

II.1. Internal devaluation and external imbalances: a model-based analysis

Recent developments have highlighted the urgent need for some euro-area Member States to restore their external balances and to improve their competitiveness. While nominal exchange rate adjustment is not an available tool for the correction of external imbalances in a currency union, alternative policies of ‘internal devaluation’ can mimic the expenditure-switching effects of ‘external’ exchange rate devaluation.⁽²⁷⁾ Internal devaluation policies aim to reduce domestic prices either by affecting relative export-import prices or by lowering domestic production costs and thereby yielding a *real* exchange rate depreciation. An example of such internal devaluation is a revenue-neutral shift from taxes on labour to taxes on consumption. By reducing the tax burden on exports and raising that on imports this policy can help to restore competitiveness. Likewise, public-sector wage moderation may achieve overall wage moderation by exerting downward pressure on wages in the private sector and thereby reduce firms’ production costs and lead to a real exchange rate depreciation restoring competitiveness.

This section analyses the potential effects of these policies based on simulations using a three-region version of the European Commission’s QUEST model:⁽²⁸⁾ a small euro-area member country, the rest of the euro area, and the rest of the world. The model includes tradable and non-tradable sectors and trade in final goods and intermediate inputs. It also distinguishes between private-sector and public-sector employment.

The policy measures analysed are: (i) a tax reform shifting government revenue from social security contributions towards consumption taxes and (ii) a public-sector wage reduction aiming at achieving overall labour cost moderation. The rest of the section discusses each scenario in more details.

Switching the tax burden from labour to consumption

The first set of scenarios assumes a revenue-neutral shift from social security contributions (SSCs) of firms towards destination-based taxes

such as VAT. The reduction in SSCs lowers unit labour costs and leads to a reduction in producer prices, including for exported goods. This boosts foreign demand for exports. At home, higher consumption taxes offset the fall in producer prices but raise prices on imported goods. Hence, the effects are similar to those of an exchange rate depreciation and yield an improvement in the trade balance. However, in the long run, increased consumption taxes are shifted into higher nominal wages and real wage costs will return to pre-reform levels. Therefore, like external exchange rate devaluations, the effects on the trade balance are not likely to be permanent.

The scenarios shown in Graph II.1.1 consist of reductions in employers’ social security contributions of 1% of (baseline) GDP that are compensated by an increase in consumption taxes of equal size, such that the reform is *ex ante* budget-neutral. The endogenous improvement in fiscal positions from this tax reform due to economic expansion can be used for two purposes. In the first scenario, the revenues are, in the medium term, recycled back into the economy through cuts in labour income taxes. These further tax reductions give rise to an additional expansionary effect while keeping the reform also *ex post* budget-neutral in the very long run.⁽²⁹⁾ In a second scenario there is no further tax reduction in the medium term but instead the higher tax revenue is used to reduce government debt.⁽³⁰⁾ Without these further reductions in labour taxes, the GDP and employment gains are somewhat smaller in this second scenario. However, with less of a demand stimulus, imports are also more negatively affected and the overall improvement in the trade balance is therefore more persistent.

The reduction in wage costs boosts employment and GDP increases by 0.35% after 10 years, but by only half that amount when the revenue is used to reduce government debt. The tax reform shifts taxation from labour to other sources of income such as profits/rents, income from financial wealth and transfers. Consumption of liquidity-constrained households declines on impact as consumer prices rise, also because transfer and unemployment benefit recipients are not compensated for the increase in consumption taxes in this scenario and face a reduction in their disposable income of more than 1%. Consumption of unconstrained households

