

FISCAL STABILISATION PLANS AND THE OUTLOOK FOR THE WORLD ECONOMY

*Patrick Van Brusselen**

The topic of counter-cyclical fiscal policies has been put squarely under the spotlights since the outbreak of the current world-wide financial and economic crisis in September 2008. As governments have devised billion dollar stimulus packages, debates have raged in both the media and academia surrounding the effectiveness of such measures. This paper brings together material written on fiscal stabilisation plans in 2009 and a more recent macroeconomic projection for the world economy, which was made in early 2010. It attempts to provide an overview of the theory and empirical evidence on the effects of fiscal policies, placed in the current context of global recession and financial distress. It then goes on to address the question of where the world economy is headed given the now generally unsustainably high levels of public sector deficits and debt and given the possibility that the global financial crisis will have lasting adverse effects on potential output levels. This text is a very much abridged version of the full paper (80 pages in length) that was presented at the Bank of Italy's Fiscal Policy Workshop, held in Perugia on 25-27 March 2010. The full paper can be obtained upon simple email request sent to the author.

1 Economic stabilisation policies in theory

1.1 The basic fiscal policy setup

During the Great Depression years of the 1930s, John Maynard Keynes explained that the cause of the high unemployment was insufficient demand. Aggregate demand had fallen to a level below that necessary to ensure the full and optimal utilisation of the economy's productive capacities, in terms of both labour and capital utilisation. Left to themselves, economies could remain in such a state of insufficient demand indefinitely. The answer to this deficiency was for the government to boost demand and bring the level of aggregate demand up to the level of optimal aggregate supply, thus ensuring full employment and stable inflation.

Government intervention in the economy happens through both the expenditure side and the income side. On the expenditure side, government outlays are, in part, linked to mechanisms laid down in laws. These public expenditures are commonly referred to as non-discretionary or entitlement spending. Other spending items are called discretionary, because governments can decide to change the level of spending on these items without going through changes in legislation. Most income is usually raised through taxation rates, which are usually laid down in laws and are thus non-discretionary.

Changes in the business cycle have a direct influence on government income and expenditure levels, even without any changes in discretionary spending. Indeed, in a recession, unemployment levels rise and lead to automatic increases in unemployment benefits paid out. This in turn tends to mitigate the effect of the cyclical downturn on income and employment. Similarly, a recession can lead to a decline in household incomes and push households into lower average tax brackets. This tends to increase after-tax incomes and mitigate the effect of the cyclical downturn on income and employment, while leading to reduced tax receipts for the government.

* Federal Planning Bureau, Brussels, Belgium. E-mail: pvb@plan.be

The views expressed in the paper are those of the author and should not be taken to represent the views or policy recommendations of the Belgian Federal Planning Bureau.

However, alongside the working of the government's automatic fiscal stabilisers, a government can also intervene directly in the economy through discretionary fiscal policy, enhancing or counterbalancing the effects of automatic stabilisers.

1.2 *Insights from the Hicksian IS-LM analysis*

In discussing the effectiveness of monetary and fiscal policy, two polar cases can be analysed in the standard Hicksian IS-LM framework. In this framework, recall that the IS curve or schedule represents the combinations of interest rates and aggregate output levels for which the goods market is in equilibrium. It is negatively sloped because a higher level of the interest rate reduces investment spending. The LM curve represents the combinations of interest rates and aggregate output levels for which real money balances (and the bond market) are in equilibrium. It is positively sloped because a higher level of the interest rate reduces the demand for real money balances and an increase in aggregate income raises the demand for real money balances.

First, there is the *classical case* in which the LM curve becomes vertical. A vertical LM schedule signals that demand for real money balances is completely insensitive to the interest rate. This is called the classical case because it represents the situation corresponding to the *quantity theory of money*, which states that for a given price vector, the level of real output is completely determined by the supply of nominal money balances. In this situation, fiscal policy is completely ineffective in stimulating the economy while monetary policy can have a maximum effect on output. Indeed, an increase in the money supply shifts the LM schedule out to the right, leading to a strong increase in output and a parallel decline in the interest rate. An increase in government expenditure, which shifts the IS curve up and to the right, would lead to a complete crowding out of private spending, thus pushing up the interest rate and leaving the output level unchanged.

Second, there is the case of the *liquidity trap*, in which the LM curve becomes horizontal and where changes in the quantity of money are unable to shift it. In this case, households are prepared to hold any amount of real money balances rather than increase their portfolio balance of less liquid bonds. Changes in the stock of money in circulation have no effect on the LM curve, implying that monetary policy no longer affects the interest rate, no longer affects investment and savings decisions, and no longer affects output and income. This is the situation that presents itself when nominal interest rates fall to their zero lower bound. Households then prefer to hold cash balances rather than invest in less liquid bonds that yield zero interest. Note that an economy can also find itself in a liquidity trap with a positive interest rate, as in the case of a seizing up of credit linked to increased perceptions of market or counterparty risk. If this situation leads to lower private final demand, fiscal policy can be relatively potent, as an increase in government spending will not lead to any significant crowding out of private consumption and investment.

Having reviewed the potential for economic stimulus through fiscal policy in the case of the *classical model* and in the case of a *liquidity trap*, we now turn to a summary analysis of fiscal policy in the usual IS-LM framework. An increase in government spending or a decline in taxation brings about an increase in both output and in the interest rate. For any rise in public spending, equilibrium output must rise by the change in spending multiplied by the value of the fiscal spending multiplier. In an open economy operating in a flexible exchange rate regime, the rise in the interest rate would lead to a rise in the external value of the country's currency and to a deterioration in the country's current account balance. In the absence of any crowding out and upward pressure on the interest rate, the economy's equilibrium output would rise unambiguously.

1.3 Bridging the divide with the New Keynesian perspective

In a noteworthy attempt to breach the divide that has appeared between various strands of macroeconomic approaches since the beginning of the global financial crisis, recent literature has indicated that though differences do exist between more traditional Keynesian and the New Keynesian approaches, these differences can often be largely explained in terms of modelling assumptions.

