WORKING PAPER

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An assessment of the risks to the medium-term outlook of the Belgian international economic environment

Simulations with the NIME model

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Economic analyses and forecasts

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Abstract: Each year, the Federal Planning Bureau (FPB) prepares a medium-term outlook for the Belgian economy. One of the key inputs of this exercise is a baseline scenario for the Belgian international economic environment. The baseline scenario for the international economic environment used by the FPB is a consensus projection, and it does not include an assessment of the risks that may affect the international economy. This paper presents simulations with the NIME model that help to evaluate the effects of four risks that were perceived to weigh on the international economic environment scenario during the preparation of the 2003-2008 medium-term outlook for the Belgian economy. These four risks are a temporary world-wide autonomous drop in private consumption, a further monetary easing by the European Central Bank, a fiscal consolidation in the euro area, and a sustained world-wide fall in stock markets. Tables with detailed simulation results are discussed in the text.

JEL-classification: C5, E0, F4

Keywords: Belgian international economic environment, euro area, macro-econometric world model NIME, fiscal consolidation, monetary easing, equity risk premium.

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I Introduction

Each year, the Federal Planning Bureau (FPB) prepares a medium-term outlook for the Belgian economy with its macro-econometric HERMES model[1]. One of the key inputs of this exercise is a baseline scenario for the Belgian international economic environment, which includes an outlook for the output, imports, prices and financial variables of the major trading partners of Belgium. Traditionally, this international environment is based on the medium-term outlook presented by the European Commission in its Autumn Forecasts or the most recent available medium-term outlook of the Organisation for Economic Co-operation and Development (OECD).

The baseline scenario for the international economic environment used by the FPB is a consensus projection, and it does not include an assessment of the risks that may affect the international economy[2]. This paper presents simulations with the NIME model that may help to evaluate the effects of four risks that were perceived to weigh on the international economic environment scenario during the preparation of the latest medium-term outlook for the Belgian economy[3]. These four risks are a temporary world-wide autonomous drop in private consumption, a further monetary easing by the European Central Bank (ECB), a fiscal consolidation in the euro area, and a sustained world-wide stock market fall[4].

The structure of this paper is as follows. In the second section, we give a brief overview of the NIME model. The NIME model is a macro-econometric world model that divides the world into five different country blocks[5], and that can be used to study the transmission of the effects of exogenous shocks on the Belgian international economic environment. In the third section, we simulate the effects of an autonomous drop in private consumption across the different country blocks[6]. This drop is calibrated in such a way that it induces a one percentage point increase in the savings rate of the household sector in each of the country blocks. In the fourth section, we simulate the effects of the case that the ECB delays its monetary tightening, assumed in the baseline scenario, by one year. In the fifth section, we simulate the effects of a fiscal consolidation, whereby we assume that there is an additional cut in the public expenditures of the euro area, in such a way that it induces ex ante a one percentage point reduction in the fiscal deficit to GDP ratio. In the sixth section, we assess how the world-wide stock market cor-

1. See Bossier e.a. (2000) for the HERMES model. See the latest medium term economic outlook at: http://www.plan.be/en/pub/ecofor/detail_ef.php?pub=EF20032008.
2. See Appendix A for the baseline scenario of the Belgian international economic environment.
3. The cut-off date of this projection was April 2003.
4. Other assessments can be found in, for example, Boone e.a. (1998), Edison and Slok (2001), European Commission (2002.a), and Ludwig and Slok (2002).
5. These country blocks are the euro area (EU), the non-euro European Union countries (NE), the United States (US), Japan (JP) and the “rest of the world” (RW).
6. Except for the “rest of the world” block. See below.

rection in 2002 tempered world-wide growth and inflation. In the last section we give a brief summary of the results.

Before we proceed, we want to make the following three remarks. First, in the following sections we focus mainly on the macro-economic effects in the euro area, because this is the main trading partner of Belgium. The simulation results for the other country blocks can be found in Appendix B of this working paper. Second, we want to emphasise that the simulations of this paper are of an illustrative nature, and they should not be considered as predictions. Third, interpreting the simulations of this paper, it should be remembered that the NIME model is a Keynesian model with classical long run properties. In the long run, the economy is at its natural equilibrium, whereby the relative prices clear the markets and the nominal variables do not affect equilibrium in the real sector. However, in the medium run, the model has typical Keynesian features, whereby prices adjust sluggishly to their equilibrium value, supply is determined by demand, and expectations have some backward looking features.

II The NIME model

The NIME model is a macro-econometric world model developed by the Federal Planning Bureau. It is currently used for medium-term forecasts of the Belgian international economic environment and to study the effects of economic policies and exogenous shocks on the European economy[1].

The current version of NIME divides the world into five separate country blocks: the euro area (EU), the European Union countries that have not currently adopted the euro (NE), the United States (US), Japan (JP), and the "rest of the world" (RW). These country blocks are linked through trade and financial flows. In each block[2], we distinguish a household sector, an enterprise sector, a public sector, and a monetary sector. A similar set of behavioural equations and accounting identities is specified for each sector across blocks, while the parameter values of the equations are obtained using econometric techniques applied to the aggregated data of the different blocks.

The NIME model makes an analytical distinction between three different time frames: in the short run, the model is demand driven and agents' plans are not fully realised due to adjustment costs; in the medium run, plans are realised but are still changing, due to lagging adjustment of endogenous variables and the steady state. In the steady state, productivity, the natural rate of unemployment, secular inflation, the real interest rate, the participation rate, and population growth are exogenous, while the values of other variables, such as potential output, are determined by exogenous variables and the model's structural equations.

Agents' expectations are partly forward-looking, and partly backward-looking. The forward-looking expectations are quasi-rational, in the sense that agents have model consistent expectations about the steady state, but the speed of convergence towards this steady state is determined by a reduced form function rather than by the underlying structural parameters of the model.

We continue with a summary of the essential features of the four sectors in a country block.

1. More technical details regarding the model can be found in Meyermans and Van Brusselen (2000.a, 2000.b, and 2001) and Meyermans (2003).
2. Except for the RW block, which consists of a very limited number of equations describing overall economic activity in the rest of the world.

A. The household sector

The household sector allocates its total available means over goods and services, real money balances, residential buildings, and other assets, as a function of the nominal and real interest rate, the user cost of residential buildings, and a scale variable. The scale variable consists of inherited assets, current income from assets, and current and expected future labour income. Error correction mechanisms and partial adjustment schemes capture sluggish adjustment in household expenditure plans. Moreover, in the short run, households are liquidity constrained, implying that a fraction of their expenditures must be financed by disposable income.

The interest rate influences household demand through several channels. First, there is the income effect. An interest rate increase will increase households' asset income in the next period. Next, there is the wealth effect, through which an increase in the discount rate will decrease[1] the present value of expected future income. Third, there is the liquidity effect, through which an increase in the nominal interest rate will increase the opportunity cost of money and will lower money demand. The impact of changes in the opportunity cost of money on demand for other goods and services is less clear a priori, and it is an empirical issue to determine the sign of this cross-elasticity. Fourth, there is the intertemporal substitution effect. An increase in the real interest rate will lead households to reduce contemporaneous consumption and hold more interest-bearing assets. Fifth, the interest rate affects the user cost of residential buildings. An increase in the nominal interest rate increases the user cost of residential buildings, and decreases the demand for residential buildings. Finally, it should be noted the above mentioned effects do not all point in the same direction, and that it is an empirical issue to determine the net impact of all these effects.

B. The enterprise sector

The enterprise sector maximizes its profits by hiring production factors and selling its products to final users. There are three production factors, labour, capital and intermediary imports. Error correction mechanisms and partial adjustment schemes are used to model short run demand for the production factors. In these demand schemes, the long run factor demand equations are derived from a Cobb-Douglas production function with constant returns to scale.

Labour demand is function of supply to final demand and the real wage rate. The real wage rate is defined as the nominal wage rate deflated by the producer price. Gross fixed capital formation is determined by the change in supply to final demand and the user cost of capital. The user cost of capital is determined by the interest rate, the rate of depreciation, the price of capital, the expected price change and a risk premium. Imports and exports are determined by a scale variable and relative prices. The scale variable for imports is domestic total supply to final demand, while the scale variable for exports is the effective foreign total supply to final demand. In the short run demand equations, relative prices and the scale variable affect factor demand with variable lags.

1. Since stock prices are equal to the present value of expected future profits, an increase in the interest rate increases the discount rate, and thus reduces the present value of future profits.

In the long run, input and output prices clear the markets, but they adjust sluggishly to their equilibrium value because of menu costs and backward looking behaviour in price setting. Thus, in the short run, quantities must adjust in order to meet demand. Here, let us recall the price setting scheme for international trade. Imports are used as intermediary inputs in the production of total supply to final demand. As such, their price is determined by their productivity and, at equilibrium, importers are not prepared to pay in excess of their productivity. This implies that exporters must set export prices with a view on importers' willingness to pay. Hence, exporters are price takers. However, these are equilibrium conditions, to which the economy converges in the long run. In the medium run, all kinds of rigidities prevent exporters and importers from setting their prices immediately to their equilibrium level.

C. The public sector

Public sector receipts are determined by endogenous tax bases and predetermined tax rates, while public expenditures are to a large extent determined by the business cycle and trend growth. In the NIME model, automatic fiscal stabilisers operate on the expenditure side through unemployment benefits and interest payments on public debt, and on the revenue side through direct labour income taxes, profit taxes, social security contributions, and indirect taxes. See also Meyermans (2002.a) on this issue.

D. The monetary sector

The monetary authorities follow a Taylor rule, whereby the short-term interest rate is set as a function of the output gap and the difference between contemporaneous inflation and a target inflation[1]. The long-term interest rate is determined by the term structure of interest rates. The effective nominal exchange rate is determined by a weighted average of the equilibrium effective nominal exchange rate and the lagged exchange rate, by the interest rate differential, and by the expected inflation differential. The equilibrium exchange rate stabilises the debt to GDP ratio[2], and is equal to the relative price level multiplied by the real exchange rate. The real exchange rate is determined by relative indirect tax rates, and the relative level of economic activity, corrected for a term related to the ratio of net factor income and net current transfers to the output of the rest of the world[3]. If the domestic price level increases, ceteris paribus, then the equilibrium nominal exchange rate will depreciate. This result reflects the fact that in the steady state, purchasing power parity, adjusted for the real exchange rate, must hold. If domestic output increases, ceteris paribus, then the equilibrium real (and nominal) exchange rate will depreciate. The latter effect is due to the fact that if domestic output increases, the import volume will increase. Hence, to maintain equilibrium in the current account, the exchange rate must depreciate[4].

1. See also Meyermans (2002.b) on this issue.
2. Several options for the equilibrium exchange rate are possible in the NIME model: the current account in equilibrium, the trade account in equilibrium, or a stable foreign debt to GDP ratio.
3. For more details see Section IV.C of Meyermans and Van Brusselen (2001).
4. It should be noted that this is a partial equilibrium. This depreciation may be offset by the appreciation which is induced by the increase in the short run interest rate.

III A world-wide autonomous drop in private consumption

In this section, we assess the effects of a temporary autonomous drop in private consumption of goods and services across the industrialised countries. Here, the fall in private consumption has been calibrated in such a way that it induces a one percentage point increase in the household saving rate, during the first year of the simulation and with respect to the baseline[1].

The main macro-economic effects of this shock are as follows. In each country block of the NIME model, the shock lowers total demand without affecting potential output. Lower demand reduces inflationary pressures and opens the way for monetary easing. The subsequent interest rate cut decreases the real interest rate and the user cost of capital, and increases households' financial wealth. However, because interest rates are cut across all country blocks, the behaviour of the effective nominal exchange rates will depend on the relative size of the interest rate cuts. All in all, the interest rate cuts boost demand, and the overall drop in total demand is less severe than in the absence of monetary easing. In the second year, with no further shock on consumption, the economy gradually converges back to its baseline. However, convergence is tempered by the slow adjustment of prices, caused by menu costs and backward looking behaviour in price setting, and by the lagged responses of some components of demand to changes in interest rates, prices, and scale variables.

Table 1 shows the adjustment path of the euro area over a six year period. The results for the other country blocks can be found in Appendix B. The results shown in this and subsequent tables are percentage deviations from a technical baseline, unless mentioned otherwise. Let us now have a closer look at the simulation results for the euro area.

The one percentage point rise in the savings rate increases the holdings of financial assets (+2.20%) and money (+0.54%), and reduces private consumption (-1.22%) in 2003. The reduced inflationary pressures trigger an interest rate cut (-46 basis points, nominal short term rate), thereby stimulating domestic demand. However, since the fall in interest rates is sharper in the United States and Japan than in the euro area, the nominal effective euro exchange rate appreciates (-0.22%), thereby tempering external demand.

1. The shock was introduced by applying a shock to the constant term of the short run private consumption equation.

In 2003, real euro area GDP falls (-0.85%), primarily because of the drop in private consumption (-1.22%) and net exports. Private consumption falls directly through the very nature of the shock. Exports fall (-0.73%), due to the appreciation of the euro (-0.22%) and the reduction in the effective foreign output level (-0.48%). The effective foreign output level declines because the other country blocks are hit by a similar demand shock on consumption. Imports decrease (-0.56%), primarily because domestic activity falls (-0.88%), and because the pass-through of the exchange rate appreciation is limited in the first year, so that the decrease in import prices is small (-0.06%). Total gross fixed capital formation remains relatively unaffected in the first year. However, each component of investment has its own profile. Public capital formation (-0.24%) falls, in line with the fall in real GDP[1]. Investment in residential buildings (-0.12%) falls because disposable real income falls (-0.15%), and this effect dominates the effect of the reduction in the user cost of capital. Investment in enterprise capital increases (+0.12%), because the user cost of capital decreases and this effect dominates the effect of the overall reduction in economic activity.

The lower economic activity reduces total employment (-0.30%) and increases the unemployment rate (+0.26 points), in spite of a drop in real wages (-0.12%). The general price level is almost unaffected in the first year, and only export and import prices show very small reductions (-0.03% and -0.06%, respectively), reflecting the currency appreciation. Finally, due to the automatic fiscal stabilisers, the public deficit and debt increase in percent of GDP (+0.27 and +0.78 percentage points, respectively), while the current account deteriorates, also in percent of GDP (-0.03 points).

As of 2004, the autonomous drop in private consumption disappears, and households start to reduce their savings to compensate for the savings surplus accumulated in the previous year. However, the recovery is not fast enough and interest rates are cut further (-0.61 percentage points, nominal short term rate). At the same time, the effective nominal exchange rate continues to appreciate (-0.48 percent in the second year, and about one percent in the third and fourth year, gradually depreciating thereafter) because the interest rate cuts in the rest of the world are stronger than in the euro area (-0.71 percentage points, effective foreign short-term interest rate), because the general price level falls more in the euro area than in the rest of the world, and because there is backward looking behaviour in the foreign exchange market[2]. The general price level falls (-0.25%) in the second year, because private consumption prices react with a one year time lag to the increased output gap, and because the exchange rate appreciation puts downward pressure on prices. As for the price of capital, it is determined by the discounted future -after tax- market value of the marginal productivity of capital[3]. Thus, the price of capital rises with the fall in the interest and discount rate.

In 2004, private consumption nearly returns to its baseline level (-0.17%), and overshoots it as of 2005. Total gross fixed capital formation increases (+0.48%), mainly because enterprise sector investments are boosted by the sharp interest rate cuts. Exports start to rebound due to the recovery of output in the rest of the world (-0.48% for effective foreign output in 2003, and -0.15% in 2004). The loss of competitiveness, due to the nominal exchange rate appreciation, is partly offset

1. In the NIME model, public investments are not a function of the user cost of capital.
2. If a currency depreciates in period *t-1*, "chartists" will expect a depreciation in period *t*.
3. See equation (17) of Meyermans and Van Brusselen (2000.b).

by a fall in export prices, denominated in euro (-0.13%). Imports recover completely as of the second year (+0.01%), so that the current account of the euro area deteriorates further (-0.07 points, measured in terms of GDP).

Total employment follows the change in private supply to final demand and responds positively to the decline in the real wage rate. Prices show a high degree of persistence (-0.46%, GDP deflator in 2008), partly due to menu costs, backward looking behaviour in price setting, and the gradual adjustment of the exchange rate. Finally, after the initial deterioration of the fiscal deficit to GDP ratio, the fiscal accounts reach a surplus as of 2004 (with a maximum of 0.10% in 2005). Nevertheless, the debt to GDP ratio increases because of the fall in nominal GDP.

In 2008, real GDP and the output gap of the euro area have almost completely returned to their baseline level (+0.02% and +0.01 percentage points, respectively). However, looking at the different components of demand, we note that while private consumption is above its baseline level (+0.11%), gross fixed capital formation and exports are still negatively affected (-0.19% and -0.06%, respectively). These persistent deviations reflect the sluggish adjustment of prices and the lagged responses of demand to changes in interest rates, prices and scale variables. Private consumption is supported by the low price level, which increases the purchasing power of households' financial assets (+0.33%), while the fall in household disposable income, due to the fall in real wages, is negligible (-0.03%). Enterprise sector investment remains below the baseline, due to a correction for overshooting in the 2003-2005 period.