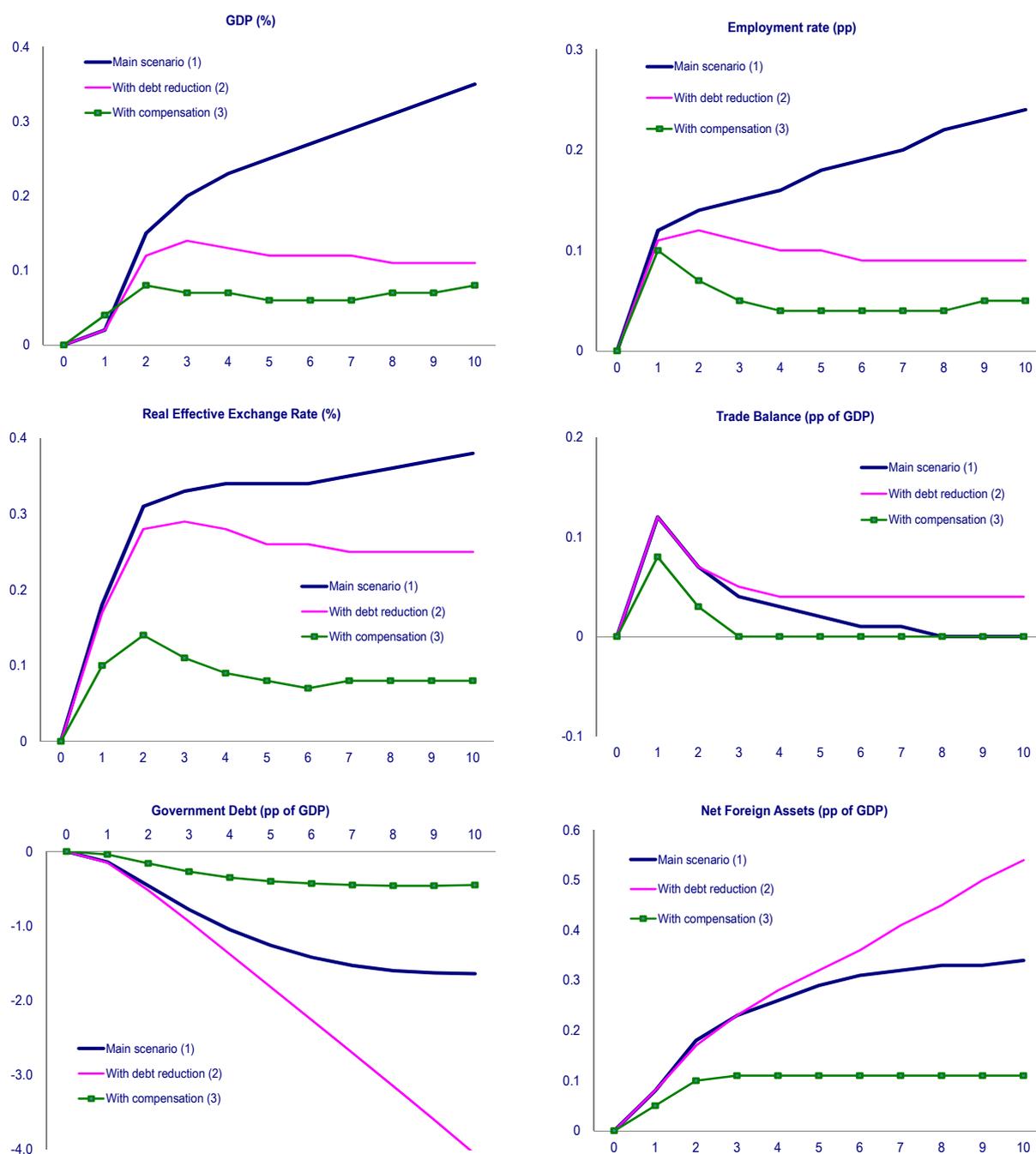
⁽²⁷⁾ Calmfors, L. (1998), ‘Macroeconomic policy, wage setting, and employment — what difference does the EMU make?’, *Oxford Review of Economic Policy*, Vol. 14, No 3.

⁽²⁸⁾ For references, see: http://ec.europa.eu/economy_finance/research/macroeconomic_models_en.htm.

⁽²⁹⁾ Technically this is done through a labour tax rule ensuring a stable debt-to-GDP ratio at some target in the long run, while allowing some deviation in the short and medium run.

