

# QUANTIFYING FISCAL MULTIPLIERS

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# Quantifying Fiscal Multipliers

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## *Abstract*

This paper uses the National Institute Global Econometric Model (NiGEM) to quantify the magnitude of fiscal multipliers in each Euro Area country when fiscal policies are enacted in each country in isolation and when there is international coordination of fiscal policies. We find that fiscal multipliers are usually below 1 when countries implement fiscal policies in isolation. By contrast, multipliers increase significantly, on average by 50 to a 100 per cent depending on the fiscal instrument, when there is international coordination of fiscal policies. Our analysis suggests that fiscal multipliers arising from government spending measures are larger than those arising from changes in taxation. These estimates correlate with the degree of openness to trade of each country, the sensitivity of aggregate consumption to fluctuations in short-term income and country size. We also find that fiscal multipliers increase with the proportion of liquidity constrained agents.

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## Introduction

This paper quantifies fiscal multipliers induced by contractionary fiscal policies<sup>1</sup> among the set of countries pertaining to the Euro Area (EA)<sup>2</sup>, where the fiscal multiplier is defined as the percentage change in real GDP in response to a 1 per cent of GDP fiscal contraction. We quantify two types of multipliers: those that arise when one country, in isolation, implements a contractionary fiscal policy and those that arise when several countries coordinate their fiscal stances and implement a set of consolidation measures simultaneously. We denote the differences in magnitude of the multipliers between the two scenarios as coordination spillovers.

Our focus on EA countries has implications on the magnitude of fiscal multipliers. Countries in the Euro Area have a common monetary policy, thus exhibiting smaller initial interest rate responses to fiscal shocks compared to countries with independent monetary policy. In addition, a common currency means that the exchange rate has a much more limited scope to buffer the impacts of a fiscal contractionary shock in any one country.

Consistent with much of the literature, which we review in Section 2, we find that fiscal multipliers are usually below 1, while coordination spillovers are significant, increasing the multipliers by 50-100 per cent, on average. Our analysis differentiates between fiscal multipliers arising from temporary and permanent fiscal shocks and the type of fiscal instrument used to implement the policy. We consider four instruments from both the spending and revenue sides of the government balance sheet: government consumption, government investment, direct tax and indirect tax. Fiscal multipliers from government spending shocks are larger than the multipliers from changes in taxes, as in the latter case, adjustments in saving mean that not all of the change in disposable income feeds into consumption and therefore output.

We use the National Institute Global Econometric Model (NiGEM), to perform the analysis. NiGEM is an estimated global model with forward-looking agents and built-in nominal rigidities slowing the adjustment process to the equilibrium. Countries in the model are linked through trade, competitiveness and financial markets. Modelling the composition of wealth emphasises the role and origin of foreign assets and liabilities. Monetary and fiscal rules ensure the long-run stability and solvency of the countries included in the model. NiGEM is a theoretically coherent and closed global model, in the sense that every export is matched by an import, all liabilities are matched by assets, all income flows from assets are matched by outflows on liabilities and current accounts add up across the world. As far as possible, all country models have the same structure. Differences in the economic behaviour of each country model come from country idiosyncrasies reflected in the data and captured through the estimation process.

Making use of NiGEM's capabilities we are able to decompose the magnitude of the multipliers into contributions driven by movements in interest rates and trade flows. We find that the trade channel is of first order importance relative to the interest rate channel, albeit this result is driven by the fact

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<sup>1</sup> Fiscal multipliers arising from contractionary fiscal policies could potentially be different than those from expansionary fiscal policies, for instance because of the presence of the zero lower bound in policy rate. In this paper we do not explore the potential for such asymmetry.

<sup>2</sup> Excluding Cyprus, Luxembourg and Malta as they are not modelled separately in the model that we use to perform the analysis, NiGEM. Estonia, Latvia, Lithuania, Slovakia and Slovenia have their own country model in NiGEM but we do not include them in the present analysis as they do not have an explicit model for the government sector.

that Euro Area countries share the same monetary policy. Indeed, when we look at multipliers arising from coordinated permanent fiscal shocks –the scenario that triggers the largest reaction from the ECB- the interest rate channel becomes more relevant.

Our analysis distinguishes between fiscal multipliers in “normal times” and “crisis times”. There are several reasons why fiscal multipliers might be dependent on the phase of the business cycle and we review some of them in the Section 2. In this paper we focus on the role of liquidity constraints. Barrell et al. (2006) suggest that financial crises are usually accompanied by an increase in the share of agents facing liquidity constraints. Liquidity constrained individuals cannot smooth consumption by borrowing against their future income. As a consequence, their spending plans are more sensitive to short term fluctuations in their current real incomes. Following Al-Eyd and Barrell (2005), we model “crisis times” as a period with a higher sensitivity of aggregate consumption and investment to short term fluctuations in income to account for a larger proportion of liquidity constrained individuals and firms. We find that the magnitude of the fiscal multipliers increases as changes in the purchasing power induced by the fiscal shock have a greater impact on the investment and consumption decisions of agents. However, the effect is not uniformly distributed across the multipliers of different fiscal instruments. The impact on taxation multipliers is greater than the impact on the multipliers associated with government spending.

Our analysis adds to the body of work that has used large multi-country macro models to quantify the magnitude of fiscal multipliers. Papers in this literature include, among others, Gros and Hobza (2001), Cwik and Wieland (2011) and in’t Veld (2013). The next section provides a brief overview of the literature on fiscal multipliers. Section three describes the model we use, NiGEM. Section four discusses fiscal multipliers for different fiscal instruments in ‘normal’ and ‘crisis’ times. Section five examines how fiscal multipliers change due to spillovers from coordination of fiscal policy within the Euro Area and a final section concludes.

## **Literature review on fiscal multipliers**

The literature on the measurement and understanding of fiscal multipliers is vast. This should, perhaps, not come as a surprise given the direct policy relevance of the topic. Ramey (2011) provides a comprehensive survey of what theory and empirics have found on this topic so far. A common feature of models that look into the size of fiscal multipliers (both Neoclassical and New Keynesian) is the effect of government spending on the number of hours worked as capital is fixed in the short run. Neoclassical models rely on wealth effects, inter-temporal substitution of consumption and distortions that modify agents’ optimality conditions. The general finding is that multipliers are below 1 unless we look at the cumulative effect over the long run. New Keynesian models are subject to the same mechanisms but can estimate the multipliers that arise when interest rates hit the zero lower bound. In this case multipliers will exceed 1. After surveying a large body of empirical literature, Ramey (2011) concludes that fiscal multipliers of deficit-financed increases in government spending most likely lie between 0.8 and 1.5.

A number of studies find that the size of multipliers is dependent on the state of the economy. Barrell et al. (2009), DeLong and Summers (2012) and Holland and Portes (2012) all conclude that fiscal multipliers are larger during a downturn than in normal times. This is due to a higher proportion of consumers who face borrowing constraints; interest rates being at or close to the zero

lower bound, limiting the ability of monetary policy to react; and an absence of supply constraints. Cugnasca and Rother (2015), using a panel of 27 European Union countries between 2004 and 2013, also find that multipliers are larger in a recession. Auerbach and Gorodnichenko (2012) use a regime switching model to capture differences in government spending multipliers given the state of the economy for a large number of OECD countries and find that multipliers are between 0 and 0.5 in expansions and between 1 and 1.5 in recessions. Bagaria et al. (2012) use NiGEM to analyse the effects of the UK's fiscal consolidation programme from 2011 to 2017 and compare to the counterfactual of delaying implementation of the programme until 2014. They estimate that growth is reduced and unemployment increased in both cases but by much less and for a shorter period if delayed until more normal times. This impact is partly driven by heightened fiscal multipliers and exacerbated by hysteresis effects.

Other factors which can affect the size of multipliers include country size, degree of openness and the duration of the shock. Barrell et al. (2012) find that multipliers are smaller in more open economies since more of the fiscal shock is "leaked" through imports. The authors find that multipliers from permanent shocks are less than multipliers coming from temporary shocks, since the effect on long rates is larger, and the difference in magnitude between permanent and temporary shocks is larger in large economies. Countries in the Euro Area and those without independent monetary policy exhibit smaller initial interest rate responses to fiscal shocks and so have larger multipliers. Ilzetzki et al. (2013), using a novel<sup>3</sup> quarterly dataset including a large number of developed and emerging market economies, also find that the degree of openness is negatively related to fiscal multipliers. They find that countries with higher levels of debt experience smaller –or even negative- multipliers. One proposed explanation for this result is that fiscal expansions in highly indebted countries act as a signal of future consolidation measures, and the expectation of such contractionary policies dominates the short term effect of the initial fiscal expansion.

In a world with perfect foresight, frictionless capital markets and flexible prices, only the change in the present discounted value of disposable income of the agents in the economy matters in terms of fiscal multipliers. Any deviation from these conditions will translate into multipliers being a function of the instrument used. Cugnasca and Rother (2015) find that fiscal consolidations implemented via cuts in transfers and subsidies or via tax increases, reduce the magnitude of the fiscal multiplier and make fiscal consolidation programmes more growth friendly. Barrell et al. (2012) find that spending multipliers are larger than tax or benefit multipliers, as in the latter case part of the change in disposable income is siphoned off through adjustments in savings. Barrell et al. (2009) find that in the expansionary phase of the business cycle, VAT reductions have a larger effect on output than direct tax rebates since the change in prices driven by the change in the indirect tax rate brings consumption forward, while in the case of direct tax rebates part of it is saved. The result is reversed when the economy is in recession as the direct tax rebates ameliorate the problems faced by a growing number of liquidity constrained agents.

Fiscal multipliers depend not only on the policy implemented at the time of the announcement but also on the plans announced for the future. This has been illustrated by Corsetti et al. (2010) who show that increases in government spending followed by announced medium term consolidation

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<sup>3</sup> The novelty of this dataset lies in the fact that it uses quarterly rather than annual data.

plans produce higher fiscal multipliers and spillovers. The mechanism works via the long term interest rate. Short-term rates increase following a surge in government spending, but if people expect future consolidations to take place this implies lower future short term rates, which means that the current long term rate not only increases by less but it could even fall.

Another strand of the literature looks at the determinants of a successful consolidation period, where success is defined as a long-lasting reduction of the government deficit. This exercise has been done by, amongst others, Alesina and Perotti (1995) and Larch and Turrini (2011). The general consensus is that successful consolidations happen during periods where deficits are large and when they are implemented through reductions in government spending on transfer programs and public sector wages rather than cuts in government investment or increases in taxes.

The literature has also devoted a considerable amount of work to quantify fiscal spillovers: the effects that fiscal policy in one country has on another country. Alcidi et al. (2015), provide a comprehensive review of the literature on quantifying such spillovers. They identify three channels: the demand channel which highlights the importance of trade as a mechanism of transmission of spillovers, the competitiveness channel that captures spillovers transmitting via adjustment in terms of trade and the financial markets channel that encompasses several types of transmission mechanisms that operate via financial markets. These include changes in monetary policy stance and risk premia in response to fiscal policy changes. While there are variations across studies, the general finding is that fiscal spillovers are modest.

On a related note, the existence of economic spillovers implies that the magnitude of fiscal multipliers may be amplified when fiscal consolidation programmes are coordinated among a set of countries. Holland and Portes (2012) simulate the actual fiscal programmes announced by 12 European Union countries for 2011-2013. They find that when policies are enacted jointly rather than unilaterally, the effect on the level of GDP in 2013 is on average 2 percentage points lower. Barrell et al. (2009) also look at the effect of spillovers and find that fiscal coordination increases the magnitudes of the multipliers and remark that the effects will be larger the more open the country is, as they benefit from increased imports of neighbouring countries, and the less sensitive to developments of financial markets, as coordinated fiscal policy has larger effects on the long run interest rates. Ivanova and Weber (2011) find that spillovers arising from coordinated fiscal policy are small (around ½ per cent) unless fiscal multipliers and/or import elasticities are large. They also find that the more open to trade an economy is, the larger the spillover.

## **The modelling framework**

### **The National Institute Global Econometric Model (NiGEM)**

NiGEM is a large estimated quarterly model of the UK and the world economies. The model is intended to capture the key features of the major world economies. It is theoretically coherent and quantified by means of empirical estimation over recent historical experience. It provides a plausible benchmark for estimating the effects on the economy of different policy decisions as well as other types of shocks. In contrast to many small theoretical models of the economy, its complete specification ensures that important features of the economy are not omitted from the analysis.

In the model framework agents can be forward looking, but nominal rigidities, namely sticky prices and adjustment costs, slow down the adjustment to the long-run equilibrium. It includes complete demand and supply sides, as well as extensive monetary and financial sectors. Domestic demand, aggregate supply, and the external sector are linked through the wage-price system, income and wealth, the financial sector, the government sector, and competitiveness. The external sector links the domestic economy to the rest of the world. The theoretical structure and the relevant simulation properties of NiGEM are described in detail in Barrell et al. (2001, 2004).

For each country we have an underlying CES production function which constitutes the theoretical background for the specification of the factor demand equations and provides a measure of capacity utilisation which then feeds into the price system. A CES production function that embodies labour augmenting technological progress (denoted  $\lambda$ ) with constant returns to scale, can be written as:

$$Q_t = \gamma \left\{ \left[ s(K_t)^{-\rho} + (1-s)(L_t e^{\lambda t})^{-\rho} \right]^{-\frac{1}{\rho}} \right\}^\alpha M_t^{1-\alpha} \quad (1)$$

where  $Q$  is real output,  $K$  is the total capital stock,  $L$  is total hours worked,  $t$  is an index of labour-augmenting technical progress and  $M$  is oil input. This constitutes the theoretical background for the specifications of the factor demand equations, forms the basis for unit total costs and provides a measure of capacity utilization, which then feeds into the price system.

Barrell and Pain (1997) show that the elasticity of substitution is estimated from the labour demand equation, and in general it is around 0.5. Demand for labour and capital are determined by profit maximisation of firms, implying that the long-run labour-output ratio depends on real wage costs and technical progress, while the long-run capital-output ratio depends on the real user cost of capital:

$$\ln \left( \frac{L_t}{Y_t} \right) = \alpha - (1-\sigma)\lambda t - \sigma \ln \left( \frac{w_t}{p_t} \right) \quad (2)$$

$$\ln \left( \frac{K_t}{Y_t} \right) = \delta - \sigma \ln \left( \frac{c_t}{p_t} \right) \quad (3)$$

where  $\alpha$  and  $\delta$  are constant terms related to the other parameters in the model,  $w/p$  is the real wage and  $c/p$  is the real user cost of capital. The user cost of capital is influenced by corporate taxes, depreciation (consumption of fixed capital) and risk premia and is a weighted average of the cost of equity and debt finance. The weights vary with the size of equity markets as compared to the private sector capital stock. Business investment is determined by the error-correction based relationship between actual and equilibrium capital stocks. It is the response of firms that is one of the main drivers of any boost to aggregate demand. Firms anticipate the expansion of the labour force and aggregate incomes and hence invest to raise the level of capital stock to a new equilibrium in order to maintain their desired capital-output ratio. This shift raises demand through an increase in investment: the accelerator effect. This is not an immediate response but rather a gradual shift to a new equilibrium, due to such factors such as adjustment costs for implementing additional investment. Government investment depends upon trend output in the long run. Prices are determined as a constant mark-up over marginal costs in the long term.



Within NiGEM, core prices are determined as the solution to a cost minimization problem, which assumes that firms choose factor inputs to minimize the cost of producing at the desired level of output. Core prices are driven by import prices and by the total cost of production, where the latter is constructed from the wage per person hour and the nominal user cost of capital per unit of capital. We incorporate an endogenous markup, which we model as a function of the output gap. This core price variable is used in the determination of consumer prices and hence of the rate of inflation. The price equations, and the wage equations that they depend upon, are dynamically and statically homogenous.

Capacity utilisation also affects price setting and depends on actual as opposed to potential output. If output is above capacity, prices rise more rapidly than their determinants (foreign prices, costs, expectations) would suggest, and the reverse is the case if the economy is below capacity. If prices fall relative to baseline because the economy is below capacity then real financial wealth rises, and competitiveness improves, and both help raise capacity utilisation through higher domestic demand and exports. These effects stabilise the economy slowly.

### Labour market

In NiGEM we have a labour demand curve, and we assume that employers have a right to manage, and hence the bargain in the labour market is over the real wage. In the long run wages rise in line with productivity all else equal. Other factors matter too; for instance if unions become stronger real wages rise and employment falls. Given the determinants of the trajectory for real wages, if unemployment rises then real wages fall relative to trend, and conversely.

There is continual structural change in labour markets and sustainable unemployment changes when policies change. We regularly update our model so that it reflects the economies we are studying, rather than being just a simple description of past data. Both the determinants of equilibrium and the dynamics of adjustment change, and adjustment, especially in Europe, is slow.

We assume that labour markets embody rational expectations, at least where we have evidence that bargainers use forward expectations of future inflation (Anderton and Barrell, 1995). In certain circumstances we assume that wage bargainers do not use model consistent expectations, but rather look at a simple time series predictor for next period's inflation.

A long-run labour demand schedule conditioned on real wages, technical progress and output (Barrell and Pain, 1997) can be derived from the production function (1). We first set the mark-up adjusted real wage equal to the marginal product of labour<sup>4</sup>, which is the derivative of (1) with respect to L. We then solve for L and apply a log-linear transformation:

$$\ln\left(\frac{L_t}{Y_t}\right) = [\sigma \ln(\beta(1-s)) - (1-\sigma) \ln(\gamma)] - (1-\sigma)\lambda t - \sigma \ln\left(\frac{w_t}{p_t}\right) \quad (4)$$

where  $w$  and  $p$  denote respectively labour costs per head and the price of value added (at factor cost).  $\beta$  denotes the mark-up. Denoting the expression in brackets by  $\alpha$  gives equation (2). We estimate the demands for factors as error corrections around the long run.

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<sup>4</sup> Demand for capital is given by  $\ln(K_t) = [\sigma \ln(\beta s) - (1-\sigma) \ln(\gamma)] + \ln(Y_t) - \sigma \ln(c_t/p_t)$ , where  $c$  is the nominal user cost of capital. Denoting the bracket of the equation as  $\delta$  gives equation (3).

We estimate the natural rate of unemployment within a stylised version of the bargaining framework of Layard et al. (1991, Chap. 2). Firms determine employment according to their labour demand curves and therefore bargaining only takes place over wages, the outcome reflecting the relative strength of unions versus employers. The non-accelerating inflation rate of unemployment is an equilibrium concept corresponding to the rate of unemployment that would prevail were the endogenous wage and price variables at their equilibrium levels (Barrell et al., 1993). Our analysis uses a labour demand equation (as described above) and a wage equation.

The wage equation models in a stylised way the determinants of the bargaining outcome by making wages dependent on the prevailing ILO unemployment rate ( $U$ ), as well as on average labour productivity. Clearly, many other factors such as replacement ratios, the degree of unionisation or the existence and level of minimum wages influence the bargain. In this analysis they are encapsulated in the intercept,  $a$ , and we can analyse them by shifting the intercept. It then holds that:

$$\ln\left(\frac{W_t}{P_t}\right) = a + \ln\left(\frac{Y_t}{L_t}\right) - bU_t \quad (5)$$

An estimate of the NAIRU can now be obtained by solving the labour demand equation (2) for the (log) real wage, inserting the result into the equation for the real wage (5) and solving the latter for the unemployment rate:

$$\text{NAIRU}_t = \frac{1}{b} \left( \frac{\sigma - 1}{\sigma} \left[ \ln\left(\frac{Y_t}{L_t}\right) - \lambda t \right] - a - \frac{\alpha}{\sigma} \right) \quad (6)$$

If  $\sigma=1$  then the parameters and intercepts in the equations determine the NAIRU. These equations express long-run equilibrium relationships, and appear as cointegrating vectors in NiGEM's error correction formulation for the labour demand and wage equations, respectively. Layard et al. (1991), state that "in the long-run, unemployment is determined entirely by long-run supply factors and equals the NAIRU. But in the short-run, unemployment is determined by the interaction of aggregate demand and short-run aggregate supply" (p.16). One of the key properties of NiGEM is that in the long run, employment and output are determined by supply side factors only. Long-run economic growth is determined by the growth in the labour force and by technical progress. Nevertheless, demand shocks are an important determinant of economic activity in the short and longer term.

### Household consumption, income and wealth

Consumption decisions are presumed to depend on real disposable income and real wealth in the long run, and follow the pattern discussed in Barrell and Davis (2007). Total wealth is composed of both financial wealth and tangible (housing) wealth where the latter data is available.

$$\ln(C_t) = \alpha + \beta \ln(RPDI_t) + (1 - \beta) \ln(RFN_t + RTW_t) \quad (7)$$

where  $C$  is real consumption,  $RPDI$  is real personal disposable income,  $RFN$  is real net financial wealth and  $RTW$  is real tangible wealth. The dynamics of adjustment to the long run are largely data based, and differ between countries to take account of differences in the relative importance of types of wealth and of liquidity constraints.

## Financial markets

We generally assume that exchange rates are forward looking and ‘jump’ when there is news. The size of the jump depends on the expected future path of interest rates and exchange rate risk premia, solving an uncovered interest parity condition, so that the expected change in the exchange rate is given by the difference in the interest earned on assets held in local and foreign currencies.

$$e_t = e_{t+1} \left( \frac{1 + r_t^*}{1 + r_t} \right) (1 + rp_t) \quad (8)$$

where  $e_t$  is the bilateral exchange rate at time  $t$  (defined as domestic currency per unit of foreign currency),  $r_t$  is the short-term nominal interest rate at home set in line with a policy rule,  $r_t^*$  is the interest rate abroad and  $rp_t$  is the exchange rate risk premium.

Interest rates are determined by policy rules adopted by monetary authorities as discussed in Barrell et al. (2006). Nominal short term interest rates are set in relation to a standard forward looking feedback rule<sup>5</sup>. Forward looking long-term interest rates (LR) are a forward convolution of expected short-term interest rates:

$$(1 + LR_t) = \prod_{j=1}^T (1 + r_{t+j})^{1/T} \quad (9)$$

We assume that equity markets are also forward looking, with equity prices determined by the discounted present value of expected profits, adjusted by an equity risk premium.

## Public sector

We model corporate (CTAX) and personal (TAX) direct taxes and indirect taxes (MTAX) on spending, along with government spending on investment and on current consumption, and separately identify transfers and government interest payments. Each source of taxes has an equation applying a tax rate to a tax base (profits, personal incomes or consumption). As a default we have government spending on investment (GI) and consumption (GC) rising in line with trend output in the long run, with delayed adjustment to changes in the trend, and are re-valued in line with the consumers’ expenditure deflator (CED). Government interest payments (GIP) are driven by a perpetual inventory of accumulated debts. Transfers to households (TRAN) are determined by the number of the working age population not in employment and the population above working age. Adjusted spending minus receipts gives us the budget deficit (BUD):

$$BUD = CED*(GC+GI)+TRAN+GIP-TAX-CTAX-MTAX \quad (10)$$

We have to consider how the government deficit (BUD) is financed. We allow either money (M) or bond finance (DEBT), so that the debt stock is related to historical deficits:

$$BUD_t = \Delta M_t + \Delta DEBT_t \quad (11)$$

rearranging gives:

$$DEBT_t = DEBT_{t-1} + BUD_t - \Delta M_t \quad (12)$$

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<sup>5</sup> Our default rule follows a ‘two-pillar’ strategy, targeting a combination of inflation and a nominal aggregate.

In all policy analyses we use a tax rule to ensure that governments remain solvent in the long run (Barrell and Sefton, 1997). This ensures that the deficit and debt stock return to sustainable levels after any shock. A debt stock target can also be implemented. The tax rate equation is of the form:

$$TAXR = f(\text{target deficit ratio} - \text{actual deficit ratio}) \quad (13)$$

If the Government budget deficit ratio is greater than the target, (e.g. -3 per cent of GDP and target is -1 per cent of GDP) then the effective income tax rate is increased.

Fiscal multipliers in response to direct and indirect tax adjustments are smaller compared to the multipliers arising from adjustments in government spending, as part of the movement in personal sector income driven by adjustment in taxes is offset by temporary adjustments in the saving rate while government spending instruments, such as government consumption or government investment, are part of the income identity and affect output directly.

### External trade

International linkages come from patterns of trade, the influence of trade prices on domestic prices, the impacts of exchange rates and patterns of asset holding and associated income flows. The structure of the trade block ensures overall global consistency of trade volumes by imposing that the growth of import volumes is equal to the growth of export volumes at the global level. Trade volumes and prices are linked by Armington matrices, based on 2010 trade patterns. The volumes of exports and imports of goods and services are determined by foreign or domestic demand, respectively, and by competitiveness as measured by relative prices or relative costs.

$$\begin{aligned} \Delta XVOL = & \alpha_1 - \lambda \left[ XVOL_{-1} - S_{-1} + \beta_1 \frac{PXNCOM}{CPX}_{-1} + \beta_2 \frac{PXNCOM}{DPX}_{-1} \right] + \\ & + \beta_3 \Delta S - \beta_4 \Delta \frac{PXNCOM}{CPX} - \beta_5 \Delta \frac{PXNCOM}{DPX} \end{aligned} \quad (14)$$

where  $XVOL$  is a volume of exports of goods and services,  $S$  is export market size,  $PXNCOM$  is export prices of non-commodities,  $CPX$  is a weighted average of competitor's export prices, and  $DPX$  is a weighted average of consumer prices in the exporting country's export markets.

$$\Delta MVOL = \alpha_1 - \lambda [MVOL_{-1} - 1.24TFE_{-1} + \beta_1 RPM_{-1}] + \beta_2 \Delta TFE - \beta_3 \Delta RPM \quad (15)$$

where  $MVOL$  is a volume of imports of goods and services,  $TFE$  is total final expenditure and  $RPM$  is relative import price. We impose a common demand elasticity across all countries of 1.24, based on panel estimations reported in Barrell and Dees (2005).

The export demand variable ( $S$ ) is constructed as a weighted sum of other countries' imports, which ensures approximate balance, and any discrepancy is allocated to exports in proportion to the country's share of world trade.

$$S_j = \sum \beta_i XMVOL_i \quad (16)$$

where  $\beta_i$  is given by (exports from country  $j$  to country  $i$ )/(total imports in country  $i$ ).  $XMVOL_i$  is imports of goods and services in country  $i$ , calculated in 2011 US\$.

Import prices depend on a weighted average of global export prices, and this ensures that the ratio of the value of exports to the value of imports remains at around its historical level.

$$RPM = PM / (CED / (1 + ITR)) \quad (17)$$

where  $PM$  is an import deflator (goods and services),  $CED$  is a consumer expenditure deflator and  $ITR$  is indirect tax rate.

It is assumed that exporters compete against others who export to the same market as well as domestic producers via relative prices. The overall current balance depends upon the trade balance and net property income from abroad, which comprises flows of income onto gross foreign assets and outgoings on gross foreign liabilities. World flows of property income balance because all assets are matched by liabilities, while revaluations of liabilities match those of assets and income flows match payment flows.

## Model assumptions

NiGEM incorporates a wide range of possible monetary and fiscal policy reaction functions as well as different assumptions regarding the way expectations are formed. In order to evaluate the effects of fiscal shocks and to ensure a proper comparison across scenarios we need to be clear about the underlying assumptions that we impose as well as making sure that the policy reactions do not contaminate the immediate responses of the economy to the established shocks. Our assumptions are listed below.

There are no policy reactions in the first year:

- That is, the central bank's policy rate remains fixed on baseline for the first year. Afterwards it follows a two pillar rule whereby it aims to stabilise both inflation and nominal output (see Barrell et al., 2006).
- NiGEM incorporates a feedback rule to ensure fiscal solvency. This does not respond in the first year, but afterwards the tax rate on household incomes adjusts to return the government balance to baseline in the medium term<sup>6</sup>.
- Government investment and consumption are held at the baseline level for a year and allowed to move according to its structure thereafter.

In the model, market clearing holds and all quantities and prices are endogenous, with the exception of policy targets, labour supply, and risk premia:

- Financial markets are forward looking and the expectations they hold are consistent with the outturns.
  - Long-term government bond rates are the forward convolution of future short-term policy rates plus an exogenous term premium.

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<sup>6</sup> By medium term we refer to a time span of around 5 years.

- Corporate borrowing costs are the interest rate on long-term government bonds plus a risk premium term capturing private sector risks.
- Equity prices are the discounted value of future profits, where the discount factor is the market interest rate plus an exogenous equity premium.
- Exchange rates are described by a forward-looking uncovered interest rate parity condition so that they can “jump” when future interest rates are expected to change.
- Labour markets are described by exogenous labour supply, a labour demand equation and by a wage equation based on search theory, where the bargain depends on a combination of backward and forward looking inflation expectations.
- Capital stocks adjust slowly and accumulate as a function of a forward looking user cost of capital.
- Output capacity and factor demands are based on a CES production function.
- Consumers are myopic in the sense that they do not respond to changes in future financial wealth.

## Short-term fiscal multipliers

Fiscal multipliers in NiGEM are usually below 1. This is largely due to two features of the model. Firstly, trade linkages imply that part of the fiscal impulse will be leaked away from the country via trade. Secondly, there are several policy switches that dampen the effects of a fiscal shock. Even if the short-term interest rate is constant for a year, as described in the previous section, the long-run rate will fall on impact creating an incentive for firms to invest and thus dampening the fall in output. Even so, the multipliers in NiGEM could be overstated, as there may be lags in the implementation of a fiscal policy in the real world that are not fully captured in the model.

In this section we present the multipliers from a range of fiscal shocks. A fiscal multiplier is defined as the percentage change in GDP in response to a 1 per cent of GDP fiscal contraction in the same year. We use four different fiscal instruments: government spending, government investment, income taxes and value added taxes (VAT). Each of the fiscal instruments transmits through the economy in a different way. Both government consumption and government investment have a direct impact on output as they are part of the national account identity. Government investment also affects capital accumulation, one of the factors of production within NiGEM’s production function, possibly changing the path for potential output. However, as capital accumulates slowly the short-term output effect of government investment is very similar to that of government consumption. Both income tax and VAT affect households’ real disposable income, the former via a change in disposable income and the latter via the rate of consumer price inflation. Fiscal multipliers from government spending shocks are larger than the multipliers from changes in taxes, as the former impact output directly while part of the changes in real disposable income implied by the latter are saved. An in-depth analysis and discussion of the transmission mechanisms of each fiscal instrument and their relation with fiscal multipliers within the context of NiGEM can be found in Al-Eyd and Barrell (2005).

Table 1 shows the one-year multipliers from a temporary fiscal shock lasting one year<sup>7</sup>. Shocks were run in each country in isolation. A negative multiplier means that output falls given a fiscal impulse. Further details can be found in the tables in Appendix A where we report the simulation outcome for a selection of variables of interest.

**Table 1:** First year multipliers from a 1% of GDP temporary fiscal contraction

	Government Spending		Taxes	
	Consumption	Investment	Income	VAT
Belgium	-0.45	-0.46	-0.10	-0.06
Finland	-0.62	-0.64	-0.20	-0.10
France	-0.58	-0.59	-0.40	-0.15
Germany	-0.46	-0.48	-0.31	-0.28
Greece	-0.94	-0.96	-0.59	-0.12
Ireland	-0.22	-0.22	-0.06	-0.08
Italy	-0.55	-0.56	-0.11	-0.06
Netherlands	-0.55	-0.56	-0.18	-0.11
Austria	-0.49	-0.50	-0.13	-0.05
Portugal	-0.61	-0.62	-0.11	-0.12
Spain	-0.81	-0.82	-0.22	-0.19

*Note:* No shift in the budget deficit target. Experiments conducted in one country at a time.

As expected, multipliers are below unity in all instances. They are larger for government spending shocks, averaging around -0.6 per cent, than government revenue shocks, averaging almost -0.2 per cent. There is, nevertheless, a lot of variation across countries which we discuss in the following section.

### Econometric analysis

In this section we look into the determinants of the observed variation in the magnitudes of the fiscal multipliers displayed in table 1. To do so we run OLS regressions of the multipliers displayed in table 1 onto a set of explanatory variables. The set of covariates include the short-term elasticity of household consumption to real personal disposable income (ConsSens), openness to trade (Openness), which is defined as the ratio of the volume of imports to the volume of GDP, and country size (Size), defined as GDP in PPP terms.

These covariates are either estimates taken from NiGEM's equations, or data taken from NiGEM's historical database. Al-Eyd and Barrell (2005) is the original source of the estimated household consumption equations from where we take our estimates of the short-term elasticity of private consumption to real personal disposable income. The data used to construct the Openness to Trade covariate comes from national statistical offices and GDP values in PPP terms, used to compute the covariate Size, come from IMF World Economic Outlook Database (2011).

<sup>7</sup> These shocks, as explained in section 3.2, are run with monetary policy rate constant for the first year. We have run the same shocks allowing policy rate to react on impact and find the results change very little, less than 0.01 percentage point in most instances. This is explained by the limited impact that economic fluctuations from one single country in the Euro Area has on the ECB policy rate reaction function.

Table 2 provides the outcome of the regressions. Note that in this context, a negative regression coefficient means larger multipliers in the absolute value sense, as the dependant variables are negative multipliers.

**Table 2.** OLS regression: fiscal multipliers as dependent variables

	Government Spending		Taxes	
	Consumption	Investment	Income	VAT
ConsSens	-0.284 [-1.10]	-0.307 [-1.19]	-0.827 [-4.95]	-0.137 [-1.24]
Openness	0.719 [4.11]	0.732 [4.16]	0.312 [2.75]	0.021 [0.28]
Size	0.0004 [2.35]	0.0004 [2.39]	0.0003 [2.76]	-0.0001 [-1.35]
Constant	-0.960 [-7.71]	-0.975 [-7.77]	-0.228 [-2.82]	-0.063 [-1.17]
R-squared (%)	72.6	73.2	83.7	60.8
Adj R-squared (%)	60.8	61.8	76.8	44.0
F-test	0.022	0.021	0.004	0.073
Num. Observations	11	11	11	11

*Note:* Regressions run in levels. Numbers in brackets are t-statistics.

The sign of the coefficients appear to fit what theory would suggest. Countries with higher short-term elasticity of household consumption to real income have larger multipliers. This makes economic sense: countries with households whose consumption plans are more sensitive to fluctuations in short-term income should experience larger negative multipliers as private consumption reacts more strongly to a fall in income induced by contractionary fiscal policy. Those countries more open to trade experience smaller multipliers, as part of the fall in output is matched by a larger fall in imports. Finally, the regressions also show that larger countries experience lower multipliers<sup>8</sup>. Within the Euro Area, fiscal shocks in bigger countries trigger stronger reactions from the ECB, who adjusts policy rate to offset fluctuations in nominal output and inflation. The only instance where we obtain an unexpected sign of the covariate Size is in the last column of table 2. However, the coefficient is not statistically different from zero.

There are differences in the statistical fit and significance of the regression equations across each of the dependent variables. For instance, government spending multipliers display coefficients on the effects of the short-term elasticity of private consumption to real income that are not statistically different than zero, while that of income tax rate multipliers is significant. This result is reassuring; government spending shocks affect household real disposable income only indirectly via general equilibrium effects while income tax rate impacts real income directly. Therefore, the magnitude of the multipliers should be more sensitive on the value of the short-term elasticity of consumption to real disposable income on the latter case than in the former.

The goodness of fit is good in all instances –as measured by the adjusted  $R^2$  and the F-test- except for the regression that uses as dependent variable multipliers from a VAT shock. This is possibly due

<sup>8</sup> The coefficient for Size is very small, which is explained by the large magnitude of the values in the covariate Size relative to the remaining covariates.



to small variation in simulated multipliers arising from a low pass-through of VAT shocks to real personal disposable income.

### Short-term fiscal multipliers in crisis times

In a world where the assumption of perfect capital markets holds, agents' consumption and investment decisions can be decoupled from their income profile so long as the present discounted value of their spending profile equals that of their income<sup>9</sup>. Agents can simply borrow against their future income. Under this assumption, aggregate consumption would be unaffected by fluctuations in current income. However, some agents cannot gain access to credit even when they should be able to given their future stream of income. There are several reasons to explain this phenomenon but most of them fall into the category of problems related with imperfect information<sup>10</sup>. Following the literature we call these agents credit or liquidity constrained individuals. Agents who cannot borrow against their future income rely much more on their current income which implies that aggregate consumption will also be more reactive to movements in income in the presence of liquidity constrained agents.

The sensitivity of aggregate consumption to current income may fluctuate over the business cycle as the share of agents who face credit constraints moves. For instance, Barrell et al. (2006) suggest that the proportion of agents and firms with liquidity constraints increased over the previous financial crisis. Fiscal multipliers, in turn, will also be affected by the proportion of liquidity constrained agents, as falls in firms' profits and households' disposable income triggered by the fiscal shock will translate into a stronger fall in consumption or investment.