Indeed, recent research indicates that even in the framework of a modern, state-of-the-art New Keynesian macroeconomic model, the basic findings of the more traditional Keynesian perspective on the usefulness of public stabilisation policies still hold (Woodford, 2010). This research indicates that both monetary and fiscal policies are essential policy tools, but that their effectiveness is state-dependant, that it changes with their degree of coordination, and that timing and expectations matter. The New Keynesian macroeconomic models would produce government spending multipliers of around unity when monetary policy is coordinated with fiscal policy, ensuring that real interest rates do not rise. If monetary policy does not stabilise real interest rates and if the economy is operating around its potential output level, real interest rates would rise and the public spending multiplier would fall below one, possibly even becoming nil or negative. The multiplier can however be significantly larger than one in these models, inasmuch as the economy is operating below potential and if monetary authorities act to reduce real interest rates. The research finds that a large public multiplier is to be expected in the case where the nominal interest rate falls to the zero lower bound, as the higher inflation generated by public spending would reduce the real interest rate.

The research also attempts to shed light on the question of the optimal size of discretionary public spending plans in the face of a recession, supporting the view that the optimal size of a public stabilisation plan depends on the output loss relative to the economy's potential and on perceptions as to the timing and duration of the increase in public spending. Indeed, confirming other recent findings (Krugman, 2008), the research indicates that the larger the negative output gap, the larger the optimal policy response: the fiscal stabilisation package should go a long way in closing the output gap if the gap is large, but should remain much more limited in the case of a less pronounced or cyclical downturn. At the same time, the effectiveness of a public spending programme depends on the duration of the rise in spending. If the increase in public spending is expected to persist even after a recovery in private sector output, the expected increase in real interest rates would once again reduce the potency of the fiscal stabilisation plans.

2 Optimal design of fiscal stabilisation programmes

Standard economic theory indicates that in situations where there exist developed and functioning financial markets and an independent central bank with the appropriate know-how, monetary policy is usually the best response to an effective or anticipated downturn in economic activity, due to the speed with which monetary authorities can modify market interest rates. Even though it may take several quarters before the full impact of a change in the monetary policy stance is felt in the economy, the first effects materialise quite rapidly and implementation lags are, in any case, shorter than those usually associated with budgetary processes.

In all cases, an economic downturn will also lead to an autonomous counter-cyclical fiscal policy through the working of the automatic fiscal stabilisers. However, if the expected downturn appears to be particularly sudden and large, there is a case that can be made for an accompanying expansionary and discretionary fiscal policy. This is particularly relevant in situations where monetary authorities have all but exhausted the scope for conventional monetary policy intervention through reductions in policy interest rates. It has also been shown to be the optimal

response in the face of uncertainty as to the true impact of monetary and fiscal policy options. Furthermore, recent research indicates that an active discretionary fiscal policy based on counter-cyclical public spending can be more important for growth than a fiscal policy based only on automatic fiscal stabilisers.

When monetary policy is deemed insufficient to stabilise the economy on its own, or in the case of a liquidity trap, an expansionary fiscal policy should be devised so as to correspond to a number of basic principles. There are the now well-known three “Ts”: an expansionary fiscal policy should be timely, targeted and temporary (Elmendorf and Furman, 2008). Then, there are the three “Cs”: an expansionary fiscal policy should also be contingent, credible and coordinated.

All in all, poorly crafted fiscal stabilisation packages might result in too little economic boost coming too late, and lead only to rising interest rates and increased public borrowing and debt. In this case, having no fiscal stimulus could be better than a badly thought-out stimulus plan, in limiting the present value of the sum of current and future output losses.

3 Empirical evaluations of fiscal multipliers

The following section presents the values of fiscal multipliers that are found through the historical narrative record method, through the analysis of the impulse-responses of variable autoregressive models and through macroeconomic model simulation experiments.

Evidence on multipliers from empirical macroeconomic models leads to a number of important conclusions. Looking at all the results compiled from narrative records, VAR impulse-responses, econometric models and general equilibrium models, the range of multipliers is very wide indeed. Government spending multipliers vary between -3.8 and $+3.8$; tax cut multipliers vary between -4.8 and $+3.0$.

Results vary most widely for multiplier estimates derived from VAR models. However, it has been shown that estimates are very sensitive to specifications and assumptions in all types of empirical models. Studies have highlighted the important role of the monetary policy reaction function in multiplier evaluations, underscoring the necessity of coordination between fiscal and monetary policies.

Results also indicate that exchange rates play a crucial role in open-economy models, underscoring here the importance of international policy coordination. Finally, another set of model features or assumptions are found to be crucial in deriving multiplier estimates; these are linked to the way the model handles liquidity constraints, credibility issues regarding long-term fiscal balance, forward-looking behaviour and rationality issues.

4 An evaluation of the effects of the euro area recovery plan of 2008

This section presents a tentative evaluation of the national Recovery Plans put forward by individual EU governments in the wake of the European Commission’s Recovery Plan proposal. The macroeconomic effects of the effective implementation of these plans have been evaluated with the NIME model. The main effects of the implied Euro area Recovery Plan are presented in terms of deviations from a baseline scenario that does not include these measures.

The European Commission’s *European Economic Recovery Plan* of 26 November, 2008, called for the swift implementation of a public spending and/or tax cut programme of roughly 1.5 per cent of the EU’s GDP (Commission, 2008). This would come in the form of various types of aid for business investments (e.g., through direct aid and loan guarantees), other public works

Table 1

Range of Fiscal Multiplier Estimates for the US

Item	Narrative Record Models		VAR/SVAR models		Econometric Models		GE / DSGE Models	
	Low	High	Low	High	Low	High	Low	High
Public spending multipliers	1.0	1.4	-3.77	3.68	-0.6	1.6	0.0	3.9
Tax cut multipliers	-	3.0	-4.75	2.64	-0.4	1.3	-2.63*	-0.23*

* Results for a large economy from the IMF's Global Fiscal Model (see Botman *et al.*, 2006).

programmes, tax cuts aiming to boost consumption expenditure, and cuts in social security contributions aiming to boost labour demand. The recovery plans could allow EU Member States to engage in temporary fiscal stabilisation (deficit spending) and increase their budget deficits without violating the terms of the EU's revised Stability and Growth Pact, as the Pact's "exceptional circumstances" clause allows countries to post temporary and limited budget deficits¹ as long as their medium-term cyclically-adjusted budgetary position is projected to return to balance or surplus.