Table 1 - A world-wide drop in private consumption: macroeconomic effects for the euro area[1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	-1.22	-0.17	0.17	0.12	0.11	0.11
2. Public consumption	-0.07	-0.17	-0.11	-0.04	-0.01	0.01
3. Gross fixed capital formation	-0.00	0.48	0.23	-0.08	-0.13	-0.19
A. Residential	-0.21	-0.03	-0.00	-0.07	-0.06	-0.03
B. Enterprises	0.12	0.78	0.37	-0.09	-0.19	-0.29
C. Public	-0.24	-0.03	0.01	-0.02	-0.02	-0.00
4. Total domestic expenditure	-0.82	-0.00	0.15	0.05	0.04	0.04
5. Exports	-0.73	-0.38	-0.36	-0.35	-0.21	-0.06
6. Imports	-0.56	0.01	-0.00	0.01	0.05	0.00
7. Gross Domestic Product	-0.85	-0.10	0.06	-0.04	-0.03	0.02
8. Total private supply to final demand	-0.88	-0.05	0.07	-0.03	-0.01	0.02
9. Total public supply to final demand	-0.11	-0.28	-0.18	-0.06	-0.01	0.01
III. Price indices						
1. Private consumption	-0.01	-0.38	-0.41	-0.39	-0.40	-0.40
2. Public consumption	0.01	-0.15	-0.31	-0.40	-0.44	-0.44
3. Gross fixed capital formation	0.00	-0.02	-0.05	-0.08	-0.10	-0.12
A. Residential	-0.00	-0.07	-0.18	-0.29	-0.37	-0.42
B. Enterprises	0.02	0.05	0.08	0.09	0.10	0.09
C. Government	0.00	-0.12	-0.28	-0.39	-0.45	-0.46
4. Exports	-0.03	-0.13	-0.32	-0.54	-0.72	-0.81
5. Imports	-0.06	-0.19	-0.41	-0.47	-0.42	-0.34
6. Gross domestic product	0.04	-0.25	-0.31	-0.34	-0.41	-0.46
7. Total private supply to final demand	0.02	-0.25	-0.32	-0.36	-0.41	-0.44
IV. Financial sector						
1. Nominal short-term interest rate *	-0.46	-0.61	-0.02	0.02	-0.03	0.00
2. Nominal long-term interest rate *	-0.25	-0.34	-0.01	0.01	-0.01	0.00
3. Spot exchange rate (local/eur)	0.00	0.00	0.00	0.00	0.00	0.00
4. Effective nominal exchange rate (+: depreciation)	-0.22	-0.48	-0.96	-1.01	-0.79	-0.59
5. Effective real exchange rate	-0.20	-0.43	-0.77	-0.61	-0.23	0.06
6. Money (M1)	0.54	0.72	-0.23	-0.30	-0.26	-0.31
7. Ex-ante stock market correction	0.00	0.00	0.00	0.00	0.00	0.00
V. Labour market						
1. Total employment	-0.30	-0.01	0.12	0.09	0.05	0.03
A. private sector	-0.36	-0.02	0.15	0.11	0.07	0.04
B. public sector	0.01	0.01	0.01	0.00	0.00	-0.00
2. Unemployment rate *	0.26	0.00	-0.11	-0.08	-0.04	-0.02
3. Nominal wage private sector	-0.10	-0.45	-0.51	-0.47	-0.45	-0.43
4. Nominal wage public sector	-0.13	-0.48	-0.52	-0.47	-0.45	-0.43
5. Nominal wage total economy	-0.10	-0.46	-0.51	-0.47	-0.45	-0.43
6. Real take home private wage	-0.10	-0.07	-0.10	-0.08	-0.05	-0.03

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
7. Real producer private wage	-0.12	-0.20	-0.19	-0.11	-0.04	0.01
8. Real take home public wage	-0.13	-0.10	-0.11	-0.09	-0.05	-0.03
9. Real producer public wage	-0.15	-0.23	-0.20	-0.12	-0.04	0.01
10. Contemporaneous productivity	-0.52	-0.04	-0.07	-0.14	-0.08	-0.02
VI. Household sector						
Total real means	0.12	0.31	0.14	0.11	0.11	0.09
o/w Disposable real income	-0.15	-0.08	-0.02	-0.06	-0.05	-0.03
Inherited assets (deflated by the consumption price)	0.47	1.11	0.50	0.38	0.39	0.33
- o/w financial assets (excluding money)	2.20	3.21	1.08	0.79	0.82	0.61
- o/w residential buildings	-0.01	0.33	0.32	0.27	0.27	0.26
- o/w inventories	0.03	0.10	0.11	0.11	0.11	0.11
Expected future real income	-0.02	-0.01	-0.00	0.01	0.01	0.01
VII. Fiscal sector						
1. Nominal total revenue	-0.42	-0.46	-0.39	-0.43	-0.44	-0.43
2. Real total revenue	-0.46	-0.20	-0.08	-0.08	-0.03	0.03
3. Real direct income tax	-0.22	-0.32	-0.15	-0.10	-0.04	0.03
4. Real indirect income tax	-0.82	-0.07	0.03	-0.05	-0.01	0.04
5. Real social security contributions	-0.22	-0.32	-0.15	-0.10	-0.04	0.03
6. Nominal total expenditures	0.17	-0.62	-0.62	-0.46	-0.46	-0.43
7. Real total expenditures	0.13	-0.37	-0.31	-0.12	-0.05	0.03
8. Real transfers to households	0.53	-0.65	-0.38	-0.29	-0.22	-0.06
9. Public consumption of goods	-0.03	0.10	-0.01	-0.06	-0.03	0.02
10. Real wage bill	-0.16	-0.22	-0.21	-0.13	-0.04	0.03
11. Real capital formation	-0.24	-0.03	0.01	-0.02	-0.02	-0.00
12. Real interest payments	-0.04	-0.86	-1.31	0.65	0.79	0.65
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	-0.48	-0.15	-0.05	-0.03	-0.00	0.01
2. Effective foreign price level	-0.01	-0.09	-0.13	-0.14	-0.15	-0.15
3. Effective foreign short-term interest rate *	-0.53	-0.71	-0.22	-0.09	-0.05	-0.00
IX. Stocks						
1. Residential buildings	-0.01	-0.00	0.00	0.00	-0.00	-0.00
2. Enterprise capital	0.01	0.08	0.13	0.14	0.15	0.15
3. Public capital	-0.01	-0.01	-0.01	-0.02	-0.03	-0.03
4. Real money balance	0.54	1.10	0.18	0.08	0.14	0.09
5. Real public debt	0.36	0.53	0.41	0.41	0.46	0.50
6. Inventories	-0.34	-0.21	-0.09	-0.06	-0.04	-0.01
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	-0.27	0.06	0.10	0.01	0.00	-0.00
2. Debt (% of GDP)*	0.78	0.39	0.22	0.28	0.30	0.29
3. Current account (% of GDP)*	-0.03	-0.07	-0.07	-0.11	-0.13	-0.13
4. Trade balance (% of GDP)*	-0.03	-0.07	-0.07	-0.10	-0.13	-0.12
5. Net saving by households (% of disposable income)*	1.00	0.08	-0.17	-0.17	-0.15	-0.13
6. Output gap*	-0.86	-0.04	0.07	-0.04	-0.02	0.01
7. Weight of EU in total BE trade	0.63	0.63	0.63	0.63	0.63	0.63

IV A monetary easing in the euro area

The baseline scenario of the Belgian international economic environment, prepared for the Federal Planning Bureau's 2003-2008 Economic Outlook, assumes a nominal short-term euro interest rate of 2.4 percent in 2003. In 2004, this interest rate is increased by 30 basis points, followed by another increase of 90 basis points in 2005, and subsequently yearly increases of 80, 20 and 0 basis points respectively for years 2006, 2007 and 2008[1]. In this section, we assess the effects of a scenario in which the European monetary authorities decide to postpone these interest rate hikes by one year, so that the interest rate remains unchanged in 2004 relative to 2003, and the first interest rate hike of 30 basis points occurs in 2005 instead of 2004. The postponement of the interest rate increases are introduced into the model as interest rate cuts relative to baseline levels.

The effects of this monetary easing are straightforward. When the nominal interest rates falls relative to the baseline, the real interest rate and the user cost of capital also fall relative to the baseline, the financial wealth of the household sector increases, and the effective nominal exchange rate depreciates. All these effects stimulate demand and increase private supply to final demand. However, this leads to inflationary pressures, and prices increase. Table 2 shows the main macro-economic effects for the euro area. Results for the other country blocks can be found in Appendix B. Let us now have a closer look at the results for the euro area.

In 2003, no deviations from the baseline are to be noted, because no shock occurs and economic agents do not anticipate the postponement of the interest rate increases[2].

In 2004, the postponement of the 30 basis point interest rate hike, in the form of an equivalent interest rate cut, increases euro area GDP (+0.16%), through three main channels. First, the absence of a nominal interest rate hike leads to higher private consumption (+0.09%) through a lower real interest rate, a rise in the value of households' financial assets, and an increase in household disposable income. The latter rises (+0.03%) because employment and the real take home (private sector) wage increase (+0.05% and +0.02%, respectively), and this is sufficient to compensate for the lower interest income and transfers (-0.07%). Second, the lower user cost of capital and higher output increase total gross fixed capital formation (+0.24%), with the largest increase to be seen in enterprise sec-

1. See the baseline scenario in Appendix A.
2. This is an assumption.

tor investment (+0.33%). Third, exports increase (+0.22%) through the depreciation of the effective nominal euro exchange rate (+0.67%), which is only partly offset by an increased export price (+0.10%). This depreciation is explained by the lower nominal short-term interest rate (-30 basis points) and the higher expected inflation in the euro area.

In 2004, the general price level is almost unaffected by the relative monetary easing. However, export and import prices increase notably (+0.10% and +0.20%, respectively), reflecting the depreciation of the effective nominal exchange rate. Employment is higher (+0.05%) and the unemployment rate lower (-5 basis points), because of greater private supply to final demand (+0.16%), and even though employment demand is tempered by a slightly higher real (private) wage rate (+0.02%). Moreover, through the working of the automatic fiscal stabilisers, the fiscal deficit and public debt of the euro area are lower (+0.05 and +0.14 percentage points respectively), measured in percent of GDP.

As of 2005, the higher economic activity and the depreciation of the effective nominal exchange rate lead to higher prices. The GDP deflator rises (+0.04%), while the consumer price level also increases (+0.13%). The increases in export and import prices are even higher (+0.50% and +0.81%, respectively) as they are more sensitive to the strong depreciation of the effective nominal exchange rate (+2.53%). The nominal wage rate increases (+0.26%, private sector) in line with the evolution of contemporaneous productivity (+0.37%) and inflation (+0.13%). Note also that because the increases in consumer prices are smaller than the increases in producer prices, the increases in the real producer wage are smaller than the increases in the real take home wage[1]. Finally, note that through the working of the automatic fiscal stabilisers, there is an additional improvement in the public deficit to GDP ratio in 2005 (+22 points), but this improvement decreases as the monetary stimulus diminishes.

In 2008, real GDP is still 0.47 percent above the baseline. This rise in GDP stems from an increase in investment (+0.94%) and exports (+0.73%). Investment is still adjusting to the decreases in the user cost of capital in previous years, as well as to the rise in economic activity. Exports rise because they benefit from the depreciation of the effective nominal euro exchange rate (+3.03%) and the rises in the effective foreign output level (+0.06%). Notwithstanding the increase in nominal wages (+1.65%, private sector), and real disposable income (+0.21%), private consumption increases only moderately (+0.10%), because the higher consumer price level (+1.11%) erodes the purchasing power of households' nominal assets and income. The employment effects have all but disappeared, and the public deficit in percent of GDP is lowered (-0.17%). Finally, note that the price of private consumption increased by 1.1 percent over the 2004-2008 period, which corresponds

1. In the NIME model, the wage equation is derived from a sequential bargaining process where, in a first stage, the household and enterprise sectors negotiate over the wage. The household sector is interested in the after tax nominal wage deflated by the consumer price, while the producer is interested in the nominal wage deflated by the producer price. Clearly, there is some room for bargaining over the nominal wage, when consumer and producer prices deviate from each other. The net outcome of this bargaining is captured by the 'tax wedge' effect, i.e., - wrp_l1 d ln(TAXWP) in equation (III.14) of Meyermans and Van Brusselen (2001).

to an average annual inflation of about 0.3 percent. This price increase happens in spite of an endogenous increase in labour productivity[1].

The interest rate shock in the euro area is transmitted to the other country blocks through trade and financial flows[2]. In the other country blocks, the effective nominal exchange rate appreciates, thereby reducing their international competitiveness. On the other hand, it should also be noted that their exports are stimulated by the increased imports of the euro area. Hence, it is not clear a priori what the net impact on the exports of these country blocks will be. From the simulation results reported in tables 12 to 15 in Appendix B, we see that the exports of the NE block remain above their baseline level throughout the simulation period. NE block exports are 0.24 percent above baseline in 2008, indicating that the scale effect dominates the price effect. A similar, though smaller, result is found for the US, where exports are 0.11 percent above the baseline in 2008. In Japan, exports decline somewhat, indicating that the appreciation of the yen dominates the scale effect. Since these country blocks constitute relatively closed economies, the spill-over effects of trade on the domestic sectors are very mild.

1. Using the AS-AD framework, this positive correlation of prices and productivity in the context of a demand shock is explained as follows. A demand shock shifts the aggregate demand curve in the price-output space, and the economy adjusts along the aggregate supply curve which has a positive slope. In other words, prices and output move in the same direction. Moreover, following Okun's law, the change in employment is smaller than the change in output, hence the change in productivity which is greater than the change in output. Furthermore, note that an *exogenous* productivity shock -as opposed to the *endogenous* productivity change discussed here-would lead to a negative correlation of prices and productivity, ceteris paribus. In that case, the aggregate supply curve shifts, and the economy adjusts along the negatively sloping aggregate demand curve. As a caveat, it should be remembered that this adjustment process implies that there is no off-setting demand shock. Indeed, when productivity increases, wage earners may expect a higher future wage, which may then cause a shift of the aggregate demand curve.
2. In the other country blocks the automatic fiscal stabilisers are allowed to operate, and the monetary authorities follow a Taylor rule whereby they set the short-term interest rate as a function of the output gap and the difference between contemporaneous inflation and target inflation.

Table 2 - A monetary easing in the euro area: macroeconomic effects for the euro area[1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	0.00	0.09	0.37	0.59	0.42	0.10
2. Public consumption	0.00	0.01	0.07	0.18	0.27	0.26
3. Gross fixed capital formation	0.00	0.24	0.98	1.52	1.30	0.94
A. Residential	0.00	0.11	0.44	0.65	0.53	0.34
B. Enterprises	0.00	0.33	1.36	2.12	1.82	1.34
C. Public	0.00	0.04	0.19	0.31	0.28	0.17
4. Total domestic expenditure	0.00	0.12	0.50	0.76	0.59	0.28
5. Exports	0.00	0.22	0.86	1.34	1.17	0.73
6. Imports	0.00	0.09	0.27	0.19	-0.05	-0.02
7. Gross Domestic Product	0.00	0.16	0.64	1.04	0.89	0.47
8. Total private supply to final demand	0.00	0.16	0.62	0.95	0.75	0.38
9. Total public supply to final demand	0.00	0.02	0.10	0.29	0.44	0.43
III. Price indices						
1. Private consumption	0.00	0.02	0.13	0.43	0.82	1.11
2. Public consumption	0.00	0.03	0.16	0.43	0.81	1.20
3. Gross fixed capital formation	0.00	0.01	0.07	0.18	0.34	0.50
A. Residential	0.00	0.03	0.14	0.34	0.57	0.82
B. Enterprises	0.00	0.01	0.06	0.13	0.20	0.27
C. Government	0.00	0.03	0.16	0.41	0.75	1.12
4. Exports	0.00	0.10	0.50	1.19	1.88	2.40
5. Imports	0.00	0.20	0.81	1.31	1.32	1.14
6. Gross domestic product	0.00	-0.01	0.04	0.32	0.82	1.28
7. Total private supply to final demand	0.00	0.03	0.17	0.50	0.93	1.28
IV. Financial sector						
1. Nominal short-term interest rate *	0.00	-0.30	-0.90	-0.80	-0.20	0.00
2. Nominal long-term interest rate *	0.00	-0.17	-0.50	-0.44	-0.11	0.00
3. Spot exchange rate (local/eur)	0.00	0.00	0.00	0.00	0.00	0.00
4. Eff. nom. exchange rate (+: depreciation)	0.00	0.67	2.53	3.88	3.64	3.03
5. Eff. real exchange rate	0.00	0.56	1.99	2.59	1.65	0.55
6. Money (M1)	0.00	0.75	2.54	3.15	2.40	1.93
V. Labour market						
1. Total employment	0.00	0.05	0.21	0.31	0.18	-0.02
A. private sector	0.00	0.07	0.26	0.38	0.23	-0.02
B. public sector	0.00	-0.00	-0.01	-0.02	-0.03	-0.03
2. Unemployment rate *	0.00	-0.05	-0.18	-0.26	-0.14	0.03
3. Nominal wage private sector	0.00	0.04	0.26	0.73	1.28	1.65
4. Nominal wage public sector	0.00	0.05	0.29	0.79	1.35	1.71
5. Nominal wage total economy	0.00	0.04	0.26	0.74	1.29	1.66
6. Real take home private wage	0.00	0.03	0.13	0.30	0.46	0.54
7. Real producer private wage	0.00	0.02	0.10	0.23	0.35	0.37
8. Real take home public wage	0.00	0.03	0.16	0.36	0.53	0.61
9. Real producer public wage	0.00	0.02	0.12	0.29	0.42	0.44
10. Contemporaneous productivity	0.00	0.09	0.37	0.58	0.52	0.40

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
VI. Household sector						
Total real means	0.00	0.10	0.29	0.21	-0.06	-0.18
o/w Disposable real income	0.00	0.03	0.13	0.26	0.28	0.21
Inherited assets (deflated by the consumption price)	0.00	0.33	0.97	0.67	-0.29	-0.73
- o/w financial assets (excluding money)	0.00	0.92	2.65	1.71	-0.72	-1.49
- o/w residential buildings	0.00	0.02	0.01	-0.17	-0.51	-0.76
- o/w inventories	0.00	0.02	0.09	0.12	0.08	0.01
Expected future real income	0.00	0.00	0.02	0.03	0.03	0.02
VII. Fiscal sector						
1. Nominal total revenue	0.00	0.10	0.48	1.05	1.47	1.66
2. Real total revenue	0.00	0.11	0.45	0.74	0.66	0.38
3. Real direct income tax	0.00	0.07	0.29	0.55	0.57	0.38
4. Real indirect income tax	0.00	0.18	0.70	1.06	0.82	0.37
5. Real social security contributions	0.00	0.07	0.29	0.55	0.57	0.38
6. Nominal total expenditures	0.00	-0.01	-0.01	0.20	0.79	1.34
7. Real total expenditures	0.00	0.00	-0.05	-0.12	-0.03	0.06
8. Real transfers to households	0.00	-0.07	-0.19	-0.05	0.29	0.42
9. Public consumption of goods	0.00	0.04	0.12	0.12	-0.00	-0.08
10. Real wage bill	0.00	0.06	0.25	0.46	0.51	0.41
11. Real capital formation	0.00	0.04	0.19	0.31	0.28	0.17
12. Real interest payments	0.00	0.01	-1.10	-3.64	-4.18	-2.95
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	0.00	0.03	0.11	0.16	0.11	0.06
2. Effective foreign price	0.00	-0.01	-0.03	-0.06	-0.06	-0.04
3. Effective foreign short term interest rate *	0.00	-0.09	-0.30	-0.26	-0.07	-0.01
IX. Stocks						
1. Residential buildings	0.00	0.00	0.01	0.02	0.03	0.03
2. Enterprise capital	0.00	0.02	0.11	0.22	0.28	0.29
3. Public capital	0.00	0.00	0.01	0.03	0.04	0.06
4. Real money balance	0.00	0.73	2.41	2.71	1.58	0.83
5. Real public debt	0.00	-0.07	-0.45	-1.33	-2.31	-2.96
6. Inventories	0.00	0.06	0.29	0.55	0.61	0.50
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	0.00	0.05	0.22	0.39	0.33	0.17
2. Debt (% of GDP)*	0.00	-0.14	-0.67	-1.44	-1.91	-2.02
3. Current account (% of GDP)*	0.00	0.01	0.08	0.24	0.40	0.44
4. Trade balance (% of GDP)*	0.00	0.01	0.08	0.24	0.39	0.44
5. Net saving by households (% of disposable income)*	0.00	-0.06	-0.22	-0.30	-0.13	0.10
6. Output gap*	0.00	0.16	0.61	0.94	0.73	0.36
7. PGDP-inflation	0.00	-0.01	0.05	0.29	0.51	0.47
8. PCH-inflation	0.00	0.02	0.12	0.31	0.40	0.29
9. Weight of EU in total BE trade	0.63	0.63	0.63	0.63	0.63	0.63

V A fiscal consolidation in the euro area

In this variant, we simulate the effects of an “across the board” reduction in discretionary public expenditure of the euro area (i.e., public employment, transfers, public consumption of goods and services, investment, and other capital spending). The reduction in public spending is calibrated so as to generate, ex ante and relative to the baseline, a drop in the fiscal deficit to GDP ratio of 0.50 percentage points in 2003, and 1 percentage point from 2004 to 2008. This implies that, ex ante, public expenditures are cut by about 1.2 percent vis-à-vis the baseline in the first year, reflecting the fact that public expenditures constitute about 45 percent of GDP. In subsequent years, public expenditures are cut by about 2.3 percent vis-à-vis the baseline.

In the NIME model, the effects of this fiscal consolidation are the following for the euro area. First, on impact, the lower public expenditures decrease domestic demand directly through lower public investment and spending on goods and services, and indirectly through decreased public sector employment and public transfers to households. However, monetary and fiscal feed-backs temper the deflationary effects of the decreased public expenditures, and the ex post public surplus is smaller than the ex ante programmed surplus. Indeed, as soon as output and prices start to fall, the monetary authorities cut the nominal short-term interest rate. This interest rate cut causes private and external demand to rise via a decrease in the real interest rate and the user cost of capital, a depreciation of the exchange rate, and an increase in the financial wealth of households. Moreover, the automatic fiscal stabilisers are free to operate so that, with economic activity contracting and unemployment rising, public transfers to households increase and tax revenue falls. Second, as public consumption will be reduced in the long run while potential output will barely change[1], private absorption must increase in order to balance supply and demand in the long run. However, in the new steady state, the equilibrium fixed capital stock will be unchanged. Exports will also remain unchanged, reflecting the absence of change in long run potential output in the rest of the world. Thus, it is household private consumption which must increase and balance demand and supply[2]. This increased demand can only

1. In fact, potential output will increase slightly. Potential output is determined by trend productivity, the natural employment rate (which is determined by the natural unemployment rate and the participation rate), and by the composition of employment (private versus public sector employment). Trend productivity and the employment rate do not change. However, there will be a shift from public employment to private employment. As the latter is somewhat more productive, one will notice a small increase in long run potential output.
2. The increase in private consumption is brought about through a drop in the relative price of private consumption. Indeed, the real user cost of capital does not change (see Appendix C), while the relative price of intermediary imports is determined by their productivity, and the latter does not change either. Technically, this price adjustment is generated by the inclusion of the output gap in the consumption price equation. See Appendix F of Meyermans and Van Brusselen (2000.b).

be generated by a decline in the relative price of private consumption. Let us now have a closer look at the simulation results in Table 3.