In this section we will look at how fiscal spillover multipliers change when the share of liquidity constrained agents increases as would happen during a recession. Following Al-Eyd and Barrell (2005), we model "crisis times" as a period with a higher sensitivity of aggregate consumption and investment to short term fluctuations in income to account for a larger proportion of liquidity constrained individuals. The consumption equation in NiGEM is of the following form<sup>11</sup>:

$$\Delta \log(C_t) = \lambda \{ \log(C_{t-1}) - [a + b_0 \log(TW_{t-1}) + (1 - b_0) \log(RPDI_{t-1})] \} + b_1 \Delta \log(RPDI_t) + b_2 \Delta \log(NW_t) + b_3 \Delta \log(HW_t), \quad (18)$$

where C is consumption, TW is total asset wealth which includes net financial wealth (NW) and tangible wealth (HW) and RPDI is real personal disposable income.  $\Delta$  is the difference operator, subscript t denotes the time period and the remaining symbols are parameters.  $\lambda$  is the error correction coefficient on the long-run relationship. The remaining terms capture short-run dynamics. The parameter  $b_1$  captures the sensitivity of aggregate consumption to changes in current real disposable income and, as suggested by Al-Eyd and Barrell (2005), it represents a proxy of the share of people subject to liquidity constraints in the economy. To approximate a 25 per cent increase in

<sup>9</sup> This is a variation of the Fisher separation theorem.

<sup>10</sup> For instance, and in the spirit of Kiyotaki and Moore (1997), moral hazard concerns may induce the lender to request the borrower to provide collateral to secure the loan. If the borrower has insufficient collateral it may become credit constrained.

<sup>11</sup> Note that the long run component of equation 18 is equivalent to equation 7.

the share of liquidity constrained agents, we increase  $b_1$  by 25 per cent across all countries in the Euro Area to capture a situation with heightened turmoil in the banking sector<sup>12</sup>.

In crisis times firms also face difficulties obtaining funding, not only households. To capture an increase in the share of firms who face liquidity constraints we will follow the same approach as with households and increase the parameter in the investment equation that captures the sensitivity of investment to changes in current income. As with the household sector, we will consider a 25 per cent increase in the value of the parameter.

**Table 3.** Multipliers with proportion of liquidity constrained agents increased by 25 per cent

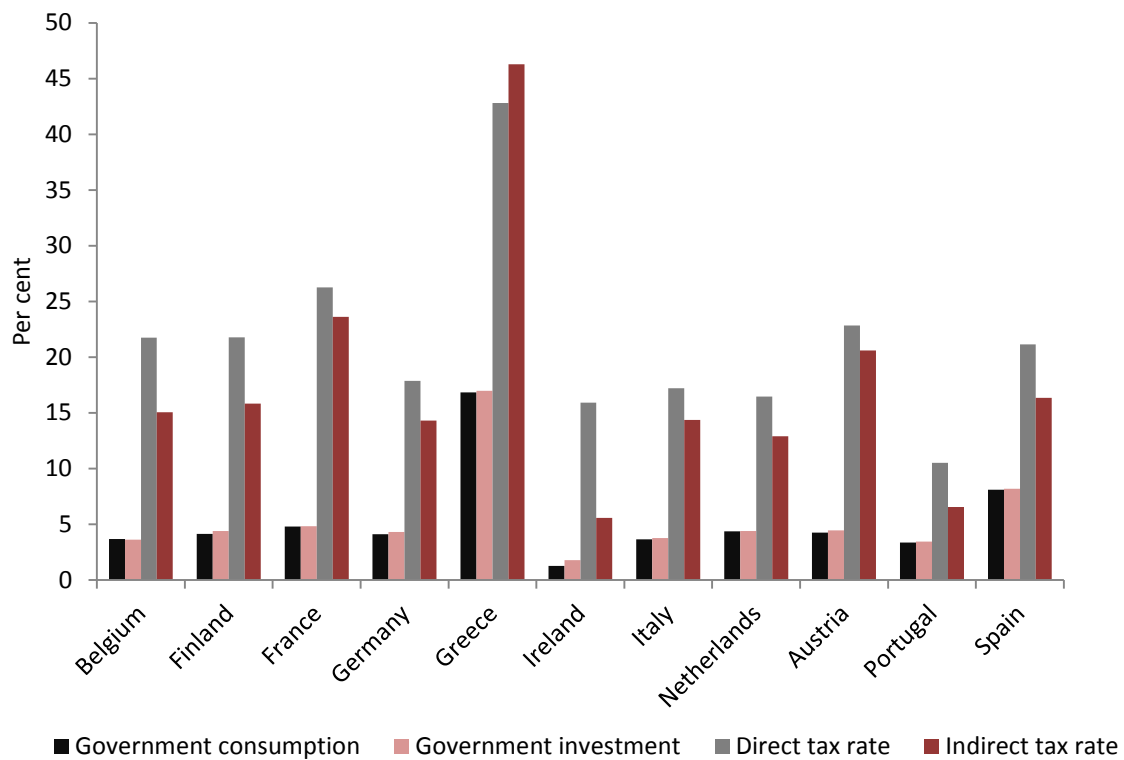
	Government Spending				Taxes			
	Consumption	$\Delta$	Investment	$\Delta$	Income	$\Delta$	VAT	$\Delta$
Belgium	-0.47	-0.02	-0.48	-0.02	-0.12	-0.02	-0.07	-0.01
Finland	-0.65	-0.03	-0.67	-0.03	-0.25	-0.04	-0.11	-0.02
France	-0.61	-0.03	-0.62	-0.03	-0.51	-0.11	-0.18	-0.03
Germany	-0.48	-0.02	-0.50	-0.02	-0.37	-0.06	-0.32	-0.04
Greece	-1.10	-0.16	-1.12	-0.16	-0.84	-0.25	-0.18	-0.06
Ireland	-0.22	0.00	-0.23	0.00	-0.07	-0.01	-0.08	0.00
Italy	-0.57	-0.02	-0.58	-0.02	-0.13	-0.02	-0.07	-0.01
Netherlands	-0.57	-0.02	-0.58	-0.02	-0.21	-0.03	-0.13	-0.01
Austria	-0.51	-0.02	-0.53	-0.02	-0.16	-0.03	-0.06	-0.01
Portugal	-0.63	-0.02	-0.64	-0.02	-0.12	-0.01	-0.13	-0.01
Spain	-0.88	-0.07	-0.89	-0.07	-0.27	-0.05	-0.22	-0.03

*Note:* No shift in the budget deficit target. Experiments conducted in one country at a time.  $\Delta$  denotes the difference between the multiplier reported in this table against the multiplier reported in table 1.

Government consumption and investment shocks affect real household income only indirectly and the proportion of liquidity constrained agents in the economy has little effect on fiscal spillovers. Direct tax rate and VAT shocks affect real household income directly and the effect of liquidity constraints is more significant. Table 3 shows the one-year multipliers from a temporary fiscal shock lasting one year and a 25 per cent increase in liquidity constrained firms and consumers. Figure 1 plots the percentage increase of the magnitude of the multipliers in table 3 relative to those in table 1. Government consumption and investment multipliers increase by less than 5 per cent in most cases once we account for an increase in the share of agents facing liquidity constraints, the exceptions being Spain and Greece where they increase by around 8 and 17 per cent respectively. The percentage changes in the multipliers are on average around 21 per cent in the case of the direct tax shock and 17 per cent in the case of the indirect tax shock. The effect of increasing liquidity constraints is more pronounced in Greece (43 and 46 per cent increases) and less pronounced in Portugal and Ireland. One reason for the more pronounced effects of increasing liquidity constraints in Greece is that the share of private consumption in output in Greece is larger compared to other countries in our sample, thus output is more sensitive to variables which directly affect consumption.

<sup>12</sup> We use increases in liquidity constrained consumers as a proxy for crisis times. We do not introduce elements of crises such as risk premia and uncertainty shocks, that we have experienced in Europe since 2008, as we want to isolate how multipliers shift when liquidity constraints change. For an examples of modelling such developments within Europe, see the EBA stress tests (<http://www.eba.europa.eu/-/eba-launches-2016-eu-wide-stress-test-exercise>).

**Figure 1.** Percentage increase of multipliers relative to table 1



Source: NiGEM simulations.

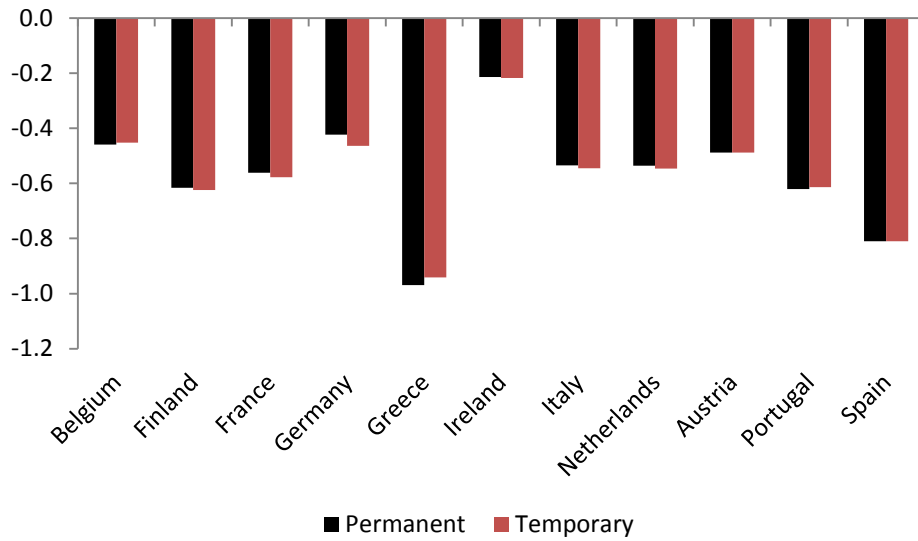
### Short-term fiscal multipliers from permanent fiscal shocks

A permanent fiscal consolidation involves a permanent shift in the budget balance target. In the scenarios reported here, each permanent fiscal consolidation is introduced via one particular fiscal instrument. The multipliers reported in figure 2 are based on the same set of shocks applied in table 1 but the fiscal consolidation is permanent and the deficit target is reduced by 1 per cent of GDP. This changes the profile of the multiplier as income taxes will vary from the second year of the shock onwards to ensure that this target is met.

In general, we would expect permanent multipliers to be smaller than temporary ones since the effect of the fiscal contraction on long rates is more pronounced and this fall in long rates induces increases in asset prices and investment. Since the countries in our sample do not have independent monetary policies, this effect is not in evidence except for the larger economies such as Germany and France. Figure 2 shows the multipliers from permanent and temporary contractions in government consumption of 1 per cent of GDP.

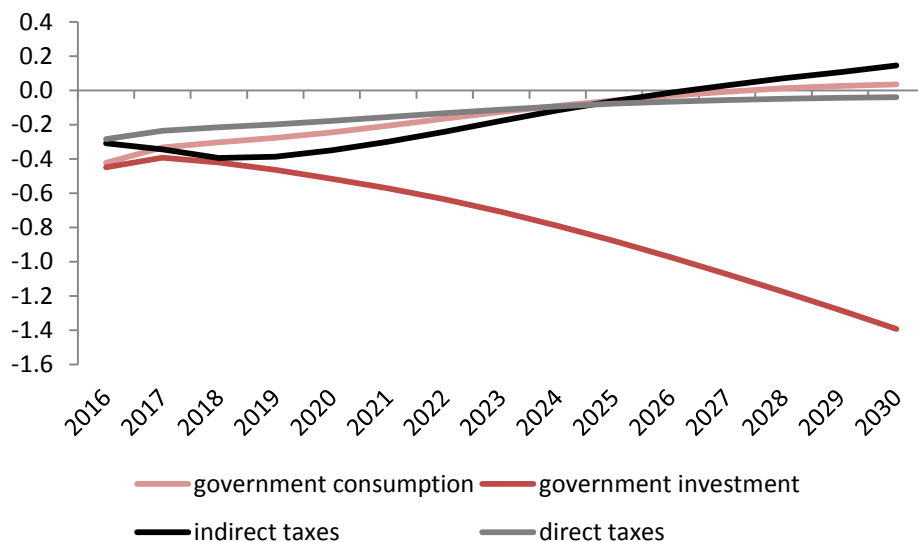
Figures 3 and 4 show the longer-term multiplier profiles for selected economies following a permanent fiscal consolidation.

**Figure 2.** Multipliers from permanent and temporary government consumption contractions (percentage difference from baseline)



The long-run effects on output are much larger in the case of a permanent reduction in government investment since this results in a permanently lower level of capital stock. Since the effect on interest rates is small, even in Germany which is the largest economy in the Euro Area, there is no offsetting increase in business investment. An increase in indirect taxes pushes up the rate of inflation resulting in a small increase in interest rates (about 7 basis points in the case of the German shock) which lowers output growth relative to baseline. In contrast, the interest rate declines by a small amount following a permanent fiscal contraction via government consumption, government investment or direct taxes.

**Figure 3.** Germany: permanent consolidation multipliers (percentage difference from baseline)

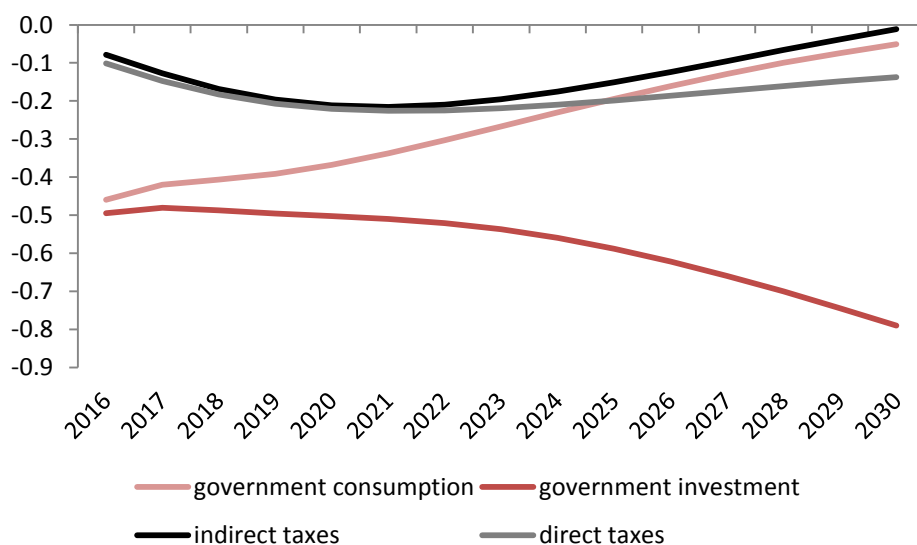


Source: NiGEM simulations.

The output profiles following a permanent fiscal consolidation in Belgium are similar but the impact multipliers for direct and indirect taxes are smaller. This is because the income elasticity of

consumption is lower in Belgium than in Germany. See appendix C for longer-term multiplier profiles for the other countries in our sample.

**Figure 4.** Belgium: permanent consolidation multipliers (percentage difference from baseline)



Source: NiGEM simulations.

## International coordination of fiscal policies

Every now and then, neighbouring<sup>13</sup> countries find themselves synchronizing their fiscal policies, even if they had not intended to. The recent Euro Area sovereign crisis episode offers one such example where several governments across the Euro Area engaged, almost simultaneously, in fiscal consolidation programs.

When a country implements a set of contractionary fiscal policies, these will have an impact, a spillover, on other countries. As discussed in Alcidi et al. (2016) there are three main channels of transmission by which a fiscal policy change in one country can affect other countries: the demand channel which highlights the importance of trade as a mechanism of transmission of spillovers, the competitiveness channel that captures terms of trade effects and the financial markets channel that encompasses several types of transmission mechanisms that operate via financial markets.

As discussed at length, within the context of NiGEM, in Carreras et al. (2016), trade is a powerful channel: the reduction in government spending, or private spending if the adjustment is on the revenue side of the government budget, triggers a reduction in that country's imports which translates into a decline of other countries' exports. As we will see, interest rates and exchange rates will operate to offset the trade effects.

In this section we quantify fiscal multipliers that arise when all Euro Area countries included in this analysis coordinate into a temporary fiscal contraction and compare them to those described in the Section 4. The difference between fiscal multipliers that arise when there is a fiscal shock in a

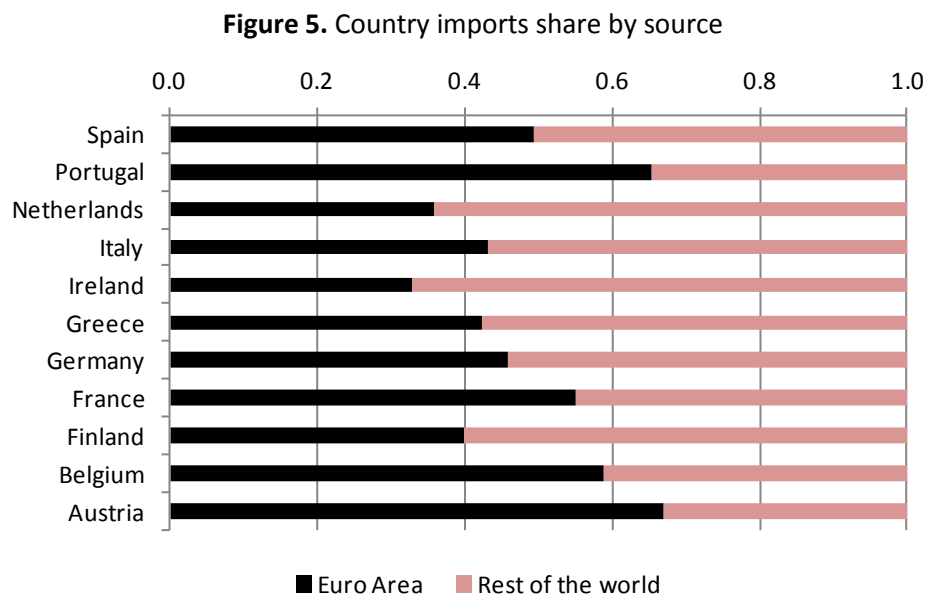
<sup>13</sup> We use the term neighbouring from an economic perspective, where closeness is not only related to the geographical sense of the word but also related to the degree of trade and financial linkages as well as migration flows.

country in isolation to that arising when a set of countries implement fiscal shocks simultaneously will be denoted as the coordination spillover multiplier for the remainder of this section.

We provide intuition to explain the observed variation in the magnitude of multipliers and investigate the importance of the trade channel relative to the other channels. In addition, we look into how these multipliers change under a wide range of alternative assumptions, including the share of borrowing constrained borrowers and the length of the contractionary fiscal shock.

### The importance of trade

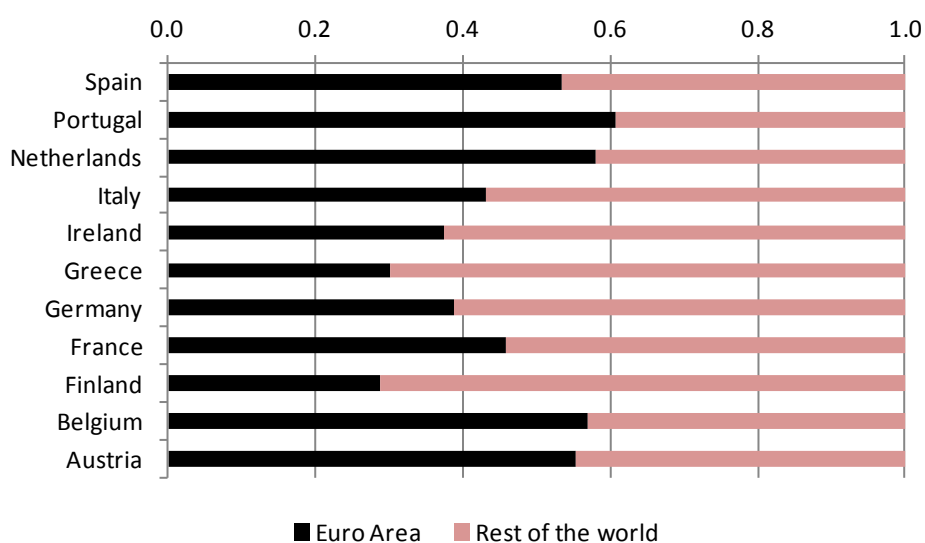
Trade with Euro Area partners constitutes a significant part of total imports and exports for all countries in the analysis, see figures 5 and 6<sup>14</sup>.



Source: NiGEM simulations.

<sup>14</sup> Shares are based on NiGEM's trade matrix which reflects total bilateral trade in goods and services between countries with weights based on trade in 2010. Trade is estimated from the export side and we impose the restriction that exports from country *i* to country *j* are equal to imports in country *j* from country *i*.

**Figure 6.** Country exports share by source



Source: NIGEM simulations.

On average, 49 per cent of a country's imports come from the Euro Area and 46 per cent of a country's exports go to other Euro Area countries. There are, however, differences across countries. Of note are the cases of Ireland and Finland, which appear to have low shares of import and export volumes relative to the remaining countries. On the opposite spectrum lie Austria, Belgium and Portugal. Another interesting case is that of the Netherlands, whose share of imports from the rest of the Euro Area is small relative to other countries, but a much larger share of their exports go to the Euro Area. This may be explained by the "port" phenomenon, whereby Netherlands acts as a port of entry of imports from the rest of the world which are then re-exported to other Euro Area countries.

### Short-term fiscal multipliers

Table 4 below provides the first year fiscal multipliers that arise in each Euro Area country after implementing a temporary fiscal contraction in all Euro Area countries simultaneously. As in Section 4, we consider multipliers that arise from four different fiscal instruments: government consumption and investment, direct tax rate and indirect tax rate. The magnitude of the shocks have been calibrated to produce a reduction in government spending equivalent to 1 per cent of GDP or an increase in tax receipts of 1 per cent of GDP. For further information on the outcome of the simulations, Appendix D reports the time series path of a set of variables of interest.

Multipliers displayed in table 4 combine the effects of a contraction in domestic demand as a result of the fiscal consolidation package implemented in each country with the coordination spillovers from the remaining countries' fiscal shocks. Next to each fiscal instrument, we report a column named " $\Delta\%$ " that reports the percentage change of the multiplier compared to that displayed in table 1. So for instance, the fiscal multiplier of a temporary contraction in government consumption in Belgium is 132 per cent larger when all countries coordinate their consolidation programs compared to when Belgium enacts such a program in isolation.

**Table 4.** International coordination: first year multipliers from a 1% of GDP temporary fiscal contraction

	Government Spending				Taxes			
	Consumption	$\Delta\%$	Investment	$\Delta\%$	Income	$\Delta\%$	VAT	$\Delta\%$
Belgium	-1.05	132	-1.08	133	-0.40	307	-0.24	304
Finland	-0.93	50	-0.96	50	-0.34	68	-0.19	89
France	-0.78	35	-0.80	36	-0.48	19	-0.21	40
Germany	-0.66	42	-0.68	41	-0.38	21	-0.31	9
Greece	-1.31	39	-1.34	40	-0.75	27	-0.22	79
Ireland	-0.33	51	-0.34	53	-0.09	59	-0.08	8
Italy	-0.70	28	-0.72	28	-0.19	63	-0.10	59
Netherlands	-1.22	123	-1.25	125	-0.51	180	-0.33	197
Austria	-0.77	58	-0.80	58	-0.26	104	-0.14	171
Portugal	-1.08	75	-1.10	76	-0.32	196	-0.26	108
Spain	-0.99	22	-1.01	22	-0.30	34	-0.22	17
Average % increase		59		60		98		98

Note: Column named " $\Delta\%$ " computes the percentage increase of the fiscal multipliers relative to those displayed in table 1.

Fiscal multipliers increase significantly when there is international coordination of fiscal policies. There is a large degree of variation across countries, but the average percentage increase in the fiscal multiplier, in absolute value terms, is 60 per cent for government spending shocks and 100 per cent for revenue shocks. Most of the variation is explained by the degree of openness of an economy, as already discussed in Section 4. Countries more open to trade face a higher reduction of demand for domestic products following the decline in imports from their trading partners. To see this, we plot the coordination spillovers<sup>15</sup> (figure 7) against our measure of openness to trade: a country's imports to GDP ratio, which we call import penetration.

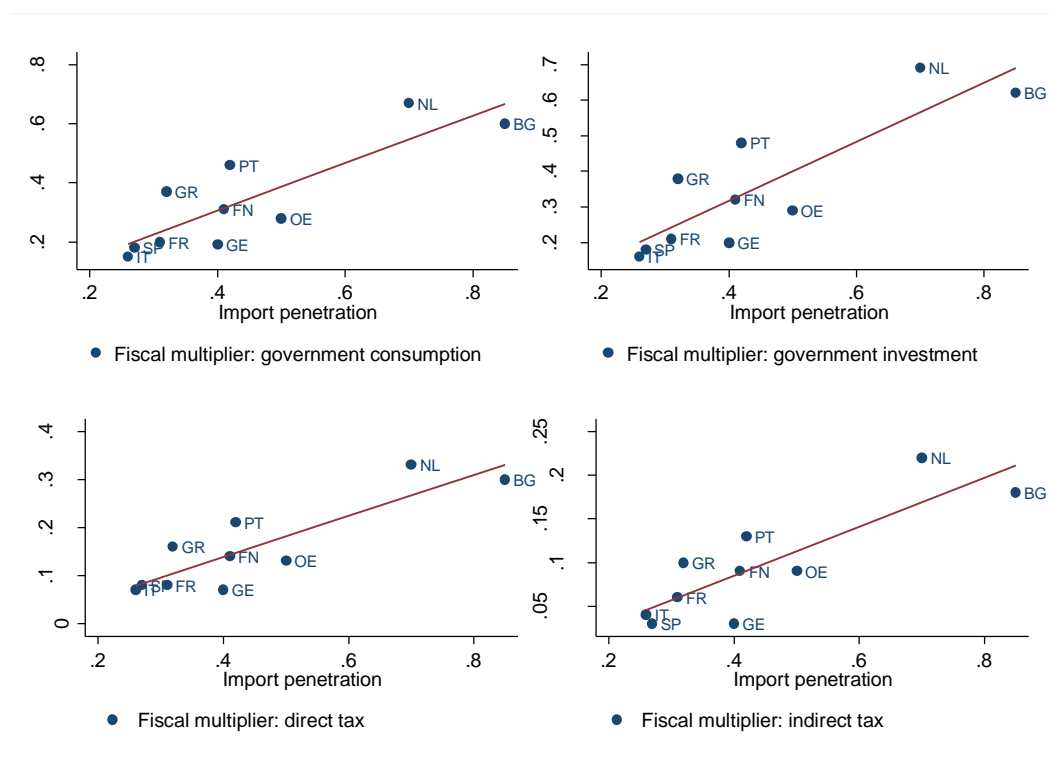
We have excluded Ireland from the plots as it confounds the results. Ireland constitutes an outlier in this analysis given that it is a very open economy whose main trading partner is the UK, which is not part of the set of countries that implements fiscal consolidation packages in our simulation. As a result, the coordination spillover effect of a Euro Area wide austerity programme on Ireland appear to be much more muted given its degree of openness to trade compared to countries such as Belgium or the Netherlands.

Regressions of the differential impact on the multipliers driven by coordination spillovers against our measure of openness to trade, country size and income sensitivity of consumers show that openness to trade is the single most important factor determining the magnitude of the coordination spillovers.

<sup>15</sup> Coordination spillovers are defined as the difference between the multipliers that arise when countries coordinate their fiscal policies against the ones that arise when the austerity programmes are implemented in isolation.



**Figure 7.** Scatter plot: import penetration against fiscal multipliers (per cent)



**Table 5.** OLS regression: increase in fiscal multipliers as dependent variables

	Government Spending		Taxes	
	Consumption	Investment	Income	VAT
ConsSens	-0.061 [-0.29]	-0.060 [-0.27]	0.008 [0.08]	-0.012 [-0.16]
Openness	-0.691 [-3.81]	-0.714 [-3.80]	-0.370 [-4.25]	-0.238 [-3.79]
Size	0.0002 [1.51]	0.0002 [1.47]	0.0001 [1.38]	0.0001 [1.54]
Constant	-0.084 [-0.75]	-0.086 [-0.75]	-0.025 [-0.46]	-0.012 [-0.30]
R-squared (%)	81.1	80.9	83.9	81.5
Adj R-squared (%)	71.7	71.4	75.9	72.3
F-test	0.014	0.014	0.008	0.013
Num. Observations	10	10	10	10

*Note:* Regressions run in levels. Numbers in brackets are t-statistics. Ireland has been excluded from the sample

### Propagation mechanisms

There are at least three possible channels, excluding migration flows, through which a shock in one country can have an effect on the other countries: a trade channel, terms of trade channel and a financial market channel.

Coordinated fiscal contractions depress domestic demand and propagate to other countries via trade. Movements in policy rate and euro exchange rate operate to offset the decline in activity derived by the Euro Area wide fiscal consolidation packages. Following a decline in output, the ECB

will decrease policy rate, which should offset to some extent the decline in demand induced by the government. In addition, as policy rate declines, euro depreciates which induces an improvement of Euro Area countries' net trade position against the rest of the world. In this section we quantify the relevance of each of the channels discussed above. We find that the trade channel is quantitatively much more important compared to the offset induced by policy and exchange rate.

Table 6 below presents the percentage increase of fiscal multipliers that would have occurred had monetary policy rate been constant. In most cases, multipliers would have been less than 5 per cent larger had policy rate been constant; the only exception being the case of Ireland, which is an artefact derived from the computation of a percentage change on a fiscal multiplier that is in absolute value much smaller than the multipliers of the other countries. The muted quantitative impact on multipliers of movements in policy rate comes at a no surprise given the relatively muted response of the ECB, a 15 basis points decline, to the Euro Area fiscal shock<sup>16</sup>. The decline is short-lived given the temporary nature of the shock<sup>17</sup>.

**Table 6:** Percentage change in multipliers had interest rate been constant

	Government Spending		Taxes	
	Consumption	Investment	Income	VAT
Belgium	3.9	3.4	12.0	14.6
Finland	3.2	2.8	9.8	13.4
France	2.9	2.6	5.4	9.5
Germany	3.5	3.1	6.7	6.1
Greece	2.3	2.1	4.7	11.4
Ireland	11.0	9.4	44.1	38.2
Italy	2.9	2.5	12.3	16.7
Netherlands	2.7	2.4	7.4	8.3
Austria	3.9	3.4	13.1	18.5
Portugal	1.8	1.6	7.1	6.0
Spain	2.4	2.2	9.3	9.2

The exchange rate provides an additional channel that offsets the negative impact on output of the fiscal consolidation programmes. As policy rate declines, capital flows out of the Euro Area in search of better yield and euro depreciates, thus giving an edge to Euro Area exporters relative to their competitors from the rest of the world. However, given the muted response of policy rate to the fiscal shocks, the nominal exchange rate movements are small. As a result, the economic offset triggered by a depreciation of euro is negligible<sup>18</sup>.

<sup>16</sup> The simulation assumes a fiscal contraction package that lasts only for one year. It is easy to envisage situations where the fiscal measures are of larger magnitude and last for longer, in which case it would trigger larger responses of the ECB.

<sup>17</sup> Given that NiGEM is broadly a linear model, one could extrapolate the results to situations where we assume a larger response of the Monetary Authority. In such instance, one can scale the percentage effect of policy rate on multipliers by the same proportion as the differential in the percentage response of policy rate.

<sup>18</sup> We have computed the multipliers that arise had nominal exchange rate remained constant, but the effects are almost zero.

In Section 5.4 we consider permanent, rather than temporary fiscal shocks and we will see that movements in policy rate and exchange rate will be much more pronounced thus having a larger impact on the observed multipliers.

### Short-term fiscal multipliers in crisis times

We now discuss the effects of internationally coordinated government consolidation programmes in times where the share of liquidity constrained agents in the economy is higher; our proxy of a crisis time scenario as explained in Section 4.2. Table 7 presents the percentage increase in multipliers when we increase the proportion of liquidity constrained households and firms by 25 per cent. Sensitivity analysis regarding this proportion is reported in Appendix B.

According to our simulations, fiscal consolidation packages in crisis times induce larger multipliers, albeit the differential impact is heavily dependent on the fiscal instrument shocked. Multipliers triggered by fiscal instruments on the spending side experience moderate increases, of around 8 per cent on average. By contrast, revenue instruments experience much larger increases of around 25 per cent on average. Government spending items affect real household income only indirectly via feedback effects of economic activity onto wages and transfers and therefore the proportion of liquidity constrained agents in the economy has little effect on fiscal multipliers. By contrast, direct tax rate and VAT shocks affect the economy through real household income directly. As a result, liquidity constrained agents who face large declines of their real income will thus have to adjust their consumption plans to a larger extent.

**Table 7.** Fiscal multipliers: percentage increase compared to table 4

	Government Spending		Taxes	
	Consumption	Investment	Income	VAT
Belgium	7.8	7.9	29.0	25.2
Finland	6.7	6.9	26.4	22.3
France	6.7	6.7	27.2	25.5
Germany	6.2	6.3	21.6	17.0
Greece	19.7	19.8	44.8	48.0
Ireland	4.7	5.0	30.5	18.9
Italy	5.6	5.5	25.6	23.8
Netherlands	8.0	8.0	25.3	21.2
Austria	7.2	7.3	29.3	28.8
Portugal	6.7	6.7	23.5	16.6
Spain	9.7	9.7	28.1	22.7
Average	8.1	8.2	28.3	24.5

### Short-term multipliers from permanent shocks

In this section we repeat the same exercise we did in Section 5.2, but with permanent contractionary fiscal shocks. The magnitude of the shock itself is unchanged, they either imply a contraction in government spending equivalent to 1 per cent of GDP or an increase in tax receipts of 1 per cent of GDP as well. The only difference is the duration of the fiscal shock.

Table 8 presents the multipliers that arise from internationally coordinated permanent fiscal contractionary shocks and the percentage change compared to the multipliers reported in table 4.

**Table 8.** International coordination: first year multipliers from a 1% of GDP permanent fiscal contraction

	Government Spending				Taxes			
	Consumption	Δ%	Investment	Δ%	Income	Δ%	VAT	Δ%
Belgium	-0.79	-24	-0.86	-20	-0.25	-37	-0.34	42
Finland	-0.74	-21	-0.82	-14	-0.23	-33	-0.21	10
France	-0.65	-17	-0.67	-16	-0.42	-12	-0.28	37
Germany	-0.51	-22	-0.54	-20	-0.30	-20	-0.37	22
Greece	-1.12	-14	-1.20	-11	-0.66	-12	-0.34	51
Ireland	-0.10	-68	-0.22	-36	0.10	-	-0.08	-10
Italy	-0.57	-18	-0.62	-14	-0.12	-37	-0.15	42
Netherlands	-1.00	-18	-1.08	-13	-0.40	-22	-0.42	26
Austria	-0.59	-24	-0.65	-18	-0.17	-34	-0.20	45
Portugal	-0.97	-10	-1.02	-7	-0.29	-9	-0.34	31
Spain	-0.86	-12	-0.92	-9	-0.25	-15	-0.34	56
Average % increase		-23		-16		-23		32

Note: Column named "Δ%" computes the percentage increase of the fiscal multipliers relative to those displayed in Table 4.

Several features arise from table 8. First, relative to the results displayed in table 4, the multipliers from permanent fiscal shocks are smaller for all fiscal instruments except for the multipliers triggered by indirect tax rates. Policy rate explains such difference. For government consumption, government investment and direct tax rate shocks, the ECB lowers policy rate in all periods of the simulation to combat lower output and inflation. By contrast, contractionary fiscal policy implemented via an increase in the VAT triggers an increase in policy rate. This is because under the VAT scenario, the ECB faces a trade-off between declining output and rising inflation driven by higher VAT. According to our parameterization of the monetary policy reaction function, the latter effect dominates and the ECB raises interest rates. As a consequence, output declines further and the multiplier is amplified relative to the case in table 4.

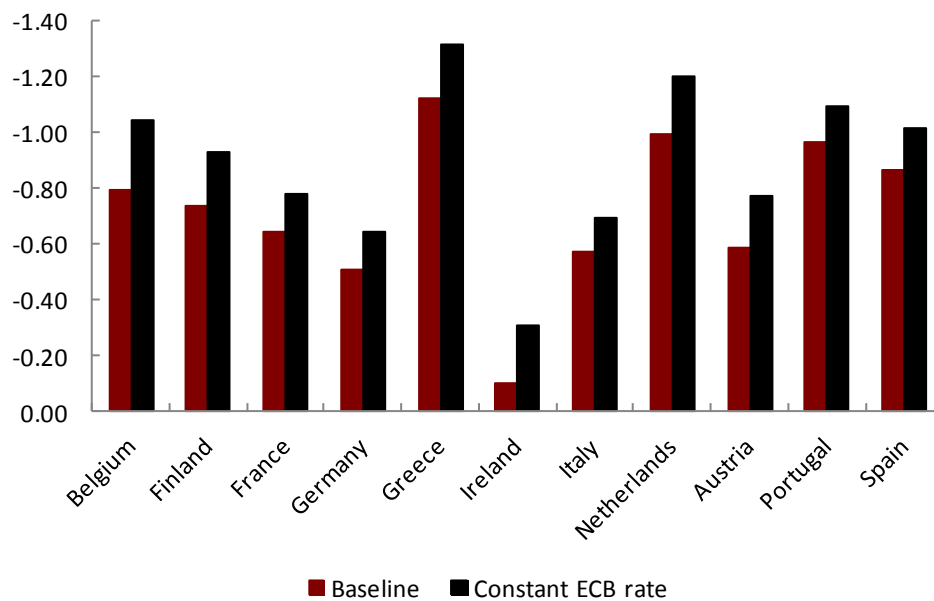
Second, in all instances except the VAT shock scenario, multipliers are smaller –on average by 20 per cent- with permanent shocks. Again, policy rate provides the main explanation of such result. In our temporary fiscal shock scenarios, policy rate declines and takes around two years to return to base. Instead, in the permanent fiscal shock scenarios, policy rate remains at a lower level for longer, thus triggering a larger drop of the long run real rate which in turn implies a boost for domestic activity as the cost of financing for firms and households declines. The sustained decline in policy rate not only boosts domestic activity via reduced cost of funds but also improves the net trade position of Euro Area countries relative to the rest of the world as the euro exchange rate depreciates by a larger degree relative to the case in Section 5.2.