On 2 December, 2008, the EcoFin Council approved the Commission's proposed Recovery Plan, based on a proposal of an overall 1.5 per cent of GDP, EU-wide fiscal stimulus package. By late February 2009, the sum of fiscal stimulus (public spending and tax cut) measures put forward by EU governments was estimated to reach 106 billion euros at the level of the 27 EU Member States (Saha and Von Weisäcker, 2009). If one adds to this figure the 263.8 billion euros in measures put forward in the form of government loan and credit guarantees for non-financial enterprises, one comes up with a total EU-wide commitment of 369.8 billion euros. For the euro area² (Euro-12), direct fiscal measures are estimated to total 73 billion euros. Additional credit and loan guarantees to non-financial corporates could provide another 169.85 billion euros, leading to a grand total of 271.6 billion euros or 3 per cent of the estimated nominal GDP of 2008 at the Euro-12 level.

Though the total figure of 369.8 billion euros budgeted in the framework of the economic recovery plans of the 27 EU Member States is impressive, a large part of this sum consists of credit and loan guarantees extended by national governments to the non-financial corporate sector. These guarantees and credit lines constitute large contingent liabilities for governments; however, a figure for an effective fiscal stimulus which includes this support most likely overestimates the true impact of the stimulus plans in terms of their potential impact on real economic output and employment.

In view of assessing the potential real output effects of these plans, we assume that the effective stimulus consists of the announced fiscal spending and tax cut measures, to which we add half of the amount budgeted under the heading of credit lines and loan guarantees to the

¹ See Article 1 of Council Regulation (EC) No 1056/2005 on exceptional excessive deficits.

² The NIME model's "euro area" comprises the following twelve countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Spain and Portugal.

Table 2

Main Effects of the Euro Area Economic Recovery Plan
(deviations from baseline level in percent, except where otherwise noted)

Item	2009	2010	2011	2012	2013	2014	2015
Real GDP	0.77	0.62	0.45	0.31	0.19	0.11	0.06
Real private consumption	0.23	0.18	0.10	0.05	0.00	-0.04	-0.08
Employment	0.14	0.11	0.06	-0.02	-0.07	-0.10	-0.10
Employment (difference, thousands of persons)	200	163	84	-25	-107	-150	-149
Consumer price inflation rate (difference, percent)	0.00	0.22	0.50	0.76	0.99	1.19	1.35
Nominal short term Interest rate (difference, percent of GDP)	0.17	0.34	0.44	0.47	0.44	0.39	0.33
Nominal effective exchange rate	-0.20	-0.58	-1.00	-1.49	-1.90	-2.18	-2.35
Fiscal position (difference, percent of GDP)	-0.60	-0.67	-0.75	-0.85	-0.92	-0.98	-1.03
Current account position (difference, percent of GDP)	-0.19	-0.21	-0.28	-0.37	-0.46	-0.53	-0.58

No international fiscal policy coordination: fiscal stimulus is simulated within the Euro-12 area only.

Short-term interest rates are endogenously determined by a Taylor-type rule.

Exchange rates are endogenously determined by an uncovered interest parity condition; a minus (-) sign indicates currency appreciation.

No long-run fiscal solvency rule is imposed.

non-financial business sector. For the Euro-12 area, this leads to a total effective economic stimulus package of 157.93 billion euros, representing 1.7 per cent of the Euro-12's nominal GDP of 2008.

In evaluating the macroeconomic effects of the euro area economic recovery package, we assume the presence of both inside and outside implementation lags, leading to a spend-out schedule in which one half of the package impacts the economy in 2009 and the remaining half affects the Euro-12 economy in 2010. For the sake of simplicity, we assume that the entire increase in public spending comes in the form of increased consumption of goods and services and that the reductions in taxes take the form of temporarily lower taxes on labour income. In both cases, we opt for policy measures that are associated with what can be viewed as relatively high short-run multiplier effects; the simulation thus arguably provides an upper bound on the macroeconomic effects that can be expected from the NIME model for the Euro-12 economic stabilisation plan.

Finally, the recovery plans are simulated using a baseline projection that corresponds to a projection of the world economy in the current economic environment. This allows the macroeconomic effects of the stimulus plan to capture possible state-dependant effects from prevailing low inflation, low – but still positive – nominal short-term interest rates, rising unemployment, and rising household saving rates in the Euro-12 area.

The main macroeconomic effects of the euro area fiscal stabilisation plan are presented in Table 2. In the first year of its implementation, the plan would raise Euro-12 GDP by 0.77 per cent with respect to the baseline. The initial effect of the euro-12 recovery plan would be to increase private sector output, creating about 200 thousand jobs in response to the rise in public consumption. The ensuing rise in household income then goes on to raise private consumption expenditure.

The second half of the stimulus package affects the economy in 2010, raising GDP by 0.62 per cent. This lesser impact is due to a number of factors. First, the somewhat higher inflation reduces the size of the real amount of stimulus in 2010. Secondly, a larger part of the stimulus package leaks out in the form of higher real imports, which produce a deterioration in the area's current account balance. Finally, the fiscal stimulus leads to a slight increase in nominal interest rates as the area's negative output gap is reduced and as inflation picks up.

Over the period 2011-15, the effects of the stimulus package on output decline, and real GDP gradually falls back toward its baseline level. As of 2012, higher inflation, higher interest rates and import leakages reverse the initial employment gains. The area's fiscal position deteriorates by a full percentage point of GDP while the area's current account deteriorates by 0.58 percentage points of GDP.