In 2003, the spending cut has a direct effect on demand through the cut in public investment (-1.27%), but it also has indirect effects through its impact on household disposable income. Real household disposable income drops significantly (-0.34%), not only due to the drop in public transfers to households (-0.65%), but also due to the drop in employment (-0.28%) and the real take home wage (-0.04%). This decline in real disposable income leads to lower private consumption (-0.12%) and investment in residential buildings (-0.47%). The cut in public spending -and the subsequent fall in inflationary pressures- is also at the origin of a cut in interest rates (-10 basis points, nominal short term rate), which then stimulates private consumption and investment, and leads to increased competitiveness through a depreciation of the euro (+0.15%, nominal effective exchange rate). However, these interest and exchange rate developments only partly offset the deflationary effects of the fiscal consolidation, and euro area real GDP falls (-0.35%).

Total gross fixed capital formation falls (-0.27%), but its different components do not have identical profiles. This can be understood as follows. Investment by the public sector falls (-1.27%), and this fall is almost entirely determined by the ex ante autonomous cut in public outlays. Investment by the household sector (-0.47%) and the enterprise sector (+0.01%) are both explained by the change in a scale variable and the user cost of capital. However, the scale variable and the user cost of these two investment categories, as well as their elasticities, differ. For enterprise investments, the scale effect is private supply to final demand, while for investments in residential buildings the scale effect is a weighted average of disposable income and the total available means of the household sector. The user cost of capital is determined by the interest rate, the rate of depreciation, and the expected change in prices. For the enterprise sector the latter is related to the expected change in the price of output, while for the household sector the latter is related to the expected change in the consumer price. Moreover, the enterprise sector's user cost is augmented by a risk premium, so that an interest rate cut induces a proportionally smaller reduction in the enterprise sector's user cost than in the user cost of residential buildings. Nevertheless, the evidence shows that in the case of investments in residential buildings, the scale effect dominates the user cost effect. In the case of enterprise investments however, both scale and user cost effects cancel each other out in the short run.

In 2003, exports are unaffected by the fiscal consolidation, because effective foreign output and export prices are left almost unchanged by the measure. Imports decrease (-0.15%), primarily because domestic demand falls. As a consequence, the current account to GDP ratio improves immediately (+0.04 points). Furthermore, the automatic fiscal stabilisers mitigate the effects of the public expenditure cut and, ex post, the public surplus to GDP ratio (+0.26%) ends up smaller than expected ex ante (+0.50%).

In 2004, the expenditure cuts are increased (-2.31%) and real euro area GDP contracts still further (-0.62%). Nevertheless, private demand starts to benefit from the interest rate cuts (-29 basis points, nominal short-term rate) and the lower consumption price (-0.07%), which falls in response to the rising output gap. However, at the same time, household real disposable income continues to fall

(-0.77%) because of falling employment (-0.52%), the lower real take home wage rate (-0.17%) and the reduced transfers to households (-1.57%). Taking all these effects into account, private consumption falls only moderately (-0.17%). Exports start to benefit from the depreciation of the effective nominal euro exchange rate (+0.56%) and the lagged adjustments in export prices, and they increase (+0.10%) in 2004. Nominal wages fall (-0.29%), due to the rising unemployment rate (+0.44 points), and the falling prices and labour productivity (-0.20%).

As of 2005, no further shocks are introduced to the model and the economy is free to converge to its new steady state. However, the sluggish adjustment of prices and stocks hinder a quick return to the new steady state.

Finally, as a caveat, we conclude this section by recalling that NIME is basically a Keynesian model, in which demand determines output in the medium term. This model does not include non-Keynesian effects, such as Ricardian equivalence or risk premium effects, which may mitigate the negative short or medium term Keynesian effects. Hence, it should come as no surprise that the initial model response to the fiscal shock is a sharp decline in economic activity.

Table 3 - A fiscal consolidation in the euro area: macroeconomic effects for the euro area[1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	-0.12	-0.17	-0.05	-0.03	-0.05	-0.05
2. Public consumption	-1.21	-2.51	-2.65	-2.73	-2.79	-2.83
3. Gross fixed capital formation	-0.27	-0.45	-0.38	-0.44	-0.50	-0.50
A. Residential	-0.47	-1.02	-1.14	-1.23	-1.30	-1.31
B. Enterprises	0.01	0.19	0.35	0.28	0.23	0.22
C. Public	-1.27	-2.52	-2.48	-2.47	-2.47	-2.47
4. Total domestic expenditure	-0.40	-0.73	-0.66	-0.67	-0.72	-0.73
5. Exports	0.00	0.10	0.23	0.25	0.23	0.21
6. Imports	-0.15	-0.28	-0.31	-0.40	-0.41	-0.39
7. Gross Domestic Product	-0.35	-0.62	-0.50	-0.49	-0.53	-0.54
8. Total private supply to final demand	-0.23	-0.37	-0.24	-0.22	-0.24	-0.24
9. Total public supply to final demand	-1.06	-2.29	-2.54	-2.72	-2.84	-2.93
III. Price indices						
1. Private consumption	0.01	-0.07	-0.20	-0.28	-0.35	-0.44
2. Public consumption	0.02	0.02	-0.03	-0.07	-0.09	-0.10
3. Gross fixed capital formation	-0.00	-0.01	-0.01	-0.02	-0.02	-0.03
A. Residential	0.02	0.04	0.03	0.00	-0.03	-0.07
B. Enterprises	0.00	0.02	0.04	0.06	0.08	0.11
C. Government	0.02	0.03	-0.01	-0.06	-0.09	-0.11
4. Exports	0.02	0.11	0.27	0.44	0.61	0.76
5. Imports	0.04	0.16	0.23	0.21	0.16	0.12
6. Gross domestic product	0.01	-0.05	-0.12	-0.14	-0.13	-0.14
7. Total private supply to final demand	0.01	-0.02	-0.07	-0.07	-0.08	-0.09
IV. Financial sector						
1. Nominal short-term interest rate *	-0.10	-0.29	-0.30	-0.21	-0.22	-0.24
2. Nominal long-term interest rate *	-0.06	-0.16	-0.16	-0.12	-0.12	-0.13
3. Spot exchange rate (local/eur)	0.00	0.00	0.00	0.00	0.00	0.00
4. Effective nominal exchange rate (+: depreciation)	0.15	0.56	0.87	0.94	1.01	1.12
5. Effective real exchange rate	0.13	0.44	0.58	0.47	0.36	0.31
6. Money (M1)	0.07	0.22	0.11	-0.13	-0.22	-0.29
7. Ex-ante stock market correction	0.00	0.00	0.00	0.00	0.00	0.00
V. Labour market						
1. Total employment	-0.28	-0.52	-0.41	-0.29	-0.22	-0.17
A. private sector	-0.10	-0.17	-0.05	0.09	0.18	0.23
B. public sector	-1.17	-2.32	-2.30	-2.28	-2.26	-2.25
2. Unemployment rate *	0.24	0.44	0.33	0.22	0.16	0.13
3. Nominal wage private sector	-0.03	-0.24	-0.55	-0.77	-0.91	-1.01
4. Nominal wage public sector	-0.06	-0.32	-0.67	-0.91	-1.06	-1.16
5. Nominal wage total economy	-0.05	-0.29	-0.61	-0.83	-0.97	-1.07
6. Real take home private wage	-0.04	-0.17	-0.35	-0.49	-0.56	-0.57
7. Real producer private wage	-0.02	-0.19	-0.45	-0.66	-0.80	-0.88

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
8. Real take home public wage	-0.06	-0.25	-0.47	-0.63	-0.71	-0.73
9. Real producer public wage	-0.05	-0.27	-0.57	-0.80	-0.95	-1.04
10. Contemporaneous productivity	-0.13	-0.20	-0.19	-0.31	-0.42	-0.47
VI. Household sector						
Total real means	0.00	0.04	0.03	-0.01	-0.03	-0.05
o/w Disposable real income	-0.34	-0.77	-0.88	-0.96	-1.03	-1.05
Inherited assets (deflated by the consumption price)	0.06	0.24	0.26	0.09	0.00	-0.06
- o/w financial assets (excluding money)	0.26	0.77	0.56	-0.08	-0.42	-0.72
- o/w residential buildings	-0.01	0.07	0.18	0.21	0.24	0.29
- o/w inventories	0.00	0.01	0.01	0.01	-0.00	-0.01
Expected future real income	-0.02	-0.05	-0.06	-0.06	-0.05	-0.04
VII. Fiscal sector						
1. Nominal total revenue	-0.34	-0.78	-0.92	-1.01	-1.11	-1.18
2. Real total revenue	-0.35	-0.73	-0.79	-0.88	-0.98	-1.04
3. Real direct income tax	-0.40	-0.95	-1.13	-1.27	-1.40	-1.50
4. Real indirect income tax	-0.31	-0.53	-0.41	-0.42	-0.46	-0.47
5. Real social security contributions	-0.40	-0.95	-1.13	-1.27	-1.40	-1.50
6. Nominal total expenditures	-0.88	-2.01	-2.39	-2.65	-2.89	-3.12
7. Real total expenditures	-0.88	-1.96	-2.27	-2.52	-2.76	-2.98
8. Real transfers to households	-0.65	-1.57	-1.92	-2.19	-2.52	-2.76
9. Public consumption of goods	-1.16	-2.27	-2.23	-2.25	-2.26	-2.25
10. Real wage bill	-1.23	-2.60	-2.84	-3.05	-3.19	-3.28
11. Real capital formation	-1.27	-2.52	-2.48	-2.47	-2.47	-2.47
12. Real interest payments	-0.01	-0.71	-2.17	-3.22	-4.11	-5.45
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	-0.03	-0.04	-0.02	-0.01	-0.01	-0.01
2. Effective foreign price level	0.00	-0.00	-0.02	-0.03	-0.03	-0.04
3. Effective foreign short-term interest rate *	-0.04	-0.11	-0.12	-0.08	-0.08	-0.08
IX. Stocks						
1. Residential buildings	-0.01	-0.03	-0.06	-0.09	-0.12	-0.15
2. Enterprise capital	-0.00	0.02	0.05	0.07	0.09	0.11
3. Public capital	-0.07	-0.21	-0.34	-0.47	-0.59	-0.70
4. Real money balance	0.06	0.29	0.31	0.15	0.13	0.14
5. Real public debt	-0.43	-1.32	-2.36	-3.59	-4.95	-6.41
6. Inventories	-0.09	-0.20	-0.21	-0.21	-0.21	-0.22
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	0.26	0.59	0.70	0.77	0.83	0.90
A. Ex ante fiscal deficit (% of GDP)* (+: surplus)	0.50	1.00	1.00	1.00	1.00	1.00
B. Ex ante cut in expenditures	-1.16	-2.31	-2.30	-2.28	-2.27	-2.26
2. Debt (% of GDP)*	-0.05	-0.44	-1.14	-1.87	-2.62	-3.41
3. Current account (% of GDP)*	0.04	0.09	0.15	0.22	0.27	0.31
4. Trade balance (% of GDP)*	0.04	0.10	0.15	0.22	0.27	0.31
5. Net saving by households (% of disposable income)*	-0.21	-0.56	-0.77	-0.87	-0.91	-0.93
6. Output gap*	-0.21	-0.32	-0.18	-0.17	-0.19	-0.20
7. Weight of EU in total BE trade	0.63	0.63	0.63	0.63	0.63	0.63

VI A world-wide stock market correction

From 2001 to 2002, euro area stock markets fell, on a year-on-year average, by a little more than 25 percent. This fall averaged about 17 percent in the other, non-euro, European Union countries, 17 percent in the United States, and about 16 percent in Japan. In this section, we present NIME simulation results in which we assess the effects of this fall in equity markets on world growth and inflation. In order to give more structure to our analysis, we will assume here that the stock market correction is caused by an increase in the risk premium in the stock markets.

In the NIME model, an increase in the risk premium affects the value of households' financial assets, the user cost of capital, and the price of capital. In Appendix C, we show that a permanent increase in the risk premium will reduce the price of capital in the long run, but that it will not affect the user cost of capital in the long run[1]. Indeed, as the discount rate increases[2], the present value of future returns on capital declines, triggering a drop in the price of capital.[3] The user cost of capital tends to increase as the financing cost increases. However, this increase will be tempered by the fall in the price of capital goods. It is also shown in Appendix C that, in the steady state, the latter effect is exactly equal to the former, so that the user cost of capital is unaffected by a risk premium shock. Moreover, since the long run user cost of capital is not affected, long run demand for capital will also be unaffected. However, it should be noted that, in the medium-term, the user cost will change inasmuch as each of its components adjusts at its own distinct speed.

In the first period, real euro area GDP falls (-0.58%) because the increased equity risk premium induces an overall contraction in demand. As a consequence, inflationary pressures are reduced and monetary authorities react by cutting short-term interest rates (-31 basis points). This rate cut reduces the long-term interest rate, as well as the discount rate in equity markets, thereby limiting the initial deflationary pressures of the increase in the equity risk premium. Let us now have a closer look at the different components of demand, as presented in Table 4.

Private consumption falls (-0.45%), primarily because of the reduction in value of households' financial assets, but also because disposable income decreases (-0.10%), and because the fall in interest rates is insufficient to offset the changes in the scale variables. Total gross fixed capital formation falls sharply (-1.08%), be-

1. The user cost of capital is determined by the interest rate (plus a risk premium, for the enterprise sector), the rate of depreciation (which is assumed constant), the expected change in the price of capital, and the price of capital. See, for example, equation (C.3) of Appendix C.
2. The discount rate in the stock market is equal to the long term interest rate in the bond market, plus the risk premium.
3. See Appendix C for further details.

cause the increase in the equity risk premium raises the user cost of capital, and because the overall decline in economic activity depresses investment even further. Enterprise sector investment is the most affected (-1.64%), because the risk premium shock only affects the riskiness of enterprise capital. Public investment is reduced (-0.16%), following the decline in real GDP. Investment in residential buildings also falls (-0.13%), because of the reduction in household disposable income and total available means, despite a fall in the user cost of residential buildings. Exports fall (-0.47%) primarily due to the world-wide fall in economic activity (-0.32% for the effective foreign output level), resulting from the world-wide increase in the equity risk premium. Euro area imports fall (-0.38%), but less than exports (-0.47%), so that the current account to GDP ratio shows a very slight deterioration (2 basis points).

In the first period, the general price level (+0.03%, GDP deflator) and the effective nominal euro exchange rate (-0.05%) change only little. However, private sector employment is adversely affected (-0.25%), and the unemployment rate increases notably (+0.18 basis points), because private supply to final demand falls (-0.60%). The shock produces only a small fall in the real wage rate (-0.08%). Furthermore, due to the working of the automatic fiscal stabilisers, the fiscal deficit to GDP ratio increases (18 basis points), while the public debt to GDP ratio increases (54 basis points).

In the second period, real GDP continues to shrink (-0.77%), and prices start to fall (-0.24%, GDP deflator). As a consequence, the nominal short-term interest rate is cut further (-77 basis points), thereby tempering the financial asset losses of households and the increases in the user cost of capital. Moreover, the lower price level also compensates for the loss of household nominal income and assets, while the depreciation of the effective nominal euro exchange rate (+0.18%) improves international competitiveness. All these changes help to stabilise the fall in private consumption (-0.49% in the second period, compared to -0.45% in the first period), exports (-0.49%, compared to -0.47%), and to a lesser extent imports (-0.47%, compared to -0.38%). However, total gross fixed capital formation continues to drop (-1.86%), dragged down by the very sharp reduction in enterprise sector investment (-2.80%) which react to shocks with long lags. Private sector employment (-0.31%) and the unemployment rate (+21 basis points) continue to deteriorate, because the fall in the real producer wage rate (-0.25%) is too small to offset the fall in private supply (-0.76%). Finally, note that while the public budget deficit to GDP ratio stabilises (-18 basis points), the public debt to GDP ratio continues to deteriorate (+0.92 points), because of the continued fall in nominal GDP (-0.91%).

Table 4 - A world-wide stock market correction: macroeconomic effects for the euro area[1]

	Period 1	Period 2
I. Steady state assumptions		
1. Trend productivity growth *	0.00	0.00
2. Population	0.00	0.00
3. Secular inflation *	0.00	0.00
4. Natural unemployment rate *	0.00	0.00
5. Natural real interest rate *	0.00	0.00
II. Aggregate demand-supply		
1. Private consumption	-0.45	-0.49
2. Public consumption	-0.05	-0.18
3. Gross fixed capital formation	-1.08	-1.86
A. Residential	-0.13	-0.33
B. Enterprises	-1.64	-2.80
C. Public	-0.16	-0.22
4. Total domestic expenditure	-0.57	-0.77
5. Exports	-0.47	-0.49
6. Imports	-0.38	-0.47
7. Gross Domestic Product	-0.58	-0.77
8. Total private supply to final demand	-0.60	-0.76
9. Total public supply to final demand	-0.08	-0.30
III. Price indices		
1. Private consumption	-0.00	-0.24
2. Public consumption	0.01	-0.05
3. Gross fixed capital formation	-0.02	-0.09
A. Residential	0.00	-0.01
B. Enterprises	-0.08	-0.22
C. Government	0.01	-0.04
4. Exports	-0.01	0.01
5. Imports	-0.01	0.03
6. Gross domestic product	0.03	-0.14
7. Total private supply to final demand	0.02	-0.12
IV. Financial sector		
1. Nominal short-term interest rate *	-0.31	-0.77
2. Nominal long-term interest rate *	-0.17	-0.43
3. Spot exchange rate (local/eur)	0.00	0.00
4. Effective nominal exchange rate (+: depreciation)	-0.05	0.18
5. Effective real exchange rate	-0.05	0.12
6. Money (M1)	-0.21	0.30
7. Ex-ante stock market correction	-25.36	-25.36
V. Labour market		
1. Total employment	-0.21	-0.26
A. private sector	-0.25	-0.31
B. public sector	0.01	0.01
2. Unemployment rate *	0.18	0.21
3. Nominal wage private sector	-0.06	-0.37
4. Nominal wage public sector	-0.08	-0.41
5. Nominal wage total economy	-0.06	-0.37
6. Real take home private wage	-0.06	-0.12

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	Period 1	Period 2
7. Real producer private wage	-0.08	-0.25
8. Real take home public wage	-0.08	-0.17
9. Real producer public wage	-0.11	-0.29
10. Contemporaneous productivity	-0.35	-0.45
VI. Household sector		
Total real means	-0.48	-0.32
o/w Disposable real income	-0.10	-0.28
Inherited assets (deflated by the consumption price)	-1.58	-1.04
- o/w financial assets (excluding money)	-5.59	-4.11
- o/w residential buildings	-0.00	0.23
- o/w inventories	-0.12	-0.17
Expected future real income	-0.02	-0.03
VII. Fiscal sector		
1. Nominal total revenue	-0.28	-0.63
2. Real total revenue	-0.31	-0.50
3. Real direct income tax	-0.14	-0.37
4. Real indirect income tax	-0.56	-0.69
5. Real social security contributions	-0.14	-0.37
6. Nominal total expenditures	0.13	-0.26
7. Real total expenditures	0.10	-0.12
8. Real transfers to households	0.38	0.01
9. Public consumption of goods	-0.02	0.08
10. Real wage bill	-0.11	-0.27
11. Real capital formation	-0.16	-0.22
12. Real interest payments	-0.03	-0.60
13. Direct labour tax rate *	0.00	0.00
VIII. International environment		
1. Effective foreign output	-0.32	-0.37
2. Effective foreign price level	-0.01	-0.06
3. Effective foreign short-term interest rate *	-0.30	-0.65
IX. Stocks		
1. Residential buildings	-0.00	-0.01
2. Enterprise capital	-0.12	-0.31
3. Public capital	-0.01	-0.02
4. Real money balance	-0.21	0.55
5. Real public debt	0.24	0.66
6. Inventories	-0.24	-0.45
X. Memo items		
1. Fiscal deficit (% of GDP)* (+: surplus)	-0.18	-0.18
2. Debt (% of GDP)*	0.54	0.92
3. Current account (% of GDP)*	-0.02	-0.00
4. Trade balance (% of GDP)*	-0.01	0.01
5. Net saving by households (% of disposable income)*	0.33	0.20
6. Output gap*	-0.59	-0.74
7. Weight of EU in total BE trade	0.63	0.63

VII Summary

Each year, the FPB prepares a medium-term outlook for the Belgian economy. One of the key inputs to this exercise is a baseline scenario for the Belgian international economic environment. In this paper, we assess the potential effects of certain risks that may affect this baseline, simulating four different shocks with the NIME model. These four risks are a temporary world-wide autonomous drop in private consumption, a further monetary easing by the ECB, a fiscal consolidation in the euro area, and a sustained world-wide stock market fall. Table 5 summarises the main results of these shocks for the euro area.