To gauge the quantitative impact of the adjustment in policy rate on the multipliers, we plot in figure 8 the multipliers from table 8 for the case of a government consumption shock against the multipliers that would have arised had ECB's interest rate been constant. Multipliers would have been, on average, 22 per cent larger<sup>19</sup> had interest rate been constant.

<sup>19</sup> Excluding Ireland from the computation. Including Ireland, the average percentage increase of the multipliers is 39 per cent.

For all countries in the sample, a negative multiplier arises from a contraction in private consumption following a fall in real personal disposable income driven by higher taxes, with an exception of Ireland. In all cases, a decline in policy rate leads to a decline in private investment and euro depreciation which partly offsets the fall in private consumption. Ireland’s share of private consumption to total output is among the lowest in the Euro Area: around 45 per cent compared to 55 per cent in Germany and up to 70 per cent in Greece. As a result, the decline in consumption triggered by higher taxes is small relative to other Euro Area countries and the offsets induced by a decline in policy rate become dominant.

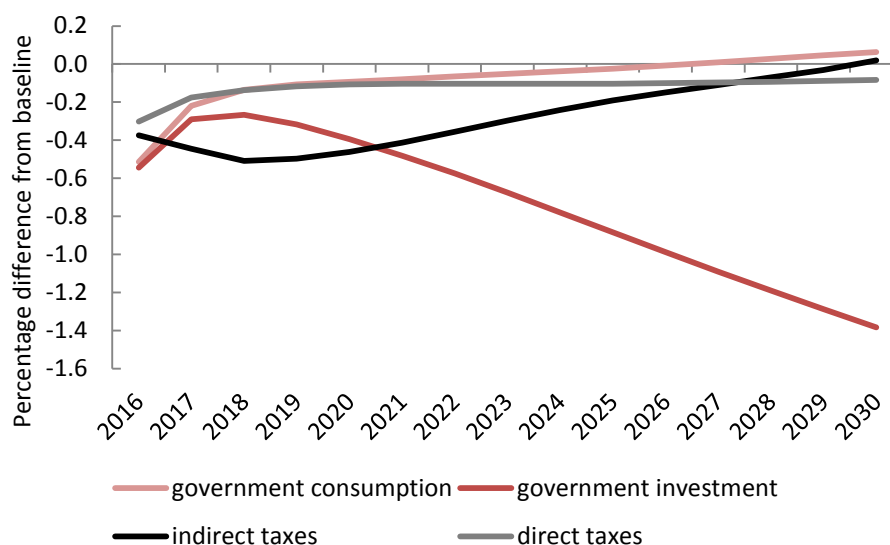
**Figure 8.** International coordination: fiscal multiplier comparison from a government consumption shock



Note: Baseline values are the fiscal multipliers (in percentage terms) reported in table 4. Constant ECB rate values are the multipliers that arise had ECB’s interest rate been constant.

Given the permanent nature of the shocks considered in this section, we want to explore the implications of such shocks beyond the first year effect. Figure 9 shows the longer-term multiplier profiles for Germany following a permanent fiscal consolidation. The profiles for the remaining countries are displayed in Appendix C. While the longer-term multiplier profiles of the remaining countries are quantitatively different to those displayed for Germany here, the qualitative story is very similar.

**Figure 9.** Germany: output response to a permanent fiscal consolidation



Source: NiGEM simulations.

The impact of permanent shocks to government consumption and direct taxes on output fade relatively fast. This is the product of two factors. First, both scenarios constitute shocks to the demand side of the economy that have no major impact on the supply side. As a result, potential output is largely unaffected and prices will adjust gradually to fill the gap in demand. Second, policy rate does not face a trade-off in this instance. The reaction function of the monetary authority in all our simulations targets fluctuations in inflation and nominal output and in both scenarios inflation and nominal output are falling. Thus, the ECB will unambiguously decline policy rate to stabilise inflation and output.

By contrast, the impact on output of the indirect tax rate shock, while eventually fading away, is much more persistent. VAT shocks, as opposed to government consumption or direct tax rate shocks, pose a trade-off to the monetary authority. A rise in VAT induces a decline in output and an increase in inflation which makes the reaction of policy rate ambiguous. Given our parameterization of the policy rate reaction function we get that policy rate increases, thus putting further downward pressure on output.

Finally, output, following a permanent government investment shock, does not return to base because of supply side effects. Government investment accumulates into public capital which is a factor of production in NiGEM. A permanent reduction in public investment thus leads to a permanent reduction in potential output.

## Conclusions

In this paper we quantify the magnitude of fiscal multipliers in individual members of the Euro Area using the National Institute's Global Econometric Model, NiGEM. We control for the type of fiscal instrument by considering four types of fiscal shocks: government consumption and investment, direct tax rate and indirect tax rate. Our results suggest that multipliers are usually below 1, and multipliers from government spending shocks are larger than those from tax rate shocks.

We find that countries that are more open to trade experience smaller multipliers, as the decline in demand is absorbed by imports to a larger degree. By contrast, countries whose agent's consumption plans are more sensitive to fluctuations in short-term income are found to experience larger multipliers. Country size also correlates with the magnitude of the multipliers: bigger countries induce a larger response from the monetary authority and policy rate acts more aggressively to dampen the impact of the shock.

We also examine whether international coordination of fiscal policies strengthens or weakens the size of multipliers in individual countries and find that fiscal multipliers increase significantly when countries coordinate their fiscal policies. Trade is the main transmission channel of spillovers between countries, and interest and exchange rate act to dampen this channel.

We also analyse the sensitivity of the multipliers to changes in the proportion of agents that face liquidity constraints, an exercise that proxies the downturn phase of the business cycle. Our findings suggest that the increase in the magnitude of the multipliers from tax rate shocks is around 20 per cent when looking at multipliers arising from fiscal shocks implemented in each country in isolation and around 25 per cent when there is international coordination of fiscal policies.

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## Appendix A

The following set of tables report the simulated time path of a selection of variables following a fiscal shock in each Euro area country included in the present analysis. Included in the selection of variables are the spillover multipliers to the remaining Euro area countries. The units are either in percentage or absolute difference from baseline values. The title reports the country where the fiscal shock has taken place as well as the type of fiscal shock applied.

### Government consumption shock

**Table 9.** Belgium, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.45	0.04	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.00
Real consumption	-0.04	-0.03	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.04	0.05
Real investment	-0.54	0.59	0.18	0.06	0.02	0.01	0.00	-0.01	-0.01	-0.01	-0.01
Real exports	-0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-0.80	0.09	0.03	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.02
Output gap (per cent of GDP)*	-0.33	0.05	-0.03	-0.03	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Current account (per cent of GDP)*	0.69	-0.06	-0.01	0.00	0.01	0.00	0.00	0.00	-0.01	-0.01	-0.02
Real effective exchange rate	-0.01	-0.05	-0.05	-0.05	-0.04	-0.02	-0.01	0.01	0.02	0.03	0.03
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.02	-0.04	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Consumer expenditure deflator	-0.02	-0.06	-0.06	-0.05	-0.04	-0.03	-0.01	0.00	0.01	0.02	0.03
GDP deflator	0.01	-0.02	-0.03	-0.02	0.00	0.01	0.02	0.04	0.05	0.06	0.07
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.87	0.01	-0.01	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.07	-0.82	-0.80	-0.77	-0.76	-0.75	-0.75	-0.74	-0.73	-0.72	-0.70
<b>Spillovers: Real GDP level</b>											
Finland	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.05	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: All numbers reported are in percentage difference from base, unless indicated otherwise. \* denotes the number is reported as absolute difference from base. A positive number for government deficit represents an increase in the deficit. A positive number in the exchange rate variables denotes an appreciation of the currency. Spillovers to the Euro Area include the effect on the country being shocked.

**Table 10.** Finland, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.62	-0.03	0.02	0.04	0.03	0.02	0.02	0.02	0.01	0.01	0.01
Real consumption	-0.05	-0.07	-0.03	-0.03	-0.03	-0.02	-0.01	0.01	0.02	0.03	0.03
Real investment	-0.86	0.43	0.30	0.18	0.10	0.05	0.02	0.00	-0.01	-0.01	-0.01
Real exports	-0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Real imports	-1.37	0.18	0.04	-0.04	-0.07	-0.07	-0.05	-0.02	-0.01	0.01	0.02
Output gap (per cent of GDP)*	-0.52	-0.02	-0.03	0.00	0.04	0.05	0.02	0.00	0.00	0.01	0.01
Current account (per cent of GDP)*	0.63	-0.06	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.00	0.00
Real effective exchange rate	-0.05	-0.18	-0.19	-0.14	-0.09	-0.06	-0.04	-0.02	0.00	0.02	0.03
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.06	-0.13	0.00	0.05	0.05	0.03	0.02	0.02	0.02	0.01	0.01
Consumer expenditure deflator	-0.06	-0.19	-0.19	-0.14	-0.09	-0.06	-0.04	-0.02	0.00	0.02	0.03
GDP deflator	-0.04	-0.17	-0.18	-0.13	-0.08	-0.05	-0.02	0.00	0.02	0.04	0.04
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.92	0.03	-0.04	0.00	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.16	-0.73	-0.77	-0.79	-0.77	-0.75	-0.74	-0.73	-0.72	-0.70	-0.68

**Spillovers: Real GDP level**

Belgium	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 11.** France, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.58	0.00	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.03
Real consumption	-0.12	-0.10	-0.02	-0.01	0.00	0.00	0.01	0.02	0.04	0.05	0.06
Real investment	-0.58	0.50	0.29	0.15	0.08	0.05	0.04	0.03	0.02	0.01	0.00
Real exports	-0.17	0.14	0.14	0.11	0.08	0.06	0.04	0.03	0.02	0.00	-0.01
Real imports	-1.94	0.25	0.21	0.12	0.06	0.02	0.00	-0.01	-0.01	0.00	0.00
Output gap (per cent of GDP)*	-0.42	0.04	-0.04	-0.04	-0.01	0.01	0.01	0.02	0.02	0.02	0.02
Current account (per cent of GDP)*	0.56	-0.06	-0.04	-0.03	-0.02	-0.01	0.00	0.00	0.01	0.01	0.00
Real effective exchange rate	-0.04	-0.15	-0.17	-0.15	-0.12	-0.09	-0.07	-0.04	-0.02	0.00	0.02
Nominal effective exchange rate	0.00	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	-0.01	-0.05	-0.05	-0.05	-0.04	-0.03	-0.02	-0.01	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	-0.02	-0.02	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.01	0.01
Headline CPI Inflation*	-0.06	-0.13	-0.01	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02
Consumer expenditure deflator	-0.06	-0.19	-0.20	-0.17	-0.14	-0.11	-0.08	-0.05	-0.03	-0.01	0.01
GDP deflator	-0.06	-0.21	-0.22	-0.19	-0.15	-0.12	-0.08	-0.05	-0.02	0.01	0.03
Policy interest rate*	0.00	-0.03	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.79	0.02	-0.04	0.00	0.01	0.00	0.00	-0.01	-0.01	0.00	0.00
Government debt (per cent of GDP)*	0.13	-0.53	-0.57	-0.60	-0.61	-0.63	-0.64	-0.66	-0.68	-0.69	-0.70

**Spillovers: Real GDP level**

Belgium	-0.17	0.04	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Finland	-0.06	0.04	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Germany	-0.06	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.07	0.02	0.03	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Ireland	-0.02	-0.02	-0.01	0.00	0.01	0.01	0.01	0.02	0.01	0.01	0.01
Italy	-0.04	-0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.14	0.05	0.06	0.04	0.02	0.01	0.01	0.01	0.01	0.01	0.00
Austria	-0.04	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Portugal	-0.11	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Spain	-0.05	-0.04	0.03	0.04	0.03	0.01	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.18	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01

Notes: see table 9.

**Table 12.** Germany, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.46	0.02	0.03	0.03	0.04	0.04	0.04	0.04	0.03	0.02	0.01
Real consumption	-0.11	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.04
Real investment	-0.50	0.52	0.21	0.09	0.05	0.02	0.00	-0.02	-0.03	-0.03	-0.03
Real exports	-0.27	0.19	0.18	0.13	0.10	0.07	0.04	0.02	0.00	-0.01	-0.02
Real imports	-1.90	0.39	0.24	0.13	0.06	0.01	-0.02	-0.03	-0.03	-0.03	-0.02
Output gap (per cent of GDP)*	-0.40	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.01
Current account (per cent of GDP)*	0.71	-0.09	-0.05	-0.03	-0.01	0.01	0.01	0.02	0.02	0.02	0.01
Real effective exchange rate	-0.07	-0.20	-0.18	-0.17	-0.13	-0.09	-0.05	-0.01	0.02	0.04	0.06
Nominal effective exchange rate	0.01	-0.01	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.01	0.01	0.01
EA wide real effective exchange rate	-0.02	-0.08	-0.08	-0.07	-0.05	-0.04	-0.02	-0.01	0.00	0.01	0.01
EA wide nominal effective exchange rate	0.01	-0.03	-0.03	-0.03	-0.02	-0.01	0.00	0.01	0.01	0.01	0.01
Headline CPI Inflation*	-0.10	-0.16	0.02	0.03	0.04	0.04	0.04	0.04	0.03	0.03	0.02
Consumer expenditure deflator	-0.10	-0.25	-0.23	-0.21	-0.17	-0.13	-0.09	-0.05	-0.01	0.01	0.03
GDP deflator	-0.11	-0.30	-0.27	-0.24	-0.19	-0.14	-0.08	-0.03	0.01	0.05	0.07
Policy interest rate*	0.00	-0.04	-0.03	-0.02	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.92	0.00	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.03	-0.64	-0.65	-0.67	-0.70	-0.73	-0.75	-0.77	-0.79	-0.79	-0.79

**Spillovers: Real GDP level**

Belgium	-0.21	0.07	0.06	0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Finland	-0.11	0.07	0.05	0.03	0.02	0.02	0.01	0.01	0.01	0.00	0.00
France	-0.09	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.14	0.03	0.06	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Ireland	-0.04	-0.04	-0.02	0.00	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Italy	-0.06	-0.01	0.02	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Netherlands	-0.28	0.08	0.09	0.06	0.04	0.02	0.01	0.00	0.00	0.00	0.00
Austria	-0.14	-0.04	-0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Portugal	-0.12	0.05	0.05	0.04	0.03	0.03	0.03	0.02	0.02	0.01	0.01
Spain	-0.05	-0.02	0.04	0.05	0.04	0.02	0.01	0.00	0.00	0.00	0.00
Euro Area	-0.21	0.02	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01

Notes: see table 9.

**Table 13.** Greece, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.94	0.19	0.16	0.13	0.09	0.06	0.05	0.04	0.03	0.01	0.00
Real consumption	-0.21	0.05	0.14	0.13	0.09	0.07	0.08	0.09	0.10	0.10	0.09
Real investment	-5.09	3.12	1.03	0.30	0.03	-0.05	-0.06	-0.06	-0.07	-0.08	-0.07
Real exports	-0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Real imports	-1.88	0.56	0.25	0.06	-0.05	-0.07	-0.04	0.00	0.03	0.06	0.08
Output gap (per cent of GDP)*	-0.74	0.14	0.01	0.04	0.09	0.09	0.06	0.03	0.01	0.01	0.01
Current account (per cent of GDP)*	0.65	-0.20	-0.09	-0.02	0.02	0.03	0.02	0.01	0.00	-0.01	-0.02
Real effective exchange rate	-0.06	-0.19	-0.19	-0.13	-0.08	-0.04	0.00	0.03	0.06	0.09	0.10
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.06	-0.13	0.01	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01
Consumer expenditure deflator	-0.06	-0.20	-0.19	-0.13	-0.08	-0.04	0.00	0.03	0.06	0.09	0.10
GDP deflator	-0.02	-0.15	-0.15	-0.09	-0.04	0.01	0.05	0.08	0.11	0.14	0.15
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.69	-0.02	-0.06	0.00	0.02	0.01	0.00	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	1.38	-0.75	-0.76	-0.80	-0.79	-0.79	-0.81	-0.84	-0.85	-0.84	-0.82

**Spillovers: Real GDP level**

Belgium	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 14.** Ireland, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.22	-0.05	-0.01	0.01	0.02	0.03	0.02	0.02	0.01	0.00	0.00
Real consumption	-0.02	-0.02	0.01	0.03	0.03	0.04	0.05	0.05	0.05	0.05	0.05
Real investment	-0.24	0.07	0.09	0.07	0.05	0.03	0.02	0.00	-0.01	-0.02	-0.03
Real exports	-0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-0.85	0.06	0.04	0.02	0.01	0.00	0.00	0.01	0.01	0.01	0.02
Output gap (per cent of GDP)*	-0.18	-0.05	-0.03	0.00	0.02	0.02	0.02	0.01	0.01	0.00	0.00
Current account (per cent of GDP)*	0.86	-0.04	0.00	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.00
Real effective exchange rate	-0.01	-0.05	-0.05	-0.03	-0.02	-0.02	-0.01	0.01	0.01	0.02	0.02
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.02	-0.04	0.00	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Consumer expenditure deflator	-0.02	-0.05	-0.05	-0.04	-0.02	-0.02	-0.01	0.00	0.01	0.02	0.02
GDP deflator	0.00	-0.03	-0.03	-0.01	0.00	0.00	0.01	0.02	0.03	0.03	0.03
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.91	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.34	-0.78	-0.79	-0.80	-0.78	-0.76	-0.75	-0.73	-0.71	-0.68	-0.66

**Spillovers: Real GDP level**

Belgium	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 15.** Italy, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.55	-0.11	0.04	0.07	0.04	0.01	0.00	0.00	0.00	0.01	0.01
Real consumption	-0.04	-0.07	-0.05	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.04
Real investment	-0.71	0.52	0.30	0.09	-0.01	-0.03	-0.02	0.00	0.00	0.00	0.00
Real exports	-0.10	0.07	0.09	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-2.20	0.61	0.05	-0.16	-0.16	-0.08	-0.01	0.02	0.04	0.04	0.05
Output gap (per cent of GDP)*	-0.43	-0.08	-0.02	0.02	0.04	0.03	0.01	0.00	0.00	0.00	0.01
Current account (per cent of GDP)*	0.62	-0.15	0.03	0.08	0.06	0.03	0.01	0.00	0.00	0.00	0.00
Real effective exchange rate	-0.10	-0.37	-0.35	-0.17	-0.03	0.02	0.03	0.02	0.02	0.02	0.02
Nominal effective exchange rate	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	-0.02	-0.07	-0.05	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	-0.01	-0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.11	-0.30	0.02	0.19	0.15	0.05	0.00	-0.01	0.00	0.00	0.00
Consumer expenditure deflator	-0.10	-0.39	-0.37	-0.19	-0.04	0.01	0.01	0.01	0.01	0.01	0.01
GDP deflator	-0.09	-0.38	-0.35	-0.17	-0.03	0.02	0.03	0.02	0.02	0.02	0.03
Policy interest rate*	0.00	-0.04	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.84	0.06	-0.05	-0.02	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.46	-0.02	-0.30	-0.62	-0.76	-0.76	-0.73	-0.71	-0.70	-0.69	-0.68

**Spillovers: Real GDP level**

Belgium	-0.08	0.04	0.02	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.04	0.04	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
France	-0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.07	0.02	0.02	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00
Ireland	-0.01	-0.01	0.00	-0.01	-0.01	0.00	0.00	0.01	0.01	0.01	0.01
Netherlands	-0.09	0.05	0.03	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Austria	-0.05	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.05	0.03	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00
Spain	-0.03	-0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.13	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 16. Netherlands, temporary government consumption shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.55	0.03	0.05	0.05	0.03	0.02	0.02	0.02	0.01	0.01	0.01
Real consumption	-0.06	-0.08	0.01	0.07	0.08	0.07	0.07	0.08	0.09	0.09	0.09
Real investment	-0.84	0.52	0.29	0.14	0.06	0.02	0.00	-0.01	-0.01	-0.02	-0.02
Real exports	-0.05	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
Real imports	-0.91	0.05	0.04	0.03	0.02	0.01	0.01	0.02	0.02	0.02	0.02
Output gap (per cent of GDP)*	-0.43	0.02	-0.03	0.01	0.04	0.04	0.02	0.01	0.01	0.01	0.01
Current account (per cent of GDP)*	0.78	0.00	0.01	-0.01	-0.02	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02
Real effective exchange rate	-0.04	-0.11	-0.06	-0.02	0.00	0.00	0.00	0.02	0.03	0.03	0.03
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.05	-0.07	0.05	0.05	0.02	0.00	0.00	0.01	0.01	0.01	0.00
Consumer expenditure deflator	-0.05	-0.12	-0.08	-0.03	-0.01	-0.01	0.00	0.01	0.02	0.03	0.03
GDP deflator	-0.03	-0.09	-0.04	0.01	0.02	0.02	0.03	0.04	0.05	0.05	0.05
Policy interest rate*	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.89	-0.01	-0.04	0.01	0.02	0.00	-0.01	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.16	-0.81	-0.87	-0.89	-0.85	-0.82	-0.82	-0.82	-0.81	-0.79	-0.78

**Spillovers: Real GDP level**

Belgium	-0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
Italy	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	-0.01	-0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.05	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 17. Austria, temporary government consumption shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.49	-0.03	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Real consumption	-0.05	-0.05	-0.02	-0.02	-0.02	0.00	0.01	0.02	0.02	0.03	0.04
Real investment	-0.71	0.49	0.18	0.06	0.02	0.01	0.00	0.00	-0.01	-0.01	-0.01
Real exports	-0.03	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-1.35	0.18	0.06	0.01	-0.01	-0.01	0.00	0.00	0.01	0.01	0.02
Output gap (per cent of GDP)*	-0.39	-0.03	-0.04	0.01	0.02	0.00	0.00	0.01	0.01	0.01	0.01
Current account (per cent of GDP)*	0.74	-0.06	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Real effective exchange rate	-0.04	-0.12	-0.06	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.01	0.01
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.04	-0.09	0.06	0.05	-0.01	0.00	0.02	0.01	0.00	0.00	0.00
Consumer expenditure deflator	-0.04	-0.13	-0.07	-0.02	-0.03	-0.02	-0.01	0.00	0.00	0.00	0.01
GDP deflator	-0.03	-0.11	-0.05	-0.01	-0.01	-0.01	0.00	0.01	0.01	0.01	0.02
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.90	-0.01	-0.02	0.02	0.00	-0.02	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.13	-0.73	-0.79	-0.78	-0.73	-0.73	-0.73	-0.72	-0.70	-0.69	-0.68

**Spillovers: Real GDP level**

Belgium	-0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 18.** Portugal, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.61	-0.02	0.00	0.01	0.00	0.00	-0.01	-0.01	0.00	0.00	0.01
Real consumption	-0.02	-0.08	-0.10	-0.08	-0.08	-0.08	-0.08	-0.06	-0.04	-0.02	0.00
Real investment	-0.87	0.46	0.25	0.13	0.06	0.03	0.02	0.01	0.01	0.02	0.02
Real exports	-0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Real imports	-1.14	0.11	-0.01	-0.05	-0.06	-0.07	-0.06	-0.05	-0.03	-0.02	0.00
Output gap (per cent of GDP)*	-0.47	0.02	-0.05	-0.05	-0.01	0.00	0.00	-0.01	-0.01	-0.01	0.00
Current account (per cent of GDP)*	0.50	-0.04	0.02	0.03	0.04	0.04	0.04	0.04	0.03	0.03	0.02
Real effective exchange rate	-0.02	-0.08	-0.08	-0.07	-0.06	-0.05	-0.04	-0.03	-0.02	-0.02	-0.01
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.02	-0.06	-0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Consumer expenditure deflator	-0.02	-0.08	-0.09	-0.07	-0.06	-0.05	-0.04	-0.03	-0.02	-0.02	-0.01
GDP deflator	-0.01	-0.07	-0.08	-0.06	-0.04	-0.03	-0.02	-0.01	-0.01	0.00	0.00
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.83	0.03	-0.03	0.00	0.01	0.00	-0.01	-0.01	-0.01	-0.01	-0.01
Government debt (per cent of GDP)*	0.31	-0.63	-0.64	-0.66	-0.64	-0.62	-0.61	-0.61	-0.61	-0.62	-0.63

**Spillovers: Real GDP level**

Belgium	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 19.** Spain, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.81	0.07	0.18	0.13	0.05	0.00	-0.01	-0.01	0.00	0.01	0.02
Real consumption	-0.08	-0.09	-0.01	0.02	0.03	0.04	0.06	0.08	0.09	0.10	0.11
Real investment	-1.46	1.03	0.65	0.19	-0.06	-0.10	-0.07	-0.02	0.00	0.01	0.00
Real exports	-0.04	0.10	0.18	0.04	-0.08	-0.10	-0.06	-0.03	-0.01	0.00	0.00
Real imports	-1.71	0.33	0.01	-0.18	-0.19	-0.09	0.03	0.11	0.14	0.14	0.13
Output gap (per cent of GDP)*	-0.64	0.07	0.02	0.02	0.04	0.04	0.02	0.00	0.00	0.00	0.01
Current account (per cent of GDP)*	0.57	-0.09	0.05	0.10	0.06	0.02	-0.01	-0.03	-0.03	-0.03	-0.03
Real effective exchange rate	-0.11	-0.40	-0.34	-0.15	0.00	0.08	0.10	0.09	0.08	0.07	0.07
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	-0.01	-0.05	-0.03	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	-0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.12	-0.31	0.06	0.20	0.16	0.08	0.02	-0.01	-0.01	-0.01	0.00
Consumer expenditure deflator	-0.12	-0.42	-0.36	-0.17	-0.01	0.06	0.09	0.08	0.07	0.06	0.06
GDP deflator	-0.10	-0.42	-0.33	-0.11	0.05	0.11	0.13	0.12	0.10	0.10	0.10
Policy interest rate*	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.81	0.02	-0.05	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.58	-0.34	-0.58	-0.77	-0.82	-0.80	-0.77	-0.75	-0.75	-0.74	-0.74

**Spillovers: Real GDP level**

Belgium	-0.05	0.02	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	-0.03	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.02	0.01	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.01	0.01	0.01	0.01
Italy	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.05	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
Austria	-0.02	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.12	0.02	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.12	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

## Government investment shock

**Table 20.** Belgium, temporary government investment shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.46	0.02	0.00	-0.01	-0.01	-0.02	-0.03	-0.03	-0.04	-0.05	-0.06
Real consumption	-0.05	-0.04	-0.01	0.00	0.01	0.02	0.03	0.04	0.05	0.05	0.05
Real investment	-0.66	0.42	0.02	-0.09	-0.12	-0.12	-0.12	-0.12	-0.11	-0.10	-0.10
Real exports	-0.04	0.01	0.01	0.01	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01
Real imports	-0.82	0.06	0.00	-0.02	-0.02	-0.01	0.00	0.01	0.02	0.03	0.03
Output gap (per cent of GDP)*	-0.27	0.15	0.05	0.04	0.06	0.05	0.05	0.04	0.04	0.03	0.02
Current account (per cent of GDP)*	0.70	-0.04	0.01	0.02	0.02	0.01	0.00	-0.01	-0.02	-0.02	-0.03
Real effective exchange rate	-0.01	-0.03	-0.02	0.00	0.03	0.05	0.07	0.09	0.10	0.11	0.12
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.02	-0.03	0.01	0.02	0.03	0.03	0.02	0.02	0.01	0.01	0.01
Consumer expenditure deflator	-0.02	-0.04	-0.03	-0.01	0.02	0.05	0.07	0.09	0.10	0.11	0.12
GDP deflator	0.01	-0.01	0.01	0.03	0.06	0.09	0.11	0.13	0.14	0.15	0.16
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.85	-0.01	-0.04	-0.02	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.05	-0.81	-0.82	-0.83	-0.84	-0.84	-0.83	-0.82	-0.81	-0.79	-0.77
<b>Spillovers: Real GDP level</b>											
Finland	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 21.** Finland, temporary government investment shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.64	-0.07	-0.04	-0.04	-0.06	-0.08	-0.08	-0.09	-0.09	-0.09	-0.09
Real consumption	-0.07	-0.11	-0.10	-0.11	-0.13	-0.13	-0.13	-0.12	-0.11	-0.11	-0.11
Real investment	-0.97	0.21	0.04	-0.09	-0.16	-0.18	-0.19	-0.19	-0.18	-0.16	-0.14
Real exports	-0.02	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-1.40	0.11	-0.05	-0.13	-0.15	-0.13	-0.11	-0.08	-0.07	-0.05	-0.04
Output gap (per cent of GDP)*	-0.45	0.08	0.04	0.05	0.08	0.07	0.05	0.03	0.02	0.03	0.02
Current account (per cent of GDP)*	0.63	-0.05	0.02	0.03	0.03	0.03	0.02	0.02	0.01	0.00	0.00
Real effective exchange rate	-0.05	-0.15	-0.13	-0.07	-0.01	0.03	0.05	0.07	0.08	0.09	0.09
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.05	-0.11	0.02	0.07	0.06	0.04	0.02	0.02	0.02	0.01	0.00
Consumer expenditure deflator	-0.05	-0.16	-0.14	-0.07	-0.01	0.02	0.05	0.06	0.08	0.09	0.09
GDP deflator	-0.04	-0.14	-0.12	-0.05	0.01	0.04	0.06	0.08	0.10	0.11	0.11
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.88	0.03	-0.05	-0.01	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.13	-0.68	-0.73	-0.76	-0.75	-0.73	-0.72	-0.71	-0.69	-0.66	-0.64
<b>Spillovers: Real GDP level</b>											
Belgium	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.



**Table 22. France, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.59	-0.03	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02
Real consumption	-0.12	-0.11	-0.03	0.00	0.01	0.02	0.03	0.05	0.06	0.07	0.08
Real investment	-0.67	0.36	0.15	0.02	-0.04	-0.06	-0.07	-0.07	-0.08	-0.08	-0.08
Real exports	-0.17	0.13	0.12	0.08	0.04	0.01	-0.01	-0.02	-0.04	-0.05	-0.05
Real imports	-1.97	0.18	0.13	0.06	0.01	-0.01	-0.01	0.00	0.01	0.02	0.03
Output gap (per cent of GDP)*	-0.35	0.13	0.04	0.03	0.04	0.05	0.05	0.04	0.04	0.03	0.02
Current account (per cent of GDP)*	0.57	-0.04	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
Real effective exchange rate	-0.04	-0.13	-0.13	-0.09	-0.05	-0.01	0.03	0.06	0.08	0.10	0.12
Nominal effective exchange rate	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
EA wide real effective exchange rate	-0.01	-0.05	-0.04	-0.03	-0.02	-0.01	0.00	0.01	0.01	0.02	0.02
EA wide nominal effective exchange rate	0.00	-0.02	-0.01	-0.01	-0.01	0.00	0.00	0.01	0.01	0.01	0.01
Headline CPI Inflation*	-0.06	-0.11	0.01	0.04	0.05	0.04	0.04	0.03	0.03	0.02	0.01
Consumer expenditure deflator	-0.06	-0.17	-0.16	-0.12	-0.07	-0.03	0.01	0.04	0.07	0.09	0.10
GDP deflator	-0.06	-0.19	-0.18	-0.13	-0.07	-0.02	0.03	0.07	0.10	0.13	0.15
Policy interest rate*	0.00	-0.03	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.81	0.01	-0.06	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.13	-0.56	-0.63	-0.69	-0.73	-0.75	-0.78	-0.79	-0.80	-0.80	-0.80
<b>Spillovers: Real GDP level</b>											
Belgium	-0.17	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Finland	-0.06	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Germany	-0.06	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.08	0.02	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	-0.02	-0.02	-0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Italy	-0.04	-0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.14	0.04	0.05	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Austria	-0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.11	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Spain	-0.05	-0.04	0.02	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.18	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01

Notes: see table 9.

**Table 23. Germany, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.48	-0.02	-0.02	-0.03	-0.04	-0.05	-0.06	-0.07	-0.07	-0.08	-0.09
Real consumption	-0.14	-0.06	-0.06	-0.06	-0.05	-0.04	-0.03	-0.02	-0.01	0.00	0.00
Real investment	-0.63	0.32	0.01	-0.10	-0.14	-0.15	-0.16	-0.16	-0.15	-0.14	-0.13
Real exports	-0.28	0.16	0.12	0.06	0.01	-0.02	-0.05	-0.07	-0.08	-0.08	-0.09
Real imports	-1.96	0.27	0.09	0.00	-0.05	-0.07	-0.07	-0.06	-0.05	-0.03	-0.01
Output gap (per cent of GDP)*	-0.33	0.10	0.08	0.09	0.08	0.06	0.05	0.04	0.03	0.02	0.01
Current account (per cent of GDP)*	0.72	-0.05	0.00	0.02	0.03	0.03	0.03	0.03	0.02	0.01	0.01
Real effective exchange rate	-0.06	-0.16	-0.10	-0.05	0.01	0.07	0.11	0.14	0.16	0.16	0.16
Nominal effective exchange rate	0.01	-0.01	-0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00
EA wide real effective exchange rate	-0.01	-0.06	-0.05	-0.03	-0.01	0.01	0.02	0.03	0.04	0.04	0.04
EA wide nominal effective exchange rate	0.02	-0.01	-0.02	-0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Headline CPI Inflation*	-0.10	-0.13	0.06	0.06	0.07	0.06	0.05	0.04	0.02	0.01	0.00
Consumer expenditure deflator	-0.10	-0.22	-0.16	-0.10	-0.04	0.02	0.07	0.10	0.13	0.14	0.15
GDP deflator	-0.11	-0.26	-0.17	-0.10	-0.01	0.06	0.12	0.17	0.19	0.21	0.21
Policy interest rate*	0.00	-0.04	-0.03	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.89	0.00	-0.02	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.01	-0.61	-0.67	-0.73	-0.79	-0.83	-0.85	-0.85	-0.85	-0.83	-0.81
<b>Spillovers: Real GDP level</b>											
Belgium	-0.22	0.04	0.03	0.01	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.01
Finland	-0.12	0.06	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
France	-0.09	0.02	0.01	0.00	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.01
Greece	-0.14	0.02	0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.01
Ireland	-0.04	-0.05	-0.03	-0.02	0.00	0.01	0.02	0.02	0.03	0.03	0.03
Italy	-0.06	-0.02	0.01	0.02	0.01	0.00	0.00	-0.01	-0.01	-0.01	-0.01
Netherlands	-0.29	0.05	0.06	0.04	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00
Austria	-0.15	-0.06	-0.03	-0.02	-0.02	-0.01	0.00	0.00	0.01	0.02	0.02
Portugal	-0.13	0.04	0.03	0.02	0.02	0.01	0.01	0.00	0.00	-0.01	-0.01
Spain	-0.06	-0.03	0.02	0.04	0.02	0.01	0.00	-0.01	-0.01	-0.01	-0.01
Euro Area	-0.22	0.00	0.01	0.00	-0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02

Notes: see table 9.

