countries give rise to a stronger monetary policy response, the positive effect of which exceeds the negative effect due to trade.

Monetary policy response to fiscal consolidation and impact on exchange rates

The base rates react to consolidation plans through their impact on activity and inflation. In particular, in the case of consolidation by a rise in VAT, the central bank is faced with a dilemma: increase its rates because of the rise in prices, or reduce them to support activity. This problem associated with a rise in indirect taxes has already been noted in the empirical study by the IMF (2010). Our report did not take account of any unconventional monetary policies that might be introduced by the ECB or BoE.

The 10-year rate adjusts to the base rate by an error correction mechanism. In the short term, it moves with the quarterly variation in the short-term rate, while in the long term, the long-term rate is equal to the base rate to which a constant is added. This rate is used in the model to calculate interest on government debt and the user cost of capital for companies and households.

The reduction in base interest rates also implies a depreciation in the exchange rate resulting from the uncovered interest rate parity. For example, a fall in interest rates in the Euro Zone reduces the attractiveness of the Euro against other currencies, all other things being equal.

Multipliers for different consolidation shocks according to the NiGEM model

Multipliers for France	Direct tax burden on households	Government investment	Government consumption
after 1 year	-0.3	-0.7	-0.9
after 5 years	-0.5	-0.9	-0.7
Multipliers for France	**Direct tax burden on households**	**Government investment**	**Government consumption**
after 1 year	-0.3	-0.9	-1.1
after 5 years	-0.2	-0.8	-0.1

Explanatory note: the shock of a permanent rise in the tax burden on households in France improving the general government balance by one percentage point of GDP weighs down on French GDP in volume by 0.3 percentage points after one year and by 0.5 points after five years. An identical shock in all the Euro Zone countries reduces Euro Zone GDP in volume by 0.3 percentage points the first year and by 0.2 points after five years.

Incorporation of the spread on long-term interest rates

In the model, the long-term rate does not depend on the sovereign risk premium determinants. This missing spread is therefore incorporated via a shock on the residual of the long-term rates equation. This shock is calculated according to the impact of the consolidation plans on the determinants of the spread, essentially the state of government finances, using one of the regressions (equation 1) referred to in Box 2.

Normally, variations in long-term government rates have an impact on long-term rates for financing of the private sector. Given that the sovereign risk spread is, by definition, specific to public debt, it is not certain that this spread will be passed on in full to the private sector. In this study, we considered that half of it was passed on to the private sector. As the impact of the consolidation plans on the spread is progressive over time, the choice of this repercussion had a negligible effect on the results.

Breakdown of the effects on GDP

It is possible to break down the effects of consolidation according to the three channels mentioned above: direct effect of fiscal consolidation, reduction in the spreads on long-term rates and the effect of monetary policy (including depreciation of the exchange rate). Initially, the total impact of the consolidation plans was evaluated leaving all variables in the model as endogenous. The two indirect effects of consolidation were then incorporated separately into the model. The "pure", direct effect of fiscal consolidation on activity was obtained by difference, subject to the hypothesis of linearity of the model.

In this way, the effects of the consolidation plans for each country were broken down according to whether they came from the national plan or foreign plans. To do this, the effect of each national consolidation plan was calculated separately. The imported effect from foreign plans was then calculated as the difference between this national plan effect and the effect of all the plans, after subtracting the effects of monetary policy and spreads. ■

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