Table 5 - The main macro-economic effects for the euro area of alternative shocks: summary table[1]

	03	04	05	06	07	08
A world-wide drop in private consumption						
1. Gross domestic product	-0.85	-0.10	0.06	-0.04	-0.03	0.02
2. Consumption price	-0.01	-0.38	-0.41	-0.39	-0.40	-0.40
3. Nominal short-term interest rate *	-0.46	-0.61	-0.02	0.02	-0.03	0.00
4. Nominal long-term interest rate *	-0.25	-0.34	-0.01	0.01	-0.01	0.00
5. Effective nominal exchange rate (+: depreciation)	-0.22	-0.48	-0.96	-1.01	-0.79	-0.59
6. Fiscal deficit (% of GDP)* (+: surplus)	-0.27	0.06	0.10	0.01	0.00	-0.00
7. Current account (% of GDP)*	-0.03	-0.07	-0.07	-0.11	-0.13	-0.13
A monetary easing in the euro area	03	04	05	06	07	08
1. Gross domestic product	0.00	0.16	0.64	1.04	0.89	0.47
2. Consumption price	0.00	0.02	0.13	0.43	0.82	1.11
3. Nominal short-term interest rate *	0.00	-0.30	-0.90	-0.80	-0.20	0.00
4. Nominal long-term interest rate *	0.00	-0.17	-0.50	-0.44	-0.11	0.00
5. Effective nominal exchange rate (+: depreciation)	0.00	0.67	2.53	3.88	3.64	3.03
6. Fiscal deficit (% of GDP)* (+: surplus)	0.00	0.05	0.22	0.39	0.33	0.17
7. Current account (% of GDP)*	0.00	0.01	0.08	0.24	0.40	0.44
A fiscal consolidation in the euro area	03	04	05	06	07	08
1. Gross domestic product	-0.35	-0.62	-0.50	-0.49	-0.53	-0.54
2. Consumption price	0.01	-0.07	-0.20	-0.28	-0.35	-0.44
3. Nominal short-term interest rate *	-0.10	-0.29	-0.30	-0.21	-0.22	-0.24
4. Nominal long-term interest rate *	-0.06	-0.16	-0.16	-0.12	-0.12	-0.13
5. Effective nominal exchange rate (+: depreciation)	0.15	0.56	0.87	0.94	1.01	1.12
6. Fiscal deficit (% of GDP)* (+: surplus)	0.26	0.59	0.70	0.77	0.83	0.90
7. Current account (% of GDP)*	0.04	0.09	0.15	0.22	0.27	0.31

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

A world-wide stock market correction

	Period 1	Period 2
1. Gross domestic product	-0.58	-0.77
2. Consumption price	-0.00	-0.24
3. Nominal short-term interest rate *	-0.31	-0.77
4. Nominal long-term interest rate *	-0.17	-0.43
5. Effective nominal exchange rate (+: depreciation)	-0.05	0.18
6. Fiscal deficit (% of GDP)* (+: surplus)	-0.18	-0.18
7. Current account (% of GDP)*	-0.02	-0.00

In Table 6, we summarise the main effects for the Belgian international environment of each of the shocks discussed in this paper. These results highlight the fact that the risks facing the Belgian economy can be severe and persistent over time.

Table 6 - The effects for the Belgian international economic environment of alternative shocks[1]

A world-wide drop in private consumption

	03	04	05	06	07	08
Export markets, in constant prices	-0.84	-0.17	-0.05	-0.01	0.04	0.03
Effective nominal exchange rate (+: depreciation)	-0.08	-0.17	-0.38	-0.40	-0.31	-0.23
World prices (in euro)	-0.05	-0.21	-0.53	-0.74	-0.82	-0.83
Euro short-term interest rate *	-0.46	-0.61	-0.02	0.02	-0.03	0.00
Euro long-term interest rate *	-0.25	-0.34	-0.01	0.01	-0.01	0.00

A monetary easing in the euro area

	03	04	05	06	07	08
Export markets, in constant prices	0.00	0.11	0.35	0.42	0.26	0.19
Effective nominal exchange rate (+: depreciation)	0.00	0.28	1.06	1.62	1.52	1.27
World prices (in euro)	0.00	0.23	0.94	1.72	2.14	2.37
Euro short-term interest rate *	0.00	-0.30	-0.90	-0.80	-0.20	0.00
Euro long-term interest rate *	0.00	-0.17	-0.50	-0.44	-0.11	0.00

A fiscal consolidation in the euro area

	03	04	05	06	07	08
Export markets, in constant prices	-0.14	-0.23	-0.20	-0.22	-0.23	-0.21
Effective nominal exchange rate (+: depreciation)	0.06	0.23	0.36	0.39	0.42	0.47
World prices (in euro)	0.05	0.20	0.37	0.50	0.62	0.74
Euro short-term interest rate *	-0.10	-0.29	-0.30	-0.21	-0.22	-0.24
Euro long-term interest rate *	-0.06	-0.16	-0.16	-0.12	-0.12	-0.13

A world-wide stock market correction

	Period 1	Period 2
Export markets, in constant prices	-0.55	-0.67
Effective nominal exchange rate (+: depreciation)	-0.02	0.08
World prices (in euro)	0.00	0.08
Euro short-term interest rate *	-0.31	-0.77
Euro long-term interest rate *	-0.17	-0.43

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

VIII Appendix A: The baseline scenario for the Belgian international economic environment

The international environment of the Federal Planning Bureau's 2003-2008 Economic Outlook[1] is based on the latest available scenarios from the European Commission and the OECD. The short term, i.e. the 2002-2003 period, is based on Commission forecasts[2], adapted when this was deemed necessary in order to account for the latest available information, mainly with respect to exchange rates, interest rates, and the prices of raw materials. The scenario's 2004-2008 sub-period is based mainly on the latest medium term projections of the OECD[3].

Table 7 - International economic environment of the Planning Bureau's 2003-2008 Economic Outlook [4]

	2002	2003	2004	2005	2006	2007	2008	Period averages 1997-2002	2003-2008
Belgian potential export markets	0.5	4.3	6.4	6.0	5.6	5.5	5.5	6.2	5.6
GDP, euro area	0.9	1.0	2.3	2.5	2.4	2.3	2.3	2.3	2.1
GDP, United States	2.4	2.4	2.5	3.5	3.4	3.4	3.4	3.2	3.1
Consumption price, euro area	2.2	2.1	1.7	1.6	1.6	1.5	1.5	1.9	1.6
World prices, excl. energy, in USD									
.Exports (goods & services, excl. energy)	3.9	10.6	0.5	1.7	1.4	1.4	1.4	-3.2	2.8
.Imports (goods & services, excl. energy)	4.2	11.1	0.5	1.6	1.4	1.4	1.4	-3.6	2.9
World prices, excl. energy, in euro									
.Exports (goods & services, excl. energy)	-1.4	-1.3	0.7	1.9	1.6	1.6	1.6	1.8	1.0
.Imports (goods & services, excl. energy)	-1.1	-0.9	0.7	1.8	1.6	1.6	1.6	1.2	1.1
Oil price (Brent, USD per barrel) *	25.0	28.8	25.3	26.0	26.6	27.2	27.9	21.2	27.0
Exchange rate, in level									
.EUR in USD (x 100) *	94.3	105.6	105.4	105.2	105.0	104.8	104.6	101.3	105.1
Nominal short term interest rates (3 months)									
Euro area *	3.3	2.4	2.7	3.6	4.4	4.6	4.6	--	3.7
United States *	1.7	1.4	2.4	3.3	4.2	4.6	4.6	4.7	3.4
Nominal long term interest rates (10 years)									
Germany *	4.8	4.2	4.3	4.8	5.2	5.4	5.5	4.9	5.0
United States *	4.6	4.1	4.8	5.1	5.4	5.6	5.8	5.5	5.1

1. See Federal Planning Bureau (2003), or browse to the Bureau's website at: http://www.plan.be/en/pub/ecofor/detail_ef.php?pub=EF20032008
2. See European Commission (2002.b).
3. I.e., the OECD medium term reference scenario of November 2002. See Federal Planning Bureau (2003) for more details.
4. Variables without * expressed in growth rates (%). Variables with * are expressed in levels.

IX Appendix B: Additional simulation results for the other country blocks

A. A world-wide autonomous drop in private consumption

Table 8 - A world-wide drop in private consumption: macroeconomic effects for the NE block[1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	-1.15	-0.69	-0.19	-0.01	0.06	0.10
2. Public consumption	-0.09	-0.13	-0.12	-0.10	-0.07	-0.05
3. Gross fixed capital formation	-0.11	0.23	0.06	-0.06	-0.16	-0.25
A. Residential	0.11	0.53	0.35	0.28	0.27	0.25
B. Enterprises	-0.01	0.26	0.01	-0.14	-0.28	-0.39
C. Public	-1.38	-0.58	-0.07	0.07	0.09	0.08
4. Total domestic expenditure	-0.77	-0.41	-0.13	-0.03	0.00	0.01
5. Exports	-0.80	-0.20	-0.03	0.01	0.03	0.04
6. Imports	-0.74	-0.32	-0.12	-0.05	0.01	0.03
7. Gross Domestic Product	-0.79	-0.36	-0.09	-0.01	0.01	0.01
8. Total private supply to final demand	-0.82	-0.36	-0.09	-0.00	0.02	0.03
9. Total public supply to final demand	-0.18	-0.27	-0.25	-0.20	-0.16	-0.12
III. Price indices						
1. Private consumption	-0.01	-0.32	-0.44	-0.47	-0.47	-0.47
2. Public consumption	-0.03	-0.22	-0.36	-0.39	-0.39	-0.38
3. Gross fixed capital formation	0.01	0.02	0.02	0.01	-0.01	-0.03
A. Residential	-0.02	-0.08	-0.16	-0.24	-0.31	-0.35
B. Enterprises	0.02	0.06	0.09	0.10	0.09	0.07
C. Government	-0.02	-0.11	-0.22	-0.32	-0.40	-0.45
4. Exports	-0.12	-0.32	-0.39	-0.39	-0.40	-0.41
5. Imports	-0.07	-0.23	-0.30	-0.36	-0.39	-0.39
6. Gross domestic product	-0.02	-0.27	-0.37	-0.38	-0.37	-0.38
7. Total private supply to final demand	-0.04	-0.27	-0.35	-0.37	-0.38	-0.38

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
IV. Financial sector						
1. Nominal short-term interest rate *	-0.43	-0.63	-0.21	-0.05	-0.01	0.01
2. Nominal long-term interest rate *	-0.11	-0.16	-0.05	-0.01	-0.00	0.00
3. Spot exchange rate (local/eur)	-0.07	0.03	0.58	0.61	0.39	0.25
4. Effective nominal exchange rate (+: depreciation)	-0.26	-0.35	-0.13	-0.14	-0.21	-0.20
5. Effective real exchange rate	-0.14	-0.15	0.10	0.07	-0.02	-0.01
6. Money (M1)	0.79	1.54	1.25	0.78	0.39	0.10
7. Ex-ante stock market correction	0.00	0.00	0.00	0.00	0.00	0.00
V. Labour market						
1. Total employment	-0.20	-0.22	-0.05	0.04	0.06	0.06
A. private sector	-0.24	-0.26	-0.06	0.05	0.08	0.07
B. public sector	0.00	0.00	0.00	0.00	0.00	0.00
2. Unemployment rate *	0.16	0.16	0.02	-0.04	-0.05	-0.04
3. Nominal wage private sector	-0.13	-0.32	-0.42	-0.43	-0.41	-0.39
4. Nominal wage public sector	-0.24	-0.52	-0.64	-0.61	-0.56	-0.50
5. Nominal wage total economy	-0.15	-0.35	-0.45	-0.45	-0.43	-0.40
6. Real take home private wage	-0.12	0.00	0.02	0.04	0.06	0.08
7. Real producer private wage	-0.09	-0.05	-0.06	-0.06	-0.03	-0.01
8. Real take home public wage	-0.22	-0.21	-0.20	-0.15	-0.08	-0.03
9. Real producer public wage	-0.20	-0.26	-0.28	-0.25	-0.18	-0.12
10. Contemporaneous productivity	-0.58	-0.10	-0.02	-0.06	-0.06	-0.04
VI. Household sector						
Total real means	0.17	0.32	0.19	0.15	0.14	0.13
o/w Disposable real income	-0.14	-0.15	-0.04	-0.00	0.03	0.05
Inherited assets (deflated by the consumption price)	0.73	1.41	0.86	0.61	0.54	0.48
- o/w financial assets (excluding money)	2.31	3.65	1.85	1.21	1.08	1.00
- o/w residential buildings	-0.01	0.22	0.27	0.25	0.23	0.20
- o/w inventories	0.11	0.25	0.21	0.17	0.15	0.14
Expected future real income	-0.04	-0.07	-0.04	-0.00	0.02	0.02
VII. Fiscal sector						
1. Nominal total revenue	-0.49	-0.55	-0.46	-0.42	-0.40	-0.38
2. Real total revenue	-0.47	-0.28	-0.09	-0.04	-0.03	-0.00
3. Real direct income tax	-0.15	-0.24	-0.12	-0.08	-0.06	-0.03
4. Real indirect income tax	-0.79	-0.34	-0.08	-0.01	0.01	0.02
5. Real social security contributions	-0.15	-0.24	-0.12	-0.08	-0.06	-0.03
6. Nominal total expenditures	0.14	-0.31	-0.43	-0.50	-0.51	-0.48
7. Real total expenditures	0.16	-0.04	-0.06	-0.12	-0.14	-0.11
8. Real transfers to households	0.59	-0.01	-0.07	-0.30	-0.37	-0.32
9. Public consumption of goods	-0.01	0.05	0.01	-0.02	-0.01	0.00
10. Real wage bill	-0.22	-0.25	-0.26	-0.23	-0.18	-0.12
11. Real capital formation	-1.38	-0.58	-0.07	0.07	0.09	0.08
12. Real interest payments	0.02	0.45	0.80	1.74	2.23	2.69
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	-0.58	-0.10	-0.00	-0.03	-0.01	0.01
2. Effective foreign price level	0.00	-0.12	-0.16	-0.18	-0.20	-0.22
3. Effective foreign short-term interest rate *	-0.53	-0.69	-0.16	-0.06	-0.05	-0.01

	03	04	05	06	07	08
IX. Stocks						
1. Residential buildings	0.00	0.01	0.02	0.02	0.03	0.03
2. Enterprise capital	0.00	0.05	0.08	0.10	0.11	0.10
3. Public capital	-0.05	-0.07	-0.07	-0.06	-0.06	-0.05
4. Real money balance	0.80	1.86	1.69	1.24	0.86	0.57
5. Real public debt	0.75	1.45	1.87	2.15	2.56	3.58
6. Inventories	-0.28	-0.28	-0.20	-0.12	-0.06	-0.02
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	-0.22	-0.09	-0.02	0.02	0.04	0.04
2. Debt (% of GDP)*	0.52	0.52	0.47	0.40	0.34	0.28
3. Current account (% of GDP)*	-0.03	0.02	0.01	0.01	0.01	-0.00
4. Trade balance (% of GDP)*	-0.03	0.01	0.00	0.01	0.00	-0.01
5. Net saving by households (% of disposable income)*	1.00	0.53	0.15	0.01	-0.04	-0.05
6. Output gap*	-0.77	-0.29	-0.05	-0.00	0.01	0.01
7. Weight of NE in total BE trade	0.11	0.11	0.11	0.11	0.11	0.11

Table 9 - A world-wide drop in private consumption: macroeconomic effects for the US[1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	-1.41	-0.76	-0.37	-0.16	-0.01	0.07
2. Public consumption	-0.20	-0.21	-0.20	-0.15	-0.09	-0.04
3. Gross fixed capital formation	-0.49	-0.17	-0.08	-0.18	-0.16	-0.16
A. Residential	-1.22	-0.71	-0.41	-0.29	-0.14	-0.00
B. Enterprises	-0.12	0.07	0.05	-0.16	-0.20	-0.26
C. Public	-1.18	-0.52	-0.24	-0.11	-0.00	0.05
4. Total domestic expenditure	-1.17	-0.52	-0.25	-0.14	-0.04	0.02
5. Exports	-0.70	-0.29	-0.06	0.04	0.09	0.10
6. Imports	-1.27	-0.52	-0.22	-0.16	-0.06	0.03
7. Gross Domestic Product	-1.09	-0.49	-0.23	-0.11	-0.01	0.03
8. Total private supply to final demand	-1.19	-0.51	-0.22	-0.11	-0.01	0.04
9. Total public supply to final demand	-0.27	-0.30	-0.28	-0.22	-0.14	-0.07
III. Price indices						
1. Private consumption	0.00	-0.23	-0.30	-0.34	-0.37	-0.38
2. Public consumption	-0.00	-0.07	-0.16	-0.24	-0.31	-0.35
3. Gross fixed capital formation	-0.05	-0.05	-0.04	-0.04	-0.05	-0.05
A. Residential	-0.00	-0.04	-0.08	-0.12	-0.16	-0.21
B. Enterprises	0.00	0.01	0.02	0.02	0.02	0.02
C. Government	-0.00	-0.04	-0.07	-0.11	-0.15	-0.20
4. Exports	0.01	-0.16	-0.24	-0.22	-0.18	-0.16
5. Imports	0.00	-0.25	-0.22	-0.20	-0.25	-0.29
6. Gross domestic product	-0.02	-0.18	-0.25	-0.29	-0.30	-0.30
7. Total private supply to final demand	-0.02	-0.20	-0.26	-0.28	-0.29	-0.29
IV. Financial sector						
1. Nominal short-term interest rate *	-0.57	-0.58	-0.23	-0.12	-0.06	-0.01
2. Nominal long-term interest rate *	-0.19	-0.19	-0.08	-0.04	-0.02	-0.00
3. Spot exchange rate (local/eur)	0.28	0.17	1.00	1.15	0.89	0.65
4. Effective nominal exchange rate (+: depreciation)	0.04	-0.46	-0.08	0.04	0.02	0.00
5. Effective real exchange rate	0.03	-0.38	0.05	0.13	0.05	0.00
6. Money (M1)	0.91	0.77	0.13	-0.06	-0.16	-0.26
7. Ex-ante stock market correction	0.00	0.00	0.00	0.00	0.00	0.00
V. Labour market						
1. Total employment	-0.42	-0.25	-0.04	0.07	0.12	0.13
A. private sector	-0.51	-0.30	-0.05	0.08	0.14	0.15
B. public sector	0.10	0.02	0.01	-0.00	-0.02	-0.03
2. Unemployment rate *	0.32	0.18	0.02	-0.05	-0.09	-0.09
3. Nominal wage private sector	-0.36	-0.36	-0.42	-0.44	-0.43	-0.40
4. Nominal wage public sector	-0.41	-0.43	-0.48	-0.48	-0.44	-0.38
5. Nominal wage total economy	-0.36	-0.37	-0.43	-0.45	-0.43	-0.39
6. Real take home private wage	-0.36	-0.13	-0.12	-0.10	-0.06	-0.02