**Table 24. Greece, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.96	0.15	0.12	0.08	0.03	0.00	-0.02	-0.03	-0.04	-0.06	-0.07
Real consumption	-0.22	0.03	0.10	0.09	0.04	0.02	0.02	0.03	0.03	0.03	0.02
Real investment	-5.36	2.77	0.75	0.08	-0.16	-0.22	-0.21	-0.19	-0.18	-0.17	-0.15
Real exports	-0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	-0.01
Real imports	-1.91	0.50	0.18	0.00	-0.10	-0.12	-0.08	-0.03	0.01	0.04	0.06
Output gap (per cent of GDP)*	-0.71	0.18	0.05	0.06	0.11	0.11	0.07	0.04	0.02	0.01	0.01
Current account (per cent of GDP)*	0.66	-0.18	-0.06	0.01	0.04	0.05	0.04	0.02	0.01	0.00	-0.01
Real effective exchange rate	-0.06	-0.18	-0.17	-0.11	-0.04	0.01	0.05	0.09	0.12	0.14	0.15
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.06	-0.13	0.02	0.06	0.06	0.05	0.04	0.04	0.03	0.02	0.01
Consumer expenditure deflator	-0.06	-0.19	-0.17	-0.11	-0.04	0.01	0.05	0.08	0.12	0.14	0.15
GDP deflator	-0.02	-0.14	-0.12	-0.06	0.01	0.06	0.10	0.14	0.17	0.19	0.21
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.81	-0.02	-0.06	-0.01	0.02	0.01	0.00	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	1.34	-0.83	-0.84	-0.88	-0.88	-0.89	-0.91	-0.94	-0.94	-0.93	-0.90
<b>Spillovers: Real GDP level</b>											
Belgium	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 25. Ireland, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.22	-0.08	-0.06	-0.06	-0.08	-0.10	-0.12	-0.13	-0.14	-0.15	-0.16
Real consumption	-0.05	-0.10	-0.13	-0.16	-0.18	-0.21	-0.22	-0.24	-0.25	-0.26	-0.26
Real investment	-0.34	-0.13	-0.16	-0.19	-0.23	-0.25	-0.25	-0.24	-0.23	-0.21	-0.18
Real exports	-0.01	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Real imports	-0.87	0.00	-0.04	-0.06	-0.07	-0.07	-0.06	-0.05	-0.05	-0.04	-0.04
Output gap (per cent of GDP)*	-0.08	0.10	0.09	0.10	0.09	0.07	0.04	0.02	0.01	0.00	-0.01
Current account (per cent of GDP)*	0.88	0.00	0.04	0.05	0.05	0.05	0.04	0.03	0.03	0.02	0.02
Real effective exchange rate	-0.01	-0.02	0.00	0.04	0.06	0.07	0.08	0.09	0.08	0.08	0.07
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.01	-0.02	0.03	0.04	0.02	0.01	0.01	0.01	0.00	-0.01	-0.01
Consumer expenditure deflator	-0.01	-0.03	0.00	0.03	0.06	0.07	0.08	0.09	0.09	0.08	0.07
GDP deflator	0.00	-0.01	0.01	0.04	0.06	0.07	0.08	0.08	0.08	0.08	0.07
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.95	0.00	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.36	-0.82	-0.83	-0.82	-0.79	-0.76	-0.72	-0.69	-0.66	-0.63	-0.61
<b>Spillovers: Real GDP level</b>											
Belgium	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 26.** Italy, temporary government investment shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.56	-0.15	-0.03	-0.02	-0.05	-0.09	-0.10	-0.09	-0.09	-0.08	-0.07
Real consumption	-0.04	-0.09	-0.09	-0.08	-0.08	-0.08	-0.07	-0.06	-0.05	-0.04	-0.03
Real investment	-0.87	0.28	0.07	-0.10	-0.17	-0.17	-0.14	-0.12	-0.11	-0.10	-0.10
Real exports	-0.10	0.06	0.07	0.03	-0.01	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01
Real imports	-2.25	0.52	-0.02	-0.19	-0.15	-0.06	0.01	0.04	0.04	0.04	0.04
Output gap (per cent of GDP)*	-0.36	0.02	0.06	0.07	0.07	0.06	0.04	0.03	0.02	0.03	0.03
Current account (per cent of GDP)*	0.64	-0.12	0.04	0.08	0.06	0.03	0.01	0.00	0.00	0.00	0.00
Real effective exchange rate	-0.08	-0.31	-0.24	-0.05	0.09	0.13	0.12	0.10	0.10	0.09	0.09
Nominal effective exchange rate	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	-0.02	-0.05	-0.03	-0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
EA wide nominal effective exchange rate	0.00	-0.01	0.01	0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.10	-0.25	0.07	0.21	0.14	0.04	-0.01	-0.01	-0.01	0.00	0.00
Consumer expenditure deflator	-0.10	-0.34	-0.27	-0.07	0.07	0.12	0.11	0.09	0.09	0.09	0.09
GDP deflator	-0.08	-0.32	-0.25	-0.05	0.09	0.13	0.12	0.11	0.10	0.10	0.10
Policy interest rate*	0.00	-0.03	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.88	0.05	-0.07	-0.04	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.44	-0.10	-0.41	-0.74	-0.86	-0.85	-0.80	-0.77	-0.76	-0.75	-0.74
<b>Spillovers: Real GDP level</b>											
Belgium	-0.08	0.04	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00
Finland	-0.05	0.03	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00
France	-0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00
Greece	-0.08	0.02	0.02	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Ireland	-0.02	-0.01	-0.01	-0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Netherlands	-0.09	0.04	0.03	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Austria	-0.05	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	0.01	0.01	0.00
Portugal	-0.05	0.03	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00
Spain	-0.03	-0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00
Euro Area	-0.13	-0.01	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01

Notes: see table 9.

**Table 27.** Netherlands, temporary government investment shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.56	0.00	0.00	-0.01	-0.03	-0.05	-0.05	-0.06	-0.06	-0.07	-0.07
Real consumption	-0.07	-0.13	-0.07	-0.05	-0.06	-0.09	-0.10	-0.10	-0.11	-0.11	-0.12
Real investment	-0.93	0.35	0.08	-0.06	-0.13	-0.16	-0.15	-0.15	-0.14	-0.13	-0.12
Real exports	-0.05	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01
Real imports	-0.92	0.01	-0.02	-0.04	-0.05	-0.06	-0.06	-0.05	-0.04	-0.04	-0.04
Output gap (per cent of GDP)*	-0.36	0.11	0.05	0.07	0.09	0.08	0.05	0.04	0.03	0.03	0.03
Current account (per cent of GDP)*	0.77	-0.01	0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.03	-0.04	-0.04
Real effective exchange rate	-0.04	-0.09	-0.03	0.02	0.04	0.05	0.05	0.07	0.08	0.08	0.08
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.05	-0.06	0.06	0.06	0.03	0.01	0.01	0.01	0.01	0.00	0.00
Consumer expenditure deflator	-0.04	-0.10	-0.05	0.01	0.04	0.04	0.05	0.06	0.07	0.08	0.08
GDP deflator	-0.02	-0.07	-0.01	0.04	0.06	0.07	0.07	0.09	0.09	0.10	0.10
Policy interest rate*	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.89	0.00	-0.04	0.01	0.02	0.00	-0.01	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.16	-0.80	-0.85	-0.87	-0.83	-0.80	-0.79	-0.79	-0.78	-0.76	-0.74
<b>Spillovers: Real GDP level</b>											
Belgium	-0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00
Italy	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	-0.01	-0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 28. Austria, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.50	-0.05	-0.04	-0.04	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Real consumption	-0.07	-0.09	-0.07	-0.08	-0.08	-0.07	-0.06	-0.05	-0.05	-0.04	-0.03
Real investment	-0.85	0.30	0.00	-0.10	-0.13	-0.13	-0.12	-0.12	-0.12	-0.11	-0.10
Real exports	-0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-1.39	0.11	-0.01	-0.06	-0.06	-0.05	-0.04	-0.03	-0.02	-0.01	0.00
Output gap (per cent of GDP)*	-0.33	0.05	0.03	0.06	0.07	0.04	0.04	0.04	0.03	0.03	0.03
Current account (per cent of GDP)*	0.75	-0.05	0.01	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.00
Real effective exchange rate	-0.04	-0.11	-0.04	0.02	0.01	0.01	0.03	0.04	0.04	0.04	0.04
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.04	-0.08	0.07	0.06	0.00	0.00	0.02	0.01	0.00	0.00	0.00
Consumer expenditure deflator	-0.04	-0.12	-0.05	0.01	0.01	0.01	0.03	0.03	0.04	0.04	0.04
GDP deflator	-0.03	-0.10	-0.04	0.02	0.02	0.02	0.04	0.04	0.05	0.05	0.05
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.88	0.00	-0.03	0.01	-0.01	-0.02	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.11	-0.70	-0.77	-0.77	-0.74	-0.73	-0.73	-0.72	-0.70	-0.69	-0.68
<b>Spillovers: Real GDP level</b>											
Belgium	-0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 29. Portugal, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.62	-0.05	-0.05	-0.05	-0.06	-0.07	-0.07	-0.07	-0.06	-0.05	-0.04
Real consumption	-0.02	-0.10	-0.13	-0.13	-0.13	-0.14	-0.14	-0.12	-0.09	-0.06	-0.03
Real investment	-0.97	0.27	0.04	-0.07	-0.12	-0.13	-0.12	-0.11	-0.10	-0.08	-0.07
Real exports	-0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	-0.01	0.00
Real imports	-1.16	0.06	-0.07	-0.11	-0.12	-0.12	-0.11	-0.09	-0.07	-0.04	-0.02
Output gap (per cent of GDP)*	-0.40	0.11	0.02	0.01	0.04	0.06	0.05	0.04	0.03	0.04	0.05
Current account (per cent of GDP)*	0.50	-0.03	0.03	0.05	0.05	0.05	0.04	0.04	0.03	0.02	0.01
Real effective exchange rate	-0.02	-0.07	-0.06	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.04
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.02	-0.05	0.01	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Consumer expenditure deflator	-0.02	-0.07	-0.06	-0.04	-0.01	0.00	0.01	0.02	0.03	0.03	0.04
GDP deflator	-0.01	-0.06	-0.05	-0.02	0.00	0.02	0.03	0.04	0.04	0.05	0.05
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.89	0.03	-0.04	-0.01	0.01	0.00	-0.01	-0.02	-0.02	-0.01	-0.01
Government debt (per cent of GDP)*	0.28	-0.68	-0.70	-0.72	-0.71	-0.69	-0.68	-0.69	-0.70	-0.71	-0.73
<b>Spillovers: Real GDP level</b>											
Belgium	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 30.** Spain, temporary government investment shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.82	0.03	0.11	0.04	-0.04	-0.08	-0.09	-0.07	-0.06	-0.04	-0.04
Real consumption	-0.09	-0.11	-0.06	-0.03	-0.03	-0.02	0.00	0.02	0.04	0.05	0.06
Real investment	-1.57	0.82	0.42	-0.01	-0.20	-0.21	-0.15	-0.10	-0.07	-0.05	-0.05
Real exports	-0.04	0.09	0.16	0.01	-0.10	-0.10	-0.06	-0.03	-0.01	-0.01	-0.01
Real imports	-1.75	0.26	-0.06	-0.22	-0.21	-0.09	0.03	0.10	0.13	0.13	0.12
Output gap (per cent of GDP)*	-0.59	0.14	0.07	0.04	0.06	0.05	0.03	0.02	0.01	0.02	0.02
Current account (per cent of GDP)*	0.57	-0.07	0.07	0.10	0.06	0.01	-0.02	-0.03	-0.03	-0.04	-0.04
Real effective exchange rate	-0.10	-0.37	-0.27	-0.07	0.08	0.14	0.15	0.14	0.12	0.12	0.11
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	-0.01	-0.04	-0.03	-0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
EA wide nominal effective exchange rate	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.11	-0.28	0.10	0.21	0.15	0.07	0.01	-0.01	-0.01	-0.01	0.00
Consumer expenditure deflator	-0.11	-0.39	-0.29	-0.09	0.06	0.13	0.14	0.13	0.11	0.11	0.11
GDP deflator	-0.10	-0.38	-0.26	-0.02	0.13	0.18	0.18	0.16	0.15	0.14	0.14
Policy interest rate*	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.81	0.02	-0.06	-0.02	0.00	0.00	0.00	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.59	-0.35	-0.60	-0.80	-0.84	-0.81	-0.78	-0.77	-0.76	-0.76	-0.76
<b>Spillovers: Real GDP level</b>											
Belgium	-0.05	0.02	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	-0.03	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.01	0.01	0.01	0.01
Italy	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.06	0.02	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00
Austria	-0.02	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.13	0.02	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.12	0.01	0.01	0.00	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00

Notes: see table 9.

## Income tax shock

**Table 31.** Belgium, temporary income tax shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.10	-0.05	-0.04	-0.03	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00
Real consumption	-0.42	-0.25	-0.21	-0.18	-0.16	-0.13	-0.11	-0.09	-0.07	-0.06	-0.04
Real investment	-0.13	0.05	0.04	0.03	0.03	0.03	0.02	0.02	0.01	0.01	0.01
Real exports	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-0.17	-0.08	-0.07	-0.06	-0.05	-0.05	-0.04	-0.03	-0.03	-0.02	-0.02
Output gap (per cent of GDP)*	-0.07	-0.02	-0.03	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00	0.00
Current account (per cent of GDP)*	0.15	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03
Real effective exchange rate	0.00	-0.01	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer expenditure deflator	0.00	-0.01	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02
GDP deflator	0.00	-0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.93	0.02	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Government debt (per cent of GDP)*	-0.48	-0.82	-0.78	-0.75	-0.73	-0.72	-0.71	-0.70	-0.69	-0.69	-0.68
<b>Spillovers: Real GDP level</b>											
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 32. Finland, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.20	-0.12	-0.08	-0.06	-0.04	-0.03	-0.02	-0.01	0.00	0.00	0.00
Real consumption	-0.61	-0.34	-0.28	-0.23	-0.20	-0.17	-0.14	-0.11	-0.09	-0.06	-0.04
Real investment	-0.29	-0.01	0.05	0.06	0.07	0.06	0.05	0.04	0.03	0.03	0.02
Real exports	-0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Real imports	-0.46	-0.17	-0.15	-0.14	-0.14	-0.13	-0.12	-0.10	-0.09	-0.07	-0.05
Output gap (per cent of GDP)*	-0.17	-0.09	-0.08	-0.07	-0.04	-0.02	-0.01	-0.01	-0.01	0.00	0.00
Current account (per cent of GDP)*	0.20	0.09	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.04
Real effective exchange rate	-0.02	-0.07	-0.10	-0.11	-0.11	-0.11	-0.10	-0.09	-0.07	-0.06	-0.05
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.02	-0.05	-0.03	-0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Consumer expenditure deflator	-0.02	-0.07	-0.10	-0.11	-0.11	-0.11	-0.10	-0.09	-0.07	-0.06	-0.05
GDP deflator	-0.01	-0.06	-0.10	-0.11	-0.11	-0.11	-0.10	-0.09	-0.07	-0.06	-0.05
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.86	0.06	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Government debt (per cent of GDP)*	-0.41	-0.68	-0.63	-0.62	-0.61	-0.60	-0.59	-0.59	-0.59	-0.59	-0.58
<b>Spillovers: Real GDP level</b>											
Belgium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 33. France, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.40	-0.07	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.03	0.03	0.03
Real consumption	-1.40	-0.33	-0.24	-0.19	-0.15	-0.11	-0.08	-0.05	-0.02	0.00	0.02
Real investment	-0.41	0.30	0.22	0.15	0.11	0.09	0.07	0.06	0.04	0.03	0.02
Real exports	-0.11	0.09	0.11	0.10	0.08	0.07	0.06	0.05	0.04	0.03	0.02
Real imports	-1.36	-0.07	-0.02	-0.02	-0.03	-0.04	-0.04	-0.03	-0.03	-0.02	-0.01
Output gap (per cent of GDP)*	-0.29	-0.02	-0.06	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.01	0.01
Current account (per cent of GDP)*	0.39	0.04	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Real effective exchange rate	-0.04	-0.12	-0.15	-0.15	-0.14	-0.13	-0.11	-0.09	-0.06	-0.04	-0.02
Nominal effective exchange rate	-0.01	-0.02	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	-0.02	-0.04	-0.05	-0.04	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01
EA wide nominal effective exchange rate	-0.01	-0.03	-0.03	-0.02	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.04	-0.10	-0.03	0.00	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Consumer expenditure deflator	-0.04	-0.13	-0.16	-0.16	-0.15	-0.13	-0.11	-0.09	-0.07	-0.05	-0.03
GDP deflator	-0.04	-0.15	-0.18	-0.18	-0.17	-0.15	-0.13	-0.10	-0.08	-0.05	-0.03
Policy interest rate*	0.00	-0.03	-0.02	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-1.20	0.04	-0.02	-0.01	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Government debt (per cent of GDP)*	-0.31	-0.91	-0.89	-0.88	-0.88	-0.89	-0.90	-0.91	-0.93	-0.94	-0.96
<b>Spillovers: Real GDP level</b>											
Belgium	-0.11	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Finland	-0.04	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Germany	-0.04	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Greece	-0.05	0.02	0.03	0.03	0.02	0.01	0.01	0.01	0.01	0.00	0.00
Ireland	-0.01	-0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Italy	-0.03	-0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Netherlands	-0.09	0.02	0.04	0.03	0.03	0.02	0.01	0.01	0.01	0.01	0.01
Austria	-0.03	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Portugal	-0.07	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
Spain	-0.03	-0.02	0.02	0.03	0.02	0.02	0.01	0.01	0.00	0.00	0.00
Euro Area	-0.12	-0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Notes: see table 9.

**Table 34.** Germany, temporary income tax shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.31	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.02	0.01
Real consumption	-1.27	-0.07	-0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03
Real investment	-0.34	0.34	0.16	0.07	0.03	0.02	0.00	-0.01	-0.02	-0.02	-0.02
Real exports	-0.18	0.12	0.13	0.10	0.07	0.05	0.03	0.02	0.00	-0.01	-0.02
Real imports	-1.29	0.20	0.16	0.09	0.04	0.01	-0.01	-0.02	-0.03	-0.03	-0.02
Output gap (per cent of GDP)*	-0.27	-0.01	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
Current account (per cent of GDP)*	0.47	-0.04	-0.03	-0.02	-0.01	0.00	0.01	0.01	0.01	0.01	0.01
Real effective exchange rate	-0.05	-0.14	-0.13	-0.12	-0.10	-0.07	-0.04	-0.01	0.01	0.03	0.04
Nominal effective exchange rate	0.00	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	-0.01	-0.05	-0.05	-0.05	-0.04	-0.03	-0.01	-0.01	0.00	0.01	0.01
EA wide nominal effective exchange rate	0.00	-0.02	-0.02	-0.02	-0.01	-0.01	0.00	0.01	0.01	0.01	0.01
Headline CPI Inflation*	-0.07	-0.11	0.01	0.02	0.03	0.03	0.03	0.03	0.02	0.02	0.02
Consumer expenditure deflator	-0.07	-0.17	-0.16	-0.15	-0.12	-0.09	-0.06	-0.04	-0.01	0.01	0.02
GDP deflator	-0.07	-0.21	-0.19	-0.17	-0.14	-0.10	-0.06	-0.02	0.01	0.03	0.05
Policy interest rate*	0.00	-0.03	-0.02	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.78	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.12	-0.56	-0.57	-0.58	-0.60	-0.62	-0.63	-0.65	-0.66	-0.66	-0.66
<b>Spillovers: Real GDP level</b>											
Belgium	-0.14	0.04	0.04	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Finland	-0.08	0.05	0.03	0.03	0.02	0.01	0.01	0.01	0.00	0.00	0.00
France	-0.06	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.09	0.02	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Ireland	-0.02	-0.02	-0.01	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.01
Italy	-0.04	-0.01	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Netherlands	-0.19	0.04	0.06	0.05	0.03	0.01	0.01	0.01	0.00	0.00	0.00
Austria	-0.09	-0.03	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Portugal	-0.08	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01
Spain	-0.04	-0.02	0.03	0.03	0.03	0.01	0.01	0.00	0.00	0.00	0.00
Euro Area	-0.14	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01

Notes: see table 9.

**Table 35.** Greece, temporary income tax shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.59	0.04	0.05	0.04	0.03	0.02	0.02	0.02	0.02	0.01	0.01
Real consumption	-1.06	-0.11	-0.05	-0.04	-0.05	-0.05	-0.03	-0.01	0.01	0.02	0.03
Real investment	-3.22	1.64	0.60	0.22	0.08	0.03	0.01	0.00	-0.01	-0.02	-0.03
Real exports	-0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Real imports	-1.18	0.20	0.06	-0.04	-0.09	-0.11	-0.09	-0.06	-0.04	-0.02	0.00
Output gap (per cent of GDP)*	-0.46	0.03	-0.03	-0.01	0.03	0.04	0.03	0.01	0.01	0.01	0.01
Current account (per cent of GDP)*	0.41	-0.07	-0.02	0.02	0.04	0.05	0.04	0.03	0.03	0.02	0.02
Real effective exchange rate	-0.04	-0.12	-0.13	-0.12	-0.09	-0.07	-0.05	-0.03	-0.01	0.01	0.03
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.04	-0.09	-0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Consumer expenditure deflator	-0.04	-0.13	-0.14	-0.12	-0.09	-0.07	-0.05	-0.03	-0.01	0.01	0.03
GDP deflator	-0.01	-0.09	-0.11	-0.09	-0.06	-0.04	-0.02	0.00	0.02	0.04	0.06
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.72	0.01	-0.03	0.00	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.68	-0.60	-0.59	-0.61	-0.61	-0.62	-0.65	-0.67	-0.69	-0.70	-0.70
<b>Spillovers: Real GDP level</b>											
Belgium	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 36. Ireland, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.06	-0.06	-0.04	-0.03	-0.01	0.00	0.01	0.02	0.02	0.02	0.02
Real consumption	-0.61	-0.48	-0.33	-0.23	-0.15	-0.09	-0.05	-0.02	0.00	0.01	0.02
Real investment	-0.07	-0.03	0.01	0.03	0.04	0.04	0.03	0.02	0.01	0.00	0.00
Real exports	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Real imports	-0.23	-0.16	-0.10	-0.06	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	0.00
Output gap (per cent of GDP)*	-0.05	-0.05	-0.04	-0.03	-0.01	0.00	0.01	0.01	0.01	0.01	0.01
Current account (per cent of GDP)*	0.24	0.18	0.12	0.09	0.07	0.06	0.05	0.05	0.04	0.04	0.03
Real effective exchange rate	0.00	-0.02	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.01	-0.01	0.00
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Consumer expenditure deflator	0.00	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.01	-0.01	0.00
GDP deflator	0.00	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	0.00	0.00
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.99	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.55	-0.87	-0.83	-0.81	-0.79	-0.78	-0.77	-0.75	-0.74	-0.73	-0.71
<b>Spillovers: Real GDP level</b>											
Belgium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 37. Italy, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.11	-0.13	-0.08	-0.04	-0.02	-0.01	0.00	0.00	0.00	0.00	0.01
Real consumption	-0.39	-0.36	-0.27	-0.20	-0.15	-0.11	-0.08	-0.05	-0.03	-0.01	0.01
Real investment	-0.15	0.02	0.10	0.09	0.05	0.03	0.02	0.01	0.01	0.01	0.00
Real exports	-0.02	0.01	0.03	0.03	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Real imports	-0.51	-0.27	-0.16	-0.15	-0.15	-0.13	-0.10	-0.07	-0.04	-0.02	0.00
Output gap (per cent of GDP)*	-0.09	-0.10	-0.07	-0.05	-0.03	-0.01	0.00	0.00	0.00	0.00	0.00
Current account (per cent of GDP)*	0.15	0.09	0.07	0.07	0.07	0.06	0.05	0.03	0.03	0.02	0.01
Real effective exchange rate	-0.02	-0.10	-0.16	-0.16	-0.13	-0.09	-0.06	-0.04	-0.03	-0.01	-0.01
Nominal effective exchange rate	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	-0.01	-0.03	-0.03	-0.02	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	-0.01	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.01	-0.08	-0.07	0.00	0.03	0.04	0.03	0.02	0.01	0.01	0.01
Consumer expenditure deflator	-0.01	-0.09	-0.16	-0.16	-0.13	-0.09	-0.06	-0.04	-0.03	-0.02	-0.01
GDP deflator	-0.01	-0.09	-0.15	-0.16	-0.12	-0.09	-0.06	-0.04	-0.03	-0.02	-0.01
Policy interest rate*	0.00	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.93	0.05	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00
Government debt (per cent of GDP)*	-0.39	-0.53	-0.47	-0.51	-0.58	-0.63	-0.66	-0.68	-0.69	-0.70	-0.71
<b>Spillovers: Real GDP level</b>											
Belgium	-0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
France	-0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.02	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Austria	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Spain	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.



**Table 38. Netherlands, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.18	-0.12	-0.05	-0.01	0.00	0.01	0.01	0.02	0.02	0.02	0.02
Real consumption	-0.83	-0.65	-0.36	-0.20	-0.10	-0.05	-0.01	0.03	0.05	0.07	0.08
Real investment	-0.29	0.00	0.13	0.12	0.09	0.06	0.04	0.02	0.01	0.00	0.00
Real exports	-0.02	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-0.31	-0.20	-0.09	-0.05	-0.03	-0.01	-0.01	0.00	0.01	0.02	0.02
Output gap (per cent of GDP)*	-0.14	-0.09	-0.06	-0.04	-0.01	0.01	0.01	0.01	0.01	0.01	0.01
Current account (per cent of GDP)*	0.26	0.19	0.11	0.06	0.04	0.02	0.01	0.01	0.00	0.00	-0.01
Real effective exchange rate	-0.01	-0.05	-0.06	-0.04	-0.03	-0.02	-0.02	-0.01	0.00	0.00	0.01
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.01	-0.04	-0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01
Consumer expenditure deflator	-0.01	-0.05	-0.06	-0.05	-0.03	-0.03	-0.02	-0.01	-0.01	0.00	0.01
GDP deflator	-0.01	-0.04	-0.05	-0.03	-0.02	-0.01	-0.01	0.00	0.00	0.01	0.02
Policy interest rate*	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.87	0.07	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00
Government debt (per cent of GDP)*	-0.42	-0.67	-0.69	-0.73	-0.75	-0.76	-0.76	-0.76	-0.77	-0.76	-0.76
<b>Spillovers: Real GDP level</b>											
Belgium	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 39. Austria, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.13	-0.07	-0.05	-0.04	-0.03	-0.03	-0.02	-0.01	-0.01	0.00	0.00
Real consumption	-0.53	-0.29	-0.24	-0.20	-0.17	-0.14	-0.11	-0.09	-0.07	-0.05	-0.03
Real investment	-0.19	0.05	0.05	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.01
Real exports	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-0.36	-0.13	-0.10	-0.09	-0.08	-0.07	-0.06	-0.05	-0.04	-0.03	-0.02
Output gap (per cent of GDP)*	-0.10	-0.06	-0.05	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Current account (per cent of GDP)*	0.19	0.08	0.07	0.06	0.05	0.05	0.04	0.03	0.03	0.03	0.02
Real effective exchange rate	-0.01	-0.04	-0.04	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.01	-0.01
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.01	-0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer expenditure deflator	-0.01	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.01
GDP deflator	-0.01	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.01
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.92	0.02	0.00	0.00	0.00	-0.01	-0.01	0.00	-0.01	-0.01	-0.01
Government debt (per cent of GDP)*	-0.46	-0.77	-0.73	-0.71	-0.69	-0.68	-0.68	-0.67	-0.67	-0.67	-0.67
<b>Spillovers: Real GDP level</b>											
Belgium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 40. Portugal, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.11	-0.17	-0.11	-0.08	-0.05	-0.04	-0.03	-0.02	-0.01	0.00	0.00
Real consumption	-0.28	-0.44	-0.31	-0.25	-0.20	-0.16	-0.14	-0.11	-0.08	-0.06	-0.03
Real investment	-0.18	-0.13	0.02	0.06	0.06	0.05	0.04	0.03	0.03	0.03	0.03
Real exports	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
Real imports	-0.21	-0.28	-0.17	-0.13	-0.11	-0.10	-0.08	-0.07	-0.06	-0.04	-0.03
Output gap (per cent of GDP)*	-0.07	-0.11	-0.08	-0.07	-0.06	-0.04	-0.03	-0.02	-0.01	-0.01	0.00
Current account (per cent of GDP)*	0.09	0.12	0.08	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03
Real effective exchange rate	0.00	-0.02	-0.04	-0.05	-0.06	-0.05	-0.05	-0.05	-0.04	-0.03	-0.03
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	0.00	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Consumer expenditure deflator	0.00	-0.02	-0.04	-0.05	-0.06	-0.05	-0.05	-0.05	-0.04	-0.03	-0.03
GDP deflator	0.00	-0.02	-0.04	-0.05	-0.06	-0.06	-0.05	-0.05	-0.04	-0.03	-0.03
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.95	0.06	0.00	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Government debt (per cent of GDP)*	-0.45	-0.61	-0.60	-0.62	-0.64	-0.65	-0.65	-0.65	-0.66	-0.67	-0.68
<b>Spillovers: Real GDP level</b>											
Belgium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 41. Spain, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.22	-0.18	-0.06	0.00	0.02	0.01	0.01	0.00	0.01	0.01	0.02
Real consumption	-0.52	-0.49	-0.34	-0.23	-0.16	-0.11	-0.06	-0.02	0.01	0.04	0.06
Real investment	-0.40	0.00	0.24	0.23	0.14	0.06	0.02	0.01	0.01	0.01	0.01
Real exports	-0.01	0.02	0.08	0.08	0.03	-0.01	-0.02	-0.03	-0.02	-0.02	-0.01
Real imports	-0.48	-0.31	-0.19	-0.19	-0.20	-0.18	-0.13	-0.07	-0.02	0.02	0.05
Output gap (per cent of GDP)*	-0.16	-0.12	-0.07	-0.05	-0.02	0.00	0.01	0.01	0.00	0.01	0.01
Current account (per cent of GDP)*	0.16	0.11	0.09	0.09	0.09	0.07	0.05	0.03	0.02	0.01	0.00
Real effective exchange rate	-0.03	-0.13	-0.21	-0.20	-0.15	-0.09	-0.05	-0.01	0.01	0.02	0.03
Nominal effective exchange rate	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	-0.01	-0.02	-0.02	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	-0.01	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	-0.02	-0.11	-0.08	0.00	0.05	0.06	0.05	0.03	0.02	0.01	0.01
Consumer expenditure deflator	-0.02	-0.13	-0.20	-0.20	-0.15	-0.10	-0.05	-0.02	0.00	0.01	0.02
GDP deflator	-0.01	-0.12	-0.20	-0.19	-0.13	-0.08	-0.03	0.00	0.01	0.02	0.03
Policy interest rate*	0.00	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.89	0.07	-0.01	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Government debt (per cent of GDP)*	-0.28	-0.44	-0.44	-0.53	-0.60	-0.65	-0.68	-0.70	-0.72	-0.73	-0.75
<b>Spillovers: Real GDP level</b>											
Belgium	-0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.03	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Euro Area	-0.03	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

## VAT shock

**Table 42.** Belgium, temporary VAT shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.06	-0.03	-0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Real consumption	-0.22	-0.06	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03	-0.02	-0.01	-0.01
Real investment	-0.04	0.04	0.07	0.06	0.04	0.03	0.02	0.01	0.01	0.00	0.00
Real exports	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-0.08	0.00	0.02	0.01	0.00	-0.01	-0.02	-0.02	-0.02	-0.01	-0.01
Output gap (per cent of GDP)*	0.06	-0.01	-0.09	-0.07	-0.03	-0.02	-0.01	0.00	0.00	0.00	0.00
Current account (per cent of GDP)*	0.03	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real effective exchange rate	1.00	0.02	-0.01	-0.03	-0.04	-0.04	-0.04	-0.03	-0.02	-0.01	0.00
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	1.01	-0.98	-0.04	-0.02	-0.01	0.00	0.01	0.01	0.01	0.01	0.01
Consumer expenditure deflator	1.00	0.02	-0.01	-0.03	-0.04	-0.04	-0.04	-0.03	-0.02	-0.01	0.00
GDP deflator	0.98	0.04	0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.01	0.02
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.75	-0.04	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-1.44	-0.73	-0.69	-0.63	-0.60	-0.58	-0.57	-0.57	-0.57	-0.56	-0.56
<b>Spillovers: Real GDP level</b>											
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 43.** Finland, temporary VAT shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.10	-0.01	0.06	0.04	0.01	0.00	0.01	0.01	0.01	0.00	0.00
Real consumption	-0.29	-0.03	0.03	-0.03	-0.07	-0.07	-0.04	-0.02	-0.02	-0.03	-0.02
Real investment	-0.11	-0.01	-0.01	-0.03	-0.01	0.01	0.01	0.00	-0.01	-0.01	0.00
Real exports	-0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Real imports	-0.20	0.01	-0.01	-0.08	-0.11	-0.10	-0.07	-0.05	-0.04	-0.03	-0.02
Output gap (per cent of GDP)*	-0.08	-0.18	-0.18	0.00	0.12	0.08	-0.01	-0.03	0.00	0.02	0.01
Current account (per cent of GDP)*	0.07	0.03	0.04	0.01	0.00	0.02	0.03	0.02	0.01	0.00	0.00
Real effective exchange rate	0.70	-0.21	-0.19	-0.10	-0.07	-0.08	-0.07	-0.04	-0.01	0.00	0.00
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	0.70	-0.91	0.03	0.09	0.03	-0.01	0.01	0.03	0.03	0.01	0.00
Consumer expenditure deflator	0.70	-0.21	-0.19	-0.10	-0.07	-0.08	-0.07	-0.04	-0.01	0.00	0.00
GDP deflator	0.70	-0.21	-0.18	-0.09	-0.06	-0.07	-0.07	-0.04	-0.01	0.01	0.01
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.74	-0.10	-0.01	0.10	0.05	-0.02	-0.03	0.00	0.01	0.01	0.00
Government debt (per cent of GDP)*	-0.84	-0.63	-0.73	-0.67	-0.57	-0.53	-0.55	-0.57	-0.55	-0.52	-0.50
<b>Spillovers: Real GDP level</b>											
Belgium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 44. France, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.15	0.00	0.06	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04
Real consumption	-0.49	-0.07	0.00	0.00	-0.02	-0.02	-0.01	0.01	0.02	0.03	0.04
Real investment	-0.06	0.21	0.21	0.12	0.06	0.03	0.02	0.01	0.00	-0.01	-0.01
Real exports	-0.09	0.07	0.15	0.13	0.09	0.07	0.04	0.03	0.02	0.00	0.00
Real imports	-0.47	0.10	0.16	0.08	-0.01	-0.06	-0.07	-0.08	-0.07	-0.06	-0.04
Output gap (per cent of GDP)*	-0.06	-0.08	-0.16	-0.09	-0.01	0.02	0.03	0.03	0.03	0.03	0.02
Current account (per cent of GDP)*	0.13	-0.06	-0.06	-0.03	-0.01	0.01	0.01	0.02	0.02	0.01	0.01
Real effective exchange rate	1.11	-0.26	-0.28	-0.23	-0.17	-0.12	-0.08	-0.05	-0.02	0.00	0.02
Nominal effective exchange rate	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.21	-0.06	-0.06	-0.05	-0.03	-0.02	-0.02	-0.01	-0.01	0.00	0.00
EA wide nominal effective exchange rate	-0.02	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	1.13	-1.37	-0.03	0.05	0.06	0.05	0.04	0.03	0.03	0.02	0.02
Consumer expenditure deflator	1.12	-0.25	-0.28	-0.23	-0.18	-0.13	-0.09	-0.06	-0.03	-0.01	0.01
GDP deflator	1.18	-0.31	-0.34	-0.29	-0.22	-0.15	-0.10	-0.06	-0.03	0.00	0.02
Policy interest rate*	0.00	-0.03	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.68	-0.08	-0.03	0.04	0.03	0.01	0.00	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	-1.44	-0.35	-0.44	-0.47	-0.48	-0.50	-0.52	-0.55	-0.56	-0.58	-0.58
<b>Spillovers: Real GDP level</b>											
Belgium	-0.04	0.02	0.03	0.01	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Finland	-0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Germany	-0.01	0.01	0.01	0.01	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01
Greece	-0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	-0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.03	0.02	0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Austria	-0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.03	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Spain	-0.01	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.04	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01

Notes: see table 9.