5 Where is the world economy headed? Insights from a model-based medium-term projection

In this section, a tentative projection for the world economy is proposed for the period 2010-18. Though there are an unusually high number of risks and uncertainties surrounding the unwinding of the global financial and economic crises, the NIME model is used to project a baseline scenario for the world economy over the coming years, conditional to a number of technical assumptions. NIME is a macroeconomic model with microeconomic foundations for consumption and investment decisions, short-run wage and price stickiness, stock-flow interactions and a long-run supply-driven "steady-state" equilibrium. The projection indicates that although fiscal stimulus plans will undoubtedly provide a temporary boost to world output, they will also most likely prove to be insufficient to prevent a sharp decline in real GDP growth rates and will not allow the major economies of the world to escape falling into a period of very low rates of inflation.

5.1 Evolution of the structural variables underlying the euro area economy

The results of the macroeconomic projection are determined in part by the model's reactions to past cyclical conditions, and in part by the model's long-run structural trends. While the short run is mainly determined by cyclical movements, the fundamental determinants of the projection's medium-term results are to be found in such variables as the evolution of an area's demographics, the evolution of hours worked per person, the evolution of trend hourly labour productivity and structural unemployment.

Table 3 presents the evolutions of the structural variables underlying the projection results for the euro area. Strikingly, it indicates that all of the core determinants of trend real private sector output are projected to lead to reduced growth rates of real output and GDP over the 2010-18 period.

Over the 1997-2007 period, demographics made a positive contribution to euro area growth. Indeed, over that period, total population increased at an annual average rate of 0.5 per cent.

Table 3

The Euro Area: Main Structural Developments Underlying the Projection Results

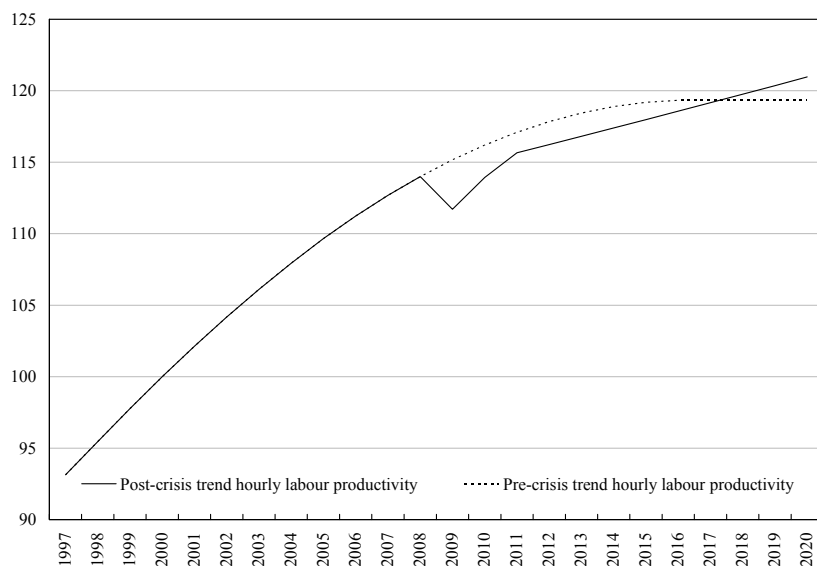
Item	Average 1997-2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average 2010-18
1. Population	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2
2. Working-age population	0.3	0.4	0.3	0.1	0.0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1
3. Trend labour supply (persons)	0.9	0.8	0.6	0.5	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
4. Trend hours worked per person, private sector	-0.5	-0.4	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
5. Trend total hours worked, private sector	0.7	0.5	-0.3	-0.9	-1.0	-0.2	0.1	0.1	0.2	0.1	0.0	-0.1	-0.2
6. Trend hourly labour productivity, private sector	2.0	1.2	-2.0	2.0	1.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8
7. Trend private sector potential output	2.7	1.6	-2.4	1.1	0.5	0.3	0.6	0.6	0.7	0.6	0.5	0.4	0.6
8. Trend inflation rate (consumption deflator)	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
9. Structural rate of unemployment (level)	8.2	8.1	8.1	8.5	9.0	8.8	8.6	8.5	8.4	8.3	8.2	8.2	8.5

All figures reported are year-on-year growth rates of yearly averages, unless otherwise specified.

Population growth temporarily reached 0.7 per cent in 2004 but has since been in steady decline. Population is expected to have increased by just 0.4 per cent in 2009 and growth rates are projected to fall to no more than 0.1 per cent per annum by 2015. The working-age population fared worse than total population: the working-age population increased on average by 0.3 per cent per year over 1997-2007, but growth is expected to have fallen to just 0.3 per cent in 2009. The level of the working-age population should remain more or less flat in 2010-11 and decline as of 2012. The area's labour supply fared somewhat better over the recent past, rising at an annual average rate of 0.9 per cent over 1997-2007. The labour supply is expected to have increased by 0.8 per cent in 2008 and 0.6 per cent in 2009 and is projected to expand at an annual average rate of 0.2 per cent over 2010-18.

Figure 1

Euro Area Private Sector Hourly Labour Productivity
(index of trend, year 2000=100)

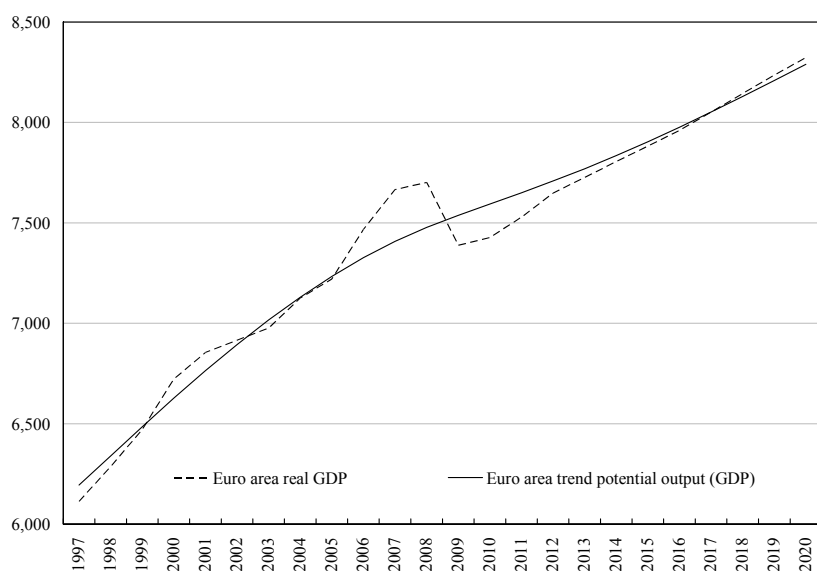


Total hours worked per person employed in the private sector followed a marked trend decline of -0.5 per cent per year over the 1997-2007 period. This steadily declining trend has been apparent since at least the early 1970s and is assumed to persist through 2018.