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
7. Real producer private wage	-0.34	-0.16	-0.16	-0.17	-0.14	-0.11
8. Real take home public wage	-0.42	-0.21	-0.18	-0.13	-0.07	-0.01
9. Real producer public wage	-0.40	-0.23	-0.22	-0.20	-0.15	-0.09
10. Contemporaneous productivity	-0.68	-0.21	-0.18	-0.19	-0.15	-0.11
VI. Household sector						
Total real means	0.13	0.28	0.25	0.24	0.22	0.20
o/w Disposable real income	-0.39	-0.26	-0.18	-0.15	-0.11	-0.06
Inherited assets (deflated by the consumption price)	0.69	1.16	0.94	0.86	0.79	0.68
- o/w financial assets (excluding money)	1.83	2.56	2.03	1.83	1.66	1.44
- o/w residential buildings	-0.04	0.11	0.15	0.15	0.14	0.12
- o/w inventories	0.09	0.22	0.24	0.24	0.23	0.20
Expected future real income	-0.10	-0.07	-0.01	0.02	0.03	0.03
VII. Fiscal sector						
1. Nominal total revenue	-0.74	-0.59	-0.46	-0.42	-0.37	-0.32
2. Real total revenue	-0.71	-0.41	-0.21	-0.13	-0.07	-0.03
3. Real direct income tax	-0.46	-0.37	-0.21	-0.14	-0.10	-0.06
4. Real indirect income tax	-1.10	-0.50	-0.22	-0.10	-0.01	0.03
5. Real social security contributions	-0.46	-0.37	-0.21	-0.14	-0.10	-0.06
6. Nominal total expenditures	0.32	-0.26	-0.35	-0.43	-0.49	-0.49
7. Real total expenditures	0.35	-0.08	-0.10	-0.14	-0.19	-0.20
8. Real transfers to households	1.24	-0.02	-0.17	-0.44	-0.60	-0.60
9. Public consumption of goods	0.02	0.11	0.09	0.04	-0.01	-0.05
10. Real wage bill	-0.29	-0.23	-0.22	-0.19	-0.15	-0.11
11. Real capital formation	-1.18	-0.52	-0.24	-0.11	-0.00	0.05
12. Real interest payments	0.02	-0.01	0.34	1.08	1.32	1.39
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	-0.45	-0.12	-0.03	-0.02	-0.00	0.01
2. Effective foreign price level	0.00	-0.08	-0.11	-0.13	-0.15	-0.16
3. Effective foreign short-term interest rate *	-0.55	-0.78	-0.24	-0.10	-0.06	-0.01
IX. Stocks						
1. Residential buildings	-0.04	-0.05	-0.06	-0.07	-0.07	-0.07
2. Enterprise capital	-0.01	0.02	0.05	0.05	0.05	0.03
3. Public capital	-0.09	-0.12	-0.13	-0.12	-0.11	-0.10
4. Real money balance	0.91	1.00	0.44	0.29	0.20	0.12
5. Real public debt	0.66	1.05	1.26	1.34	1.33	1.24
6. Inventories	-0.89	-0.55	-0.26	-0.12	-0.02	0.04
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	-0.29	-0.09	-0.03	0.00	0.03	0.05
2. Debt (% of GDP)*	0.82	0.67	0.60	0.53	0.44	0.36
3. Current account (% of GDP)*	0.06	0.04	0.03	0.04	0.04	0.04
4. Trade balance (% of GDP)*	0.07	0.04	0.01	0.02	0.03	0.03
5. Net saving by households (% of disposable income)*	1.00	0.49	0.19	0.01	-0.09	-0.14
6. Output gap*	-1.08	-0.44	-0.21	-0.12	-0.04	0.01
7. Weight of US in total BE trade	0.05	0.05	0.05	0.05	0.05	0.05

Table 10 - A world-wide drop in private consumption: macroeconomic effects for Japan[1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	-1.53	-1.09	-0.76	-0.45	-0.23	-0.08
2. Public consumption	-0.18	-0.30	-0.27	-0.18	-0.10	-0.05
3. Gross fixed capital formation	-0.54	-0.10	0.19	0.21	0.15	0.05
A. Residential	-1.35	0.46	1.14	1.59	1.74	1.66
B. Enterprises	-0.07	0.01	0.15	-0.02	-0.17	-0.30
C. Public	-1.28	-0.73	-0.27	0.01	0.12	0.12
4. Total domestic expenditure	-1.09	-0.69	-0.40	-0.20	-0.08	-0.03
5. Exports	-0.70	0.01	0.52	0.62	0.44	0.17
6. Imports	-0.50	-0.28	-0.47	-0.63	-0.60	-0.43
7. Gross Domestic Product	-1.10	-0.64	-0.27	-0.05	0.04	0.04
8. Total private supply to final demand	-1.12	-0.62	-0.27	-0.08	0.00	0.01
9. Total public supply to final demand	-0.31	-0.52	-0.46	-0.32	-0.19	-0.10
III. Price indices						
1. Private consumption	0.00	-0.55	-0.86	-1.03	-1.11	-1.15
2. Public consumption	0.00	-0.13	-0.31	-0.47	-0.57	-0.63
3. Gross fixed capital formation	-0.01	0.10	0.10	0.04	-0.05	-0.15
A. Residential	0.00	-0.06	-0.17	-0.33	-0.48	-0.59
B. Enterprises	0.08	0.25	0.31	0.27	0.17	0.05
C. Government	0.00	-0.11	-0.28	-0.45	-0.56	-0.63
4. Exports	0.01	0.39	0.86	1.15	1.18	1.06
5. Imports	0.01	0.48	0.65	0.32	-0.24	-0.72
6. Gross domestic product	0.00	-0.29	-0.45	-0.52	-0.55	-0.58
7. Total private supply to final demand	0.00	-0.23	-0.36	-0.44	-0.52	-0.58
IV. Financial sector						
1. Nominal short-term interest rate *	-0.54	-1.15	-0.64	-0.33	-0.15	-0.06
2. Nominal long-term interest rate *	-0.15	-0.31	-0.17	-0.09	-0.04	-0.02
3. Spot exchange rate (local/eur)	0.27	1.85	3.03	2.90	2.15	1.50
4. Effective nominal exchange rate (+: depreciation)	0.03	1.48	2.12	1.91	1.37	0.93
5. Effective real exchange rate	0.02	0.96	1.08	0.57	-0.01	-0.33
6. Money (M1)	2.21	3.96	1.31	0.19	-0.36	-0.66
7. Ex-ante stock market correction	0.00	0.00	0.00	0.00	0.00	0.00
V. Labour market						
1. Total employment	-0.14	-0.03	0.07	0.10	0.08	0.03
A. private sector	-0.15	-0.03	0.08	0.11	0.08	0.04
B. public sector	0.01	0.00	-0.01	-0.01	-0.01	-0.01
2. Unemployment rate *	0.08	0.01	-0.04	-0.05	-0.04	-0.01
3. Nominal wage private sector	-0.40	-0.77	-0.86	-0.83	-0.76	-0.71
4. Nominal wage public sector	-0.40	-0.77	-0.86	-0.83	-0.76	-0.71
5. Nominal wage total economy	-0.39	-0.77	-0.87	-0.84	-0.77	-0.71
6. Real take home private wage	-0.40	-0.22	-0.01	0.20	0.35	0.43

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
7. Real producer private wage	-0.40	-0.54	-0.51	-0.39	-0.25	-0.13
8. Real take home public wage	-0.40	-0.22	-0.00	0.20	0.35	0.44
9. Real producer public wage	-0.40	-0.54	-0.51	-0.39	-0.24	-0.13
10. Contemporaneous productivity	-0.97	-0.59	-0.35	-0.19	-0.08	-0.03
VI. Household sector						
Total real means	0.01	0.27	0.32	0.33	0.32	0.30
o/w Disposable real income	-0.38	-0.31	-0.10	0.09	0.22	0.30
Inherited assets (deflated by the consumption price)	0.25	1.11	1.16	1.18	1.18	1.16
- o/w financial assets (excluding money)	0.77	1.95	2.10	2.10	2.07	2.03
- o/w residential buildings	-0.02	0.53	0.81	0.91	0.92	0.89
- o/w inventories	0.00	0.05	0.09	0.13	0.17	0.19
Expected future real income	-0.07	-0.02	0.03	0.05	0.04	0.02
VII. Fiscal sector						
1. Nominal total revenue	-0.73	-0.86	-0.79	-0.72	-0.68	-0.67
2. Real total revenue	-0.73	-0.58	-0.35	-0.20	-0.12	-0.09
3. Real direct income tax	-0.40	-0.60	-0.47	-0.34	-0.25	-0.19
4. Real indirect income tax	-1.04	-0.54	-0.19	-0.02	0.01	-0.01
5. Real social security contributions	-0.40	-0.60	-0.47	-0.34	-0.25	-0.19
6. Nominal total expenditures	0.02	-0.74	-0.94	-0.93	-0.87	-0.80
7. Real total expenditures	0.02	-0.45	-0.49	-0.41	-0.32	-0.22
8. Real transfers to households	0.47	-1.17	-1.27	-1.20	-0.99	-0.75
9. Public consumption of goods	-0.00	0.16	0.14	0.06	-0.02	-0.05
10. Real wage bill	-0.39	-0.48	-0.42	-0.32	-0.22	-0.14
11. Real capital formation	-1.28	-0.73	-0.27	0.01	0.12	0.12
12. Real interest payments	-0.00	0.06	-0.15	0.22	0.38	0.45
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	-0.70	-0.23	-0.08	-0.05	-0.01	0.02
2. Effective foreign price level	-0.01	-0.13	-0.16	-0.18	-0.19	-0.20
3. Effective foreign short-term interest rate *	-0.54	-0.66	-0.20	-0.09	-0.05	-0.01
IX. Stocks						
1. Residential buildings	-0.02	-0.01	0.01	0.04	0.07	0.10
2. Enterprise capital	0.00	0.06	0.15	0.23	0.28	0.29
3. Public capital	-0.08	-0.12	-0.14	-0.15	-0.15	-0.16
4. Real money balance	2.21	4.51	2.17	1.22	0.76	0.49
5. Real public debt	0.12	0.39	0.48	0.48	0.45	0.42
6. Inventories	-0.43	-0.49	-0.39	-0.26	-0.14	-0.08
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	-0.23	-0.04	0.04	0.06	0.06	0.04
2. Debt (% of GDP)*	1.56	1.34	1.01	0.73	0.57	0.54
3. Current account (% of GDP)*	0.01	0.00	0.06	0.19	0.26	0.27
4. Trade balance (% of GDP)*	-0.01	0.07	0.19	0.28	0.31	0.29
5. Net saving by households (% of disposable income)*	1.00	0.67	0.57	0.47	0.38	0.33
6. Output gap*	-1.05	-0.60	-0.31	-0.13	-0.04	-0.01
7. Weight of JP in total BE trade	0.01	0.01	0.01	0.01	0.01	0.01

Table 11 - A world-wide drop in private consumption: macroeconomic effects for the rest of the world[1]

	03	04	05	06	07	08
1. Private supply	-0.22	-0.06	-0.01	-0.01	-0.00	0.01
2. Total exports	-1.83	-0.51	-0.11	-0.09	-0.01	0.06
3. Total imports	-1.70	-0.52	-0.07	-0.01	0.07	0.13
4. Price of exports (in euro)	-0.06	-0.27	-0.69	-1.01	-1.10	-1.02
5. Price of imports (in euro)	-0.05	-0.22	-0.63	-0.94	-1.03	-0.98
6. Effective foreign output	-1.01	-0.33	-0.10	-0.06	-0.01	0.03
7. Effective nominal exchange rate (+: depreciation)	0.20	0.39	0.33	0.34	0.33	0.28
8. Bilateral exchange rate (local/eur)	0.34	0.71	1.18	1.23	1.00	0.76
9. Weight of RW in total BE trade	0.20	0.20	0.20	0.20	0.20	0.20

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

B. Monetary easing in the euro area

Table 12 - A monetary easing in the euro area: macroeconomic effects for the NE block [1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	0.00	-0.01	-0.04	-0.11	-0.16	-0.17
2. Public consumption	0.00	0.01	0.03	0.05	0.05	0.00
3. Gross fixed capital formation	0.00	-0.00	-0.08	-0.31	-0.54	-0.61
A. Residential	0.00	0.01	-0.08	-0.41	-0.76	-0.85
B. Enterprises	0.00	-0.01	-0.09	-0.32	-0.53	-0.61
C. Public	0.00	0.02	0.01	-0.12	-0.21	-0.16
4. Total domestic expenditure	0.00	-0.00	-0.04	-0.11	-0.19	-0.22
5. Exports	0.00	0.07	0.23	0.27	0.22	0.24
6. Imports	0.00	0.03	0.12	0.15	0.04	-0.06
7. Gross Domestic Product	0.00	0.01	0.00	-0.07	-0.13	-0.10
8. Total private supply to final demand	0.00	0.02	0.04	-0.01	-0.09	-0.09
9. Total public supply to final demand	0.00	0.01	0.06	0.11	0.10	0.01
III. Price indices						
1. Private consumption	0.00	-0.02	-0.09	-0.14	-0.15	-0.16
2. Public consumption	0.00	-0.06	-0.29	-0.62	-0.84	-0.87
3. Gross fixed capital formation	0.00	-0.01	-0.05	-0.12	-0.21	-0.29
A. Residential	0.00	-0.03	-0.15	-0.34	-0.51	-0.63
B. Enterprises	0.00	-0.00	-0.01	-0.03	-0.07	-0.13
C. Government	0.00	-0.04	-0.18	-0.42	-0.65	-0.80
4. Exports	0.00	-0.18	-0.86	-1.78	-2.27	-2.17
5. Imports	0.00	-0.12	-0.49	-0.82	-0.88	-0.80
6. Gross domestic product	0.00	-0.05	-0.26	-0.58	-0.80	-0.84
7. Total private supply to final demand	0.00	-0.07	-0.32	-0.65	-0.83	-0.83
IV. Financial sector						
1. Nominal short-term interest rate *	0.00	-0.03	-0.09	-0.08	-0.05	-0.03
2. Nominal long-term interest rate *	0.00	-0.01	-0.02	-0.02	-0.01	-0.01
3. Spot exchange rate (local/eur)	0.00	-0.82	-3.12	-4.76	-4.55	-3.90
4. Eff. nom. exchange rate (+: depreciation)	0.00	-0.40	-1.59	-2.46	-2.41	-2.12
5. Eff. real exchange rate	0.00	-0.21	-0.66	-0.50	0.22	0.55
6. Money (M1)	0.00	0.03	0.11	0.12	0.05	-0.03
7. Ex-ante stock market correction	0.00	0.00	0.00	0.00	0.00	0.00
V. Labour market						
1. Total employment	0.00	0.00	-0.01	-0.06	-0.11	-0.11
A. private sector	0.00	0.00	-0.02	-0.07	-0.14	-0.13
B. public sector	0.00	0.00	0.00	0.00	0.00	0.00
2. Unemployment rate *	0.00	-0.00	0.01	0.05	0.08	0.07
3. Nominal wage private sector	0.00	-0.04	-0.22	-0.46	-0.64	-0.72
4. Nominal wage public sector	0.00	-0.04	-0.22	-0.50	-0.73	-0.86

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
5. Nominal wage total economy	0.00	-0.04	-0.22	-0.47	-0.65	-0.74
6. Real take home private wage	0.00	-0.02	-0.13	-0.31	-0.48	-0.56
7. Real producer private wage	0.00	0.02	0.10	0.19	0.19	0.11
8. Real take home public wage	0.00	-0.02	-0.13	-0.35	-0.58	-0.70
9. Real producer public wage	0.00	0.02	0.09	0.15	0.10	-0.03
10. Contemporaneous productivity	0.00	0.02	0.05	0.06	0.05	0.04
VI. Household sector						
Total real means	0.00	0.01	0.03	0.00	-0.04	-0.07
o/w Disposable real income	0.00	-0.01	-0.08	-0.22	-0.37	-0.45
Inherited assets (deflated by the consumption price)	0.00	0.04	0.13	0.07	-0.07	-0.16
- o/w financial assets (excluding money)	0.00	0.13	0.45	0.46	0.24	0.11
- o/w residential buildings	0.00	-0.01	-0.08	-0.21	-0.33	-0.41
- o/w inventories	0.00	0.01	0.02	0.01	-0.02	-0.05
Expected future real income	0.00	0.00	-0.00	-0.02	-0.03	-0.04
VII. Fiscal sector						
1. Nominal total revenue	0.00	-0.04	-0.23	-0.52	-0.74	-0.78
2. Real total revenue	0.00	0.01	0.03	0.05	0.07	0.06
3. Real direct income tax	0.00	0.01	0.07	0.17	0.23	0.19
4. Real indirect income tax	0.00	0.00	-0.02	-0.07	-0.10	-0.08
5. Real social security contributions	0.00	0.01	0.07	0.17	0.23	0.19
6. Nominal total expenditures	0.00	-0.04	-0.16	-0.28	-0.34	-0.37
7. Real total expenditures	0.00	0.01	0.10	0.30	0.47	0.46
8. Real transfers to households	0.00	0.02	0.23	0.68	1.06	1.04
9. Public consumption of goods	0.00	-0.01	-0.03	-0.04	-0.04	-0.03
10. Real wage bill	0.00	0.01	0.03	0.08	0.07	-0.02
11. Real capital formation	0.00	0.02	0.01	-0.12	-0.21	-0.16
12. Real interest payments	0.00	0.05	0.23	0.64	1.53	3.25
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	0.00	0.07	0.29	0.44	0.34	0.18
2. Effective foreign price	0.00	0.01	0.07	0.21	0.38	0.52
3. Effective foreign short term interest rate *	0.00	-0.17	-0.52	-0.46	-0.12	-0.01
IX. Stocks						
1. Residential buildings	0.00	0.00	0.00	-0.00	-0.01	-0.03
2. Enterprise capital	0.00	0.00	0.02	0.04	0.06	0.06
3. Public capital	0.00	0.00	0.01	0.01	-0.00	-0.01
4. Real money balance	0.00	0.05	0.20	0.26	0.20	0.13
5. Real public debt	0.00	0.06	0.43	1.40	3.25	7.00
6. Inventories	0.00	0.01	0.02	0.01	-0.03	-0.05
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	0.00	-0.00	-0.03	-0.09	-0.14	-0.14
A. Ex ante fiscal deficit (% of GDP)* (+: surplus)	-.-	-.-	-.-	-.-	-.-	-.-
B. Ex ante cut in expenditures	-.-	-.-	-.-	-.-	-.-	-.-
2. Debt (% of GDP)*	0.00	0.01	0.10	0.27	0.45	0.56
3. Current account (% of GDP)*	0.00	-0.01	-0.09	-0.28	-0.42	-0.38
4. Trade balance (% of GDP)*	0.00	-0.01	-0.09	-0.28	-0.41	-0.37
5. Net saving by households (% of disposable income)*	0.00	-0.00	-0.04	-0.12	-0.21	-0.27
6. Output gap*	0.00	0.02	0.04	0.00	-0.06	-0.05
7. Weight of NE in total BE trade	0.11	0.11	0.11	0.11	0.11	0.11