**Table 45. Germany, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.28	0.05	0.08	0.11	0.11	0.11	0.10	0.08	0.06	0.05	0.03
Real consumption	-1.09	0.03	0.01	0.05	0.04	0.03	0.03	0.04	0.04	0.05	0.05
Real investment	-0.35	0.31	0.20	0.11	0.05	0.00	-0.03	-0.05	-0.06	-0.06	-0.06
Real exports	-0.19	0.23	0.24	0.21	0.15	0.10	0.05	0.01	-0.02	-0.04	-0.05
Real imports	-1.13	0.34	0.23	0.14	0.02	-0.05	-0.10	-0.12	-0.12	-0.11	-0.09
Output gap (per cent of GDP)*	-0.26	-0.16	-0.04	0.12	0.10	0.09	0.09	0.08	0.07	0.05	0.04
Current account (per cent of GDP)*	0.25	-0.11	-0.07	-0.04	-0.01	0.02	0.03	0.04	0.04	0.03	0.03
Real effective exchange rate	1.48	-0.46	-0.35	-0.32	-0.23	-0.15	-0.07	-0.01	0.04	0.08	0.10
Nominal effective exchange rate	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	0.39	-0.15	-0.12	-0.10	-0.07	-0.04	-0.02	0.00	0.01	0.02	0.02
EA wide nominal effective exchange rate	-0.01	-0.04	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02	0.02	0.02
Headline CPI Inflation*	1.50	-1.97	0.10	0.03	0.08	0.08	0.08	0.07	0.05	0.04	0.02
Consumer expenditure deflator	1.49	-0.48	-0.38	-0.35	-0.28	-0.19	-0.12	-0.05	0.00	0.04	0.06
GDP deflator	1.40	-0.63	-0.48	-0.44	-0.33	-0.22	-0.12	-0.03	0.03	0.08	0.11
Policy interest rate*	0.00	-0.03	-0.04	-0.03	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.60	-0.12	0.09	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-1.35	-0.18	-0.26	-0.29	-0.38	-0.46	-0.52	-0.56	-0.58	-0.59	-0.58
<b>Spillovers: Real GDP level</b>											
Belgium	-0.12	0.06	0.06	0.04	0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.01
Finland	-0.06	0.06	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00
France	-0.05	0.03	0.03	0.02	0.01	0.00	-0.01	-0.01	-0.01	-0.01	-0.01
Greece	-0.07	0.03	0.05	0.03	0.01	0.00	-0.01	-0.01	-0.01	0.00	0.00
Ireland	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02
Italy	-0.03	0.00	0.02	0.03	0.02	0.01	0.01	0.00	0.00	0.00	-0.01
Netherlands	-0.16	0.07	0.09	0.06	0.03	0.01	-0.01	-0.01	-0.02	-0.02	-0.01
Austria	-0.07	-0.01	0.00	-0.01	-0.02	-0.02	-0.02	-0.02	-0.01	0.00	0.01
Portugal	-0.07	0.04	0.04	0.04	0.04	0.03	0.03	0.02	0.01	0.01	0.00
Spain	-0.02	-0.01	0.03	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00
Euro Area	-0.12	0.03	0.05	0.05	0.04	0.03	0.03	0.02	0.01	0.01	0.01

Notes: see table 9.

**Table 46. Greece, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.12	-0.04	0.04	0.06	0.03	0.00	0.00	0.01	0.02	0.02	0.02
Real consumption	-0.25	-0.09	0.08	0.12	0.03	-0.05	-0.06	-0.03	-0.01	0.00	-0.01
Real investment	-0.21	0.49	0.36	0.08	-0.09	-0.08	-0.01	0.04	0.03	0.01	0.00
Real exports	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-0.20	0.09	0.20	0.14	0.00	-0.08	-0.08	-0.05	-0.04	-0.04	-0.05
Output gap (per cent of GDP)*	0.12	0.04	-0.18	-0.17	-0.02	0.06	0.05	0.00	-0.01	0.00	0.01
Current account (per cent of GDP)*	0.09	-0.03	-0.07	-0.05	0.00	0.02	0.02	0.02	0.01	0.01	0.02
Real effective exchange rate	0.79	0.05	-0.06	-0.05	-0.04	-0.04	-0.05	-0.06	-0.05	-0.04	-0.03
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	0.82	-0.73	-0.11	0.00	0.01	0.00	-0.01	-0.01	0.00	0.01	0.01
Consumer expenditure deflator	0.80	0.05	-0.06	-0.05	-0.04	-0.04	-0.05	-0.06	-0.05	-0.04	-0.03
GDP deflator	0.79	0.05	-0.06	-0.06	-0.05	-0.05	-0.06	-0.06	-0.06	-0.05	-0.04
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.84	0.04	-0.09	-0.02	0.04	0.03	0.00	-0.01	-0.01	0.00	0.00
Government debt (per cent of GDP)*	-1.76	-0.78	-0.78	-0.85	-0.77	-0.66	-0.61	-0.62	-0.64	-0.65	-0.64
<b>Spillovers: Real GDP level</b>											
Belgium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 47. Ireland, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.08	-0.04	0.10	0.11	0.08	0.07	0.07	0.05	0.03	0.01	-0.01
Real consumption	-0.36	-0.14	0.07	0.11	0.04	0.00	0.02	0.04	0.04	0.03	0.03
Real investment	-0.08	-0.11	0.05	0.06	0.03	0.00	-0.01	-0.03	-0.04	-0.05	-0.04
Real exports	-0.08	-0.04	0.02	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00
Real imports	-0.20	-0.09	-0.01	-0.03	-0.05	-0.05	-0.04	-0.03	-0.01	0.00	0.01
Output gap (per cent of GDP)*	0.02	-0.19	-0.18	0.07	0.18	0.09	0.02	0.03	0.04	0.02	0.00
Current account (per cent of GDP)*	0.26	-0.08	0.09	0.04	0.03	0.06	0.07	0.05	0.03	0.02	0.01
Real effective exchange rate	1.07	-0.30	-0.17	-0.02	-0.02	-0.05	-0.03	0.01	0.03	0.03	0.03
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	1.09	-1.38	0.13	0.16	0.00	-0.03	0.02	0.04	0.02	0.00	0.00
Consumer expenditure deflator	1.07	-0.30	-0.17	-0.02	-0.02	-0.05	-0.03	0.01	0.03	0.03	0.03
GDP deflator	0.93	-0.27	-0.13	-0.01	-0.01	-0.04	-0.02	0.02	0.03	0.03	0.03
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.78	-0.09	-0.06	0.10	0.06	-0.03	-0.03	0.01	0.02	0.01	0.00
Government debt (per cent of GDP)*	-1.36	-0.45	-0.79	-0.83	-0.67	-0.62	-0.65	-0.66	-0.61	-0.57	-0.54
<b>Spillovers: Real GDP level</b>											
Belgium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 48. Italy, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.06	-0.05	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Real consumption	-0.20	-0.16	-0.08	-0.05	-0.04	-0.03	-0.02	-0.01	0.00	0.01	0.01
Real investment	-0.07	-0.01	0.07	0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Real exports	-0.01	0.02	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-0.25	-0.14	-0.12	-0.14	-0.11	-0.06	-0.03	-0.01	0.00	0.01	0.02
Output gap (per cent of GDP)*	-0.06	-0.12	-0.07	0.00	0.03	0.02	0.00	-0.01	0.00	0.00	0.00
Current account (per cent of GDP)*	0.04	0.05	0.06	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Real effective exchange rate	0.76	-0.27	-0.21	-0.08	-0.02	-0.01	-0.01	0.00	0.00	0.01	0.01
Nominal effective exchange rate	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.10	-0.05	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	-0.02	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	0.77	-1.05	0.05	0.14	0.06	0.01	0.00	0.01	0.01	0.00	0.00
Consumer expenditure deflator	0.77	-0.27	-0.22	-0.08	-0.02	-0.01	-0.02	-0.01	0.00	0.00	0.01
GDP deflator	0.74	-0.26	-0.21	-0.07	-0.01	-0.01	-0.01	0.00	0.01	0.01	0.01
Policy interest rate*	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.85	-0.03	-0.02	0.02	0.01	0.00	-0.01	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-1.57	-0.35	-0.54	-0.71	-0.72	-0.69	-0.67	-0.66	-0.66	-0.65	-0.64
<b>Spillovers: Real GDP level</b>											
Belgium	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 49. Netherlands, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.11	-0.02	0.08	0.09	0.05	0.01	0.01	0.02	0.02	0.01	0.00
Real consumption	-0.44	-0.16	0.09	0.19	0.10	-0.01	-0.02	0.00	0.02	0.02	0.01
Real investment	-0.07	0.07	0.11	0.02	-0.04	-0.04	-0.02	-0.01	-0.01	-0.02	-0.02
Real exports	-0.02	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-0.14	-0.01	0.04	0.05	0.01	-0.02	-0.03	-0.01	0.00	0.00	0.00
Output gap (per cent of GDP)*	0.10	-0.12	-0.29	-0.09	0.12	0.12	0.02	-0.02	-0.01	0.02	0.02
Current account (per cent of GDP)*	-0.02	0.02	0.05	-0.03	-0.06	-0.03	0.01	0.01	-0.01	-0.02	-0.02
Real effective exchange rate	1.12	-0.33	-0.18	-0.01	0.02	-0.03	-0.05	-0.02	0.00	0.01	0.01
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.07	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	-0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	1.13	-1.46	0.14	0.18	0.03	-0.04	-0.02	0.02	0.03	0.01	0.00
Consumer expenditure deflator	1.12	-0.33	-0.19	-0.02	0.02	-0.03	-0.05	-0.03	0.00	0.01	0.01
GDP deflator	1.01	-0.32	-0.16	0.01	0.04	-0.01	-0.03	-0.01	0.02	0.03	0.03
Policy interest rate*	0.00	-0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.64	-0.05	-0.12	0.09	0.11	0.02	-0.04	-0.03	0.00	0.01	0.00
Government debt (per cent of GDP)*	-1.02	-0.38	-0.68	-0.77	-0.62	-0.51	-0.51	-0.56	-0.57	-0.55	-0.53
<b>Spillovers: Real GDP level</b>											
Belgium	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	-0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 50. Austria, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.05	-0.02	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
Real consumption	-0.18	-0.09	-0.05	-0.05	-0.04	-0.03	-0.02	-0.01	-0.01	0.00	0.00
Real investment	-0.12	-0.06	0.04	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00
Real exports	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real imports	-0.13	-0.06	-0.04	-0.04	-0.04	-0.03	-0.02	-0.01	-0.01	0.00	0.00
Output gap (per cent of GDP)*	-0.04	-0.07	-0.04	0.02	0.02	0.00	0.00	0.01	0.00	0.00	0.00
Current account (per cent of GDP)*	0.03	0.04	0.03	0.01	0.01	0.01	0.00	0.00	0.00	0.00	-0.01
Real effective exchange rate	0.67	-0.11	-0.03	0.00	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	0.68	-0.80	0.08	0.03	-0.02	0.00	0.02	0.01	0.00	0.00	0.00
Consumer expenditure deflator	0.67	-0.11	-0.03	0.00	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00
GDP deflator	0.64	-0.10	-0.03	0.01	-0.02	-0.02	0.00	0.00	0.00	0.01	0.01
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.85	-0.05	0.00	0.04	0.00	-0.01	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-1.02	-0.72	-0.80	-0.75	-0.68	-0.68	-0.67	-0.65	-0.64	-0.63	-0.62
<b>Spillovers: Real GDP level</b>											
Belgium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 51. Portugal, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.12	-0.06	0.00	0.03	0.03	0.01	0.00	-0.01	0.00	0.00	0.00
Real consumption	-0.32	-0.14	-0.05	0.02	0.02	-0.02	-0.05	-0.04	-0.03	-0.01	0.00
Real investment	-0.08	0.07	0.07	0.04	0.01	0.00	0.00	0.00	0.01	0.01	0.01
Real exports	-0.01	-0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Real imports	-0.21	-0.04	0.01	0.03	0.00	-0.03	-0.04	-0.03	-0.02	-0.01	0.00
Output gap (per cent of GDP)*	0.07	-0.05	-0.21	-0.12	0.03	0.06	0.02	-0.02	-0.02	-0.01	0.00
Current account (per cent of GDP)*	0.11	0.01	0.01	0.00	0.00	0.01	0.02	0.02	0.01	0.01	0.01
Real effective exchange rate	0.92	-0.02	-0.05	-0.04	-0.03	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01
Nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	0.93	-0.97	-0.03	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Consumer expenditure deflator	0.92	-0.02	-0.05	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
GDP deflator	0.94	-0.01	-0.05	-0.03	-0.02	-0.01	0.00	0.00	0.00	0.01	0.01
Policy interest rate*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.69	-0.04	-0.06	0.05	0.06	0.02	-0.02	-0.02	-0.01	0.00	0.00
Government debt (per cent of GDP)*	-1.51	-0.55	-0.63	-0.65	-0.58	-0.51	-0.49	-0.50	-0.51	-0.50	-0.50
<b>Spillovers: Real GDP level</b>											
Belgium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euro Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: see table 9.

**Table 52.** Spain, temporary VAT shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.19	0.00	0.22	0.21	0.10	0.01	-0.02	-0.02	0.00	0.01	0.02
Real consumption	-0.42	-0.06	0.08	0.07	0.02	0.00	0.01	0.03	0.04	0.05	0.06
Real investment	-0.19	0.33	0.48	0.14	-0.14	-0.20	-0.14	-0.06	0.00	0.02	0.02
Real exports	-0.04	-0.01	0.23	0.17	-0.01	-0.10	-0.09	-0.05	-0.01	0.00	0.00
Real imports	-0.32	0.14	0.10	-0.18	-0.32	-0.27	-0.12	0.00	0.07	0.08	0.07
Output gap (per cent of GDP)*	-0.04	-0.20	-0.19	-0.03	0.09	0.08	0.04	0.00	-0.01	0.00	0.01
Current account (per cent of GDP)*	0.09	-0.06	0.01	0.10	0.11	0.07	0.02	-0.01	-0.02	-0.02	-0.02
Real effective exchange rate	1.20	-0.33	-0.46	-0.32	-0.14	-0.01	0.05	0.06	0.04	0.03	0.03
Nominal effective exchange rate	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EA wide real effective exchange rate	0.11	-0.05	-0.04	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
EA wide nominal effective exchange rate	-0.03	-0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Headline CPI Inflation*	1.23	-1.55	-0.15	0.14	0.18	0.13	0.06	0.01	-0.01	-0.01	0.00
Consumer expenditure deflator	1.22	-0.31	-0.46	-0.32	-0.14	-0.01	0.05	0.05	0.04	0.03	0.02
GDP deflator	1.20	-0.34	-0.50	-0.31	-0.11	0.02	0.06	0.06	0.05	0.03	0.03
Policy interest rate*	0.00	-0.03	-0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.67	-0.08	-0.01	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-1.60	-0.26	-0.38	-0.53	-0.58	-0.58	-0.57	-0.56	-0.55	-0.54	-0.54
<b>Spillovers: Real GDP level</b>											
Belgium	0.00	0.02	0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Finland	0.00	0.02	0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
France	0.00	0.01	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Germany	0.00	0.01	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Greece	0.00	0.01	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Ireland	0.00	0.01	0.01	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Italy	0.00	0.01	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.01	0.02	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Austria	0.00	0.01	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Portugal	-0.02	0.01	0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00
Euro Area	-0.02	0.01	0.03	0.02	0.00	0.00	-0.01	0.00	0.00	0.00	0.00

Notes: see table 9.

## Appendix B

Charts in this section show the percentage changes in fiscal multipliers when the proportion of agents that are liquidity constrained is increased by 10, 20, 30 and 40 per cent.

### Temporary fiscal shocks to each Euro Area country with varying liquidity constraints

**Table 53.** Percentage increase in fiscal multiplier from a government consumption shock

	Increase in share of agents facing liquidity constraints			
	10%	20%	30%	40%
Belgium	1.3	2.5	3.7	5.0
Finland	1.4	2.8	4.3	5.8
France	1.3	2.6	4.0	5.4
Germany	1.1	2.4	3.6	4.9
Greece	4.7	9.9	15.5	21.7
Ireland	0.4	0.9	1.3	1.8
Italy	1.3	2.6	3.9	5.4
Netherlands	1.5	3.1	4.7	6.4
Austria	1.4	2.9	4.4	6.0
Portugal	1.3	2.6	3.9	5.3
Spain	2.8	5.7	8.9	12.2



**Table 54.** Percentage increase in fiscal multiplier from a government investment shock

	Increase in share of agents facing liquidity constraints			
	10%	20%	30%	40%
Belgium	1.2	2.4	4.0	5.2
Finland	1.5	2.9	4.5	5.9
France	1.3	2.6	3.9	5.3
Germany	1.2	2.4	3.7	4.9
Greece	4.7	9.9	15.6	21.8
Ireland	1.0	1.5	2.0	2.5
Italy	1.3	2.7	4.0	5.4
Netherlands	1.6	3.1	4.7	6.4
Austria	1.5	3.0	4.5	6.1
Portugal	1.3	2.6	4.0	5.4
Spain	2.8	5.8	8.9	12.3

**Table 55.** Percentage increase in fiscal multiplier from an income tax shock

	Increase in share of agents facing liquidity constraints			
	10%	20%	30%	40%
Belgium	0.8	2.7	4.0	5.8
Finland	1.4	2.9	4.4	5.9
France	1.3	2.6	4.0	5.3
Germany	1.1	2.4	3.6	4.9
Greece	4.7	9.9	15.6	21.7
Ireland	0.5	0.8	1.4	1.9
Italy	0.8	2.1	3.5	4.9
Netherlands	1.5	3.0	4.7	6.3
Austria	1.4	2.9	4.5	6.2
Portugal	1.4	2.8	4.3	5.9
Spain	2.7	5.6	8.9	12.2

**Table 56.** Percentage increase in fiscal multiplier from an indirect tax shock

	Increase in share of agents facing liquidity constraints			
	10%	20%	30%	40%
Belgium	1.0	2.4	3.9	4.4
Finland	1.5	3.0	4.5	6.1
France	1.1	2.4	3.8	5.1
Germany	0.9	2.2	3.5	4.8
Greece	4.7	9.9	15.7	22.6
Ireland	0.6	1.0	1.5	2.0
Italy	1.1	2.9	4.1	5.5
Netherlands	1.9	3.4	5.0	6.9
Austria	1.1	3.2	4.6	6.6
Portugal	1.4	2.8	3.9	5.4
Spain	2.5	5.5	8.7	12.0

## Temporary fiscal shocks with international coordination and varying liquidity constraints

**Table 57.** Percentage increase in fiscal multiplier from a government consumption shock

	Increase in share of agents facing liquidity constraints			
	10%	20%	30%	40%
Belgium	2.9	5.6	8.2	11.1
Finland	2.6	4.9	7.2	9.7
France	2.2	4.2	6.2	8.4
Germany	2.3	4.2	6.2	8.3
Greece	5.8	11.8	18.4	25.8
Ireland	3.1	4.8	6.4	8.3
Italy	2.2	4.1	6.1	8.3
Netherlands	2.9	5.7	8.5	11.6
Austria	2.8	5.3	7.8	10.5
Portugal	2.5	4.9	7.4	10.1
Spain	3.6	7.1	10.7	14.7

**Table 58.** Percentage increase in fiscal multiplier from a government investment shock

	Increase in share of agents facing liquidity constraints			
	10%	20%	30%	40%
Belgium	2.9	5.5	8.2	11.0
Finland	2.5	4.8	7.2	9.7
France	2.2	4.1	6.2	8.3
Germany	2.1	4.1	6.1	8.2
Greece	5.7	11.8	18.5	25.8
Ireland	2.9	4.7	6.5	8.2
Italy	2.1	4.1	6.1	8.2
Netherlands	2.9	5.6	8.5	11.5
Austria	2.7	5.1	7.7	10.3
Portugal	2.5	4.9	7.4	10.1
Spain	3.5	7.0	10.7	14.7

**Table 59.** Percentage increase in fiscal multiplier from an income tax shock

	Increase in share of agents facing liquidity constraints			
	10%	20%	30%	40%
Belgium	3.3	6.4	9.3	12.6
Finland	2.8	5.3	7.8	10.5
France	1.9	3.6	5.4	7.2
Germany	1.9	3.6	5.3	7.2
Greece	5.5	11.3	17.7	24.7
Ireland	3.9	6.2	7.7	9.6
Italy	2.8	5.3	7.7	10.4
Netherlands	3.0	6.0	9.0	12.2
Austria	3.3	6.1	9.0	12.1
Portugal	3.1	6.1	9.2	12.5
Spain	4.0	7.9	11.9	16.3

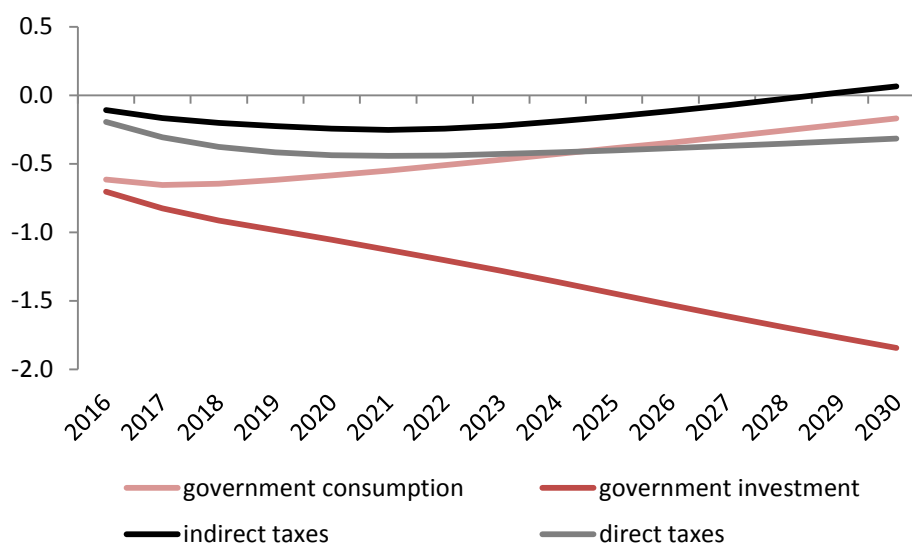
**Table 60.** Percentage increase in fiscal multiplier from an indirect tax shock

	Increase in share of agents facing liquidity constraints			
	10%	20%	30%	40%
Belgium	5.1	8.4	12.0	15.0
Finland	4.8	7.5	10.5	13.4
France	3.5	5.6	7.8	10.0
Germany	2.4	4.0	5.6	7.2
Greece	7.8	14.7	22.3	30.5
Ireland	8.4	10.4	12.3	14.2
Italy	5.1	7.9	10.7	13.4
Netherlands	4.0	7.0	10.1	13.2
Austria	6.0	9.4	12.9	16.3
Portugal	3.3	6.0	8.7	11.5
Spain	4.7	8.4	12.4	16.4

## Appendix C

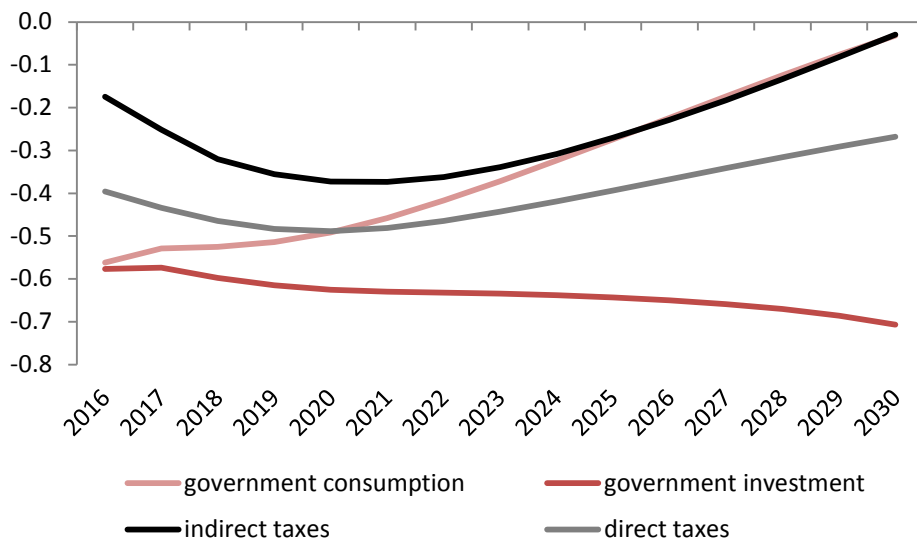
In this section we plot the response of output (as a percentage difference from baseline) to permanent shocks to each of the four types of fiscal instruments that we consider in the text. In Section 10.1 we report the responses to shocks in isolation to each of the Euro Area countries that we consider in our analysis and in Section 10.2 the responses that arise in each country following fiscal shocks that have been implemented simultaneously to all countries of the analysis.

### Permanent fiscal shocks to each Euro Area country in isolation

**Figure 10.** Finland: permanent consolidation multipliers

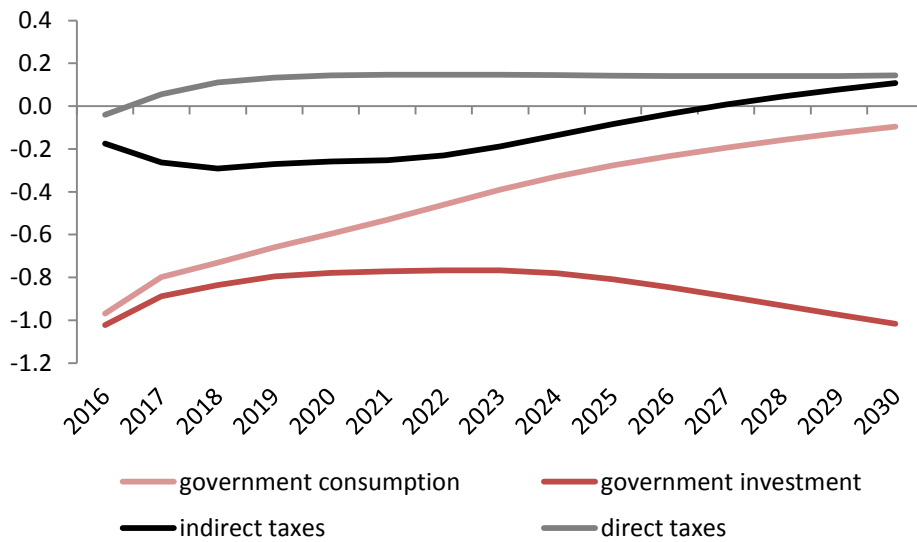
Source: NiGEM simulations.

**Figure 11. France: permanent consolidation multipliers**



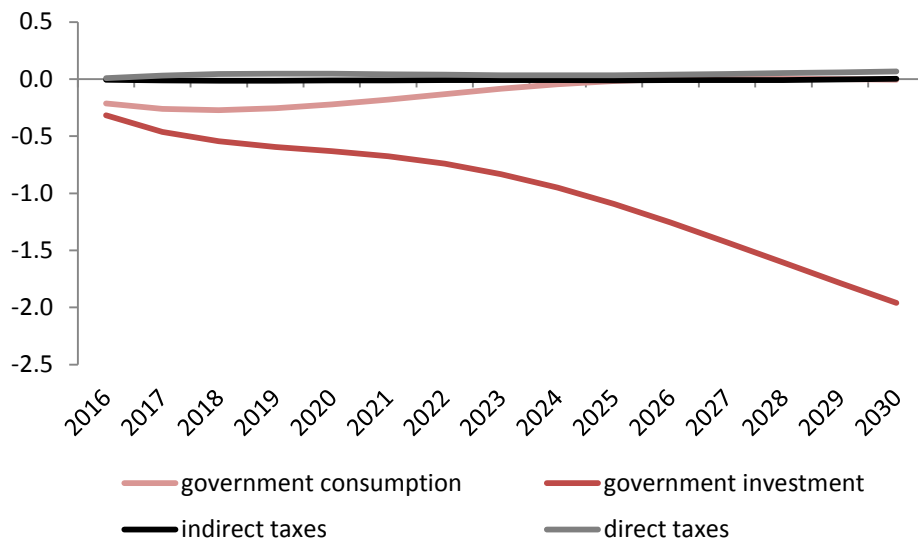
Source: NiGEM simulations.

**Figure 12. Greece: permanent consolidation multipliers**



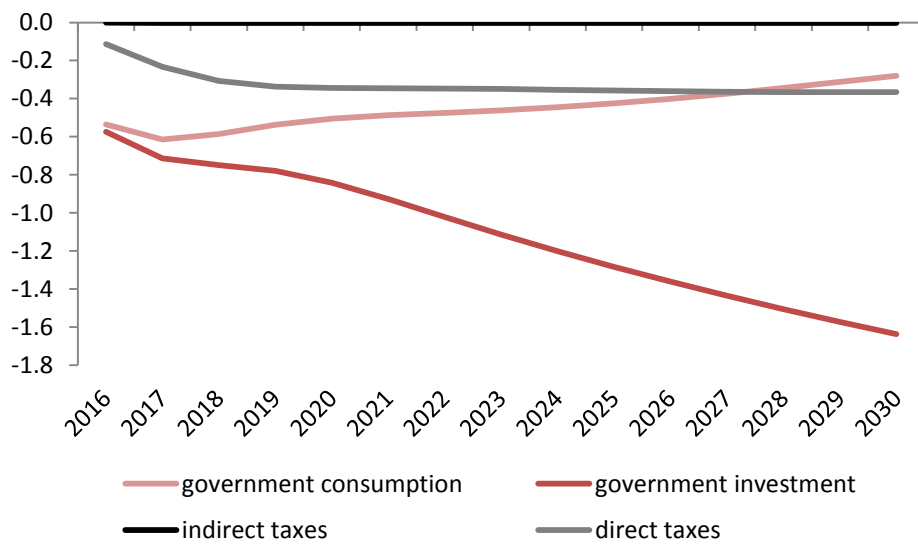
Source: NiGEM simulations.

**Figure 13. Ireland: permanent consolidation multipliers**



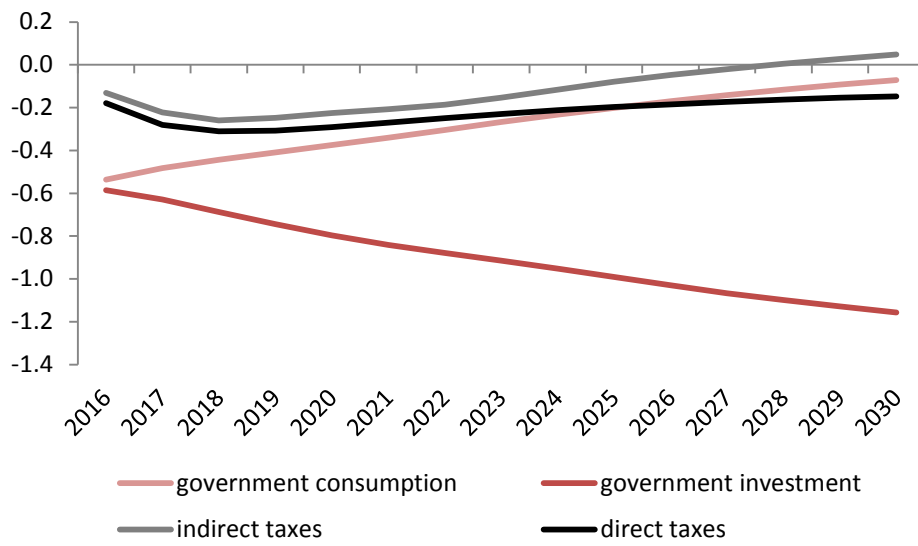
Source: NiGEM simulations.

**Figure 14. Italy: permanent consolidation multipliers**



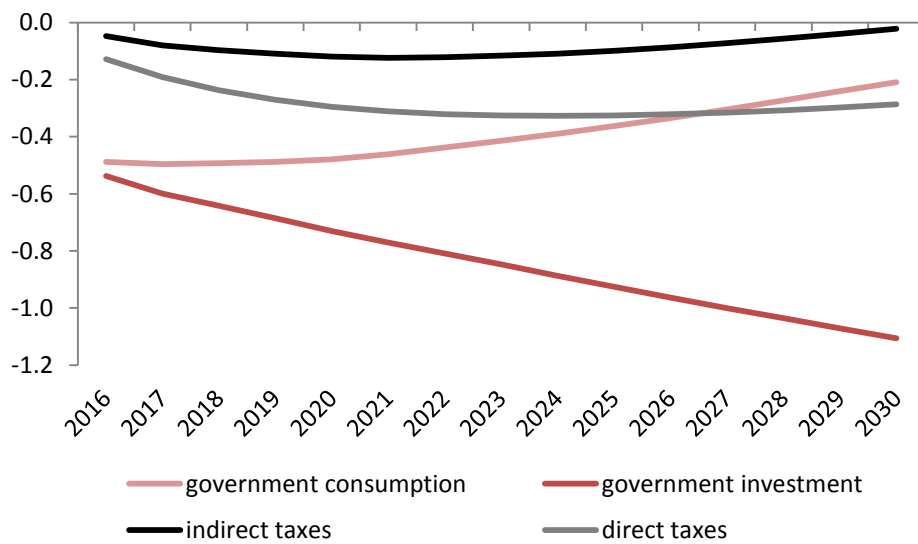
Source: NiGEM simulations.

**Figure 15. Netherlands: permanent consolidation multipliers**



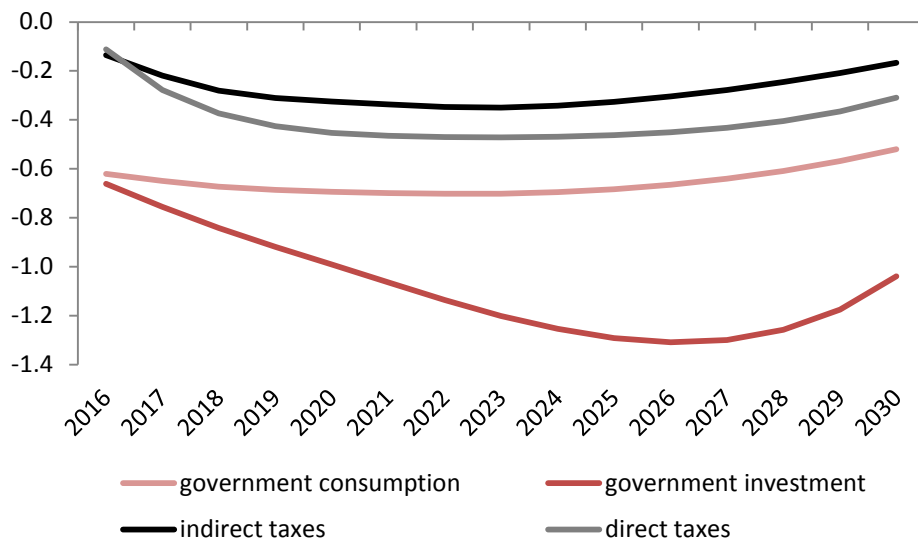
Source: NiGEM simulations.

**Figure 16. Austria: permanent consolidation multipliers**



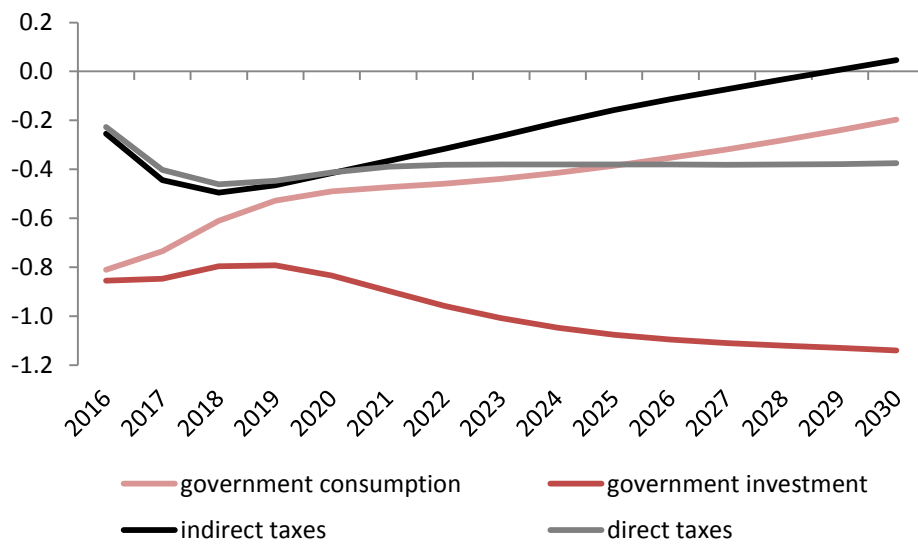
Source: NiGEM simulations.

**Figure 17. Portugal: permanent consolidation multipliers**



Source: NiGEM simulations.

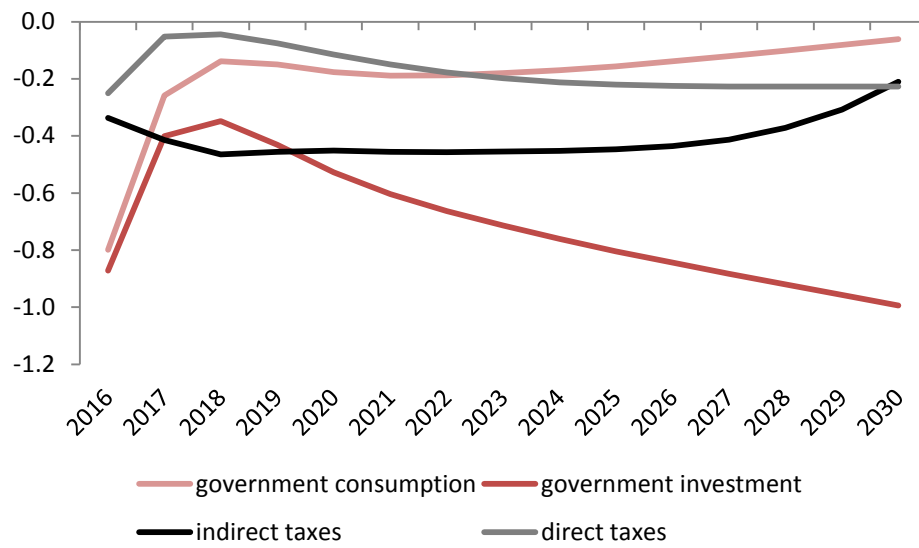
**Figure 18. Spain: permanent consolidation multipliers**



Source: NiGEM simulations.