As for private sector trend labour productivity growth,³ Table 3 indicates that trend productivity increased at an annual average rate of 2 per cent over 1997-2007. However, this average figure hides the fact that trend private sector labour productivity growth was gradually declining, from 2.6 per cent growth in 1997 to just 1.3 per cent in 2007. Labour productivity growth is estimated to have subsequently fallen to 1.2 per cent in 2008. Then, due to the specific effects that the global financial crisis⁴ (GFC) is thought to have had on such factors as investment, capital utilisation rates and government-backed labour hoarding schemes in 2009, productivity is expected to have declined by 2 per cent in 2009. After 2009, it is assumed that labour

Figure 2

Euro Area Output Gap Projection
(levels, billions of chained (2000) euros)



³ Private sector labour productivity, measured in terms of units of real output per hour of labour services, is our preferred indicator of the evolution of euro area labour productivity, due to the methodological and practical difficulties involved in attempts to arrive at an economically relevant and accurate measure of deflated non-market public sector output and productivity.

⁴ The term "global financial crisis" refers to the difficulties that the world economy faced as of August 2007, linked to the outbreak of global financial market turmoil and world-wide downturns in economic activity.

productivity will regain some of the lost ground, rising by 2 per cent in 2010 and 1.5 per cent in 2011, as the private sector cuts costs and rationalises its production processes in order to expand output and increase profit margins. However, these relatively robust increases in labour productivity are assumed to be only a short-term burst, as labour productivity is further assumed to settle on a new trend growth rate of 0.5 per cent per year over the 2012-18 period. As shown in Figure 2, this positive, albeit historically low, rate of trend labour productivity growth, in combination with the trends that are assumed for the labour supply and for hours worked per person, will, however, ensure that the euro area's output gap closes by the end of the projection period.

The subject of the trend rate of labour productivity growth after the onset of the GFC continues to be the object of much debate, but it seems that a relatively wide consensus has formed around the notion that labour productivity in the euro area will have declined significantly in the immediate aftermath of the global financial crisis. The line of reasoning is that the crisis will durably affect the cost and availability of private funds for investment, thus reducing the number of investment projects that remain profitable and that are effectively financed. This could then affect the area's overall rate of technological progress and innovation, leading to lower rates of output growth than would have been observed had capital been more easily available.

Furthermore, it is thought that the GFC will also have significant and persistent effects on the labour market, as college graduates face greater difficulties in finding first-time jobs and as workers lose their positions, thus letting valuable human capital depreciate. The loss in human capital is expected to persist throughout the projection period, as relatively low GDP growth through 2018 pushes up unemployment and leads to longer spells of unemployment, which are typically associated with a loss of skills and an increase in structural unemployment. Table 3 indicates that the current economic crisis is expected to raise the structural rate of unemployment from 8.1 per cent of the labour force in 2008 to 9 per cent in 2011. The structural unemployment rate should then gradually decline, reaching 8.2 per cent by 2018, thanks to a steady decline in the working-age population and a slower expansion of the labour supply.

5.2 *The outlook for the euro area over the 2011-18 period*

Over the 2011-18 period, the euro area's potential real GDP is projected to rise at a yearly average rate of about 0.8 per cent. As indicated in Table 3, this should come mainly from a rise in trend hourly labour productivity, with a marginal contribution from an increase in the labour supply, while the declining trend of hours worked per person per year will continue to weigh negatively on potential output, as it has done at least since the early 1970s.

Real GDP growth is projected to pick up significantly in 2011 and 2012, progressing by respectively 1.4 per cent and 1.6 per cent over the year. At the same time, total final domestic demand should fall, led by significant declines in both private consumption expenditure and household investment in residential buildings. Hence, the rise in real GDP can only be attributed to the strong upswing in real net exports.

Though private consumption levelled out in 2010 thanks to the massive support for final demand from both fiscal and monetary policy, household expenditure is projected to resume its decline as of 2011; this decline should then extend right through to the end of the projection period. Household consumption is negatively affected by the massive decline in the volume of labour services demanded over the 2009-11. This reduction in the demand for labour combines with a significant decline in hours worked per person and, at best, modest increases in real wage rates to limit the rise in household real disposable income and to raise the household saving rate.

Figure 3
Contributions to Real GDP Growth in the Euro Area
(percent)