Table 13 - A monetary easing in the euro area: macroeconomic effects for the US[1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	0.00	0.00	-0.00	-0.03	-0.04	-0.03
2. Public consumption	0.00	-0.00	-0.01	-0.01	-0.00	0.01
3. Gross fixed capital formation	0.00	0.00	-0.03	-0.10	-0.15	-0.11
A. Residential	0.00	0.00	-0.07	-0.21	-0.29	-0.21
B. Enterprises	0.00	0.00	-0.02	-0.07	-0.12	-0.10
C. Public	0.00	-0.00	-0.04	-0.09	-0.08	0.00
4. Total domestic expenditure	0.00	0.00	-0.01	-0.04	-0.06	-0.03
5. Exports	0.00	0.01	0.01	0.02	0.04	0.11
6. Imports	0.00	0.04	0.16	0.22	0.08	-0.09
7. Gross Domestic Product	0.00	-0.00	-0.04	-0.08	-0.07	0.00
8. Total private supply to final demand	0.00	0.01	-0.01	-0.04	-0.05	-0.02
9. Total public supply to final demand	0.00	-0.00	-0.01	-0.01	-0.00	0.01
III. Price indices						
1. Private consumption	0.00	-0.01	-0.03	-0.03	-0.02	-0.01
2. Public consumption	0.00	-0.01	-0.05	-0.10	-0.12	-0.11
3. Gross fixed capital formation	0.00	-0.00	-0.02	-0.04	-0.04	-0.04
A. Residential	0.00	-0.01	-0.04	-0.08	-0.08	-0.07
B. Enterprises	0.00	-0.00	-0.00	-0.00	-0.00	-0.00
C. Government	0.00	-0.01	-0.04	-0.08	-0.08	-0.07
4. Exports	0.00	-0.10	-0.45	-0.84	-0.93	-0.77
5. Imports	0.00	-0.10	-0.33	-0.35	-0.11	0.05
6. Gross domestic product	0.00	-0.00	-0.03	-0.08	-0.13	-0.14
7. Total private supply to final demand	0.00	-0.02	-0.07	-0.13	-0.13	-0.11
IV. Financial sector						
1. Nominal short-term interest rate *	0.00	-0.01	-0.04	-0.02	0.00	0.00
2. Nominal long-term interest rate *	0.00	-0.00	-0.01	-0.01	0.00	0.00
3. Spot exchange rate (local/eur)	0.00	-0.88	-3.19	-4.48	-3.85	-3.06
4. Eff. nom. exchange rate (+: depreciation)	0.00	-0.30	-1.05	-1.24	-0.79	-0.50
5. Eff. real exchange rate	0.00	-0.20	-0.60	-0.37	0.24	0.43
6. Money (M1)	0.00	0.01	0.02	-0.01	-0.04	-0.03
7. Ex-ante stock market correction	0.00	0.00	0.00	0.00	0.00	0.00
V. Labour market						
1. Total employment	0.00	0.00	-0.00	-0.01	-0.02	-0.01
A. private sector	0.00	0.00	-0.00	-0.02	-0.03	-0.01
B. public sector	0.00	0.00	0.01	0.02	0.02	0.01
2. Unemployment rate *	0.00	-0.00	0.00	0.01	0.02	0.01
3. Nominal wage private sector	0.00	-0.01	-0.07	-0.13	-0.14	-0.11
4. Nominal wage public sector	0.00	-0.01	-0.07	-0.13	-0.14	-0.12
5. Nominal wage total economy	0.00	-0.01	-0.07	-0.13	-0.14	-0.11
6. Real take home private wage	0.00	-0.01	-0.04	-0.10	-0.12	-0.10

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
7. Real producer private wage	0.00	0.00	0.00	-0.00	-0.01	-0.00
8. Real take home public wage	0.00	-0.00	-0.04	-0.10	-0.13	-0.11
9. Real producer public wage	0.00	0.00	0.00	-0.00	-0.01	-0.00
10. Contemporaneous productivity	0.00	0.00	-0.00	-0.02	-0.02	-0.00
VI. Household sector						
Total real means	0.00	0.00	0.01	0.00	-0.01	-0.01
o/w Disposable real income	0.00	0.00	-0.02	-0.07	-0.10	-0.08
Inherited assets (deflated by the consumption price)	0.00	0.02	0.05	0.02	-0.03	-0.04
- o/w financial assets (excluding money)	0.00	0.03	0.12	0.08	-0.00	-0.04
- o/w residential buildings	0.00	-0.00	-0.02	-0.04	-0.05	-0.06
- o/w inventories	0.00	0.00	0.01	0.01	-0.01	-0.01
Expected future real income	0.00	0.00	-0.00	-0.00	-0.00	-0.00
VII. Fiscal sector						
1. Nominal total revenue	0.00	-0.01	-0.07	-0.13	-0.15	-0.11
2. Real total revenue	0.00	-0.01	-0.04	-0.05	-0.02	0.03
3. Real direct income tax	0.00	-0.01	-0.04	-0.04	-0.00	0.04
4. Real indirect income tax	0.00	-0.01	-0.05	-0.08	-0.05	0.01
5. Real social security contributions	0.00	-0.01	-0.04	-0.04	-0.00	0.04
6. Nominal total expenditures	0.00	-0.01	-0.04	-0.06	-0.05	-0.06
7. Real total expenditures	0.00	-0.01	-0.01	0.02	0.08	0.08
8. Real transfers to households	0.00	-0.01	0.01	0.09	0.16	0.13
9. Public consumption of goods	0.00	-0.01	-0.02	-0.02	0.01	0.03
10. Real wage bill	0.00	-0.01	-0.03	-0.03	0.01	0.04
11. Real capital formation	0.00	-0.00	-0.04	-0.09	-0.08	0.00
12. Real interest payments	0.00	0.00	0.00	0.03	0.16	0.29
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	0.00	0.04	0.15	0.23	0.18	0.09
2. Effective foreign price	0.00	-0.00	0.01	0.04	0.10	0.16
3. Effective foreign short term interest rate *	0.00	-0.12	-0.39	-0.35	-0.10	-0.02
IX. Stocks						
1. Residential buildings	0.00	0.00	-0.00	-0.01	-0.02	-0.02
2. Enterprise capital	0.00	0.00	0.01	0.01	0.01	0.00
3. Public capital	0.00	0.00	-0.00	-0.01	-0.01	-0.01
4. Real money balance	0.00	0.02	0.05	0.02	-0.02	-0.02
5. Real public debt	0.00	-0.00	0.03	0.14	0.27	0.34
6. Inventories	0.00	0.00	-0.00	-0.03	-0.04	-0.02
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	0.00	0.00	-0.01	-0.02	-0.02	-0.01
A. Ex ante fiscal deficit (% of GDP)* (+: surplus)	-.-	-.-	-.-	-.-	-.-	-.-
B. Ex ante cut in expenditures	-.-	-.-	-.-	-.-	-.-	-.-
2. Debt (% of GDP)*	0.00	-0.00	0.03	0.08	0.11	0.10
3. Current account (% of GDP)*	0.00	-0.00	-0.03	-0.07	-0.10	-0.07
4. Trade balance (% of GDP)*	0.00	-0.00	-0.03	-0.08	-0.11	-0.08
5. Net saving by households (% of disposable income)*	0.00	-0.00	-0.02	-0.04	-0.05	-0.05
6. Output gap*	0.00	0.00	-0.01	-0.03	-0.05	-0.01
7. Weight of US in total BE trade	0.05	0.05	0.05	0.05	0.05	0.05

Table 14 - A monetary easing in the euro area: macroeconomic effects for Japan[1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	0.00	-0.00	-0.01	-0.03	-0.03	-0.02
2. Public consumption	0.00	0.00	0.01	0.01	-0.00	-0.01
3. Gross fixed capital formation	0.00	-0.00	-0.03	-0.08	-0.10	-0.07
A. Residential	0.00	-0.00	-0.09	-0.21	-0.23	-0.13
B. Enterprises	0.00	-0.00	-0.01	-0.04	-0.06	-0.07
C. Public	0.00	-0.00	-0.04	-0.10	-0.11	-0.05
4. Total domestic expenditure	0.00	-0.00	-0.01	-0.04	-0.05	-0.03
5. Exports	0.00	-0.01	-0.11	-0.24	-0.22	-0.05
6. Imports	0.00	0.00	0.03	0.12	0.18	0.13
7. Gross Domestic Product	0.00	-0.00	-0.03	-0.08	-0.09	-0.05
8. Total private supply to final demand	0.00	-0.00	-0.03	-0.07	-0.07	-0.03
9. Total public supply to final demand	0.00	0.00	0.01	0.01	-0.00	-0.02
III. Price indices						
1. Private consumption	0.00	-0.00	-0.01	-0.03	-0.06	-0.08
2. Public consumption	0.00	-0.01	-0.06	-0.12	-0.15	-0.15
3. Gross fixed capital formation	0.00	-0.00	-0.03	-0.06	-0.08	-0.08
A. Residential	0.00	-0.01	-0.04	-0.09	-0.12	-0.13
B. Enterprises	0.00	-0.00	-0.01	-0.01	-0.02	-0.04
C. Government	0.00	-0.01	-0.06	-0.11	-0.14	-0.15
4. Exports	0.00	-0.08	-0.35	-0.64	-0.70	-0.60
5. Imports	0.00	-0.11	-0.41	-0.53	-0.30	-0.03
6. Gross domestic product	0.00	-0.01	-0.03	-0.08	-0.13	-0.16
7. Total private supply to final demand	0.00	-0.01	-0.06	-0.12	-0.15	-0.15
IV. Financial sector						
1. Nominal short-term interest rate *	0.00	-0.01	-0.03	-0.06	-0.08	-0.06
2. Nominal long-term interest rate *	0.00	-0.00	-0.01	-0.02	-0.02	-0.02
3. Spot exchange rate (local/eur)	0.00	-0.92	-3.35	-4.71	-3.98	-3.06
4. Eff. nom. exchange rate (+: depreciation)	0.00	-0.27	-1.00	-1.26	-0.82	-0.45
5. Eff. real exchange rate	0.00	-0.20	-0.66	-0.62	-0.07	0.27
6. Money (M1)	0.00	0.01	0.05	0.10	0.12	0.07
7. Ex-ante stock market correction	0.00	0.00	0.00	0.00	0.00	0.00
V. Labour market						
1. Total employment	0.00	-0.00	-0.01	-0.01	-0.01	0.00
A. private sector	0.00	-0.00	-0.01	-0.01	-0.01	0.00
B. public sector	0.00	0.00	0.00	0.00	0.00	0.00
2. Unemployment rate *	0.00	0.00	0.00	0.01	0.01	-0.00
3. Nominal wage private sector	0.00	-0.01	-0.04	-0.10	-0.15	-0.17
4. Nominal wage public sector	0.00	-0.01	-0.04	-0.10	-0.15	-0.17
5. Nominal wage total economy	0.00	-0.01	-0.04	-0.10	-0.15	-0.17
6. Real take home private wage	0.00	-0.00	-0.03	-0.07	-0.10	-0.09

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
7. Real producer private wage	0.00	0.01	0.02	0.02	-0.01	-0.02
8. Real take home public wage	0.00	-0.00	-0.03	-0.07	-0.10	-0.09
9. Real producer public wage	0.00	0.01	0.02	0.02	-0.00	-0.02
10. Contemporaneous productivity	0.00	-0.00	-0.02	-0.05	-0.06	-0.03
VI. Household sector						
Total real means	0.00	-0.00	-0.00	-0.00	0.00	0.01
o/w Disposable real income	0.00	-0.00	-0.02	-0.06	-0.09	-0.08
Inherited assets (deflated by the consumption price)	0.00	-0.00	-0.00	0.01	0.03	0.04
- o/w financial assets (excluding money)	0.00	0.01	0.03	0.06	0.09	0.08
- o/w residential buildings	0.00	-0.01	-0.03	-0.04	-0.02	0.01
- o/w inventories	0.00	0.00	-0.00	-0.00	-0.00	0.00
Expected future real income	0.00	0.00	-0.00	-0.01	-0.01	0.00
VII. Fiscal sector						
1. Nominal total revenue	0.00	-0.01	-0.06	-0.14	-0.18	-0.18
2. Real total revenue	0.00	-0.00	-0.03	-0.05	-0.05	-0.01
3. Real direct income tax	0.00	-0.00	-0.01	-0.02	-0.02	-0.00
4. Real indirect income tax	0.00	-0.01	-0.06	-0.10	-0.08	-0.02
5. Real social security contributions	0.00	-0.00	-0.01	-0.02	-0.02	-0.00
6. Nominal total expenditures	0.00	-0.01	-0.03	-0.07	-0.11	-0.14
7. Real total expenditures	0.00	-0.00	0.00	0.01	0.02	0.02
8. Real transfers to households	0.00	0.00	0.04	0.08	0.06	0.01
9. Public consumption of goods	0.00	-0.01	-0.03	-0.04	-0.02	0.01
10. Real wage bill	0.00	-0.00	-0.01	-0.02	-0.02	-0.01
11. Real capital formation	0.00	-0.00	-0.04	-0.10	-0.11	-0.05
12. Real interest payments	0.00	0.01	0.03	0.07	0.11	0.13
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	0.00	0.04	0.13	0.18	0.13	0.07
2. Effective foreign price	0.00	-0.00	-0.01	0.01	0.06	0.12
3. Effective foreign short term interest rate *	0.00	-0.10	-0.30	-0.26	-0.06	-0.01
IX. Stocks						
1. Residential buildings	0.00	0.00	-0.00	-0.00	-0.01	-0.01
2. Enterprise capital	0.00	0.00	0.01	0.02	0.03	0.03
3. Public capital	0.00	-0.00	-0.00	-0.01	-0.02	-0.03
4. Real money balance	0.00	0.02	0.07	0.12	0.17	0.15
5. Real public debt	0.00	0.00	0.03	0.09	0.14	0.17
6. Inventories	0.00	-0.00	-0.01	-0.03	-0.05	-0.04
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	0.00	0.00	-0.01	-0.02	-0.02	-0.01
A. Ex ante fiscal deficit (% of GDP)* (+: surplus)	-.-	-.-	-.-	-.-	-.-	-.-
B. Ex ante cut in expenditures	-.-	-.-	-.-	-.-	-.-	-.-
2. Debt (% of GDP)*	0.00	0.01	0.09	0.23	0.33	0.31
3. Current account (% of GDP)*	0.00	-0.00	-0.04	-0.12	-0.17	-0.13
4. Trade balance (% of GDP)*	0.00	-0.00	-0.02	-0.07	-0.10	-0.09
5. Net saving by households (% of disposable income)*	0.00	-0.00	-0.01	-0.03	-0.05	-0.05
6. Output gap*	0.00	-0.00	-0.03	-0.06	-0.07	-0.03
7. Weight of JP in total BE trade	0.01	0.01	0.01	0.01	0.01	0.01

Table 15 - A monetary easing in the euro area: macroeconomic effects for the rest of the world[1]

	03	04	05	06	07	08
1. Private supply	0.00	0.01	0.06	0.09	0.08	0.05
2. Total exports	0.00	0.12	0.46	0.73	0.63	0.39
3. Total imports	0.00	0.20	0.79	1.36	1.37	1.02
4. Price of exports (in euro)	0.00	0.23	1.02	2.02	2.55	2.60
5. Price of imports (in euro)	0.00	0.15	0.69	1.40	1.94	2.31
6. Eff. foreign output	0.00	0.07	0.24	0.34	0.25	0.13
7. Eff. nominal exchange rate (+: depreciation)	0.00	-0.13	-0.50	-0.99	-1.19	-1.10
8. Bilateral exchange rate (local/eur)	0.00	-0.68	-2.52	-3.89	-3.72	-3.12
9. Weight of RW in total BE trade	0.20	0.20	0.20	0.20	0.20	0.20

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

C. A fiscal consolidation in the euro area

Table 16 - A fiscal consolidation in the euro area: macroeconomic effects for the NE block[1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	-0.01	-0.02	-0.01	0.00	0.00	-0.00
2. Public consumption	-0.00	-0.01	-0.01	-0.01	-0.01	-0.02
3. Gross fixed capital formation	-0.01	-0.01	-0.03	-0.09	-0.15	-0.19
A. Residential	0.01	0.02	-0.02	-0.09	-0.14	-0.17
B. Enterprises	-0.00	0.00	-0.03	-0.09	-0.15	-0.21
C. Public	-0.08	-0.14	-0.11	-0.10	-0.09	-0.09
4. Total domestic expenditure	-0.01	-0.02	-0.01	-0.02	-0.03	-0.04
5. Exports	-0.14	-0.23	-0.18	-0.16	-0.14	-0.11
6. Imports	-0.04	-0.06	-0.03	-0.03	-0.04	-0.04
7. Gross Domestic Product	-0.04	-0.08	-0.07	-0.06	-0.07	-0.07
8. Total private supply to final demand	-0.04	-0.08	-0.06	-0.05	-0.06	-0.06
9. Total public supply to final demand	-0.01	-0.02	-0.02	-0.02	-0.03	-0.04
III. Price indices						
1. Private consumption	-0.00	-0.03	-0.07	-0.10	-0.13	-0.15
2. Public consumption	-0.00	-0.05	-0.13	-0.21	-0.27	-0.31
3. Gross fixed capital formation	0.00	-0.00	-0.01	-0.03	-0.05	-0.08
A. Residential	-0.00	-0.02	-0.06	-0.11	-0.17	-0.22
B. Enterprises	0.00	0.00	0.01	0.00	-0.01	-0.02
C. Government	-0.00	-0.03	-0.08	-0.15	-0.22	-0.29
4. Exports	-0.03	-0.16	-0.36	-0.52	-0.63	-0.71
5. Imports	-0.01	-0.08	-0.17	-0.22	-0.27	-0.32
6. Gross domestic product	-0.00	-0.05	-0.13	-0.21	-0.27	-0.31
7. Total private supply to final demand	-0.00	-0.06	-0.14	-0.21	-0.27	-0.31
IV. Financial sector						
1. Nominal short-term interest rate *	-0.03	-0.08	-0.09	-0.07	-0.06	-0.06
2. Nominal long-term interest rate *	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02
3. Spot exchange rate (local/eur)	-0.17	-0.64	-1.00	-1.10	-1.22	-1.37
4. Effective nominal exchange rate (+: depreciation)	-0.07	-0.27	-0.44	-0.51	-0.58	-0.67
5. Effective real exchange rate	-0.03	-0.12	-0.11	-0.01	0.02	0.02
6. Money (M1)	0.04	0.14	0.21	0.19	0.15	0.11
7. Ex-ante stock market correction	0.00	0.00	0.00	0.00	0.00	0.00
V. Labour market						
1. Total employment	-0.01	-0.03	-0.04	-0.03	-0.03	-0.03
A. private sector	-0.01	-0.03	-0.04	-0.04	-0.04	-0.03
B. public sector	0.00	0.00	0.00	0.00	0.00	0.00
2. Unemployment rate *	0.01	0.02	0.03	0.02	0.02	0.02
3. Nominal wage private sector	-0.01	-0.05	-0.12	-0.18	-0.24	-0.29
4. Nominal wage public sector	-0.01	-0.07	-0.16	-0.23	-0.30	-0.36