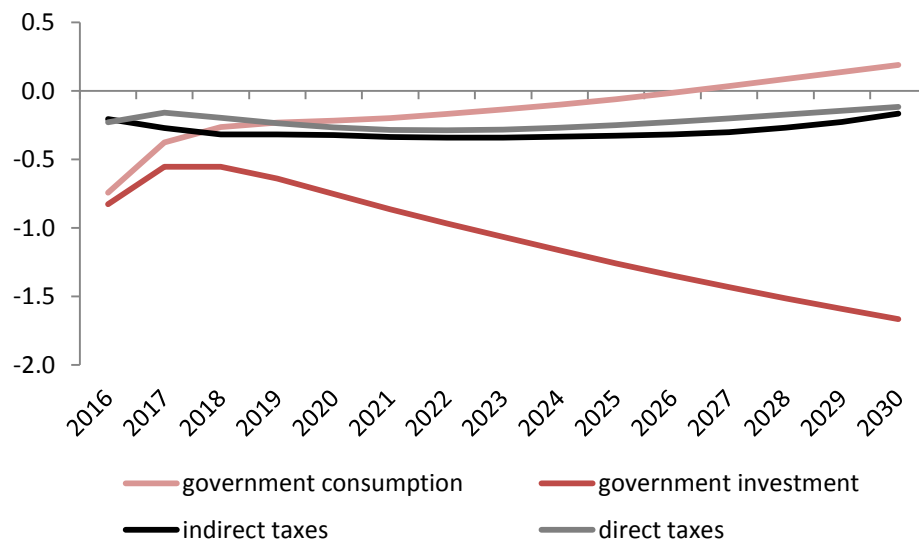
## Permanent fiscal shocks with international coordination

**Figure 19.** Belgium: permanent consolidation multipliers with international coordination



Source: NiGEM simulations.

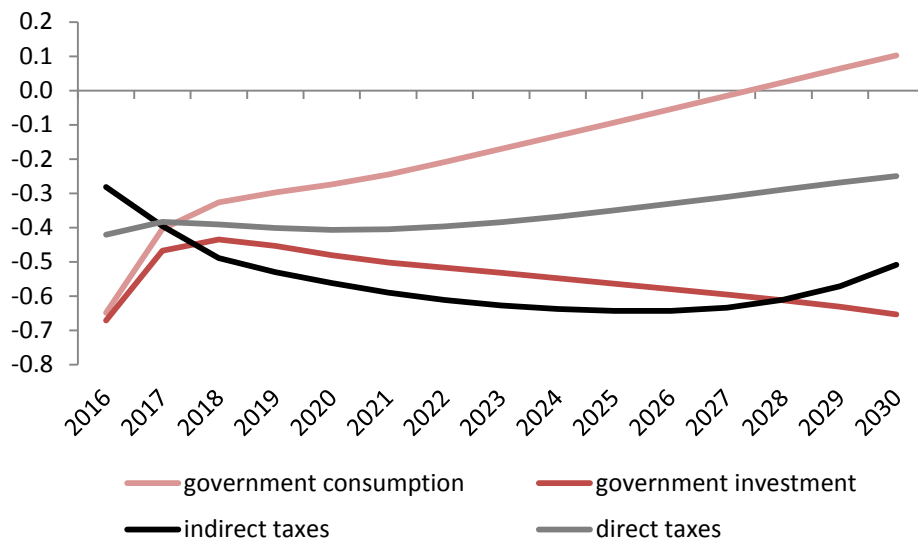
**Figure 20.** Finland: permanent consolidation multipliers with international coordination



Source: NiGEM simulations.

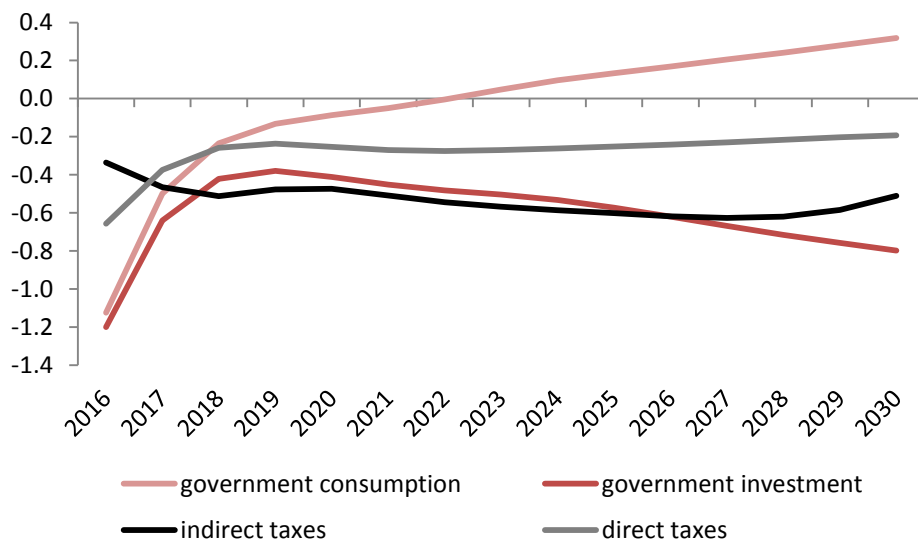


**Figure 21.** France: permanent consolidation multipliers with international coordination



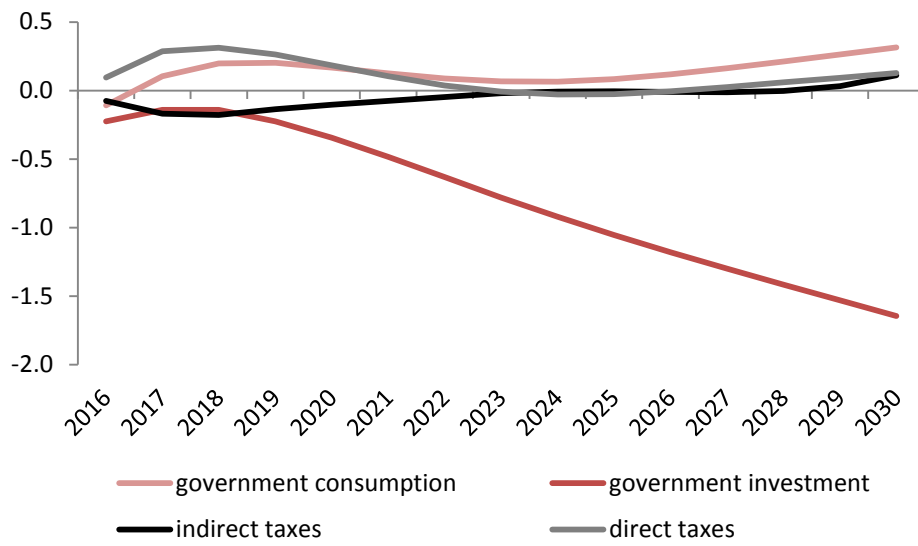
Source: NiGEM simulations.

**Figure 22.** Greece: permanent consolidation multipliers with international coordination



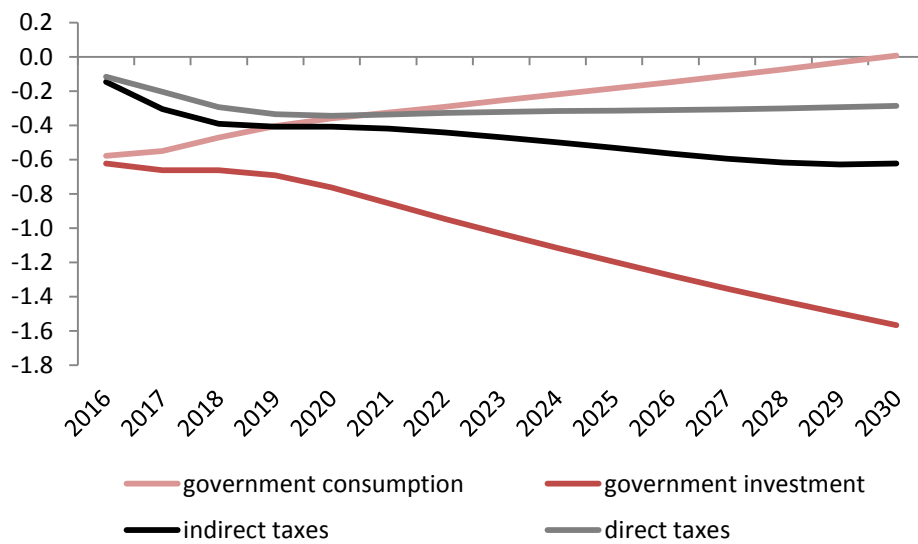
Source: NiGEM simulations.

**Figure 23.** Ireland: permanent consolidation multipliers with international coordination



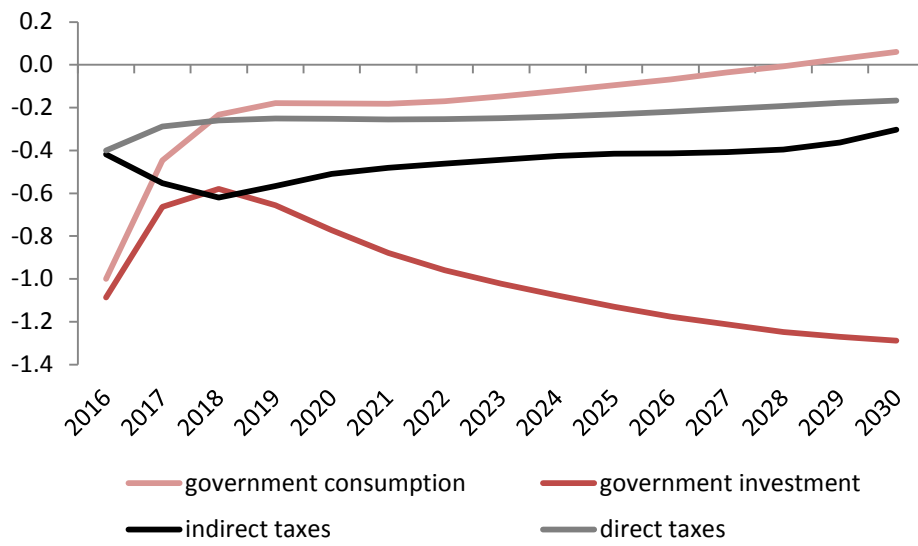
Source: NiGEM simulations.

**Figure 24.** Italy: permanent consolidation multipliers with international coordination



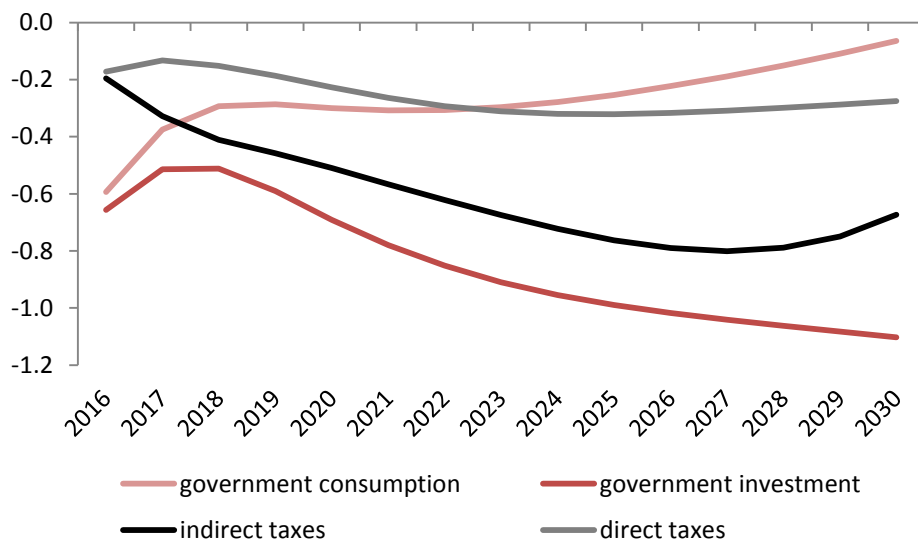
Source: NiGEM simulations.

**Figure 25.** Netherlands: permanent consolidation multipliers with international coordination



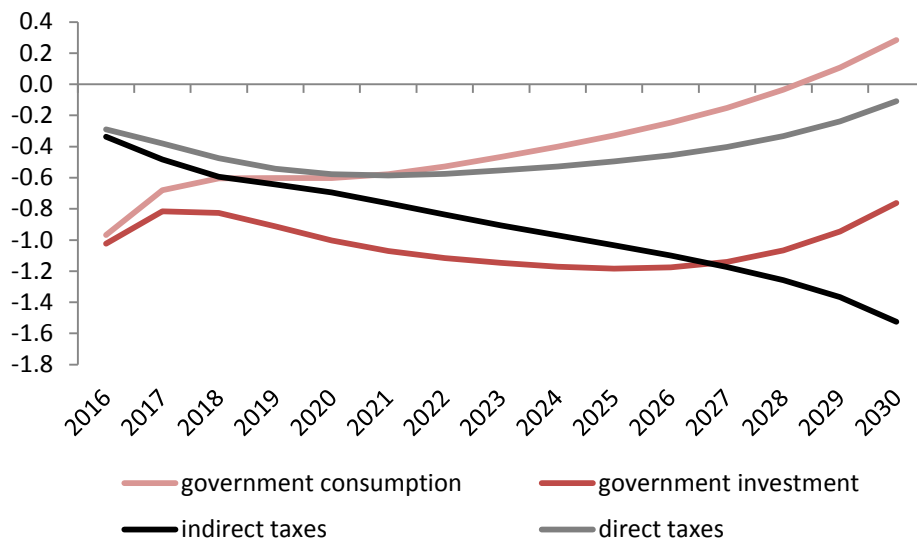
Source: NiGEM simulations.

**Figure 26.** Austria: permanent consolidation multipliers with international coordination



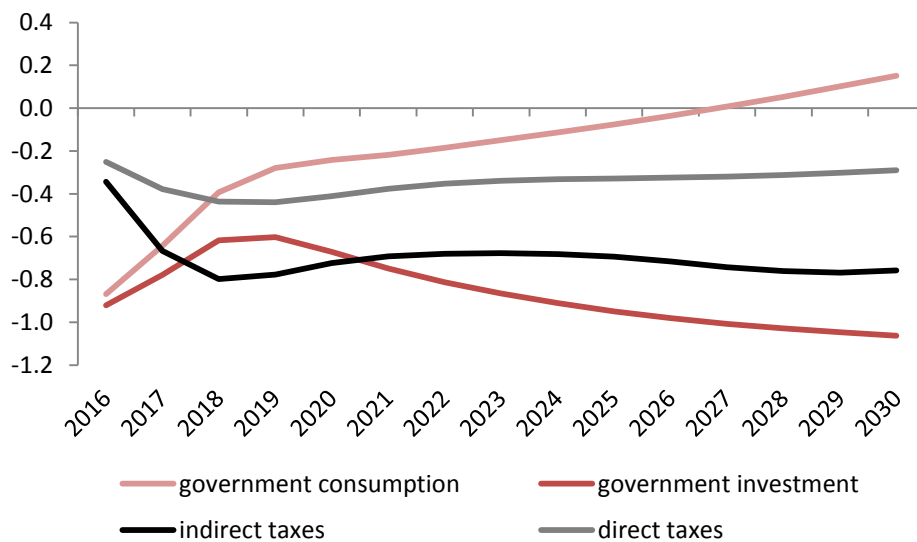
Source: NiGEM simulations.

**Figure 27.** Portugal: permanent consolidation multipliers with international coordination



Source: NiGEM simulations.

**Figure 28.** Spain: permanent consolidation multipliers with international coordination



Source: NiGEM simulations.

## Appendix D

The following set of tables report the simulated time path of a selection of variables following a fiscal shock that has been implemented simultaneously in all Euro Area countries included in the current analysis. We report the results of each country. Units are either in percentage or absolute difference from baseline values.

## Government consumption shock

**Table 61.** Belgium, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-1.05	0.24	0.18	0.09	0.05	0.04	0.04	0.03	0.02	0.02	0.01
Real consumption	-0.10	-0.07	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03
Real investment	-1.16	1.77	0.49	0.03	-0.04	-0.02	-0.01	-0.03	-0.04	-0.04	-0.04
Real exports	-1.51	0.45	0.42	0.20	0.08	0.04	0.03	0.02	0.01	0.00	-0.01
Real imports	-1.83	0.55	0.36	0.15	0.05	0.02	0.01	0.01	0.00	-0.01	-0.01
Output gap (per cent of GDP)*	-0.74	0.29	0.03	-0.04	-0.01	0.01	0.01	0.01	0.01	0.01	0.01
Current account (per cent of GDP)*	0.29	-0.16	0.03	0.06	0.04	0.03	0.03	0.03	0.03	0.02	0.01
Real effective exchange rate	0.04	0.08	0.02	-0.03	-0.05	-0.04	-0.03	-0.02	-0.02	-0.02	-0.02
Nominal effective exchange rate	0.00	-0.03	-0.02	-0.01	-0.01	0.00	0.00	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	-0.06	-0.26	-0.24	-0.18	-0.12	-0.07	-0.03	-0.01	0.00	0.01	0.02
EA wide nominal effective exchange rate	0.01	-0.06	-0.04	-0.03	-0.03	-0.01	0.01	0.02	0.03	0.03	0.03
Headline CPI Inflation*	-0.06	-0.12	-0.03	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01
Consumer expenditure deflator	-0.06	-0.18	-0.21	-0.20	-0.19	-0.16	-0.14	-0.12	-0.10	-0.09	-0.07
GDP deflator	-0.05	-0.28	-0.24	-0.17	-0.14	-0.13	-0.11	-0.10	-0.08	-0.07	-0.06
Policy interest rate*	0.00	-0.15	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Government deficit (per cent of GDP)*	-0.67	0.01	-0.04	0.02	0.01	0.00	-0.01	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.74	-0.56	-0.59	-0.54	-0.50	-0.48	-0.48	-0.49	-0.49	-0.48	-0.48

Notes: See table 9.

**Table 62.** Finland, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.93	0.17	0.14	0.11	0.08	0.06	0.05	0.04	0.03	0.02	0.02
Real consumption	-0.06	0.00	0.07	0.06	0.05	0.05	0.06	0.07	0.07	0.07	0.07
Real investment	-1.21	1.10	0.62	0.32	0.16	0.08	0.03	-0.01	-0.04	-0.05	-0.06
Real exports	-1.28	0.79	0.28	0.13	0.07	0.06	0.05	0.04	0.02	0.01	0.00
Real imports	-2.01	0.82	0.30	0.10	0.02	0.02	0.03	0.04	0.04	0.04	0.04
Output gap (per cent of GDP)*	-0.79	0.16	0.05	0.06	0.09	0.07	0.03	0.01	0.01	0.02	0.01
Current account (per cent of GDP)*	0.50	0.07	0.00	-0.01	0.00	0.01	0.02	0.01	0.00	0.00	-0.01
Real effective exchange rate	-0.02	-0.13	-0.13	-0.09	-0.06	-0.03	-0.01	0.01	0.03	0.03	0.03
Nominal effective exchange rate	0.00	-0.04	-0.02	-0.01	-0.01	0.00	0.01	0.01	0.02	0.02	0.02
EA wide real effective exchange rate	-0.06	-0.26	-0.24	-0.18	-0.12	-0.07	-0.03	-0.01	0.00	0.01	0.02
EA wide nominal effective exchange rate	0.01	-0.06	-0.04	-0.03	-0.03	-0.01	0.01	0.02	0.03	0.03	0.03
Headline CPI Inflation*	-0.12	-0.21	0.01	0.08	0.06	0.04	0.03	0.03	0.03	0.02	0.01
Consumer expenditure deflator	-0.12	-0.32	-0.31	-0.23	-0.17	-0.14	-0.11	-0.08	-0.05	-0.04	-0.03
GDP deflator	-0.08	-0.31	-0.31	-0.23	-0.16	-0.12	-0.10	-0.07	-0.04	-0.03	-0.02
Policy interest rate*	0.00	-0.15	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Government deficit (per cent of GDP)*	-0.87	-0.01	-0.07	0.02	0.02	0.00	-0.01	0.00	0.01	0.00	0.00
Government debt (per cent of GDP)*	0.09	-0.73	-0.77	-0.77	-0.73	-0.71	-0.70	-0.69	-0.67	-0.64	-0.62

Notes: See table 9.

**Table 63.** France, temporary government consumption shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.78	0.07	0.07	0.04	0.03	0.03	0.04	0.04	0.04	0.04	0.04
Real consumption	-0.15	-0.09	0.03	0.04	0.01	0.01	0.02	0.02	0.03	0.04	0.04
Real investment	-0.74	0.85	0.45	0.19	0.10	0.08	0.06	0.04	0.02	0.00	-0.01
Real exports	-1.38	0.55	0.35	0.17	0.10	0.08	0.08	0.07	0.05	0.04	0.02
Real imports	-2.59	0.64	0.46	0.24	0.12	0.06	0.04	0.03	0.01	0.00	-0.01
Output gap (per cent of GDP)*	-0.58	0.09	-0.04	-0.04	0.00	0.02	0.02	0.02	0.02	0.02	0.02
Current account (per cent of GDP)*	0.40	-0.03	-0.04	-0.04	-0.03	-0.02	-0.01	0.00	0.00	0.00	0.00
Real effective exchange rate	0.01	-0.03	-0.06	-0.10	-0.11	-0.10	-0.08	-0.07	-0.06	-0.04	-0.03
Nominal effective exchange rate	0.00	-0.04	-0.02	-0.02	-0.01	0.00	0.00	0.01	0.01	0.02	0.02
EA wide real effective exchange rate	-0.06	-0.26	-0.24	-0.18	-0.12	-0.07	-0.03	-0.01	0.00	0.01	0.02
EA wide nominal effective exchange rate	0.01	-0.06	-0.04	-0.03	-0.03	-0.01	0.01	0.02	0.03	0.03	0.03
Headline CPI Inflation*	-0.10	-0.20	-0.01	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02
Consumer expenditure deflator	-0.10	-0.30	-0.31	-0.27	-0.23	-0.20	-0.18	-0.15	-0.13	-0.10	-0.08
GDP deflator	-0.10	-0.31	-0.32	-0.29	-0.25	-0.22	-0.19	-0.16	-0.13	-0.11	-0.08
Policy interest rate*	0.00	-0.15	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Government deficit (per cent of GDP)*	-0.72	0.01	-0.06	0.02	0.02	0.00	-0.01	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.41	-0.45	-0.49	-0.48	-0.47	-0.48	-0.50	-0.52	-0.53	-0.55	-0.56

Notes: See table 9.

**Table 64. Germany, temporary government consumption shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.66	0.08	0.06	0.04	0.04	0.05	0.05	0.05	0.04	0.03	0.02
Real consumption	-0.14	0.06	0.06	0.02	-0.01	-0.01	0.00	0.01	0.01	0.01	0.02
Real investment	-0.67	0.87	0.31	0.11	0.06	0.04	0.02	-0.01	-0.03	-0.05	-0.05
Real exports	-1.23	0.51	0.35	0.19	0.11	0.09	0.07	0.06	0.03	0.01	0.00
Real imports	-2.66	0.84	0.48	0.20	0.07	0.02	0.00	-0.02	-0.03	-0.04	-0.04
Output gap (per cent of GDP)*	-0.58	0.04	0.03	0.05	0.03	0.03	0.04	0.04	0.03	0.03	0.02
Current account (per cent of GDP)*	0.59	-0.10	-0.06	-0.05	-0.02	0.00	0.01	0.02	0.02	0.02	0.02
Real effective exchange rate	-0.06	-0.15	-0.13	-0.16	-0.15	-0.11	-0.07	-0.03	0.00	0.02	0.04
Nominal effective exchange rate	0.01	-0.03	-0.02	-0.02	-0.01	0.00	0.01	0.01	0.02	0.02	0.02
EA wide real effective exchange rate	-0.06	-0.26	-0.24	-0.18	-0.12	-0.07	-0.03	-0.01	0.00	0.01	0.02
EA wide nominal effective exchange rate	0.01	-0.06	-0.04	-0.03	-0.03	-0.01	0.01	0.02	0.03	0.03	0.03
Headline CPI Inflation*	-0.16	-0.23	0.05	0.04	0.05	0.05	0.05	0.05	0.04	0.03	0.03
Consumer expenditure deflator	-0.16	-0.39	-0.34	-0.30	-0.26	-0.21	-0.17	-0.12	-0.08	-0.05	-0.02
GDP deflator	-0.17	-0.43	-0.36	-0.33	-0.28	-0.23	-0.17	-0.11	-0.06	-0.02	0.02
Policy interest rate*	0.00	-0.15	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Government deficit (per cent of GDP)*	-0.88	-0.01	0.00	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.22	-0.55	-0.57	-0.56	-0.59	-0.62	-0.66	-0.69	-0.71	-0.72	-0.72

Notes: See table 9.

**Table 65. Greece, temporary government consumption shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-1.31	0.31	0.31	0.21	0.13	0.09	0.07	0.06	0.05	0.03	0.01
Real consumption	-0.31	0.05	0.18	0.18	0.12	0.09	0.10	0.12	0.13	0.12	0.10
Real investment	-7.03	4.91	1.79	0.48	0.03	-0.07	-0.07	-0.08	-0.11	-0.13	-0.13
Real exports	-1.09	0.22	0.38	0.21	0.09	0.05	0.04	0.04	0.03	0.02	0.01
Real imports	-2.59	0.99	0.61	0.21	-0.01	-0.06	-0.03	0.01	0.03	0.04	0.05
Output gap (per cent of GDP)*	-1.02	0.26	0.10	0.08	0.12	0.12	0.08	0.04	0.02	0.01	0.01
Current account (per cent of GDP)*	0.45	-0.29	-0.06	0.02	0.05	0.05	0.04	0.03	0.02	0.01	0.00
Real effective exchange rate	0.01	-0.08	-0.11	-0.11	-0.09	-0.05	-0.01	0.02	0.05	0.06	0.07
Nominal effective exchange rate	-0.01	-0.05	-0.03	-0.02	-0.01	-0.01	0.00	0.01	0.02	0.02	0.02
EA wide real effective exchange rate	-0.06	-0.26	-0.24	-0.18	-0.12	-0.07	-0.03	-0.01	0.00	0.01	0.02
EA wide nominal effective exchange rate	0.01	-0.06	-0.04	-0.03	-0.03	-0.01	0.01	0.02	0.03	0.03	0.03
Headline CPI Inflation*	-0.11	-0.22	0.00	0.07	0.07	0.05	0.04	0.04	0.04	0.03	0.02
Consumer expenditure deflator	-0.11	-0.33	-0.34	-0.27	-0.20	-0.15	-0.11	-0.07	-0.03	0.00	0.02
GDP deflator	-0.06	-0.31	-0.35	-0.26	-0.18	-0.13	-0.09	-0.05	-0.01	0.02	0.04
Policy interest rate*	0.00	-0.15	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Government deficit (per cent of GDP)*	-0.61	-0.02	-0.09	-0.01	0.03	0.02	0.00	-0.01	0.00	0.01	0.01
Government debt (per cent of GDP)*	2.20	-0.60	-0.61	-0.60	-0.57	-0.56	-0.59	-0.63	-0.65	-0.64	-0.62

Notes: See table 9.

**Table 66. Ireland, temporary government consumption shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.33	-0.16	-0.07	-0.01	0.03	0.06	0.07	0.08	0.07	0.06	0.05
Real consumption	-0.03	-0.04	-0.03	-0.01	0.01	0.03	0.05	0.06	0.08	0.08	0.09
Real investment	-0.27	0.26	0.34	0.31	0.26	0.20	0.14	0.08	0.02	-0.02	-0.05
Real exports	-0.42	-0.19	0.06	0.13	0.12	0.10	0.08	0.06	0.05	0.04	0.03
Real imports	-1.24	-0.04	0.19	0.22	0.17	0.11	0.07	0.05	0.03	0.02	0.02
Output gap (per cent of GDP)*	-0.26	-0.13	-0.10	-0.06	0.00	0.03	0.04	0.04	0.04	0.03	0.03
Current account (per cent of GDP)*	0.58	-0.56	-0.36	-0.23	-0.17	-0.12	-0.07	-0.04	-0.02	-0.01	0.00
Real effective exchange rate	0.04	0.05	0.01	-0.05	-0.08	-0.08	-0.06	-0.04	-0.03	-0.01	0.00
Nominal effective exchange rate	-0.02	-0.07	-0.04	-0.03	-0.02	-0.01	0.00	0.02	0.02	0.02	0.02
EA wide real effective exchange rate	-0.06	-0.26	-0.24	-0.18	-0.12	-0.07	-0.03	-0.01	0.00	0.01	0.02
EA wide nominal effective exchange rate	0.01	-0.06	-0.04	-0.03	-0.03	-0.01	0.01	0.02	0.03	0.03	0.03
Headline CPI Inflation*	-0.03	-0.09	-0.05	-0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02
Consumer expenditure deflator	-0.03	-0.13	-0.18	-0.18	-0.18	-0.16	-0.15	-0.12	-0.10	-0.08	-0.06
GDP deflator	-0.03	-0.13	-0.18	-0.17	-0.16	-0.14	-0.12	-0.10	-0.08	-0.06	-0.04
Policy interest rate*	0.00	-0.15	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Government deficit (per cent of GDP)*	-0.89	0.03	-0.02	-0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.18	-0.53	-0.55	-0.60	-0.64	-0.65	-0.67	-0.68	-0.68	-0.66	-0.65

Notes: See table 9.

**Table 67. Italy, temporary government consumption shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.70	-0.13	0.09	0.14	0.09	0.04	0.01	0.01	0.01	0.01	0.01
Real consumption	-0.04	-0.08	-0.06	-0.03	-0.01	-0.01	0.00	0.01	0.02	0.03	0.03
Real investment	-0.83	0.83	0.54	0.20	0.02	-0.03	-0.02	-0.01	-0.01	-0.01	-0.02
Real exports	-1.02	0.12	0.30	0.22	0.11	0.05	0.04	0.03	0.03	0.02	0.01
Real imports	-2.77	0.92	0.26	-0.11	-0.17	-0.09	0.00	0.04	0.04	0.03	0.03
Output gap (per cent of GDP)*	-0.55	-0.10	0.01	0.05	0.07	0.05	0.02	0.00	0.00	0.00	0.00
Current account (per cent of GDP)*	0.47	-0.27	0.01	0.10	0.09	0.04	0.01	0.00	0.00	0.00	-0.01
Real effective exchange rate	-0.06	-0.36	-0.40	-0.20	-0.02	0.05	0.05	0.03	0.02	0.01	0.01
Nominal effective exchange rate	0.01	-0.03	-0.02	-0.02	-0.01	0.00	0.01	0.01	0.02	0.02	0.02
EA wide real effective exchange rate	-0.06	-0.26	-0.24	-0.18	-0.12	-0.07	-0.03	-0.01	0.00	0.01	0.02
EA wide nominal effective exchange rate	0.01	-0.06	-0.04	-0.03	-0.03	-0.01	0.01	0.02	0.03	0.03	0.03
Headline CPI Inflation*	-0.18	-0.46	0.00	0.27	0.22	0.08	0.00	-0.01	0.00	0.01	0.01
Consumer expenditure deflator	-0.18	-0.62	-0.62	-0.36	-0.14	-0.06	-0.05	-0.06	-0.06	-0.05	-0.04
GDP deflator	-0.15	-0.62	-0.62	-0.35	-0.13	-0.05	-0.05	-0.06	-0.05	-0.04	-0.04
Policy interest rate*	0.00	-0.15	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Government deficit (per cent of GDP)*	-0.80	0.09	-0.06	-0.04	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.81	0.43	0.06	-0.43	-0.66	-0.68	-0.64	-0.60	-0.60	-0.59	-0.59

Notes: See table 9.

**Table 68. Netherlands, temporary government consumption shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-1.22	0.27	0.28	0.17	0.09	0.05	0.04	0.04	0.03	0.02	0.01
Real consumption	-0.10	-0.04	0.27	0.37	0.29	0.20	0.17	0.16	0.15	0.12	0.10
Real investment	-1.83	1.62	0.84	0.27	0.03	-0.02	-0.02	-0.03	-0.05	-0.05	-0.05
Real exports	-1.55	0.46	0.38	0.17	0.07	0.04	0.04	0.03	0.02	0.01	0.00
Real imports	-2.01	0.51	0.43	0.26	0.14	0.09	0.07	0.07	0.05	0.04	0.02
Output gap (per cent of GDP)*	-0.96	0.21	0.07	0.08	0.13	0.10	0.03	0.00	0.01	0.01	0.01
Current account (per cent of GDP)*	0.71	0.28	0.06	-0.08	-0.09	-0.05	-0.02	-0.01	-0.02	-0.02	-0.02
Real effective exchange rate	-0.04	-0.10	0.02	0.08	0.07	0.02	0.01	0.01	0.02	0.01	0.00
Nominal effective exchange rate	-0.01	-0.05	-0.02	-0.01	-0.01	0.00	0.00	0.01	0.02	0.02	0.02
EA wide real effective exchange rate	-0.06	-0.26	-0.24	-0.18	-0.12	-0.07	-0.03	-0.01	0.00	0.01	0.02
EA wide nominal effective exchange rate	0.01	-0.06	-0.04	-0.03	-0.03	-0.01	0.01	0.02	0.03	0.03	0.03
Headline CPI Inflation*	-0.13	-0.19	0.11	0.11	0.02	-0.02	-0.01	0.02	0.02	0.01	0.00
Consumer expenditure deflator	-0.13	-0.31	-0.20	-0.09	-0.07	-0.09	-0.10	-0.08	-0.06	-0.05	-0.05
GDP deflator	-0.10	-0.30	-0.19	-0.07	-0.06	-0.09	-0.10	-0.08	-0.06	-0.05	-0.05
Policy interest rate*	0.00	-0.15	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Government deficit (per cent of GDP)*	-0.78	-0.08	-0.11	0.05	0.07	0.02	-0.02	-0.01	0.01	0.02	0.01
Government debt (per cent of GDP)*	0.42	-0.75	-0.94	-0.93	-0.78	-0.68	-0.67	-0.68	-0.67	-0.64	-0.62

Notes: See table 9.

**Table 69. Austria, temporary government consumption shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.77	-0.06	0.01	0.01	0.00	0.01	0.02	0.02	0.02	0.03	0.03
Real consumption	-0.07	-0.08	-0.03	-0.04	-0.04	-0.03	-0.01	-0.01	0.00	0.01	0.01
Real investment	-0.99	1.04	0.52	0.20	0.08	0.06	0.04	0.01	-0.01	-0.03	-0.04
Real exports	-1.10	-0.03	0.20	0.17	0.10	0.06	0.04	0.03	0.02	0.01	0.00
Real imports	-2.09	0.41	0.37	0.22	0.10	0.05	0.02	0.00	-0.02	-0.03	-0.04
Output gap (per cent of GDP)*	-0.62	-0.08	-0.06	-0.01	0.01	-0.01	-0.01	0.01	0.01	0.01	0.02
Current account (per cent of GDP)*	0.58	-0.17	-0.05	-0.02	0.00	0.02	0.02	0.02	0.02	0.02	0.01
Real effective exchange rate	0.06	0.06	0.07	0.05	-0.02	-0.04	-0.03	-0.03	-0.04	-0.04	-0.04
Nominal effective exchange rate	0.02	-0.01	-0.01	-0.01	-0.01	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	-0.06	-0.26	-0.24	-0.18	-0.12	-0.07	-0.03	-0.01	0.00	0.01	0.02
EA wide nominal effective exchange rate	0.01	-0.06	-0.04	-0.03	-0.03	-0.01	0.01	0.02	0.03	0.03	0.03
Headline CPI Inflation*	-0.09	-0.19	0.06	0.06	-0.02	0.00	0.03	0.02	0.01	0.01	0.02
Consumer expenditure deflator	-0.09	-0.27	-0.22	-0.16	-0.17	-0.18	-0.15	-0.13	-0.12	-0.10	-0.09
GDP deflator	-0.05	-0.25	-0.21	-0.15	-0.16	-0.16	-0.14	-0.12	-0.12	-0.11	-0.09
Policy interest rate*	0.00	-0.15	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Government deficit (per cent of GDP)*	-0.84	0.01	-0.03	0.04	0.00	-0.02	-0.01	0.00	0.00	-0.01	0.00
Government debt (per cent of GDP)*	0.15	-0.52	-0.63	-0.62	-0.57	-0.57	-0.59	-0.59	-0.58	-0.59	-0.59

Notes: See table 9.