⁽³⁰⁾ The labour tax rule is turned off for 30 years and then a new 10 pp lower debt target is imposed in the long run.

Graph II.1.1: Switching the tax burden from labour to consumption (deviation from baseline)



(1) Main scenario: labour supply elasticity 0.2, no compensation of transfer/benefit recipients; (2) Debt reduction scenario: as baseline scenario, but additional revenue used to reduce debt (reduction in long-run debt target); (3) Compensation scenario: labour supply elasticity 0.2, with compensation of transfer/benefit recipients.

Source: European Commission, QUEST simulations.

increases as permanent incomes rise, but in the first couple of years the former outweighs the latter and aggregate consumption is lower. In the medium term, disposable income of wage earners increases gradually as wages rise due to higher labour demand, and consumption rises.

As the tax shift leads to lower domestic prices, the real interest rate increases and this leads to lower

investment in the short run. In the medium to long run, investment rises above baseline as activity expands. However, investment rises by less than GDP, due to an increase in relative prices of (partially imported) investment goods to the GDP deflator, while labour costs fall, leading to substitution to more labour-intensive production.

Lower export prices raise exports and lower domestic prices shift demand towards domestic products and away from imported goods (real effective depreciation). The competitiveness effect is supplemented by the short-run negative income effect of the policy, which temporarily reduces total and import demand. Imports fall both because of increasing relative import prices and because of the negative income effect. Competitiveness gains and the income effect provide a boost to the trade balance of slightly over 0.1% of GDP. In the medium run, the improvement in the trade balance gradually evaporates as the positive income effect of the reform raises imports over time and the deterioration of the terms of trade counterbalances the impact of the increased net export volume on the trade balance. In the second scenario the additional tax revenue is used to reduce government debt, leading to a smaller positive income effect and a more persistent improvement in the trade balance, with a consequently larger improvement in the net foreign asset position.

Sensitivity analyses. These scenarios imply sharp reductions in *real transfers and benefits* as recipients of these are not compensated for the increase in VAT. If they are compensated for the increase in consumer prices, as in the third scenario in Graph II.1.1, the real benefits of the reform are significantly smaller as the costs of compensation add a significant burden on fiscal positions. Consumption declines by less on impact as real disposable incomes fall by less, but the increase in transfer and benefit expenditure reduces fiscal space and the resulting labour tax reduction is smaller. The compensation for unemployment benefits also puts upward pressure on workers' wage demands and the reduction in wage costs for firms is consequently smaller. The first-year GDP impact is slightly larger but medium-term output gains are lower than those in the first scenario. The trade balance and net foreign indebtedness also improve by less as consumption is higher in this scenario.

The macroeconomic impact of the type of tax reforms presented in Graph II.1.1 depends on the *labour market structure*. Sensitivity analysis indicates that with a more elastic labour supply a similar tax reform leads to a smaller increase in real (gross) wages and to a larger rise in employment. Thus, with a labour supply elasticity of 0.5 instead of the baseline 0.2, real wage costs for firms decline by more, long-run employment and output effects can double and the gain in the NFA-to-GDP ratio would be about 50% larger.

Public-sector wage reduction

A number of euro-area Member States have adopted measures to reduce their public wage bill in recent years. Wage reductions, wage or hiring freezes, and outsourcing of public services have been undertaken, e.g. in Spain, Portugal and Italy. In other countries, measures to curb public expenditure have been taken on an ongoing basis, such as in Ireland and Greece, where reductions or freezes of public employees' salaries were implemented already in 2009 and followed by further consolidation measures in 2010.

Besides their direct budgetary impact, public-sector wage reductions can contribute to internal devaluations by putting downward pressure on private-sector wages and thereby allowing domestic price moderation. The resulting gains in competitiveness allow the economy's external balance and net foreign asset position to improve.