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
5. Nominal wage total economy	-0.01	-0.06	-0.13	-0.19	-0.25	-0.30
6. Real take home private wage	-0.01	-0.02	-0.05	-0.08	-0.11	-0.14
7. Real producer private wage	-0.00	0.00	0.02	0.03	0.03	0.02
8. Real take home public wage	-0.01	-0.04	-0.08	-0.13	-0.17	-0.21
9. Real producer public wage	-0.01	-0.02	-0.01	-0.02	-0.03	-0.05
10. Contemporaneous productivity	-0.03	-0.04	-0.02	-0.01	-0.02	-0.02
VI. Household sector						
Total real means	0.01	0.03	0.03	0.02	0.01	0.01
o/w Disposable real income	-0.00	-0.03	-0.05	-0.07	-0.09	-0.11
Inherited assets (deflated by the consumption price)	0.04	0.14	0.17	0.12	0.09	0.06
- o/w financial assets (excluding money)	0.10	0.36	0.42	0.28	0.23	0.19
- o/w residential buildings	-0.00	0.00	0.00	-0.01	-0.03	-0.05
- o/w inventories	0.01	0.02	0.03	0.02	0.02	0.01
Expected future real income	-0.00	-0.01	-0.01	-0.01	-0.01	-0.01
VII. Fiscal sector						
1. Nominal total revenue	-0.03	-0.10	-0.16	-0.22	-0.27	-0.32
2. Real total revenue	-0.02	-0.05	-0.03	-0.01	-0.01	-0.01
3. Real direct income tax	-0.01	-0.02	-0.00	0.03	0.03	0.03
4. Real indirect income tax	-0.04	-0.08	-0.07	-0.05	-0.06	-0.06
5. Real social security contributions	-0.01	-0.02	-0.00	0.03	0.03	0.03
6. Nominal total expenditures	0.01	-0.03	-0.09	-0.13	-0.18	-0.22
7. Real total expenditures	0.01	0.02	0.05	0.08	0.09	0.09
8. Real transfers to households	0.03	0.07	0.12	0.18	0.21	0.21
9. Public consumption of goods	-0.00	-0.00	0.00	0.00	-0.00	0.00
10. Real wage bill	-0.01	-0.02	-0.02	-0.02	-0.03	-0.05
11. Real capital formation	-0.08	-0.14	-0.11	-0.10	-0.09	-0.09
12. Real interest payments	0.00	0.04	0.15	0.38	0.70	1.18
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	-0.10	-0.15	-0.09	-0.08	-0.09	-0.09
2. Effective foreign price level	0.01	-0.00	-0.02	-0.02	-0.02	-0.03
3. Effective foreign short-term interest rate *	-0.06	-0.17	-0.18	-0.12	-0.13	-0.13
IX. Stocks						
1. Residential buildings	0.00	0.00	0.00	0.00	0.00	-0.00
2. Enterprise capital	-0.00	0.00	0.01	0.02	0.03	0.03
3. Public capital	-0.00	-0.01	-0.01	-0.01	-0.01	-0.02
4. Real money balance	0.04	0.17	0.28	0.29	0.28	0.26
5. Real public debt	0.03	0.17	0.41	0.70	1.19	2.25
6. Inventories	-0.01	-0.03	-0.04	-0.04	-0.05	-0.05
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	-0.01	-0.02	-0.03	-0.02	-0.03	-0.03
2. Debt (% of GDP)*	0.02	0.07	0.11	0.14	0.16	0.18
3. Current account (% of GDP)*	-0.04	-0.08	-0.11	-0.14	-0.16	-0.17
4. Trade balance (% of GDP)*	-0.04	-0.08	-0.11	-0.14	-0.16	-0.16
5. Net saving by households (% of disposable income)*	0.00	-0.01	-0.04	-0.08	-0.10	-0.11
6. Output gap*	-0.04	-0.07	-0.05	-0.04	-0.05	-0.05
7. Weight of NE in total BE trade	0.11	0.11	0.11	0.11	0.11	0.11

Table 17 - A fiscal consolidation in the euro area: macroeconomic effects for the US[1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	0.00	0.00	-0.00	-0.00	-0.00	0.00
2. Public consumption	-0.00	-0.00	-0.01	-0.01	-0.01	-0.00
3. Gross fixed capital formation	-0.00	-0.01	-0.02	-0.03	-0.03	-0.03
A. Residential	0.00	-0.02	-0.05	-0.06	-0.06	-0.04
B. Enterprises	-0.00	-0.00	-0.01	-0.03	-0.03	-0.03
C. Public	-0.01	-0.03	-0.04	-0.03	-0.02	-0.00
4. Total domestic expenditure	0.00	-0.00	-0.01	-0.01	-0.01	-0.00
5. Exports	-0.09	-0.18	-0.15	-0.12	-0.09	-0.06
6. Imports	-0.00	0.01	0.03	0.02	-0.01	-0.01
7. Gross Domestic Product	-0.01	-0.03	-0.03	-0.03	-0.02	-0.01
8. Total private supply to final demand	-0.01	-0.02	-0.02	-0.02	-0.02	-0.01
9. Total public supply to final demand	0.00	-0.01	-0.01	-0.01	-0.01	-0.00
III. Price indices						
1. Private consumption	-0.00	-0.01	-0.01	-0.01	-0.02	-0.02
2. Public consumption	-0.00	-0.01	-0.02	-0.02	-0.03	-0.04
3. Gross fixed capital formation	0.00	-0.00	-0.01	-0.01	-0.01	-0.01
A. Residential	-0.00	-0.01	-0.01	-0.02	-0.02	-0.02
B. Enterprises	0.00	0.00	0.00	0.00	-0.00	-0.00
C. Government	-0.00	-0.01	-0.01	-0.02	-0.02	-0.02
4. Exports	-0.01	-0.09	-0.19	-0.25	-0.28	-0.28
5. Imports	-0.01	-0.06	-0.08	-0.04	-0.03	-0.04
6. Gross domestic product	0.00	-0.00	-0.02	-0.03	-0.04	-0.05
7. Total private supply to final demand	0.00	-0.01	-0.03	-0.03	-0.04	-0.05
IV. Financial sector						
1. Nominal short-term interest rate *	-0.01	-0.02	-0.02	-0.01	-0.01	-0.01
2. Nominal long-term interest rate *	-0.00	-0.01	-0.01	-0.00	-0.00	-0.00
3. Spot exchange rate (local/eur)	-0.18	-0.70	-1.05	-1.06	-1.11	-1.21
4. Effective nominal exchange rate (+: depreciation)	-0.04	-0.20	-0.28	-0.22	-0.22	-0.22
5. Effective real exchange rate	-0.02	-0.12	-0.11	-0.00	0.03	0.02
6. Money (M1)	0.01	0.02	0.01	-0.01	-0.01	-0.02
7. Ex-ante stock market correction	0.00	0.00	0.00	0.00	0.00	0.00
V. Labour market						
1. Total employment	-0.00	-0.01	-0.01	-0.01	-0.00	0.00
A. private sector	-0.00	-0.01	-0.01	-0.01	-0.00	0.00
B. public sector	0.00	0.00	0.00	0.00	0.00	0.00
2. Unemployment rate *	0.00	0.01	0.01	0.00	0.00	-0.00
3. Nominal wage private sector	-0.00	-0.02	-0.03	-0.04	-0.05	-0.05
4. Nominal wage public sector	-0.00	-0.02	-0.03	-0.04	-0.05	-0.05
5. Nominal wage total economy	-0.00	-0.01	-0.03	-0.04	-0.05	-0.05
6. Real take home private wage	-0.00	-0.01	-0.02	-0.03	-0.03	-0.03

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
7. Real producer private wage	-0.00	-0.01	-0.01	-0.01	-0.01	-0.00
8. Real take home public wage	-0.00	-0.01	-0.02	-0.03	-0.03	-0.03
9. Real producer public wage	-0.00	-0.01	-0.01	-0.01	-0.01	-0.00
10. Contemporaneous productivity	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
VI. Household sector						
Total real means	0.00	0.01	0.01	0.00	0.00	-0.00
o/w Disposable real income	0.00	-0.01	-0.02	-0.02	-0.02	-0.02
Inherited assets (deflated by the consumption price)	0.01	0.03	0.03	0.01	0.00	-0.01
- o/w financial assets (excluding money)	0.01	0.05	0.06	0.02	0.01	-0.01
- o/w residential buildings	0.00	0.00	0.00	-0.00	-0.00	-0.01
- o/w inventories	0.00	0.00	0.01	0.00	0.00	-0.00
Expected future real income	-0.00	-0.00	-0.00	-0.00	0.00	0.00
VII. Fiscal sector						
1. Nominal total revenue	-0.00	-0.02	-0.04	-0.04	-0.05	-0.04
2. Real total revenue	-0.01	-0.02	-0.02	-0.01	-0.00	0.01
3. Real direct income tax	-0.00	-0.02	-0.02	-0.01	0.00	0.01
4. Real indirect income tax	-0.01	-0.03	-0.03	-0.02	-0.01	-0.00
5. Real social security contributions	-0.00	-0.02	-0.02	-0.01	0.00	0.01
6. Nominal total expenditures	0.00	-0.00	-0.02	-0.02	-0.03	-0.04
7. Real total expenditures	0.00	-0.00	-0.00	0.01	0.01	0.01
8. Real transfers to households	0.01	0.01	0.01	0.02	0.02	0.01
9. Public consumption of goods	-0.00	-0.01	-0.00	0.01	0.01	0.01
10. Real wage bill	-0.00	-0.01	-0.01	-0.00	0.00	0.00
11. Real capital formation	-0.01	-0.03	-0.04	-0.03	-0.02	-0.00
12. Real interest payments	-0.00	-0.01	-0.01	0.02	0.05	0.05
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	-0.06	-0.09	-0.05	-0.05	-0.05	-0.05
2. Effective foreign price level	0.00	-0.01	-0.02	-0.03	-0.03	-0.04
3. Effective foreign short-term interest rate *	-0.04	-0.13	-0.14	-0.10	-0.10	-0.10
IX. Stocks						
1. Residential buildings	0.00	0.00	-0.00	-0.00	-0.00	-0.00
2. Enterprise capital	-0.00	0.00	0.00	0.00	0.00	0.00
3. Public capital	-0.00	-0.00	-0.01	-0.01	-0.01	-0.01
4. Real money balance	0.01	0.03	0.03	0.01	0.00	-0.00
5. Real public debt	-0.01	0.00	0.03	0.05	0.06	0.04
6. Inventories	-0.01	-0.02	-0.02	-0.02	-0.01	-0.01
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	0.00	-0.00	-0.00	-0.00	-0.00	0.00
2. Debt (% of GDP)*	0.00	0.01	0.02	0.03	0.03	0.02
3. Current account (% of GDP)*	-0.01	-0.02	-0.03	-0.04	-0.03	-0.03
4. Trade balance (% of GDP)*	-0.01	-0.02	-0.03	-0.04	-0.04	-0.04
5. Net saving by households (% of disposable income)*	-0.00	-0.01	-0.02	-0.02	-0.02	-0.02
6. Output gap*	-0.01	-0.02	-0.02	-0.02	-0.02	-0.01
7. Weight of US in total BE trade	0.05	0.05	0.05	0.05	0.05	0.05

Table 18 - A fiscal consolidation in the euro area: macroeconomic effects for Japan[1]

	03	04	05	06	07	08
I. Steady state assumptions						
1. Trend productivity growth *	0.00	0.00	0.00	0.00	0.00	0.00
2. Population	0.00	0.00	0.00	0.00	0.00	0.00
3. Secular inflation *	0.00	0.00	0.00	0.00	0.00	0.00
4. Natural unemployment rate *	0.00	0.00	0.00	0.00	0.00	0.00
5. Natural real interest rate *	0.00	0.00	0.00	0.00	0.00	0.00
II. Aggregate demand-supply						
1. Private consumption	0.00	-0.00	-0.01	-0.00	-0.00	0.00
2. Public consumption	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
3. Gross fixed capital formation	-0.00	-0.01	-0.02	-0.03	-0.03	-0.02
A. Residential	-0.00	-0.02	-0.05	-0.04	-0.03	-0.00
B. Enterprises	-0.00	-0.00	-0.01	-0.02	-0.03	-0.03
C. Public	-0.01	-0.03	-0.04	-0.04	-0.03	-0.02
4. Total domestic expenditure	-0.00	-0.00	-0.01	-0.01	-0.01	-0.00
5. Exports	-0.06	-0.14	-0.17	-0.17	-0.14	-0.11
6. Imports	-0.00	0.00	0.03	0.04	0.03	0.02
7. Gross Domestic Product	-0.01	-0.02	-0.03	-0.04	-0.03	-0.02
8. Total private supply to final demand	-0.01	-0.02	-0.03	-0.03	-0.02	-0.01
9. Total public supply to final demand	-0.00	-0.00	-0.00	-0.01	-0.01	-0.01
III. Price indices						
1. Private consumption	-0.00	-0.01	-0.02	-0.03	-0.05	-0.06
2. Public consumption	-0.00	-0.02	-0.04	-0.05	-0.06	-0.08
3. Gross fixed capital formation	-0.00	-0.01	-0.01	-0.02	-0.03	-0.04
A. Residential	-0.00	-0.01	-0.03	-0.04	-0.05	-0.06
B. Enterprises	0.00	0.00	-0.00	-0.00	-0.01	-0.02
C. Government	-0.00	-0.01	-0.03	-0.05	-0.06	-0.07
4. Exports	-0.02	-0.09	-0.18	-0.23	-0.25	-0.27
5. Imports	-0.03	-0.10	-0.15	-0.11	-0.08	-0.07
6. Gross domestic product	-0.00	-0.01	-0.03	-0.05	-0.07	-0.08
7. Total private supply to final demand	-0.00	-0.02	-0.04	-0.05	-0.07	-0.08
IV. Financial sector						
1. Nominal short-term interest rate *	-0.00	-0.02	-0.03	-0.04	-0.03	-0.03
2. Nominal long-term interest rate *	-0.00	-0.00	-0.01	-0.01	-0.01	-0.01
3. Spot exchange rate (local/eur)	-0.21	-0.79	-1.16	-1.14	-1.18	-1.27
4. Effective nominal exchange rate (+: depreciation)	-0.07	-0.26	-0.35	-0.29	-0.26	-0.27
5. Effective real exchange rate	-0.05	-0.17	-0.19	-0.09	-0.05	-0.04
6. Money (M1)	0.01	0.05	0.06	0.05	0.03	0.01
7. Ex-ante stock market correction	0.00	0.00	0.00	0.00	0.00	0.00
V. Labour market						
1. Total employment	-0.00	-0.00	-0.00	-0.00	0.00	0.00
A. private sector	-0.00	-0.00	-0.00	-0.00	0.00	0.00
B. public sector	0.00	0.00	0.00	0.00	0.00	0.00
2. Unemployment rate *	0.00	0.00	0.00	0.00	-0.00	-0.00
3. Nominal wage private sector	-0.00	-0.02	-0.04	-0.06	-0.08	-0.09
4. Nominal wage public sector	-0.00	-0.02	-0.04	-0.06	-0.07	-0.08
5. Nominal wage total economy	-0.00	-0.02	-0.04	-0.06	-0.08	-0.09
6. Real take home private wage	-0.00	-0.01	-0.02	-0.03	-0.03	-0.03

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	03	04	05	06	07	08
7. Real producer private wage	-0.00	-0.00	-0.00	-0.01	-0.01	-0.01
8. Real take home public wage	-0.00	-0.01	-0.02	-0.03	-0.03	-0.03
9. Real producer public wage	-0.00	-0.00	-0.00	-0.01	-0.01	-0.01
10. Contemporaneous productivity	-0.01	-0.02	-0.03	-0.03	-0.02	-0.02
VI. Household sector						
Total real means	0.00	0.00	0.00	0.01	0.01	0.01
o/w Disposable real income	-0.00	-0.01	-0.02	-0.02	-0.02	-0.02
Inherited assets (deflated by the consumption price)	0.00	0.01	0.02	0.02	0.03	0.03
- o/w financial assets (excluding money)	0.00	0.02	0.03	0.04	0.04	0.04
- o/w residential buildings	-0.00	-0.00	-0.00	0.01	0.02	0.02
- o/w inventories	0.00	0.00	0.00	0.00	0.00	0.00
Expected future real income	0.00	-0.00	-0.00	-0.00	0.00	0.00
VII. Fiscal sector						
1. Nominal total revenue	-0.00	-0.03	-0.05	-0.07	-0.08	-0.08
2. Real total revenue	-0.00	-0.02	-0.02	-0.02	-0.01	-0.00
3. Real direct income tax	-0.00	-0.01	-0.01	-0.01	-0.01	-0.00
4. Real indirect income tax	-0.01	-0.03	-0.04	-0.03	-0.02	-0.01
5. Real social security contributions	-0.00	-0.01	-0.01	-0.01	-0.01	-0.00
6. Nominal total expenditures	-0.00	-0.01	-0.03	-0.05	-0.07	-0.08
7. Real total expenditures	-0.00	-0.00	-0.00	-0.00	0.00	0.00
8. Real transfers to households	0.00	0.01	0.01	-0.00	-0.01	-0.01
9. Public consumption of goods	-0.00	-0.00	-0.01	-0.00	0.00	0.01
10. Real wage bill	-0.00	-0.01	-0.01	-0.01	-0.01	-0.00
11. Real capital formation	-0.01	-0.03	-0.04	-0.04	-0.03	-0.02
12. Real interest payments	0.00	0.01	0.02	0.03	0.05	0.06
13. Direct labour tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
14. Indirect tax rate *	0.00	0.00	0.00	0.00	0.00	0.00
VIII. International environment						
1. Effective foreign output	-0.05	-0.08	-0.05	-0.04	-0.05	-0.04
2. Effective foreign price level	0.00	-0.01	-0.03	-0.03	-0.04	-0.04
3. Effective foreign short-term interest rate *	-0.03	-0.11	-0.11	-0.07	-0.07	-0.07
IX. Stocks						
1. Residential buildings	0.00	0.00	-0.00	-0.00	-0.00	0.00
2. Enterprise capital	0.00	0.00	0.01	0.01	0.01	0.02
3. Public capital	-0.00	-0.00	-0.00	-0.01	-0.01	-0.01
4. Real money balance	0.01	0.05	0.08	0.08	0.08	0.06
5. Real public debt	-0.00	0.01	0.03	0.05	0.06	0.07
6. Inventories	-0.00	-0.01	-0.02	-0.02	-0.02	-0.02
X. Memo items						
1. Fiscal deficit (% of GDP)* (+: surplus)	-0.00	-0.00	-0.01	-0.00	-0.00	-0.00
2. Debt (% of GDP)*	0.01	0.04	0.08	0.11	0.13	0.13
3. Current account (% of GDP)*	-0.01	-0.02	-0.05	-0.07	-0.07	-0.07
4. Trade balance (% of GDP)*	-0.01	-0.02	-0.03	-0.04	-0.04	-0.04
5. Net saving by households (% of disposable income)*	-0.00	-0.01	-0.01	-0.02	-0.02	-0.02
6. Output gap*	-0.01	-0.02	-0.03	-0.03	-0.02	-0.02
7. Weight of JP in total BE trade	0.01	0.01	0.01	0.01	0.01	0.01

Table 19 - A fiscal consolidation in the euro area: macroeconomic effects for the rest of the world[1]

	03	04	05	06	07	08
1. Private supply	-0.02	-0.03	-0.01	-0.01	-0.01	-0.01
2. Total exports	-0.17	-0.26	-0.13	-0.09	-0.09	-0.08
3. Total imports	-0.19	-0.25	-0.00	0.13	0.17	0.19
4. Price of exports (in euro)	0.05	0.21	0.41	0.54	0.60	0.65
5. Price of imports (in euro)	0.06	0.20	0.35	0.47	0.58	0.69
6. Effective foreign output	-0.09	-0.15	-0.10	-0.09	-0.10	-0.09
7. Effective nominal exchange rate (+: depreciation)	-0.05	-0.15	-0.25	-0.33	-0.36	-0.41
8. Bilateral exchange rate (local/eur)	-0.16	-0.59	-0.92	-1.00	-1.07	-1.19
9. Weight of RW in total BE trade	0.20	0.20	0.20	0.20	0.20	0.20

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

D. A world-wide stock market correction

Table 20 - A world-wide stock market correction: macroeconomic effects for the NE block[1]

	Period 1	Period 2
I. Steady state assumptions		
1. Trend productivity growth *	0.00	0.00
2. Population	0.00	0.00
3. Secular inflation *	0.00	0.00
4. Natural unemployment rate *	0.00	0.00
5. Natural real interest rate *	0.00	0.00
II. Aggregate demand-supply		
1. Private consumption	-0.49	-0.61
2. Public consumption	-0.07	-0.15
3. Gross fixed capital formation	-1.61	-1.30
A. Residential	-2.24	-1.64
B. Enterprises	-1.55	-1.26
C. Public	-1.05	-1.09
4. Total domestic expenditure	-0.64	-0.66
5. Exports	-0.50	-0.62
6. Imports	-0.58	-0.64
7. Gross Domestic Product	-0.61	-0.65
8. Total private supply to final demand	-0.63	-0.68
9. Total public supply to final demand	-0.14	-0.30
III. Price indices		
1. Private consumption	-0.00	-0.24
2. Public consumption	-0.01	-0.16
3. Gross fixed capital formation	-0.12	-0.29
A. Residential	-0.00	-0.05
B. Enterprises	-0.13	-0.36
C. Government	-0.01	-0.07
4. Exports	-0.00	-0.06
5. Imports	-0.01	-0.14
6. Gross domestic product	-0.01	-0.19
7. Total private supply to final demand	-0.02	-0.19
IV. Financial sector		
1. Nominal short-term interest rate *	-0.32	-0.68
2. Nominal long-term interest rate *	-0.08	-0.17
3. Spot exchange rate (local/eur)	0.02	-0.19
4. Effective nominal exchange rate (+: depreciation)	-0.01	-0.06
5. Effective real exchange rate	-0.00	-0.06
6. Money (M1)	-0.27	0.76
7. Ex-ante stock market correction	-17.42	-17.42
V. Labour market		
1. Total employment	-0.15	-0.26
A. private sector	-0.19	-0.32
B. public sector	0.00	0.00
2. Unemployment rate *	0.12	0.20
3. Nominal wage private sector	-0.09	-0.28
4. Nominal wage public sector	-0.17	-0.49