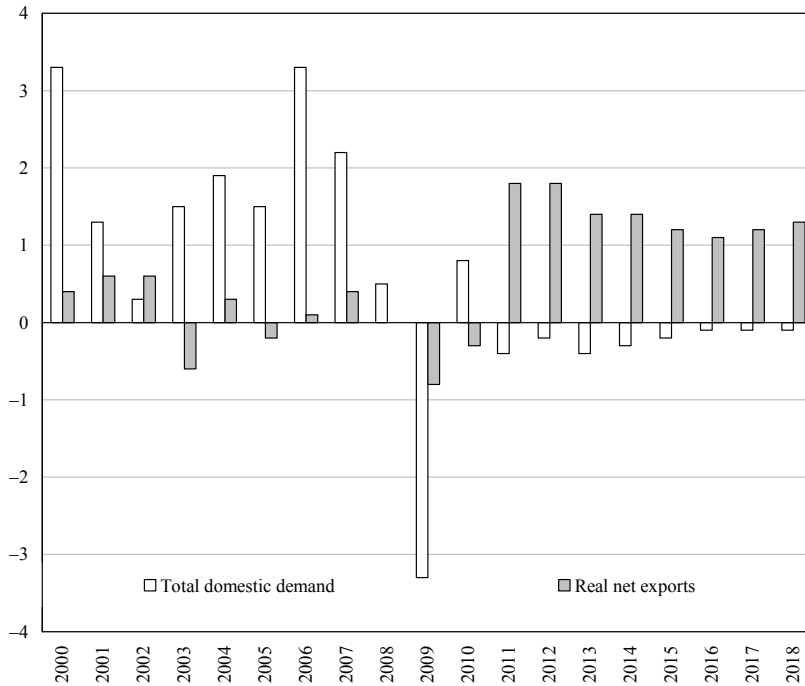
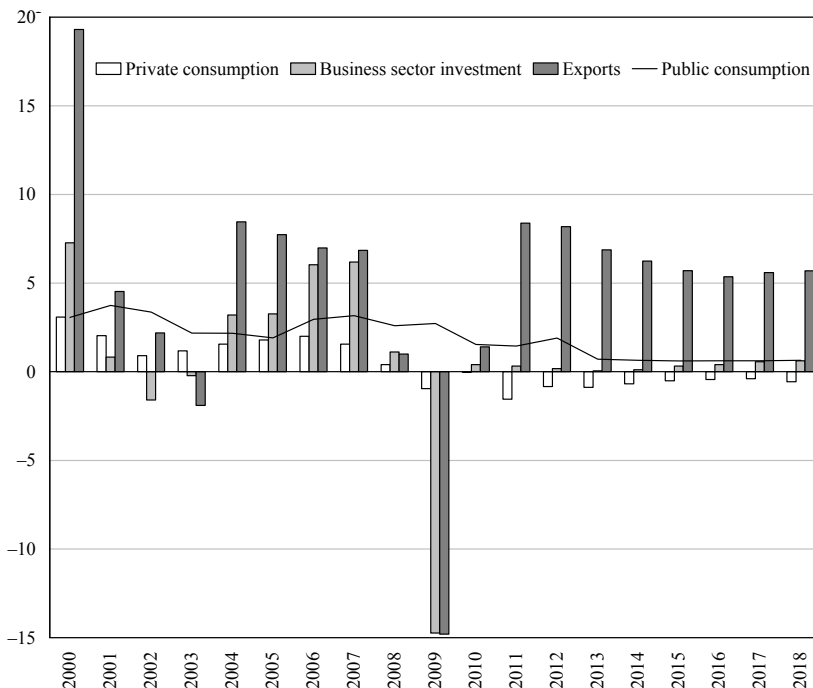


Figure 4
Selected Components of Demand in the Euro Area
(y-o-y, percent change)



Tepid growth in household take-home wage rates stems largely from an expected slowdown in trend labour productivity growth. Indeed, real wage growth is indexed on the evolution of long-run labour productivity, which will tumble from a growth rate of 1.2 per cent in 2008 to a growth rate of just 0.5 per cent after 2011. This lower expected rate of trend labour productivity growth reflects the historical long-run trend of the euro area’s real GDP growth rate, as well as the current widely held view that the GFC will lead to a one-off decline in the level of labour productivity and a slight permanent decline in the growth rate of labour productivity (see Table 3, item 6). The GFC is expected to have a negative effect on human capital – knowledge and skills – through an increase in the structural unemployment rate. It could also weigh on the other determinants of total factor productivity by curtailing business expenditure on research and development, by reducing innovation and investment, by generating generally less buoyant “animal spirits” and by reducing entrepreneurial tolerance to risk-taking. Figure 1 shows how the global financial and

economic crisis led to a revision in the assumptions we make for trend hourly labour productivity, leading to a decline in the level of the euro area's potential real GDP to below what it was expected to have been previous to the GFC.

Household investment in residential buildings is also projected to decline significantly over the 2011-18 period. This decline comes on the back of a steady decline in population growth, and marks the return of investment levels back

towards what they were previous to their massive rise over 1990-07. As shown in Figure 5, the projected growth rates of gross residential investment should lead to a decline in the growth of the stock of residential buildings, which is expected to fall to about nil by 2018.

Business sector investment is projected to recover only very slowly from its precipitous decline of nearly 15 per cent in 2009. After a first small rise of 0.4 per cent in 2010, growth in business sector investment should remain very subdued, picking up only weakly and towards the end of the projection horizon as the euro area's output gap is closed and as rising output and depreciation push capacity utilisation rates back up to more normal levels. Hence, over the 2011-18 period, business gross fixed capital investment is projected to increase at an average rate of no more than 0.3 per cent per year.

With household income and consumption straining to progress over the 2011-18 period, with high unemployment rates and a rise in structural unemployment, and with private sector capacity utilisation rates still below normal levels over the first years of the projection period, pricing power and upward price pressure is projected to be mild in the euro area. After a 0.8 per cent *yoY* rise in 2010, consumer prices are projected to pursue a very gradual rise back towards the ECB's preferred range of inflation, slightly below the 2 per cent mark.

We already noted that euro area GDP growth over the 2011-18 period is projected to be underpinned by the area's real net exports, while domestic demand should recover only painstakingly slowly from the "Great Recession" of 2009. After plunging 14.8 per cent in 2009, export volumes are forecast to begin to recover in 2010, rising by 1.4 per cent on the year. Exports are then projected to increase significantly over the next two years, rebounding first from the low level to which they had fallen, and then rising moderately as the euro area's foreign effective demand increases.

Export growth is not projected to be underpinned by favourable exchange rate developments. Indeed, while the euro currency is projected to depreciate against the US dollar and the Japanese yen over the projection period, it should appreciate against other world currencies. This would then translate into a moderate nominal effective exchange rate appreciation over 2011-18.