**Table 70. Portugal, temporary government consumption shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-1.08	0.15	0.13	0.09	0.06	0.05	0.05	0.05	0.04	0.04	0.04
Real consumption	0.00	-0.06	-0.06	-0.02	0.00	0.01	0.02	0.03	0.04	0.06	0.07
Real investment	-1.46	1.24	0.67	0.32	0.16	0.09	0.06	0.04	0.02	0.00	-0.01
Real exports	-1.75	0.62	0.35	0.13	0.04	0.04	0.05	0.06	0.05	0.04	0.02
Real imports	-1.96	0.60	0.24	0.05	-0.01	0.00	0.02	0.03	0.03	0.03	0.04
Output gap (per cent of GDP)*	-0.81	0.22	0.05	-0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01
Current account (per cent of GDP)*	0.16	0.05	0.08	0.04	0.02	0.02	0.03	0.03	0.03	0.02	0.01
Real effective exchange rate	0.02	0.07	0.04	-0.01	-0.05	-0.06	-0.06	-0.04	-0.03	-0.02	-0.01
Nominal effective exchange rate	0.00	-0.03	-0.02	-0.01	-0.01	0.00	0.00	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	-0.06	-0.26	-0.24	-0.18	-0.12	-0.07	-0.03	-0.01	0.00	0.01	0.02
EA wide nominal effective exchange rate	0.01	-0.06	-0.04	-0.03	-0.03	-0.01	0.01	0.02	0.03	0.03	0.03
Headline CPI Inflation*	-0.11	-0.19	-0.01	0.07	0.05	0.03	0.02	0.02	0.02	0.02	0.01
Consumer expenditure deflator	-0.11	-0.29	-0.30	-0.23	-0.18	-0.15	-0.13	-0.11	-0.09	-0.07	-0.06
GDP deflator	-0.07	-0.29	-0.31	-0.25	-0.19	-0.15	-0.13	-0.11	-0.09	-0.07	-0.06
Policy interest rate*	0.00	-0.15	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Government deficit (per cent of GDP)*	-0.73	0.05	-0.08	-0.01	0.01	0.01	0.00	-0.01	-0.01	0.00	0.00
Government debt (per cent of GDP)*	1.06	-0.48	-0.47	-0.51	-0.53	-0.53	-0.54	-0.54	-0.55	-0.55	-0.56

Notes: See table 9.

**Table 71. Spain, temporary government consumption shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.99	-0.01	0.28	0.25	0.13	0.04	0.00	0.00	0.01	0.02	0.02
Real consumption	-0.08	-0.09	0.00	0.05	0.06	0.07	0.08	0.10	0.11	0.11	0.10
Real investment	-1.72	1.31	1.19	0.49	0.03	-0.11	-0.10	-0.06	-0.03	-0.02	-0.03
Real exports	-0.73	-0.31	0.38	0.29	0.08	-0.01	-0.01	0.01	0.02	0.03	0.02
Real imports	-2.07	0.31	0.25	-0.06	-0.16	-0.08	0.05	0.14	0.16	0.14	0.11
Output gap (per cent of GDP)*	-0.77	0.01	0.09	0.08	0.10	0.08	0.04	0.01	0.00	0.00	0.01
Current account (per cent of GDP)*	0.48	-0.18	0.05	0.13	0.10	0.04	0.00	-0.03	-0.03	-0.03	-0.02
Real effective exchange rate	-0.05	-0.37	-0.40	-0.21	-0.01	0.11	0.14	0.12	0.08	0.05	0.04
Nominal effective exchange rate	0.00	-0.04	-0.02	-0.02	-0.01	-0.01	0.00	0.01	0.01	0.01	0.02
EA wide real effective exchange rate	-0.06	-0.26	-0.24	-0.18	-0.12	-0.07	-0.03	-0.01	0.00	0.01	0.02
EA wide nominal effective exchange rate	0.01	-0.06	-0.04	-0.03	-0.03	-0.01	0.01	0.02	0.03	0.03	0.03
Headline CPI Inflation*	-0.17	-0.47	0.00	0.27	0.24	0.13	0.03	-0.01	-0.02	-0.01	0.00
Consumer expenditure deflator	-0.17	-0.63	-0.63	-0.37	-0.13	0.00	0.03	0.02	0.00	-0.01	-0.02
GDP deflator	-0.15	-0.65	-0.64	-0.34	-0.10	0.02	0.04	0.03	0.00	-0.01	-0.01
Policy interest rate*	0.00	-0.15	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Government deficit (per cent of GDP)*	-0.77	0.05	-0.09	-0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.86	0.07	-0.33	-0.66	-0.76	-0.75	-0.71	-0.67	-0.65	-0.63	-0.62

Notes: See table 9.

## Government investment shock

**Table 72. Belgium, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-1.08	0.18	0.11	0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.04
Real consumption	-0.11	-0.09	-0.03	-0.02	-0.02	-0.02	-0.01	0.00	0.00	0.01	0.01
Real investment	-1.34	1.53	0.28	-0.13	-0.17	-0.14	-0.12	-0.12	-0.12	-0.12	-0.11
Real exports	-1.55	0.37	0.32	0.11	-0.01	-0.04	-0.04	-0.04	-0.05	-0.05	-0.05
Real imports	-1.88	0.45	0.26	0.06	-0.04	-0.06	-0.06	-0.06	-0.06	-0.06	-0.05
Output gap (per cent of GDP)*	-0.69	0.37	0.09	0.01	0.03	0.04	0.05	0.04	0.04	0.04	0.03
Current account (per cent of GDP)*	0.30	-0.15	0.03	0.05	0.04	0.03	0.03	0.02	0.02	0.01	0.01
Real effective exchange rate	0.06	0.09	0.03	-0.02	-0.04	-0.03	-0.02	-0.01	0.00	0.01	0.01
Nominal effective exchange rate	0.01	-0.02	-0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	-0.03	-0.22	-0.17	-0.10	-0.03	0.02	0.05	0.07	0.08	0.08	0.09
EA wide nominal effective exchange rate	0.04	-0.04	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.03	0.03
Headline CPI Inflation*	-0.07	-0.11	-0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.02	0.02
Consumer expenditure deflator	-0.07	-0.17	-0.19	-0.18	-0.15	-0.11	-0.08	-0.05	-0.03	-0.01	0.01
GDP deflator	-0.05	-0.27	-0.22	-0.14	-0.10	-0.08	-0.05	-0.03	-0.01	0.01	0.02
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.65	0.00	-0.06	0.00	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.79	-0.49	-0.54	-0.51	-0.50	-0.50	-0.52	-0.53	-0.54	-0.54	-0.54

Notes: See table 9.



**Table 73. Finland, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.96	0.11	0.05	0.01	-0.03	-0.05	-0.06	-0.07	-0.08	-0.09	-0.09
Real consumption	-0.08	-0.05	-0.01	-0.04	-0.07	-0.08	-0.08	-0.07	-0.08	-0.08	-0.09
Real investment	-1.34	0.84	0.32	0.03	-0.11	-0.17	-0.19	-0.21	-0.22	-0.21	-0.19
Real exports	-1.32	0.73	0.21	0.07	0.01	0.00	-0.01	-0.02	-0.03	-0.04	-0.04
Real imports	-2.06	0.72	0.17	-0.03	-0.10	-0.10	-0.09	-0.08	-0.08	-0.08	-0.07
Output gap (per cent of GDP)*	-0.72	0.24	0.10	0.09	0.11	0.09	0.05	0.03	0.03	0.03	0.02
Current account (per cent of GDP)*	0.50	0.06	0.01	-0.01	0.00	0.01	0.02	0.01	0.00	0.00	0.00
Real effective exchange rate	0.00	-0.09	-0.09	-0.04	0.00	0.02	0.04	0.06	0.07	0.07	0.07
Nominal effective exchange rate	0.01	-0.03	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02
EA wide real effective exchange rate	-0.03	-0.22	-0.17	-0.10	-0.03	0.02	0.05	0.07	0.08	0.08	0.09
EA wide nominal effective exchange rate	0.04	-0.04	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.03	0.03
Headline CPI Inflation*	-0.12	-0.19	0.03	0.09	0.07	0.04	0.03	0.03	0.03	0.02	0.01
Consumer expenditure deflator	-0.12	-0.30	-0.27	-0.18	-0.11	-0.07	-0.04	-0.01	0.02	0.04	0.04
GDP deflator	-0.08	-0.30	-0.27	-0.17	-0.10	-0.06	-0.02	0.01	0.03	0.05	0.05
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.82	0.00	-0.08	0.01	0.02	0.00	-0.01	0.00	0.01	0.01	0.00
Government debt (per cent of GDP)*	0.13	-0.66	-0.70	-0.71	-0.68	-0.66	-0.66	-0.65	-0.63	-0.60	-0.58

Notes: See table 9.

**Table 74. France, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.80	0.03	0.02	-0.01	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01
Real consumption	-0.15	-0.10	0.02	0.02	0.01	0.01	0.02	0.03	0.04	0.04	0.05
Real investment	-0.84	0.68	0.28	0.05	-0.02	-0.03	-0.04	-0.05	-0.06	-0.07	-0.07
Real exports	-1.42	0.47	0.26	0.08	0.02	0.00	0.00	-0.01	-0.02	-0.03	-0.04
Real imports	-2.65	0.53	0.34	0.14	0.03	0.00	-0.01	-0.01	-0.02	-0.02	-0.02
Output gap (per cent of GDP)*	-0.52	0.17	0.03	0.01	0.04	0.05	0.05	0.04	0.04	0.03	0.03
Current account (per cent of GDP)*	0.40	-0.02	-0.03	-0.04	-0.03	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01
Real effective exchange rate	0.03	-0.01	-0.04	-0.08	-0.09	-0.07	-0.05	-0.03	-0.01	0.00	0.02
Nominal effective exchange rate	0.01	-0.02	-0.01	-0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	-0.03	-0.22	-0.17	-0.10	-0.03	0.02	0.05	0.07	0.08	0.08	0.09
EA wide nominal effective exchange rate	0.04	-0.04	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.03	0.03
Headline CPI Inflation*	-0.11	-0.19	0.00	0.06	0.05	0.04	0.04	0.04	0.03	0.03	0.02
Consumer expenditure deflator	-0.11	-0.29	-0.29	-0.23	-0.18	-0.14	-0.10	-0.07	-0.03	0.00	0.02
GDP deflator	-0.09	-0.30	-0.29	-0.25	-0.19	-0.15	-0.10	-0.06	-0.03	0.00	0.03
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.73	0.00	-0.08	0.00	0.01	0.00	-0.01	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.42	-0.44	-0.50	-0.53	-0.54	-0.56	-0.59	-0.62	-0.64	-0.66	-0.67

Notes: See table 9.

**Table 75. Germany, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.68	0.04	0.00	-0.03	-0.04	-0.04	-0.05	-0.06	-0.07	-0.07	-0.08
Real consumption	-0.17	0.00	-0.01	-0.04	-0.06	-0.06	-0.05	-0.04	-0.03	-0.03	-0.03
Real investment	-0.81	0.67	0.11	-0.08	-0.12	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16
Real exports	-1.26	0.44	0.26	0.09	0.02	-0.01	-0.03	-0.04	-0.06	-0.07	-0.07
Real imports	-2.74	0.68	0.31	0.05	-0.05	-0.08	-0.07	-0.07	-0.07	-0.06	-0.05
Output gap (per cent of GDP)*	-0.51	0.13	0.09	0.10	0.07	0.06	0.05	0.05	0.04	0.03	0.02
Current account (per cent of GDP)*	0.61	-0.07	-0.02	-0.01	0.01	0.02	0.03	0.03	0.02	0.02	0.01
Real effective exchange rate	-0.04	-0.12	-0.06	-0.06	-0.04	0.01	0.05	0.08	0.10	0.11	0.11
Nominal effective exchange rate	0.02	-0.02	-0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.01
EA wide real effective exchange rate	-0.03	-0.22	-0.17	-0.10	-0.03	0.02	0.05	0.07	0.08	0.08	0.09
EA wide nominal effective exchange rate	0.04	-0.04	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.03	0.03
Headline CPI Inflation*	-0.16	-0.20	0.08	0.07	0.07	0.06	0.05	0.04	0.03	0.02	0.01
Consumer expenditure deflator	-0.16	-0.36	-0.28	-0.21	-0.14	-0.08	-0.03	0.02	0.05	0.08	0.09
GDP deflator	-0.16	-0.39	-0.28	-0.21	-0.13	-0.05	0.01	0.06	0.10	0.13	0.14
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.85	-0.01	-0.01	-0.02	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.26	-0.51	-0.57	-0.60	-0.65	-0.70	-0.73	-0.75	-0.75	-0.75	-0.73

Notes: See table 9.

**Table 76. Greece, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-1.34	0.25	0.23	0.14	0.05	0.01	0.00	-0.01	-0.02	-0.04	-0.06
Real consumption	-0.32	0.02	0.14	0.12	0.06	0.02	0.02	0.04	0.04	0.03	0.01
Real investment	-7.40	4.44	1.46	0.24	-0.17	-0.24	-0.22	-0.21	-0.22	-0.23	-0.22
Real exports	-1.12	0.16	0.30	0.14	0.02	-0.02	-0.02	-0.02	-0.03	-0.04	-0.04
Real imports	-2.65	0.88	0.50	0.10	-0.11	-0.16	-0.13	-0.09	-0.07	-0.06	-0.04
Output gap (per cent of GDP)*	-1.00	0.28	0.12	0.08	0.12	0.12	0.08	0.05	0.03	0.02	0.02
Current account (per cent of GDP)*	0.46	-0.28	-0.05	0.03	0.06	0.06	0.06	0.05	0.04	0.03	0.02
Real effective exchange rate	0.02	-0.07	-0.11	-0.12	-0.09	-0.05	-0.01	0.02	0.04	0.06	0.08
Nominal effective exchange rate	0.01	-0.03	-0.01	-0.01	0.00	0.00	0.01	0.01	0.02	0.02	0.02
EA wide real effective exchange rate	-0.03	-0.22	-0.17	-0.10	-0.03	0.02	0.05	0.07	0.08	0.08	0.09
EA wide nominal effective exchange rate	0.04	-0.04	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.03	0.03
Headline CPI Inflation*	-0.12	-0.22	0.00	0.07	0.07	0.06	0.05	0.05	0.04	0.04	0.02
Consumer expenditure deflator	-0.11	-0.34	-0.34	-0.27	-0.19	-0.14	-0.08	-0.04	0.01	0.04	0.06
GDP deflator	-0.06	-0.31	-0.35	-0.26	-0.17	-0.11	-0.06	-0.02	0.03	0.07	0.09
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.73	-0.01	-0.09	-0.01	0.02	0.01	0.00	-0.01	0.00	0.01	0.01
Government debt (per cent of GDP)*	2.19	-0.59	-0.58	-0.58	-0.56	-0.57	-0.61	-0.67	-0.70	-0.70	-0.69

Notes: See table 9.

**Table 77. Ireland, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.34	-0.20	-0.15	-0.11	-0.09	-0.07	-0.07	-0.07	-0.07	-0.08	-0.09
Real consumption	-0.08	-0.15	-0.20	-0.22	-0.23	-0.24	-0.24	-0.23	-0.23	-0.23	-0.22
Real investment	-0.39	0.02	0.05	0.00	-0.04	-0.09	-0.13	-0.17	-0.20	-0.22	-0.23
Real exports	-0.43	-0.22	0.00	0.07	0.06	0.03	0.01	0.00	-0.01	-0.02	-0.03
Real imports	-1.28	-0.13	0.06	0.08	0.03	-0.02	-0.06	-0.08	-0.09	-0.10	-0.10
Output gap (per cent of GDP)*	-0.16	0.01	0.00	0.02	0.05	0.06	0.06	0.05	0.05	0.04	0.03
Current account (per cent of GDP)*	0.60	-0.53	-0.32	-0.19	-0.13	-0.08	-0.03	0.01	0.03	0.04	0.04
Real effective exchange rate	0.06	0.08	0.05	0.00	-0.02	-0.02	-0.01	0.01	0.02	0.03	0.03
Nominal effective exchange rate	0.00	-0.05	-0.02	-0.01	-0.01	0.00	0.01	0.02	0.02	0.02	0.02
EA wide real effective exchange rate	-0.03	-0.22	-0.17	-0.10	-0.03	0.02	0.05	0.07	0.08	0.08	0.09
EA wide nominal effective exchange rate	0.04	-0.04	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.03	0.03
Headline CPI Inflation*	-0.03	-0.08	-0.04	0.01	0.02	0.02	0.02	0.03	0.03	0.02	0.02
Consumer expenditure deflator	-0.03	-0.11	-0.14	-0.13	-0.11	-0.09	-0.07	-0.05	-0.02	0.00	0.02
GDP deflator	-0.03	-0.12	-0.15	-0.13	-0.10	-0.08	-0.06	-0.03	-0.01	0.01	0.03
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.92	0.03	-0.03	-0.02	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.19	-0.53	-0.54	-0.59	-0.62	-0.63	-0.64	-0.65	-0.65	-0.64	-0.63

Notes: See table 9.

**Table 78. Italy, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.72	-0.19	0.01	0.03	-0.03	-0.08	-0.10	-0.10	-0.10	-0.09	-0.09
Real consumption	-0.04	-0.11	-0.10	-0.09	-0.09	-0.09	-0.09	-0.08	-0.07	-0.07	-0.07
Real investment	-1.02	0.56	0.29	-0.02	-0.17	-0.19	-0.16	-0.14	-0.13	-0.13	-0.12
Real exports	-1.04	0.06	0.22	0.13	0.03	-0.02	-0.03	-0.03	-0.03	-0.04	-0.04
Real imports	-2.84	0.79	0.15	-0.19	-0.23	-0.14	-0.05	-0.02	-0.02	-0.02	-0.03
Output gap (per cent of GDP)*	-0.48	-0.01	0.07	0.09	0.09	0.07	0.03	0.02	0.01	0.02	0.02
Current account (per cent of GDP)*	0.48	-0.26	0.02	0.10	0.08	0.04	0.01	0.00	0.00	0.00	0.00
Real effective exchange rate	-0.04	-0.31	-0.31	-0.11	0.06	0.12	0.11	0.08	0.06	0.06	0.05
Nominal effective exchange rate	0.02	-0.02	-0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.01
EA wide real effective exchange rate	-0.03	-0.22	-0.17	-0.10	-0.03	0.02	0.05	0.07	0.08	0.08	0.09
EA wide nominal effective exchange rate	0.04	-0.04	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.03	0.03
Headline CPI Inflation*	-0.18	-0.41	0.04	0.29	0.22	0.08	0.00	-0.01	0.00	0.01	0.01
Consumer expenditure deflator	-0.18	-0.58	-0.54	-0.26	-0.04	0.03	0.04	0.03	0.03	0.04	0.05
GDP deflator	-0.15	-0.57	-0.53	-0.25	-0.03	0.04	0.04	0.03	0.04	0.05	0.06
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.84	0.08	-0.08	-0.05	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.81	0.40	0.00	-0.48	-0.71	-0.72	-0.68	-0.65	-0.64	-0.65	-0.64

Notes: See table 9.

**Table 79. Netherlands, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-1.25	0.20	0.18	0.07	-0.01	-0.04	-0.05	-0.05	-0.06	-0.07	-0.07
Real consumption	-0.11	-0.11	0.15	0.21	0.11	0.00	-0.05	-0.07	-0.08	-0.11	-0.14
Real investment	-1.96	1.38	0.58	0.04	-0.16	-0.19	-0.17	-0.17	-0.17	-0.16	-0.14
Real exports	-1.60	0.37	0.28	0.08	-0.01	-0.03	-0.03	-0.03	-0.04	-0.04	-0.04
Real imports	-2.06	0.40	0.29	0.11	0.00	-0.05	-0.06	-0.07	-0.08	-0.08	-0.08
Output gap (per cent of GDP)*	-0.91	0.28	0.11	0.10	0.15	0.12	0.05	0.02	0.02	0.03	0.02
Current account (per cent of GDP)*	0.69	0.26	0.05	-0.09	-0.10	-0.06	-0.03	-0.02	-0.03	-0.04	-0.04
Real effective exchange rate	-0.03	-0.09	0.01	0.07	0.05	0.01	-0.01	0.00	0.01	0.01	0.00
Nominal effective exchange rate	0.00	-0.03	-0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.01
EA wide real effective exchange rate	-0.03	-0.22	-0.17	-0.10	-0.03	0.02	0.05	0.07	0.08	0.08	0.09
EA wide nominal effective exchange rate	0.04	-0.04	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.03	0.03
Headline CPI Inflation*	-0.14	-0.18	0.12	0.12	0.03	-0.01	0.00	0.02	0.03	0.02	0.01
Consumer expenditure deflator	-0.14	-0.31	-0.20	-0.08	-0.06	-0.07	-0.07	-0.05	-0.02	-0.01	0.00
GDP deflator	-0.10	-0.30	-0.19	-0.07	-0.05	-0.07	-0.07	-0.05	-0.02	0.00	0.00
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.77	-0.06	-0.10	0.05	0.07	0.02	-0.01	-0.01	0.01	0.02	0.01
Government debt (per cent of GDP)*	0.45	-0.68	-0.86	-0.84	-0.71	-0.62	-0.61	-0.62	-0.62	-0.60	-0.57

Notes: See table 9.

**Table 80. Austria, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.80	-0.12	-0.06	-0.07	-0.07	-0.06	-0.05	-0.04	-0.04	-0.03	-0.03
Real consumption	-0.09	-0.13	-0.10	-0.13	-0.13	-0.12	-0.11	-0.11	-0.10	-0.09	-0.08
Real investment	-1.17	0.79	0.29	0.01	-0.08	-0.09	-0.09	-0.11	-0.13	-0.14	-0.14
Real exports	-1.13	-0.10	0.10	0.07	0.01	-0.02	-0.03	-0.03	-0.03	-0.04	-0.03
Real imports	-2.15	0.28	0.22	0.07	-0.04	-0.08	-0.11	-0.12	-0.13	-0.13	-0.13
Output gap (per cent of GDP)*	-0.57	-0.01	-0.02	0.03	0.04	0.02	0.02	0.04	0.04	0.04	0.04
Current account (per cent of GDP)*	0.58	-0.17	-0.06	-0.02	0.00	0.02	0.02	0.02	0.02	0.02	0.02
Real effective exchange rate	0.06	0.06	0.06	0.03	-0.04	-0.06	-0.05	-0.05	-0.06	-0.05	-0.04
Nominal effective exchange rate	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	-0.03	-0.22	-0.17	-0.10	-0.03	0.02	0.05	0.07	0.08	0.08	0.09
EA wide nominal effective exchange rate	0.04	-0.04	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.03	0.03
Headline CPI Inflation*	-0.10	-0.19	0.07	0.07	-0.01	0.01	0.03	0.03	0.02	0.02	0.02
Consumer expenditure deflator	-0.09	-0.28	-0.21	-0.14	-0.15	-0.14	-0.11	-0.08	-0.07	-0.05	-0.03
GDP deflator	-0.05	-0.25	-0.21	-0.14	-0.15	-0.14	-0.11	-0.09	-0.08	-0.06	-0.04
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.82	0.01	-0.04	0.03	0.00	-0.03	-0.01	0.00	0.00	-0.01	0.00
Government debt (per cent of GDP)*	0.19	-0.46	-0.56	-0.57	-0.53	-0.55	-0.58	-0.58	-0.59	-0.60	-0.61

Notes: See table 9.

**Table 81. Portugal, temporary government investment shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-1.10	0.09	0.05	0.00	-0.03	-0.04	-0.04	-0.05	-0.05	-0.05	-0.04
Real consumption	0.00	-0.08	-0.11	-0.09	-0.08	-0.08	-0.08	-0.08	-0.06	-0.05	-0.02
Real investment	-1.59	1.01	0.42	0.10	-0.03	-0.08	-0.09	-0.10	-0.11	-0.11	-0.11
Real exports	-1.79	0.54	0.26	0.05	-0.04	-0.03	-0.01	0.00	-0.01	-0.02	-0.02
Real imports	-2.00	0.52	0.13	-0.06	-0.12	-0.11	-0.09	-0.08	-0.07	-0.06	-0.04
Output gap (per cent of GDP)*	-0.76	0.30	0.11	0.03	0.04	0.05	0.05	0.04	0.03	0.03	0.04
Current account (per cent of GDP)*	0.15	0.04	0.07	0.04	0.02	0.02	0.03	0.03	0.02	0.02	0.01
Real effective exchange rate	0.02	0.06	0.03	-0.01	-0.05	-0.05	-0.04	-0.03	-0.02	-0.01	0.00
Nominal effective exchange rate	0.01	-0.02	-0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	-0.03	-0.22	-0.17	-0.10	-0.03	0.02	0.05	0.07	0.08	0.08	0.09
EA wide nominal effective exchange rate	0.04	-0.04	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.03	0.03
Headline CPI Inflation*	-0.12	-0.18	0.00	0.08	0.07	0.04	0.03	0.03	0.02	0.02	0.02
Consumer expenditure deflator	-0.12	-0.29	-0.29	-0.21	-0.14	-0.10	-0.07	-0.04	-0.02	0.00	0.01
GDP deflator	-0.08	-0.29	-0.30	-0.22	-0.15	-0.10	-0.07	-0.04	-0.02	0.00	0.02
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.80	0.05	-0.09	-0.02	0.01	0.01	0.00	-0.01	-0.01	-0.01	-0.01
Government debt (per cent of GDP)*	1.06	-0.46	-0.45	-0.51	-0.55	-0.56	-0.57	-0.59	-0.60	-0.62	-0.63

Notes: See table 9.

**Table 82.** Spain, temporary government investment shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-1.01	-0.07	0.19	0.15	0.03	-0.06	-0.08	-0.08	-0.06	-0.05	-0.04
Real consumption	-0.09	-0.13	-0.06	-0.03	-0.02	-0.02	-0.01	0.01	0.02	0.03	0.03
Real investment	-1.85	1.05	0.91	0.27	-0.13	-0.23	-0.20	-0.14	-0.10	-0.09	-0.09
Real exports	-0.75	-0.36	0.29	0.20	0.00	-0.08	-0.07	-0.05	-0.03	-0.03	-0.03
Real imports	-2.11	0.22	0.13	-0.16	-0.25	-0.15	-0.02	0.05	0.07	0.06	0.04
Output gap (per cent of GDP)*	-0.72	0.07	0.12	0.09	0.10	0.08	0.04	0.01	0.00	0.01	0.02
Current account (per cent of GDP)*	0.48	-0.17	0.05	0.13	0.10	0.04	0.00	-0.02	-0.03	-0.03	-0.02
Real effective exchange rate	-0.04	-0.34	-0.36	-0.17	0.01	0.12	0.14	0.11	0.08	0.05	0.04
Nominal effective exchange rate	0.01	-0.02	-0.01	-0.01	-0.01	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	-0.03	-0.22	-0.17	-0.10	-0.03	0.02	0.05	0.07	0.08	0.08	0.09
EA wide nominal effective exchange rate	0.04	-0.04	-0.02	-0.01	-0.01	0.00	0.02	0.03	0.03	0.03	0.03
Headline CPI Inflation*	-0.17	-0.45	0.02	0.28	0.24	0.12	0.03	-0.01	-0.01	-0.01	0.00
Consumer expenditure deflator	-0.17	-0.61	-0.59	-0.32	-0.09	0.04	0.07	0.06	0.05	0.04	0.04
GDP deflator	-0.15	-0.62	-0.59	-0.29	-0.05	0.06	0.08	0.07	0.05	0.05	0.05
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.78	0.05	-0.09	-0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	0.89	0.11	-0.29	-0.61	-0.72	-0.72	-0.69	-0.66	-0.65	-0.65	-0.65

Notes: See table 9.

## Income tax shock

**Table 83.** Belgium, temporary income tax shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.40	0.03	0.06	0.03	0.01	-0.01	-0.01	0.00	0.00	0.00	0.01
Real consumption	-0.45	-0.27	-0.21	-0.18	-0.15	-0.14	-0.12	-0.10	-0.09	-0.07	-0.06
Real investment	-0.37	0.78	0.39	0.12	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Real exports	-0.78	0.09	0.20	0.13	0.06	0.02	0.01	0.00	0.00	0.00	0.01
Real imports	-0.71	0.08	0.11	0.04	-0.01	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03
Output gap (per cent of GDP)*	-0.27	0.08	0.02	-0.03	-0.03	-0.02	-0.01	-0.01	-0.01	0.00	0.00
Current account (per cent of GDP)*	-0.07	-0.04	0.05	0.08	0.07	0.06	0.05	0.05	0.05	0.04	0.04
Real effective exchange rate	-0.01	0.02	0.02	0.00	-0.02	-0.02	-0.02	-0.03	-0.03	-0.03	-0.04
Nominal effective exchange rate	-0.04	-0.05	-0.04	-0.03	-0.02	-0.01	0.00	0.00	0.00	0.01	0.01
EA wide real effective exchange rate	-0.08	-0.17	-0.16	-0.14	-0.11	-0.08	-0.05	-0.03	-0.02	-0.01	0.00
EA wide nominal effective exchange rate	-0.08	-0.12	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02
Headline CPI Inflation*	-0.01	-0.05	-0.03	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer expenditure deflator	-0.01	-0.06	-0.09	-0.10	-0.10	-0.10	-0.09	-0.09	-0.09	-0.08	-0.08
GDP deflator	-0.02	-0.13	-0.12	-0.10	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09
Policy interest rate*	0.00	-0.10	-0.08	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
Government deficit (per cent of GDP)*	-0.84	0.03	-0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.08	-0.66	-0.70	-0.67	-0.63	-0.60	-0.58	-0.57	-0.56	-0.55	-0.55

Notes: See table 9.

**Table 84.** Finland, temporary income tax shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.34	-0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.02
Real consumption	-0.61	-0.29	-0.19	-0.14	-0.11	-0.09	-0.06	-0.04	-0.02	-0.01	0.01
Real investment	-0.40	0.46	0.40	0.29	0.20	0.14	0.09	0.06	0.03	0.01	0.00
Real exports	-0.62	0.30	0.17	0.11	0.06	0.04	0.04	0.03	0.02	0.02	0.02
Real imports	-0.77	0.12	0.05	0.00	-0.03	-0.04	-0.03	-0.03	-0.02	-0.01	-0.01
Output gap (per cent of GDP)*	-0.29	-0.01	-0.02	-0.01	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00
Current account (per cent of GDP)*	0.14	0.14	0.08	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.02
Real effective exchange rate	-0.04	-0.07	-0.07	-0.06	-0.06	-0.06	-0.05	-0.05	-0.04	-0.03	-0.03
Nominal effective exchange rate	-0.05	-0.07	-0.05	-0.03	-0.02	-0.01	0.00	0.00	0.01	0.01	0.01
EA wide real effective exchange rate	-0.08	-0.17	-0.16	-0.14	-0.11	-0.08	-0.05	-0.03	-0.02	-0.01	0.00
EA wide nominal effective exchange rate	-0.08	-0.12	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02
Headline CPI Inflation*	-0.03	-0.08	-0.02	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01
Consumer expenditure deflator	-0.03	-0.11	-0.13	-0.12	-0.12	-0.11	-0.11	-0.10	-0.09	-0.08	-0.07
GDP deflator	-0.02	-0.11	-0.13	-0.13	-0.12	-0.11	-0.11	-0.10	-0.09	-0.08	-0.07
Policy interest rate*	0.00	-0.10	-0.08	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
Government deficit (per cent of GDP)*	-0.84	0.03	-0.02	0.00	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.31	-0.71	-0.70	-0.68	-0.65	-0.63	-0.62	-0.60	-0.59	-0.58	-0.56

Notes: See table 9.

**Table 85. France, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.48	-0.04	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04
Real consumption	-1.42	-0.32	-0.20	-0.14	-0.11	-0.08	-0.06	-0.03	-0.01	0.01	0.02
Real investment	-0.41	0.55	0.42	0.26	0.17	0.12	0.09	0.07	0.05	0.04	0.03
Real exports	-0.62	0.17	0.21	0.14	0.09	0.06	0.05	0.04	0.04	0.03	0.03
Real imports	-1.62	0.07	0.13	0.08	0.02	0.00	-0.01	-0.01	-0.01	0.00	0.00
Output gap (per cent of GDP)*	-0.35	0.00	-0.06	-0.06	-0.03	-0.02	-0.01	0.00	0.00	0.01	0.01
Current account (per cent of GDP)*	0.31	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Real effective exchange rate	-0.05	-0.09	-0.10	-0.10	-0.10	-0.09	-0.08	-0.07	-0.06	-0.05	-0.03
Nominal effective exchange rate	-0.04	-0.06	-0.05	-0.03	-0.02	-0.01	0.00	0.00	0.01	0.01	0.01
EA wide real effective exchange rate	-0.08	-0.17	-0.16	-0.14	-0.11	-0.08	-0.05	-0.03	-0.02	-0.01	0.00
EA wide nominal effective exchange rate	-0.08	-0.12	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02
Headline CPI Inflation*	-0.04	-0.13	-0.03	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Consumer expenditure deflator	-0.04	-0.17	-0.20	-0.19	-0.17	-0.16	-0.14	-0.13	-0.11	-0.09	-0.07
GDP deflator	-0.05	-0.18	-0.21	-0.21	-0.19	-0.17	-0.16	-0.14	-0.12	-0.10	-0.08
Policy interest rate*	0.00	-0.10	-0.08	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
Government deficit (per cent of GDP)*	-1.17	0.03	-0.04	0.00	0.01	0.00	-0.01	-0.01	-0.01	-0.01	0.00
Government debt (per cent of GDP)*	-0.21	-0.89	-0.90	-0.89	-0.88	-0.86	-0.86	-0.87	-0.87	-0.88	-0.89

Notes: See table 9.

**Table 86. Germany, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.38	0.02	0.05	0.05	0.04	0.03	0.03	0.03	0.02	0.01	0.01
Real consumption	-1.29	-0.04	0.05	0.05	0.03	0.02	0.02	0.01	0.01	0.01	0.00
Real investment	-0.33	0.60	0.33	0.16	0.08	0.04	0.02	0.00	-0.01	-0.02	-0.03
Real exports	-0.54	0.15	0.18	0.12	0.07	0.04	0.02	0.02	0.01	0.00	0.00
Real imports	-1.56	0.33	0.30	0.17	0.07	0.02	0.00	-0.01	-0.02	-0.02	-0.01
Output gap (per cent of GDP)*	-0.33	-0.01	0.01	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.00
Current account (per cent of GDP)*	0.41	-0.06	-0.05	-0.04	-0.02	-0.01	0.00	0.01	0.01	0.01	0.01
Real effective exchange rate	-0.08	-0.15	-0.10	-0.09	-0.06	-0.04	-0.01	0.01	0.02	0.03	0.03
Nominal effective exchange rate	-0.04	-0.06	-0.05	-0.03	-0.02	-0.01	0.00	0.00	0.01	0.01	0.01
EA wide real effective exchange rate	-0.08	-0.17	-0.16	-0.14	-0.11	-0.08	-0.05	-0.03	-0.02	-0.01	0.00
EA wide nominal effective exchange rate	-0.08	-0.12	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02
Headline CPI Inflation*	-0.07	-0.14	0.02	0.03	0.03	0.03	0.03	0.02	0.02	0.01	0.01
Consumer expenditure deflator	-0.07	-0.21	-0.19	-0.16	-0.13	-0.10	-0.08	-0.05	-0.04	-0.03	-0.02
GDP deflator	-0.10	-0.25	-0.20	-0.17	-0.13	-0.10	-0.06	-0.04	-0.02	0.00	0.01
Policy interest rate*	0.00	-0.10	-0.08	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
Government deficit (per cent of GDP)*	-0.77	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.04	-0.54	-0.60	-0.61	-0.62	-0.62	-0.63	-0.62	-0.62	-0.61	-0.60

Notes: See table 9.

**Table 87. Greece, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.75	0.10	0.15	0.12	0.08	0.05	0.04	0.04	0.03	0.02	0.02
Real consumption	-1.10	-0.11	-0.02	0.01	0.00	0.00	0.01	0.04	0.06	0.06	0.07
Real investment	-3.96	2.66	1.25	0.50	0.16	0.05	0.02	0.00	-0.02	-0.04	-0.05
Real exports	-0.52	0.01	0.19	0.14	0.07	0.03	0.02	0.02	0.01	0.01	0.01
Real imports	-1.51	0.36	0.27	0.10	-0.02	-0.05	-0.04	-0.01	0.01	0.03	0.04
Output gap (per cent of GDP)*	-0.58	0.09	0.04	0.04	0.06	0.05	0.04	0.02	0.01	0.01	0.01
Current account (per cent of GDP)*	0.31	-0.14	-0.02	0.04	0.06	0.06	0.05	0.04	0.03	0.02	0.01
Real effective exchange rate	-0.05	-0.10	-0.09	-0.07	-0.05	-0.02	-0.01	0.01	0.02	0.03	0.04
Nominal effective exchange rate	-0.06	-0.08	-0.06	-0.04	-0.03	-0.01	-0.01	0.00	0.01	0.01	0.01
EA wide real effective exchange rate	-0.08	-0.17	-0.16	-0.14	-0.11	-0.08	-0.05	-0.03	-0.02	-0.01	0.00
EA wide nominal effective exchange rate	-0.08	-0.12	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02
Headline CPI Inflation*	-0.04	-0.12	-0.01	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.01
Consumer expenditure deflator	-0.04	-0.16	-0.18	-0.15	-0.12	-0.09	-0.07	-0.05	-0.03	-0.02	-0.01
GDP deflator	0.00	-0.14	-0.18	-0.14	-0.10	-0.07	-0.05	-0.03	-0.02	0.00	0.01
Policy interest rate*	0.00	-0.10	-0.08	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
Government deficit (per cent of GDP)*	-0.69	0.00	-0.06	-0.01	0.01	0.01	0.00	-0.01	0.00	0.01	0.01
Government debt (per cent of GDP)*	0.98	-0.58	-0.65	-0.67	-0.65	-0.63	-0.63	-0.65	-0.65	-0.65	-0.63

Notes: See table 9.