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	Period 1	Period 2
5. Nominal wage total economy	-0.11	-0.32
6. Real take home private wage	-0.09	-0.04
7. Real producer private wage	-0.07	-0.09
8. Real take home public wage	-0.17	-0.25
9. Real producer public wage	-0.16	-0.31
10. Contemporaneous productivity	-0.45	-0.36
VI. Household sector		
Total real means	-0.75	-0.54
o/w Disposable real income	-0.12	-0.24
Inherited assets (deflated by the consumption price)	-2.69	-1.83
- o/w financial assets (excluding money)	-7.14	-5.22
- o/w residential buildings	-0.03	0.12
- o/w inventories	-0.48	-0.52
Expected future real income	-0.03	-0.07
VII. Fiscal sector		
1. Nominal total revenue	-0.37	-0.64
2. Real total revenue	-0.36	-0.44
3. Real direct income tax	-0.11	-0.26
4. Real indirect income tax	-0.60	-0.64
5. Real social security contributions	-0.11	-0.26
6. Nominal total expenditures	0.10	-0.17
7. Real total expenditures	0.11	0.03
8. Real transfers to households	0.41	0.23
9. Public consumption of goods	-0.00	0.04
10. Real wage bill	-0.16	-0.30
11. Real capital formation	-1.05	-1.09
12. Real interest payments	0.01	0.28
13. Direct labour tax rate *	0.00	0.00
VIII. International environment		
1. Effective foreign output	-0.37	-0.46
2. Effective foreign price level	0.01	-0.06
3. Effective foreign short-term interest rate *	-0.30	-0.68
IX. Stocks		
1. Residential buildings	-0.03	-0.05
2. Enterprise capital	-0.13	-0.23
3. Public capital	-0.04	-0.08
4. Real money balance	-0.27	1.00
5. Real public debt	0.50	1.29
6. Inventories	-0.27	-0.42
X. Memo items		
1. Fiscal deficit (% of GDP)* (+: surplus)	-0.17	-0.17
2. Debt (% of GDP)*	0.42	0.65
3. Current account (% of GDP)*	0.03	0.03
4. Trade balance (% of GDP)*	0.03	0.03
5. Net saving by households (% of disposable income)*	0.37	0.37
6. Output gap*	-0.60	-0.60
7. Weight of NE in total BE trade	0.11	0.11

Table 21 - A world-wide stock market correction: macroeconomic effects for the US[1]

	Period 1	Period 2
I. Steady state assumptions		
1. Trend productivity growth *	0.00	0.00
2. Population	0.00	0.00
3. Secular inflation *	0.00	0.00
4. Natural unemployment rate *	0.00	0.00
5. Natural real interest rate *	0.00	0.00
II. Aggregate demand-supply		
1. Private consumption	-0.42	-0.52
2. Public consumption	-0.09	-0.19
3. Gross fixed capital formation	-1.20	-1.66
A. Residential	-0.59	-1.25
B. Enterprises	-1.50	-1.97
C. Public	-0.62	-0.78
4. Total domestic expenditure	-0.60	-0.73
5. Exports	-0.43	-0.64
6. Imports	-0.64	-0.72
7. Gross Domestic Product	-0.57	-0.72
8. Total private supply to final demand	-0.63	-0.76
9. Total public supply to final demand	-0.13	-0.26
III. Price indices		
1. Private consumption	-0.00	-0.13
2. Public consumption	0.00	-0.04
3. Gross fixed capital formation	0.03	-0.01
A. Residential	-0.00	-0.03
B. Enterprises	-0.02	-0.05
C. Government	-0.00	-0.03
4. Exports	-0.05	-0.28
5. Imports	-0.03	-0.21
6. Gross domestic product	0.02	-0.07
7. Total private supply to final demand	0.01	-0.09
IV. Financial sector		
1. Nominal short-term interest rate *	-0.30	-0.55
2. Nominal long-term interest rate *	-0.10	-0.18
3. Spot exchange rate (local/eur)	-0.10	-0.77
4. Effective nominal exchange rate (+: depreciation)	-0.15	-0.62
5. Effective real exchange rate	-0.10	-0.40
6. Money (M1)	-0.31	-0.03
7. Ex-ante stock market correction	-16.74	-16.74
V. Labour market		
1. Total employment	-0.22	-0.31
A. private sector	-0.27	-0.37
B. public sector	0.05	0.05
2. Unemployment rate *	0.17	0.23
3. Nominal wage private sector	-0.17	-0.32
4. Nominal wage public sector	-0.20	-0.38
5. Nominal wage total economy	-0.17	-0.33
6. Real take home private wage	-0.16	-0.19

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	Period 1	Period 2
7. Real producer private wage	-0.18	-0.23
8. Real take home public wage	-0.19	-0.26
9. Real producer public wage	-0.21	-0.29
10. Contemporaneous productivity	-0.36	-0.39
VI. Household sector		
Total real means	-0.73	-0.62
o/w Disposable real income	-0.19	-0.41
Inherited assets (deflated by the consumption price)	-2.40	-1.99
- o/w financial assets (excluding money)	-4.65	-3.94
- o/w residential buildings	-0.01	0.04
- o/w inventories	-0.53	-0.59
Expected future real income	-0.05	-0.08
VII. Fiscal sector		
1. Nominal total revenue	-0.37	-0.60
2. Real total revenue	-0.39	-0.53
3. Real direct income tax	-0.26	-0.41
4. Real indirect income tax	-0.59	-0.74
5. Real social security contributions	-0.26	-0.41
6. Nominal total expenditures	0.18	-0.00
7. Real total expenditures	0.16	0.07
8. Real transfers to households	0.64	0.46
9. Public consumption of goods	-0.02	0.03
10. Real wage bill	-0.17	-0.27
11. Real capital formation	-0.62	-0.78
12. Real interest payments	-0.02	-0.06
13. Direct labour tax rate *	0.00	0.00
VIII. International environment		
1. Effective foreign output	-0.26	-0.32
2. Effective foreign price level	-0.01	-0.06
3. Effective foreign short-term interest rate *	-0.29	-0.65
IX. Stocks		
1. Residential buildings	-0.02	-0.05
2. Enterprise capital	-0.13	-0.29
3. Public capital	-0.05	-0.11
4. Real money balance	-0.31	0.10
5. Real public debt	0.29	0.75
6. Inventories	-0.50	-0.70
X. Memo items		
1. Fiscal deficit (% of GDP)* (+: surplus)	-0.15	-0.17
2. Debt (% of GDP)*	0.43	0.69
3. Current account (% of GDP)*	0.02	0.01
4. Trade balance (% of GDP)*	0.02	0.01
5. Net saving by households (% of disposable income)*	0.23	0.11
6. Output gap*	-0.57	-0.68
7. Weight of US in total BE trade	0.05	0.05

Table 22 - A world-wide stock market correction: macroeconomic effects for Japan[1]

	Period 1	Period 2
I. Steady state assumptions		
1. Trend productivity growth *	0.00	0.00
2. Population	0.00	0.00
3. Secular inflation *	0.00	0.00
4. Natural unemployment rate *	0.00	0.00
5. Natural real interest rate *	0.00	0.00
II. Aggregate demand-supply		
1. Private consumption	-0.06	-0.10
2. Public consumption	-0.03	-0.08
3. Gross fixed capital formation	-0.62	-1.20
A. Residential	-1.16	-1.17
B. Enterprises	-0.63	-1.46
C. Public	-0.30	-0.55
4. Total domestic expenditure	-0.23	-0.42
5. Exports	-0.49	-0.74
6. Imports	-0.12	-0.18
7. Gross Domestic Product	-0.26	-0.48
8. Total private supply to final demand	-0.27	-0.49
9. Total public supply to final demand	-0.05	-0.14
III. Price indices		
1. Private consumption	-0.01	-0.15
2. Public consumption	-0.07	-0.26
3. Gross fixed capital formation	-0.35	-0.72
A. Residential	-0.04	-0.16
B. Enterprises	-0.55	-1.16
C. Government	-0.07	-0.24
4. Exports	-0.13	-0.35
5. Imports	-0.20	-0.44
6. Gross domestic product	-0.09	-0.29
7. Total private supply to final demand	-0.10	-0.31
IV. Financial sector		
1. Nominal short-term interest rate *	-0.14	-0.45
2. Nominal long-term interest rate *	-0.04	-0.12
3. Spot exchange rate (local/eur)	-0.43	-1.14
4. Effective nominal exchange rate (+: depreciation)	-0.45	-0.82
5. Effective real exchange rate	-0.32	-0.53
6. Money (M1)	0.69	1.75
7. Ex-ante stock market correction	-16.34	-16.34
V. Labour market		
1. Total employment	-0.04	-0.07
A. private sector	-0.04	-0.07
B. public sector	0.00	0.01
2. Unemployment rate *	0.02	0.03
3. Nominal wage private sector	-0.14	-0.44
4. Nominal wage public sector	-0.14	-0.44
5. Nominal wage total economy	-0.14	-0.43
6. Real take home private wage	-0.14	-0.29

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

	Period 1	Period 2
7. Real producer private wage	-0.04	-0.12
8. Real take home public wage	-0.14	-0.29
9. Real producer public wage	-0.04	-0.12
10. Contemporaneous productivity	-0.23	-0.42
VI. Household sector		
Total real means	-0.21	-0.13
o/w Disposable real income	-0.12	-0.28
Inherited assets (deflated by the consumption price)	-0.78	-0.43
- o/w financial assets (excluding money)	-2.54	-1.75
- o/w residential buildings	-0.05	0.01
- o/w inventories	-0.04	-0.05
Expected future real income	-0.02	-0.03
VII. Fiscal sector		
1. Nominal total revenue	-0.25	-0.61
2. Real total revenue	-0.15	-0.31
3. Real direct income tax	-0.04	-0.16
4. Real indirect income tax	-0.26	-0.47
5. Real social security contributions	-0.04	-0.16
6. Nominal total expenditures	-0.03	-0.27
7. Real total expenditures	0.07	0.03
8. Real transfers to households	0.22	0.12
9. Public consumption of goods	0.02	0.03
10. Real wage bill	-0.04	-0.13
11. Real capital formation	-0.30	-0.55
12. Real interest payments	0.09	0.24
13. Direct labour tax rate *	0.00	0.00
VIII. International environment		
1. Effective foreign output	-0.41	-0.50
2. Effective foreign price level	0.01	-0.06
3. Effective foreign short-term interest rate *	-0.30	-0.63
IX. Stocks		
1. Residential buildings	-0.02	-0.04
2. Enterprise capital	-0.09	-0.29
3. Public capital	-0.02	-0.06
4. Real money balance	0.70	1.90
5. Real public debt	0.13	0.37
6. Inventories	-0.11	-0.25
X. Memo items		
1. Fiscal deficit (% of GDP)* (+: surplus)	-0.07	-0.11
2. Debt (% of GDP)*	0.49	1.09
3. Current account (% of GDP)*	-0.03	-0.08
4. Trade balance (% of GDP)*	-0.03	-0.05
5. Net saving by households (% of disposable income)*	-0.05	-0.16
6. Output gap*	-0.25	-0.45
7. Weight of JP in total BE trade	0.01	0.01

Table 23 - A world-wide stock market correction: macroeconomic effects for the rest of the world[1]

	Period 1	Period 2
1. Private supply	-0.12	-0.15
2. Total exports	-1.03	-1.23
3. Total imports	-1.02	-1.31
4. Price of exports (in euro)	0.04	0.17
5. Price of imports (in euro)	0.06	0.22
6. Effective foreign output	-0.57	-0.71
7. Effective nominal exchange rate (+: depreciation)	0.22	0.40
8. Bilateral exchange rate (local/eur)	0.12	-0.06
9. Weight of RW in total BE trade	0.20	0.20

1. Variables without *: deviation from baseline, in percent. Variables with *: deviation from baseline, in differences.

X Appendix C: The user cost of capital and the equity risk premium in NIME

In this appendix, we investigate analytically how changes in the risk premium affect the price of capital and the user cost of capital in the long run. The results show that an increase in the risk premium causes the price of capital to *fall* in the long run. Indeed, as the discount rate increases, ceteris paribus, the present value of future returns on capital decline, thereby triggering a drop in the price of capital. The results show also that the user cost will *not change* in the long run as the drop in the price of capital exactly matches the increase in the financing cost caused by the rise in the discount rate. However, these are long run results. In the medium run, important changes in the user cost may arise, as the speed of adjustment of the different prices and interest rates differ. In the NIME model, prices adjust at different speeds because of menu costs and backward looking behaviour, see Meyermans and Van Brusselen (2000.b).

A. The price of capital in the steady state

We repeat here the equation that determines the price of capital in the NIME model, i.e. equation (III.8) of Meyermans and Van Brusselen (2001), modified by assuming that the future flows are discounted by LIP[1]:

$$\frac{\mathrm{PCIP}}{(1-\mathrm{NITR})\mathrm{PASP}}$$

$$= \frac{\mathrm{asp\_l2\ \ YCP}}{\dfrac{(1+\mathrm{LIP})-(1-\mathrm{gip\_rh})(1+\mathrm{G\_PCH})(1+\mathrm{G\_YCP})}{(1+\mathrm{LIP})}}\,.$$

or, in logarithm:

$$\ln\left(\frac{\mathrm{PCIP}}{(1-\mathrm{NITR})\mathrm{PASP}}\right) = \ln(\mathrm{asp\_l2\ YCP})$$

$$-\ \ln\big((1+\mathrm{LIP}) - (1\text{-}\mathrm{gip\_rh})\ (1+\mathrm{G\_PCH})\ (1+\mathrm{G\_YCP})\big)$$

$$+\ln(1+\mathrm{LIP}).$$

Differentiating the previous equation we get:

$$\text{(C.1)}\qquad d\ln\left(\frac{\mathrm{PCIP}}{(1-\mathrm{NITR})\mathrm{PASP}}\right) = d\ln(\mathrm{asp\_l2\ YCP})$$

$$-\ d\ln\big((1+\mathrm{LIP}) - (1\text{-}\mathrm{gip\_rh})\ (1+\mathrm{G\_PCH})\ (1+\mathrm{G\_YCP})\big)$$
$$+\ d\ln(1+\mathrm{LIP}),$$

1. For notational convenience, the time subscripts have been suppressed. LIP = LI+ risk premium, with LI the long-term interest rate in the bond market.

so that for a change in the discount rate LIP, we get:

$$\mathrm{dln(PCIP)} = -\frac{1}{(1 + \mathrm{LIP}) - (1\text{-gip\_rh})\,(1\text{+G\_PCH})(1\text{+G\_YCP})}\ \mathrm{d\ LIP}$$

$$+ \frac{1}{1+\mathrm{LIP}}\ \mathrm{d\ LIP}$$

or

$$\text{(C.2)}\qquad \mathrm{dln(PCIP)} = -\frac{(1\text{-gip\_rh})\ (1\text{+G\_PCH})\ (1\text{+G\_YCP})}{((1+\mathrm{LIP}) - (1\text{-gip\_rh})\,(1\text{+G\_PCH})(1\text{+G\_YCP}))}\ \mathrm{d\ ln(1+LIP)}.$$

The previous result shows that an *increase* in the discount rate, *reduces* the price of capital[1] Indeed, as the discount rate increases, ceteris paribus, the present value of future returns on capital decline, triggering a drop in the price of capital.

B. The user cost of capital in the steady state

We repeat here the equation that determines the user cost of capital, i.e. equation (III.3) of Meyermans and Van Brusselen (2001), and we assume that the discount rate in the capital market is LIP[2]:

$$\mathrm{USERIP} = \frac{\mathrm{LIP} + \mathrm{gip\_rh} - \left(\frac{\mathrm{PCIP}_{+1}}{\mathrm{PCIP}} - 1\right)(1 - \mathrm{gip\_rh})}{1 + \mathrm{LIP}}\mathrm{PCIP}$$

which can be rewritten as:

$$\text{(C.3)}\qquad \mathrm{USERIP} = \frac{1 + \mathrm{LIP} - \frac{\mathrm{PCIP}_{+1}}{\mathrm{PCIP}}(1 - \mathrm{gip\_rh})}{1 + \mathrm{LIP}}\mathrm{PCIP}\,.$$

Taking logarithm of the latter we get:

$$\ln(\mathrm{USERIP}) = \ln\left(1 + \mathrm{LIP} - \frac{\mathrm{PCIP}_{+1}}{\mathrm{PCIP}}(1 - \mathrm{gip\_rh})\right)$$

$$-\ \ln(1 + \mathrm{LIP})\ + \ln(\mathrm{PCIP})$$

which yields, after differentiating w.r.t LIP:

$$\mathrm{d}\ \ln(\mathrm{USERIP}) = \frac{1}{1 + \mathrm{LIP} - \frac{\mathrm{PCIP}_{+1}}{\mathrm{PCIP}}(1 - \mathrm{gip\_rh})}\mathrm{d\ LIP}$$

$$-\ \frac{1}{1 + \mathrm{LIP}}\mathrm{d\ LIP} + \frac{\partial\ \ln(\mathrm{PCIP})}{\partial \mathrm{LIP}}\quad ,$$

1. Note that 0< (1-gip_rh) (1+G_PCH) (1+G_YCP) < 1+LIP has to be met in order to have long run convergence. See Meyermans and Van Brusselen (2000.b), Section II.E on this.
2. For notational convenience, the time subscripts are suppressed.

or

$$\text{(C.4)}\qquad d\ln(\text{USERIP}) = \frac{\frac{\text{PCIP}_{+1}}{\text{PCIP}}(1-\text{gip\_rh})}{\left(1+\text{LIP}-\frac{\text{PCIP}_{+1}}{\text{PCIP}}(1-\text{gip\_rh})\right)(1+\text{LIP})}\, d\,\text{LIP}$$

$$+\ \frac{\partial^{\ln(\text{PCIP})}}{\partial \text{LIP}}\ .$$

Note that in the steady state[1]:

$$\text{(C.5)}\qquad \frac{\text{PCIP}_{+1}}{\text{PCIP}} = (1+\text{G\_PCH})\ (1+\text{G\_YCP})\,.$$

Using result (C.2) and (C.5) in equation (C.4), we get:

(C.6) d ln (USERIP) =

$$\frac{(1\text{-gip\_rh})\ (1+\text{G\_PCH})\ (1+\text{G\_YCP})}{((1+\text{LIP}) - (1\text{-gip\_rh})\ (1+\text{G\_PCH})(1+\text{G\_YCP}))\ (1+\text{LIP})}\ d\,\text{LIP}$$

$$-\ \frac{(1\text{-gip\_rh})\ (1+\text{G\_PCH})\ (1+\text{G\_YCP})}{((1+\text{LIP}) - (1\text{-gip\_rh})\ (1+\text{G\_PCH})(1+\text{G\_YCP}))\ (1+\text{LIP})}\ d\,\text{LIP}$$

$$= 0\ d\,\text{LIP}\,.$$

In other words, equation (C.6) shows that in the long run the user cost of capital will not change as the discount rate increases. This is because the increase in the financing cost is exactly matched by the fall in the price of capital induced by the increase in the discount rate. This implies also that the desired stock of capital does not change in the long run.

1. See Meyermans and Van Brusselen (2000.b), Section II.E.

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