Figure 5

Residential Investment and the Housing Stock
(index, year 2000=100)

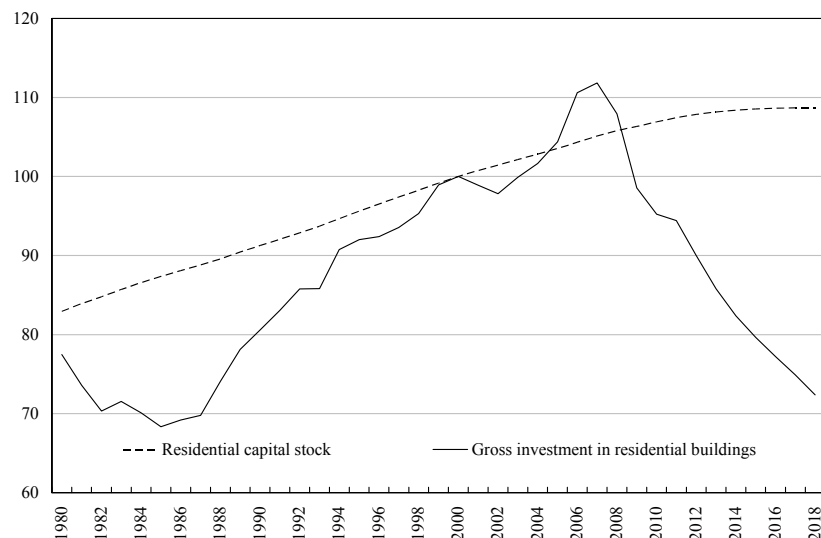


Table 4

Baseline Projection Results for the Euro Area

Item	Average 1997- 2007	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average 2010- 2018
I. Real aggregate demand and supply												
1. Private consumption	2.0	-0.9	-0.0	-1.5	-0.8	-0.9	-0.7	-0.5	-0.4	-0.3	-0.4	-0.6
2. Government consumption	1.9	2.4	1.1	2.0	2.2	1.2	0.8	0.6	0.6	0.7	0.9	1.1
3. Gross fixed capital formation	3.2	-10.2	-0.7	0.1	-1.0	-1.1	-0.8	-0.5	-0.3	-0.1	-0.1	-0.5
- of which: residential buildings	1.8	-8.7	-3.4	-0.9	-4.7	-4.7	-3.9	-3.2	-2.8	-2.6	-2.8	-3.2
- of which: business sector	4.2	-14.7	0.4	0.3	0.2	-0.0	0.0	0.2	0.3	0.5	0.5	0.3
4. Exports	6.7	-14.8	1.4	8.4	8.2	6.4	5.4	5.0	4.8	4.9	5.0	5.5
5. Imports	6.8	-12.5	3.2	-0.9	-0.4	0.2	0.2	0.6	0.8	0.9	0.9	0.6
6. Gross Domestic Product	2.3	-3.9	0.5	1.4	1.6	0.9	0.8	0.9	0.9	1.0	1.1	1.0
7. Output gap (<i>deviation of GDP from trend GDP, percent</i>)	0.5	-2.0	-2.1	-1.5	-0.6	-0.4	-0.4	-0.3	-0.2	-0.1	0.1	-0.6
8. Contributions to real GDP growth												
a) Total domestic expenditure	2.2	-3.3	0.8	-0.4	-0.2	-0.4	-0.4	-0.2	-0.1	-0.0	-0.0	-0.1
b) Net exports	0.1	-0.8	-0.3	1.8	1.8	1.4	1.2	1.1	1.0	1.0	1.1	1.1
II. Deflators												
1. Private consumption	1.7	0.0	0.8	0.6	0.7	1.0	1.1	1.2	1.2	1.4	1.5	1.1
2. Exports	0.6	0.3	0.2	-0.0	-0.2	-0.5	-0.7	-0.9	-1.1	-1.3	-1.5	-0.7
3. Imports	1.0	-5.1	2.8	-0.0	0.1	0.1	0.3	0.4	0.4	0.6	0.6	0.6
4. Gross domestic product	1.7	1.5	0.0	0.1	0.2	0.4	0.6	0.7	0.7	0.7	0.7	0.4
III. Financial Markets												
1. Short-term interest rate (<i>level</i>)	3.4	1.2	1.2	1.1	1.3	1.6	1.8	2.0	2.2	2.5	3.0	1.9
2. Long-term interest rate (<i>level</i>)	4.6	3.6	2.9	2.9	3.0	3.1	3.2	3.4	3.5	3.6	3.9	3.3
3. Spot exchange rate, euro/USD (<i>level x 100</i>)	90.8	71.8	76.3	79.8	82.7	84.2	84.8	84.6	83.9	82.9	81.8	82.3
4. Spot exchange rate, euro/USD (<i>+: depreciation</i>)	-0.3	5.6	6.3	4.5	3.8	1.8	0.7	-0.2	-0.9	-1.1	-1.4	1.5
5. Nominal effective exchange rate (<i>+: depreciation</i>)	-3.4	-9.1	0.4	-0.8	-1.1	-2.3	-2.9	-3.6	-4.2	-4.2	-4.1	-2.5
6. Real effective exchange rate (<i>+: depreciation</i>)	1.1	-5.8	2.1	1.2	1.3	0.4	0.2	-0.0	-0.2	0.1	0.6	0.6

Table 4 (continued)