**Table 88.** Ireland, temporary income tax shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.09	-0.08	-0.04	-0.02	0.00	0.01	0.03	0.03	0.04	0.05	0.05
Real consumption	-0.61	-0.47	-0.33	-0.22	-0.14	-0.08	-0.03	0.00	0.03	0.05	0.06
Real investment	0.00	0.23	0.32	0.29	0.24	0.19	0.15	0.11	0.07	0.04	0.02
Real exports	-0.18	-0.11	0.01	0.06	0.07	0.06	0.04	0.03	0.03	0.02	0.02
Real imports	-0.40	-0.23	-0.04	0.05	0.07	0.06	0.04	0.03	0.02	0.02	0.01
Output gap (per cent of GDP)*	-0.07	-0.07	-0.06	-0.04	-0.03	-0.02	-0.01	0.00	0.00	0.01	0.01
Current account (per cent of GDP)*	0.05	-0.18	-0.17	-0.14	-0.11	-0.08	-0.06	-0.03	-0.01	0.00	0.00
Real effective exchange rate	-0.04	-0.01	0.00	-0.01	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02
Nominal effective exchange rate	-0.07	-0.10	-0.07	-0.05	-0.03	-0.02	-0.01	0.00	0.01	0.01	0.01
EA wide real effective exchange rate	-0.08	-0.17	-0.16	-0.14	-0.11	-0.08	-0.05	-0.03	-0.02	-0.01	0.00
EA wide nominal effective exchange rate	-0.08	-0.12	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02
Headline CPI Inflation*	0.00	-0.03	-0.03	-0.02	-0.01	-0.01	0.00	0.00	0.01	0.01	0.01
Consumer expenditure deflator	0.00	-0.03	-0.06	-0.07	-0.08	-0.09	-0.09	-0.09	-0.08	-0.07	-0.06
GDP deflator	0.00	-0.03	-0.06	-0.07	-0.08	-0.08	-0.08	-0.08	-0.07	-0.06	-0.06
Policy interest rate*	0.00	-0.10	-0.08	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
Government deficit (per cent of GDP)*	-0.99	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.51	-0.82	-0.79	-0.77	-0.75	-0.73	-0.72	-0.71	-0.71	-0.70	-0.69

Notes: See table 9.

**Table 89.** Italy, temporary income tax shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.19	-0.14	-0.05	0.00	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Real consumption	-0.39	-0.36	-0.27	-0.19	-0.13	-0.09	-0.06	-0.03	-0.02	0.00	0.01
Real investment	-0.15	0.28	0.32	0.21	0.12	0.06	0.04	0.02	0.02	0.01	0.00
Real exports	-0.51	-0.04	0.12	0.13	0.08	0.05	0.03	0.02	0.01	0.01	0.01
Real imports	-0.81	-0.14	-0.02	-0.08	-0.12	-0.11	-0.08	-0.04	-0.02	-0.01	0.00
Output gap (per cent of GDP)*	-0.14	-0.11	-0.06	-0.03	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Current account (per cent of GDP)*	0.07	0.00	0.04	0.07	0.07	0.05	0.04	0.02	0.01	0.01	0.01
Real effective exchange rate	-0.02	-0.09	-0.17	-0.16	-0.11	-0.06	-0.03	-0.02	-0.02	-0.01	-0.01
Nominal effective exchange rate	-0.04	-0.07	-0.05	-0.03	-0.02	-0.01	0.00	0.00	0.01	0.01	0.01
EA wide real effective exchange rate	-0.08	-0.17	-0.16	-0.14	-0.11	-0.08	-0.05	-0.03	-0.02	-0.01	0.00
EA wide nominal effective exchange rate	-0.08	-0.12	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02
Headline CPI Inflation*	-0.03	-0.15	-0.09	0.02	0.07	0.05	0.03	0.02	0.01	0.01	0.01
Consumer expenditure deflator	-0.02	-0.17	-0.26	-0.24	-0.18	-0.13	-0.10	-0.08	-0.07	-0.06	-0.05
GDP deflator	-0.01	-0.17	-0.27	-0.24	-0.18	-0.13	-0.10	-0.08	-0.07	-0.06	-0.05
Policy interest rate*	0.00	-0.10	-0.08	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
Government deficit (per cent of GDP)*	-0.92	0.06	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.27	-0.37	-0.34	-0.45	-0.56	-0.62	-0.64	-0.65	-0.65	-0.66	-0.66

Notes: See table 9.

**Table 90.** Netherlands, temporary income tax shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.51	-0.03	0.10	0.09	0.06	0.04	0.03	0.03	0.02	0.02	0.02
Real consumption	-0.84	-0.61	-0.19	0.04	0.11	0.12	0.12	0.12	0.13	0.12	0.11
Real investment	-0.74	0.61	0.59	0.34	0.16	0.07	0.04	0.02	0.00	-0.01	-0.01
Real exports	-0.78	0.09	0.19	0.12	0.06	0.02	0.01	0.01	0.00	0.00	0.00
Real imports	-0.86	-0.05	0.13	0.12	0.09	0.06	0.05	0.04	0.04	0.04	0.04
Output gap (per cent of GDP)*	-0.40	-0.02	0.01	0.03	0.06	0.05	0.02	0.00	0.00	0.01	0.01
Current account (per cent of GDP)*	0.23	0.35	0.17	0.04	-0.02	-0.03	-0.02	-0.01	-0.01	-0.02	-0.01
Real effective exchange rate	-0.04	-0.07	-0.02	0.03	0.04	0.02	0.01	0.01	0.01	0.01	0.01
Nominal effective exchange rate	-0.05	-0.07	-0.05	-0.03	-0.02	-0.01	0.00	0.00	0.01	0.01	0.01
EA wide real effective exchange rate	-0.08	-0.17	-0.16	-0.14	-0.11	-0.08	-0.05	-0.03	-0.02	-0.01	0.00
EA wide nominal effective exchange rate	-0.08	-0.12	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02
Headline CPI Inflation*	-0.03	-0.09	0.02	0.05	0.02	-0.01	-0.01	0.00	0.01	0.01	0.00
Consumer expenditure deflator	-0.03	-0.13	-0.11	-0.06	-0.04	-0.05	-0.06	-0.05	-0.05	-0.04	-0.04
GDP deflator	-0.01	-0.12	-0.10	-0.05	-0.04	-0.05	-0.06	-0.06	-0.05	-0.04	-0.04
Policy interest rate*	0.00	-0.10	-0.08	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
Government deficit (per cent of GDP)*	-0.82	0.03	-0.07	-0.02	0.02	0.01	-0.01	-0.01	0.00	0.01	0.00
Government debt (per cent of GDP)*	-0.16	-0.65	-0.78	-0.83	-0.80	-0.75	-0.72	-0.72	-0.71	-0.69	-0.67

Notes: See table 9.

**Table 91. Austria, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.26	-0.09	-0.03	-0.02	-0.02	-0.02	-0.01	0.00	0.00	0.01	0.02
Real consumption	-0.53	-0.30	-0.23	-0.20	-0.17	-0.14	-0.11	-0.09	-0.07	-0.05	-0.04
Real investment	-0.22	0.52	0.42	0.24	0.14	0.09	0.06	0.04	0.02	0.01	0.00
Real exports	-0.56	-0.11	0.08	0.10	0.07	0.04	0.02	0.01	0.01	0.01	0.01
Real imports	-0.73	-0.05	0.09	0.07	0.03	-0.01	-0.03	-0.04	-0.04	-0.04	-0.04
Output gap (per cent of GDP)*	-0.21	-0.08	-0.06	-0.04	-0.03	-0.03	-0.03	-0.02	-0.01	-0.01	0.00
Current account (per cent of GDP)*	0.11	0.00	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Real effective exchange rate	0.01	0.05	0.04	0.03	0.00	-0.02	-0.03	-0.03	-0.04	-0.04	-0.04
Nominal effective exchange rate	-0.01	-0.03	-0.02	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.01	0.01
EA wide real effective exchange rate	-0.08	-0.17	-0.16	-0.14	-0.11	-0.08	-0.05	-0.03	-0.02	-0.01	0.00
EA wide nominal effective exchange rate	-0.08	-0.12	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02
Headline CPI Inflation*	-0.02	-0.07	0.00	0.01	-0.01	-0.01	0.00	0.01	0.00	0.01	0.01
Consumer expenditure deflator	-0.02	-0.09	-0.09	-0.08	-0.09	-0.10	-0.10	-0.09	-0.09	-0.08	-0.07
GDP deflator	0.01	-0.07	-0.09	-0.08	-0.09	-0.10	-0.10	-0.10	-0.09	-0.09	-0.08
Policy interest rate*	0.00	-0.10	-0.08	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
Government deficit (per cent of GDP)*	-0.89	0.03	-0.01	0.01	0.00	-0.01	-0.01	0.00	0.00	-0.01	-0.01
Government debt (per cent of GDP)*	-0.35	-0.70	-0.69	-0.67	-0.63	-0.62	-0.62	-0.61	-0.61	-0.61	-0.61

Notes: See table 9.

**Table 92. Portugal, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.32	-0.13	-0.04	-0.02	0.00	0.01	0.02	0.03	0.03	0.04	0.04
Real consumption	-0.28	-0.43	-0.29	-0.20	-0.13	-0.07	-0.03	0.00	0.03	0.05	0.07
Real investment	-0.41	0.30	0.38	0.29	0.20	0.15	0.11	0.09	0.06	0.04	0.03
Real exports	-0.82	0.09	0.14	0.08	0.03	0.01	0.01	0.02	0.02	0.02	0.02
Real imports	-0.61	-0.13	-0.03	-0.03	-0.04	-0.03	-0.01	0.00	0.02	0.03	0.04
Output gap (per cent of GDP)*	-0.24	-0.06	-0.03	-0.04	-0.03	-0.02	-0.01	0.00	0.01	0.01	0.01
Current account (per cent of GDP)*	-0.07	0.12	0.10	0.07	0.04	0.02	0.02	0.02	0.01	0.01	0.01
Real effective exchange rate	0.00	0.04	0.04	0.01	-0.01	-0.03	-0.03	-0.03	-0.02	-0.02	-0.01
Nominal effective exchange rate	-0.04	-0.05	-0.04	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00	0.01
EA wide real effective exchange rate	-0.08	-0.17	-0.16	-0.14	-0.11	-0.08	-0.05	-0.03	-0.02	-0.01	0.00
EA wide nominal effective exchange rate	-0.08	-0.12	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02
Headline CPI Inflation*	-0.01	-0.07	-0.05	-0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Consumer expenditure deflator	-0.01	-0.07	-0.12	-0.13	-0.12	-0.11	-0.10	-0.09	-0.07	-0.06	-0.05
GDP deflator	0.01	-0.07	-0.12	-0.14	-0.13	-0.12	-0.11	-0.09	-0.08	-0.07	-0.06
Policy interest rate*	0.00	-0.10	-0.08	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
Government deficit (per cent of GDP)*	-0.92	0.06	-0.03	-0.03	-0.02	-0.01	-0.01	-0.01	-0.01	0.00	0.00
Government debt (per cent of GDP)*	-0.17	-0.57	-0.59	-0.61	-0.64	-0.66	-0.67	-0.68	-0.68	-0.69	-0.69

Notes: See table 9.

**Table 93. Spain, temporary income tax shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.30	-0.22	-0.01	0.08	0.08	0.05	0.03	0.02	0.02	0.02	0.03
Real consumption	-0.52	-0.49	-0.31	-0.19	-0.11	-0.06	-0.01	0.02	0.04	0.06	0.07
Real investment	-0.46	0.23	0.64	0.50	0.27	0.11	0.04	0.01	0.00	0.00	0.00
Real exports	-0.35	-0.27	0.11	0.18	0.11	0.04	0.00	-0.01	0.00	0.00	0.01
Real imports	-0.66	-0.35	-0.05	-0.07	-0.13	-0.12	-0.07	-0.01	0.03	0.05	0.05
Output gap (per cent of GDP)*	-0.22	-0.16	-0.04	-0.01	0.02	0.03	0.02	0.01	0.01	0.01	0.01
Current account (per cent of GDP)*	0.12	0.06	0.07	0.09	0.09	0.07	0.04	0.02	0.01	0.00	0.00
Real effective exchange rate	-0.02	-0.11	-0.21	-0.20	-0.12	-0.05	0.00	0.02	0.03	0.02	0.02
Nominal effective exchange rate	-0.05	-0.06	-0.05	-0.03	-0.02	-0.01	0.00	0.00	0.00	0.01	0.01
EA wide real effective exchange rate	-0.08	-0.17	-0.16	-0.14	-0.11	-0.08	-0.05	-0.03	-0.02	-0.01	0.00
EA wide nominal effective exchange rate	-0.08	-0.12	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.02	0.02
Headline CPI Inflation*	-0.02	-0.18	-0.12	0.03	0.09	0.08	0.05	0.03	0.01	0.00	0.00
Consumer expenditure deflator	-0.02	-0.20	-0.31	-0.29	-0.20	-0.12	-0.07	-0.04	-0.03	-0.03	-0.03
GDP deflator	-0.01	-0.20	-0.33	-0.29	-0.20	-0.11	-0.06	-0.04	-0.03	-0.03	-0.03
Policy interest rate*	0.00	-0.10	-0.08	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	0.00
Government deficit (per cent of GDP)*	-0.88	0.08	-0.03	-0.04	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.19	-0.29	-0.37	-0.52	-0.63	-0.67	-0.68	-0.69	-0.69	-0.69	-0.69

Notes: See table 9.

## VAT shock

**Table 94. Belgium, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.24	0.09	0.10	0.04	0.00	-0.01	-0.02	-0.01	-0.01	-0.01	-0.01
Real consumption	-0.24	-0.06	-0.02	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
Real investment	-0.16	0.58	0.22	-0.02	-0.07	-0.05	-0.02	-0.02	-0.01	-0.01	-0.01
Real exports	-0.50	0.18	0.29	0.17	0.06	0.01	-0.01	-0.02	-0.02	-0.03	-0.04
Real imports	-0.43	0.19	0.24	0.14	0.05	0.01	-0.01	-0.02	-0.03	-0.04	-0.04
Output gap (per cent of GDP)*	-0.07	0.10	-0.03	-0.05	-0.04	-0.03	-0.02	-0.02	-0.02	-0.01	-0.01
Current account (per cent of GDP)*	-0.09	-0.04	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Real effective exchange rate	0.28	0.19	0.13	0.06	0.02	0.01	0.00	-0.01	-0.02	-0.03	-0.03
Nominal effective exchange rate	-0.04	-0.04	-0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	0.98	-0.33	-0.26	-0.18	-0.12	-0.08	-0.04	-0.01	0.01	0.01	0.02
EA wide nominal effective exchange rate	-0.09	-0.08	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.02
Headline CPI Inflation*	1.02	-1.03	-0.06	-0.03	-0.01	0.00	0.00	0.01	0.01	0.01	0.01
Consumer expenditure deflator	1.02	0.00	-0.07	-0.09	-0.10	-0.10	-0.10	-0.09	-0.09	-0.08	-0.07
GDP deflator	1.00	-0.05	-0.08	-0.07	-0.07	-0.07	-0.07	-0.07	-0.06	-0.06	-0.05
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.69	-0.05	0.00	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-1.24	-0.71	-0.68	-0.59	-0.52	-0.47	-0.45	-0.44	-0.43	-0.43	-0.43

Notes: See table 9.

**Table 95. Finland, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.19	0.11	0.14	0.09	0.03	0.01	0.02	0.02	0.01	0.00	0.00
Real consumption	-0.29	0.02	0.12	0.05	-0.01	-0.01	0.02	0.02	0.01	0.00	0.00
Real investment	-0.17	0.35	0.19	0.04	-0.01	-0.01	-0.02	-0.04	-0.05	-0.05	-0.04
Real exports	-0.43	0.32	0.20	0.12	0.06	0.04	0.03	0.02	0.01	-0.01	-0.02
Real imports	-0.43	0.26	0.18	0.06	-0.01	-0.01	0.00	0.00	-0.01	-0.02	-0.02
Output gap (per cent of GDP)*	-0.16	-0.09	-0.13	0.04	0.15	0.08	-0.01	-0.03	0.00	0.02	0.01
Current account (per cent of GDP)*	0.02	0.13	0.05	-0.02	-0.02	0.00	0.02	0.01	0.00	-0.01	0.00
Real effective exchange rate	0.29	-0.15	-0.10	-0.01	0.00	-0.03	-0.04	-0.02	0.00	0.01	0.00
Nominal effective exchange rate	-0.05	-0.05	-0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	0.98	-0.33	-0.26	-0.18	-0.12	-0.08	-0.04	-0.01	0.01	0.01	0.02
EA wide nominal effective exchange rate	-0.09	-0.08	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.02
Headline CPI Inflation*	0.72	-0.96	0.02	0.10	0.02	-0.02	0.00	0.03	0.03	0.01	0.00
Consumer expenditure deflator	0.72	-0.24	-0.22	-0.12	-0.10	-0.12	-0.12	-0.09	-0.06	-0.05	-0.04
GDP deflator	0.71	-0.23	-0.21	-0.11	-0.09	-0.11	-0.11	-0.08	-0.05	-0.04	-0.03
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.73	-0.13	-0.03	0.11	0.06	-0.02	-0.03	0.00	0.02	0.01	0.00
Government debt (per cent of GDP)*	-0.79	-0.69	-0.80	-0.71	-0.58	-0.53	-0.54	-0.55	-0.52	-0.49	-0.47

Notes: See table 9.

**Table 96. France, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.21	0.05	0.10	0.09	0.07	0.05	0.05	0.04	0.04	0.04	0.03
Real consumption	-0.51	-0.04	0.06	0.05	0.02	0.01	0.01	0.02	0.02	0.02	0.03
Real investment	-0.06	0.42	0.31	0.13	0.04	0.01	0.00	-0.01	-0.01	-0.02	-0.02
Real exports	-0.48	0.24	0.29	0.18	0.09	0.05	0.03	0.02	0.01	0.00	-0.01
Real imports	-0.68	0.28	0.34	0.19	0.05	-0.02	-0.05	-0.05	-0.05	-0.06	-0.06
Output gap (per cent of GDP)*	-0.11	-0.06	-0.16	-0.09	-0.01	0.03	0.03	0.03	0.03	0.02	0.02
Current account (per cent of GDP)*	0.07	-0.04	-0.04	-0.03	-0.01	0.00	0.00	0.01	0.00	0.00	0.00
Real effective exchange rate	0.51	-0.14	-0.15	-0.13	-0.11	-0.08	-0.06	-0.04	-0.03	-0.02	-0.02
Nominal effective exchange rate	-0.05	-0.04	-0.02	-0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	0.98	-0.33	-0.26	-0.18	-0.12	-0.08	-0.04	-0.01	0.01	0.01	0.02
EA wide nominal effective exchange rate	-0.09	-0.08	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.02
Headline CPI Inflation*	1.14	-1.43	-0.04	0.05	0.06	0.05	0.03	0.03	0.02	0.02	0.02
Consumer expenditure deflator	1.14	-0.29	-0.33	-0.28	-0.22	-0.17	-0.14	-0.11	-0.09	-0.07	-0.05
GDP deflator	1.17	-0.32	-0.36	-0.30	-0.24	-0.19	-0.15	-0.12	-0.10	-0.08	-0.06
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.66	-0.10	-0.04	0.05	0.05	0.02	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-1.37	-0.38	-0.48	-0.48	-0.45	-0.44	-0.45	-0.46	-0.47	-0.48	-0.49

Notes: See table 9.



**Table 97. Germany, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.31	0.08	0.11	0.11	0.10	0.10	0.09	0.07	0.06	0.04	0.03
Real consumption	-1.10	0.08	0.07	0.07	0.04	0.03	0.03	0.03	0.03	0.03	0.02
Real investment	-0.34	0.44	0.23	0.09	0.03	0.00	-0.03	-0.05	-0.06	-0.07	-0.07
Real exports	-0.34	0.29	0.30	0.21	0.13	0.08	0.04	0.02	0.00	-0.02	-0.04
Real imports	-1.26	0.46	0.33	0.16	0.01	-0.06	-0.09	-0.11	-0.11	-0.10	-0.09
Output gap (per cent of GDP)*	-0.29	-0.15	-0.02	0.13	0.09	0.08	0.08	0.07	0.06	0.05	0.03
Current account (per cent of GDP)*	0.22	-0.08	-0.07	-0.05	-0.01	0.02	0.03	0.04	0.04	0.03	0.03
Real effective exchange rate	1.05	-0.39	-0.25	-0.25	-0.20	-0.12	-0.06	0.00	0.03	0.06	0.07
Nominal effective exchange rate	-0.05	-0.04	-0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	0.98	-0.33	-0.26	-0.18	-0.12	-0.08	-0.04	-0.01	0.01	0.01	0.02
EA wide nominal effective exchange rate	-0.09	-0.08	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.02
Headline CPI Inflation*	1.53	-2.00	0.11	0.03	0.08	0.07	0.07	0.06	0.05	0.03	0.02
Consumer expenditure deflator	1.51	-0.49	-0.38	-0.35	-0.28	-0.20	-0.14	-0.08	-0.03	0.00	0.02
GDP deflator	1.40	-0.62	-0.45	-0.41	-0.32	-0.23	-0.14	-0.06	0.00	0.04	0.06
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.60	-0.14	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-1.33	-0.23	-0.32	-0.32	-0.38	-0.44	-0.49	-0.52	-0.54	-0.54	-0.53

Notes: See table 9.

**Table 98. Greece, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.22	0.02	0.13	0.10	0.03	-0.01	-0.01	0.01	0.02	0.02	0.02
Real consumption	-0.28	-0.08	0.11	0.15	0.06	-0.03	-0.04	-0.01	0.01	0.01	0.00
Real investment	-0.66	1.25	0.72	0.12	-0.16	-0.15	-0.05	0.01	0.01	-0.01	-0.03
Real exports	-0.34	0.05	0.22	0.17	0.07	0.03	0.01	0.01	0.00	-0.01	-0.01
Real imports	-0.43	0.23	0.40	0.26	0.07	-0.03	-0.03	-0.01	-0.02	-0.04	-0.06
Output gap (per cent of GDP)*	0.03	0.10	-0.11	-0.14	-0.02	0.05	0.03	0.00	-0.02	0.00	0.01
Current account (per cent of GDP)*	0.04	-0.06	-0.05	-0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.02
Real effective exchange rate	0.35	0.15	0.06	0.04	0.02	0.00	-0.02	-0.05	-0.06	-0.06	-0.06
Nominal effective exchange rate	-0.06	-0.06	-0.02	-0.01	0.00	0.00	0.01	0.01	0.02	0.01	0.01
EA wide real effective exchange rate	0.98	-0.33	-0.26	-0.18	-0.12	-0.08	-0.04	-0.01	0.01	0.01	0.02
EA wide nominal effective exchange rate	-0.09	-0.08	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.02
Headline CPI Inflation*	0.84	-0.77	-0.13	0.00	0.01	-0.01	-0.02	-0.01	0.00	0.01	0.01
Consumer expenditure deflator	0.82	0.04	-0.09	-0.09	-0.09	-0.09	-0.11	-0.12	-0.12	-0.11	-0.10
GDP deflator	0.82	0.04	-0.12	-0.11	-0.10	-0.10	-0.12	-0.14	-0.13	-0.12	-0.11
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.82	0.03	-0.11	-0.02	0.04	0.04	0.01	-0.01	-0.01	0.00	0.01
Government debt (per cent of GDP)*	-1.63	-0.88	-0.83	-0.83	-0.69	-0.54	-0.48	-0.49	-0.51	-0.52	-0.52

Notes: See table 9.

**Table 99. Ireland, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.08	-0.02	0.09	0.09	0.06	0.05	0.06	0.05	0.04	0.03	0.02
Real consumption	-0.36	-0.13	0.06	0.08	0.01	-0.02	0.01	0.03	0.03	0.02	0.03
Real investment	-0.02	0.09	0.20	0.16	0.08	0.04	0.01	-0.01	-0.03	-0.04	-0.05
Real exports	-0.19	-0.09	0.07	0.11	0.10	0.08	0.06	0.04	0.02	0.01	0.00
Real imports	-0.31	-0.12	0.08	0.12	0.08	0.04	0.02	0.01	0.00	0.00	-0.01
Output gap (per cent of GDP)*	0.01	-0.18	-0.18	0.05	0.14	0.06	0.00	0.01	0.03	0.02	0.01
Current account (per cent of GDP)*	0.20	-0.36	-0.16	-0.13	-0.11	-0.05	-0.01	0.00	0.00	0.01	0.01
Real effective exchange rate	0.61	-0.21	-0.07	0.03	-0.01	-0.06	-0.04	-0.01	-0.01	-0.01	-0.01
Nominal effective exchange rate	-0.07	-0.07	-0.03	-0.01	-0.01	0.00	0.01	0.02	0.02	0.02	0.02
EA wide real effective exchange rate	0.98	-0.33	-0.26	-0.18	-0.12	-0.08	-0.04	-0.01	0.01	0.01	0.02
EA wide nominal effective exchange rate	-0.09	-0.08	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.02
Headline CPI Inflation*	1.10	-1.38	0.10	0.12	-0.02	-0.04	0.02	0.04	0.02	0.00	0.01
Consumer expenditure deflator	1.09	-0.29	-0.19	-0.07	-0.09	-0.13	-0.12	-0.08	-0.07	-0.06	-0.05
GDP deflator	0.96	-0.28	-0.18	-0.08	-0.09	-0.12	-0.11	-0.07	-0.05	-0.05	-0.04
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.78	-0.09	-0.06	0.10	0.06	-0.03	-0.03	0.01	0.02	0.00	0.00
Government debt (per cent of GDP)*	-1.39	-0.46	-0.74	-0.74	-0.58	-0.53	-0.57	-0.58	-0.55	-0.53	-0.52

Notes: See table 9.

**Table 100. Italy, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.10	-0.04	0.06	0.07	0.04	0.01	0.00	0.00	0.00	0.00	0.00
Real consumption	-0.21	-0.16	-0.07	-0.03	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00
Real investment	-0.05	0.18	0.19	0.07	0.00	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01
Real exports	-0.33	0.07	0.21	0.17	0.08	0.03	0.01	0.00	0.00	-0.01	-0.02
Real imports	-0.47	-0.01	0.07	-0.02	-0.06	-0.04	-0.02	-0.01	-0.01	-0.01	-0.02
Output gap (per cent of GDP)*	-0.09	-0.12	-0.06	0.03	0.06	0.03	0.00	-0.01	0.00	0.00	0.00
Current account (per cent of GDP)*	0.01	-0.02	0.03	0.06	0.04	0.02	0.00	0.00	0.00	-0.01	-0.01
Real effective exchange rate	0.25	-0.18	-0.16	-0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Nominal effective exchange rate	-0.05	-0.05	-0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	0.98	-0.33	-0.26	-0.18	-0.12	-0.08	-0.04	-0.01	0.01	0.01	0.02
EA wide nominal effective exchange rate	-0.09	-0.08	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.02
Headline CPI Inflation*	0.81	-1.14	-0.02	0.14	0.09	0.02	0.00	0.01	0.02	0.01	0.01
Consumer expenditure deflator	0.81	-0.31	-0.33	-0.19	-0.11	-0.09	-0.09	-0.08	-0.06	-0.05	-0.04
GDP deflator	0.79	-0.30	-0.33	-0.19	-0.10	-0.08	-0.08	-0.07	-0.06	-0.04	-0.03
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.84	-0.03	-0.02	0.02	0.01	-0.01	0.00	0.00	0.00	0.00	0.00
Government debt (per cent of GDP)*	-1.58	-0.30	-0.42	-0.60	-0.64	-0.61	-0.59	-0.58	-0.59	-0.58	-0.58

Notes: See table 9.

**Table 101. Netherlands, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.33	0.10	0.23	0.18	0.07	0.01	0.00	0.00	0.00	0.00	-0.01
Real consumption	-0.45	-0.09	0.30	0.41	0.27	0.11	0.05	0.05	0.04	0.02	-0.01
Real investment	-0.37	0.58	0.42	0.08	-0.11	-0.13	-0.09	-0.06	-0.05	-0.04	-0.03
Real exports	-0.54	0.19	0.26	0.14	0.05	0.01	0.00	-0.01	-0.02	-0.03	-0.03
Real imports	-0.52	0.18	0.30	0.24	0.11	0.03	0.01	0.00	-0.01	-0.02	-0.03
Output gap (per cent of GDP)*	-0.09	-0.03	-0.20	-0.02	0.16	0.13	0.01	-0.04	-0.02	0.00	0.00
Current account (per cent of GDP)*	-0.05	0.26	0.11	-0.07	-0.11	-0.06	-0.02	-0.01	-0.02	-0.02	-0.02
Real effective exchange rate	0.51	-0.25	-0.06	0.12	0.11	0.03	-0.02	-0.02	0.00	-0.01	-0.02
Nominal effective exchange rate	-0.06	-0.05	-0.02	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	0.98	-0.33	-0.26	-0.18	-0.12	-0.08	-0.04	-0.01	0.01	0.01	0.02
EA wide nominal effective exchange rate	-0.09	-0.08	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.02
Headline CPI Inflation*	1.14	-1.51	0.16	0.19	0.02	-0.07	-0.03	0.02	0.03	0.01	0.00
Consumer expenditure deflator	1.13	-0.38	-0.21	-0.03	-0.01	-0.07	-0.11	-0.09	-0.06	-0.05	-0.05
GDP deflator	1.02	-0.35	-0.20	-0.01	0.00	-0.07	-0.10	-0.08	-0.05	-0.04	-0.04
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.61	-0.11	-0.15	0.11	0.14	0.03	-0.04	-0.02	0.01	0.02	0.01
Government debt (per cent of GDP)*	-0.86	-0.43	-0.81	-0.86	-0.63	-0.45	-0.44	-0.47	-0.48	-0.45	-0.43

Notes: See table 9.

**Table 102. Austria, temporary VAT shock**

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.14	-0.01	0.02	-0.01	-0.02	-0.02	-0.02	-0.01	-0.01	0.00	0.01
Real consumption	-0.19	-0.08	-0.03	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
Real investment	-0.13	0.29	0.21	0.05	-0.01	0.00	0.00	0.00	-0.01	-0.01	-0.01
Real exports	-0.41	0.00	0.16	0.15	0.08	0.03	0.00	-0.02	-0.03	-0.03	-0.04
Real imports	-0.42	0.05	0.20	0.16	0.10	0.05	0.01	-0.02	-0.04	-0.06	-0.07
Output gap (per cent of GDP)*	-0.12	-0.07	-0.04	0.01	-0.01	-0.03	-0.03	-0.01	-0.01	-0.01	0.00
Current account (per cent of GDP)*	-0.02	0.03	0.01	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	0.00
Real effective exchange rate	-0.09	0.10	0.14	0.12	0.04	0.00	-0.01	-0.03	-0.05	-0.05	-0.05
Nominal effective exchange rate	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	0.98	-0.33	-0.26	-0.18	-0.12	-0.08	-0.04	-0.01	0.01	0.01	0.02
EA wide nominal effective exchange rate	-0.09	-0.08	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.02
Headline CPI Inflation*	0.70	-0.86	0.06	0.01	-0.05	-0.01	0.02	0.01	0.01	0.01	0.01
Consumer expenditure deflator	0.69	-0.15	-0.09	-0.08	-0.12	-0.13	-0.11	-0.11	-0.10	-0.09	-0.07
GDP deflator	0.68	-0.09	-0.07	-0.06	-0.10	-0.11	-0.11	-0.11	-0.11	-0.10	-0.08
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.84	-0.06	0.01	0.05	0.00	-0.01	0.00	0.01	0.00	0.00	0.00
Government debt (per cent of GDP)*	-0.98	-0.73	-0.77	-0.68	-0.58	-0.57	-0.56	-0.54	-0.54	-0.54	-0.55

Notes: See table 9.

**Table 103.** Portugal, temporary VAT shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.26	0.02	0.08	0.09	0.06	0.03	0.03	0.03	0.03	0.03	0.02
Real consumption	-0.34	-0.13	0.02	0.11	0.10	0.07	0.06	0.06	0.07	0.07	0.06
Real investment	-0.24	0.38	0.27	0.14	0.06	0.03	0.02	0.01	0.00	-0.01	-0.02
Real exports	-0.52	0.24	0.24	0.11	0.01	-0.02	-0.01	0.01	0.01	0.00	-0.01
Real imports	-0.49	0.14	0.22	0.16	0.06	0.02	0.02	0.04	0.04	0.03	0.02
Output gap (per cent of GDP)*	-0.05	0.02	-0.13	-0.04	0.07	0.07	0.02	-0.01	0.00	0.01	0.01
Current account (per cent of GDP)*	0.02	0.07	0.06	0.00	-0.03	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01
Real effective exchange rate	0.19	0.16	0.10	0.05	0.02	-0.01	-0.02	-0.02	-0.01	0.00	0.00
Nominal effective exchange rate	-0.04	-0.03	-0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	0.98	-0.33	-0.26	-0.18	-0.12	-0.08	-0.04	-0.01	0.01	0.01	0.02
EA wide nominal effective exchange rate	-0.09	-0.08	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.02
Headline CPI Inflation*	0.99	-1.06	-0.14	0.01	0.04	0.03	0.01	0.01	0.01	0.02	0.01
Consumer expenditure deflator	0.98	-0.05	-0.18	-0.17	-0.13	-0.10	-0.09	-0.07	-0.06	-0.04	-0.03
GDP deflator	1.00	-0.03	-0.16	-0.16	-0.12	-0.09	-0.08	-0.06	-0.05	-0.03	-0.02
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.68	-0.05	-0.07	0.05	0.05	0.01	-0.02	-0.01	0.00	0.01	0.01
Government debt (per cent of GDP)*	-1.41	-0.63	-0.62	-0.59	-0.52	-0.48	-0.49	-0.51	-0.51	-0.50	-0.49

Notes: See table 9.

**Table 104.** Spain, temporary VAT shock

Year	1	2	3	4	5	6	7	8	9	10	11
Real GDP level	-0.22	-0.01	0.26	0.27	0.15	0.04	-0.01	-0.02	-0.01	0.01	0.01
Real consumption	-0.43	-0.03	0.13	0.11	0.06	0.04	0.04	0.05	0.06	0.05	0.05
Real investment	-0.20	0.48	0.70	0.29	-0.08	-0.21	-0.18	-0.11	-0.04	-0.01	-0.01
Real exports	-0.22	-0.18	0.29	0.34	0.14	-0.01	-0.05	-0.03	-0.01	0.00	0.00
Real imports	-0.43	0.12	0.26	-0.01	-0.21	-0.20	-0.07	0.03	0.08	0.07	0.04
Output gap (per cent of GDP)*	-0.07	-0.22	-0.17	0.03	0.14	0.11	0.04	0.00	-0.01	-0.01	0.00
Current account (per cent of GDP)*	0.07	-0.04	-0.01	0.10	0.12	0.07	0.02	-0.02	-0.03	-0.03	-0.02
Real effective exchange rate	0.63	-0.22	-0.40	-0.29	-0.11	0.03	0.09	0.08	0.05	0.02	0.01
Nominal effective exchange rate	-0.05	-0.05	-0.02	-0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01
EA wide real effective exchange rate	0.98	-0.33	-0.26	-0.18	-0.12	-0.08	-0.04	-0.01	0.01	0.01	0.02
EA wide nominal effective exchange rate	-0.09	-0.08	-0.03	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.02
Headline CPI Inflation*	1.26	-1.63	-0.21	0.14	0.21	0.16	0.07	0.00	-0.02	-0.01	0.00
Consumer expenditure deflator	1.25	-0.36	-0.57	-0.43	-0.22	-0.07	0.00	0.00	-0.02	-0.03	-0.03
GDP deflator	1.22	-0.35	-0.61	-0.43	-0.20	-0.05	0.01	0.00	-0.02	-0.03	-0.03
Policy interest rate*	0.00	-0.14	-0.06	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Government deficit (per cent of GDP)*	-0.67	-0.09	-0.02	0.03	0.02	0.01	0.01	0.01	0.01	0.00	0.00
Government debt (per cent of GDP)*	-1.59	-0.24	-0.31	-0.48	-0.55	-0.56	-0.54	-0.50	-0.48	-0.47	-0.47

Notes: See table 9.