Baseline Projection Results for the Euro Area

Item	Average 1997- 2007	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average 2010- 2018
IV. Labour Market												
1. Labour supply	1.1	0.2	0.2	0.2	0.0	0.4	0.4	0.4	0.4	0.3	0.2	0.3
2. Employment, in hours	0.9	-3.5	-0.9	-0.9	0.6	1.0	1.0	0.8	0.5	0.2	-0.1	0.2
. of which private sector	0.9	-3.9	-1.2	-1.3	0.7	1.3	1.2	1.0	0.6	0.2	-0.2	0.3
3. Unemployment rate (percent of civilian labour force)	8.7	9.4	10.4	11.3	10.4	9.4	8.4	7.5	7.0	6.6	6.5	8.6
4. Nominal wage rate, private sector	2.7	0.9	1.6	1.0	0.4	0.5	0.9	1.2	1.4	1.6	1.6	1.1
5. Real take-home wage rate, private sector	0.9	2.9	0.9	0.1	-0.4	-0.5	-0.2	0.0	0.2	0.2	0.1	0.0
6. Real producer wage rate, private sector	1.2	-0.1	1.4	0.9	-0.3	0.1	0.3	0.6	0.8	0.9	1.0	0.6
7. Contemporaneous labour productivity, private sector	1.4	-0.6	1.5	2.3	1.0	-0.1	-0.1	0.1	0.4	0.8	1.2	0.8
V. Household sector												
1. Total real means	3.4	2.8	0.3	-0.7	-0.5	-0.7	-0.5	-0.4	-0.3	-0.3	-0.4	-0.4
- of which: real disposable income	1.8	-0.8	-0.1	-1.7	-1.0	-0.9	-0.7	-0.5	-0.4	-0.4	-0.5	-0.7
2. Net saving by households (percent of disposable income)	9.6	9.3	9.7	9.5	9.3	9.2	9.2	9.2	9.2	9.2	9.1	9.3
VI. Fiscal sector												
1. Net lending (+) or borrowing (-) (percent of GDP)	-2.0	-6.1	-7.2	-7.3	-7.3	-7.1	-7.0	-6.9	-6.9	-7.0	-7.2	-7.1
2. General government gross debt (percent of GDP)	69.9	78.4	85.2	91.3	96.9	102.7	108.2	113.5	118.6	123.6	128.6	107.6
VII. International environment												
1. Foreign effective output	5.2	-8.4	3.4	4.9	4.7	4.0	4.0	4.1	4.2	4.2	4.1	4.2
2. Current account balance (percent of GDP)	0.5	-0.4	-0.8	1.2	3.1	4.4	5.5	6.3	7.0	7.5	8.1	4.7
VIII. Miscellaneous												
1. Real GDP per capita	1.8	-4.5	0.2	1.0	1.4	0.7	0.7	0.7	0.8	0.9	1.0	0.8
2. Total population	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2

All figures are year-on-year growth rates of yearly averages, unless otherwise specified.

Real variables are in chained (2000) euro; price indexes are also chain-type measures.

The NIME bloc for the euro area represents the 12 Member States that composed the euro area up to 2007.

The real effective exchange rate of the euro area is defined here as the ratio of the euro area's foreign effective output price to its export price, measured in the euro area's own currency.

Table 5

Main Results for the World Economy

Item	Average 1997- 2007	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average 2010- 2018
I. World nominal GDP												
1. Level (trillions of current euro)	33.4	39.5	41.5	44.0	46.2	48.0	49.6	51.0	52.2	53.7	55.1	49.0
- percent change, in euro	5.0	-3.0	5.2	5.9	5.1	4.0	3.3	2.8	2.4	2.7	2.7	3.8
2. Level (trillions of current USD)	37.6	55.0	54.4	55.1	55.9	57.1	58.7	60.7	62.9	65.5	68.4	59.9
- percent change, in USD	5.7	-8.1	-1.0	1.3	1.4	2.3	2.8	3.3	3.7	4.1	4.5	2.5
II. World real GDP												
1. Real GDP (euro)	3.5	-2.2	3.4	4.9	4.4	4.2	3.9	3.7	3.7	3.5	3.5	3.9
- per capita	2.2	-3.3	2.2	3.7	3.2	3.1	2.8	2.6	2.6	2.5	2.5	2.8
2. Real GDP (USD)	4.6	-7.4	-2.7	0.4	0.7	2.5	3.4	4.2	5.0	4.9	5.3	2.6
- per capita	3.3	-8.5	-3.8	-0.7	-0.4	1.4	2.3	3.1	3.9	3.9	4.3	1.5
III. World export volumes												
1. percent change, in euro	6.5	-14.6	2.9	0.7	1.6	2.0	2.2	2.5	2.8	2.9	3.0	2.3
2. percent change, in USD	6.5	-19.2	-3.1	-3.6	-2.0	0.4	1.7	3.0	4.0	4.3	4.8	1.1
3. exports (percent of World GDP)	18.4	17.9	18.5	18.1	17.9	17.9	17.8	17.8	17.8	17.8	17.8	17.9
IV. Price of world exports (percent change)												
1. at euro exchange rates	-6.6	-4.2	5.4	2.7	2.7	1.5	0.9	0.2	-0.4	-0.1	-0.2	1.4
2. at USD exchange rates	-5.7	-9.3	-0.8	-1.7	-0.9	-0.1	0.4	0.7	0.8	1.3	1.5	0.1
V. Price of oil (bbl, Brent crude)												
1. level, in USD	35.2	61.6	82.5	79.2	76.1	73.3	70.9	68.5	66.1	64.4	62.7	71.5
2. level, in euro	30.4	44.3	63.0	63.2	62.9	61.7	59.9	57.6	54.9	52.7	50.5	58.5
3. percent change, in USD	15.4	-36.4	33.9	-4.0	-4.0	-3.6	-3.3	-3.3	-3.5	-2.6	-2.5	0.8
4. percent change, in euro	15.4	-32.9	42.3	0.3	-0.4	-2.0	-2.9	-3.8	-4.7	-3.9	-4.2	2.3
VI. World population												
1. in billions	6.2	6.8	6.8	6.9	7.0	7.1	7.2	7.2	7.3	7.4	7.5	7.2
2. percent change	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.1

All figures are year-on-year growth rates of yearly averages, unless otherwise specified.
Real aggregates are in chained (2000) currency units; price indexes are also chain-type measures.

This overall nominal effective exchange rate appreciation would then impose downward price pressures on exports, so as to ensure a slight depreciation of the area's real effective exchange rate.

Finally, relatively stable public spending on goods and services, on investment, stable public sector employment and the unconstrained working of the area's automatic fiscal stabilisers, should all tend to underpin euro area domestic demand, but lead also to a continued build-up of public sector debt. The euro area's consolidated public deficit is projected to rise to 7.3 per cent of GDP in 2011 and 2012, and then to edge down to 6.9 per cent of GDP in 2016. However, as of 2017, deficits are projected to resume their upwards course once again, as fiscal positions are negatively impacted by the costs of ageing and as population growth grinds to a halt.

5.3 Main projection results for the world economy

Table 5 provides basic aggregate results for the world economy. These results are produced by computing appropriately weighted averages of macroeconomic variables of the six fully-specified economic areas (the euro area, the United States, Japan, the Western non-euro EU MS, the Central and Eastern EU MS and the Rest of the World) of the model.

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