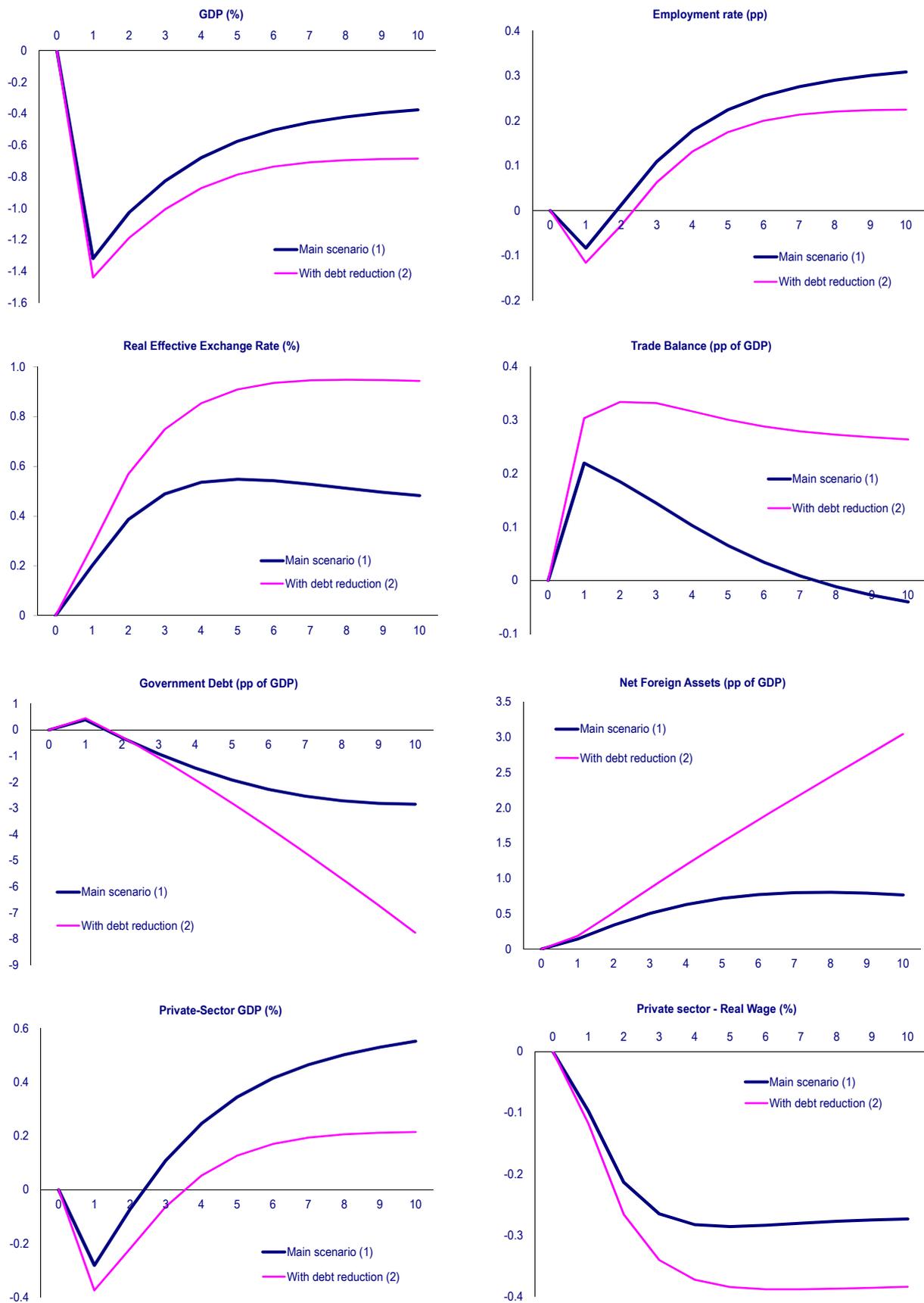
The model extension used for these simulations disaggregates final government consumption into compensation of employees and government purchases of goods and services.⁽³¹⁾ It is assumed that the government chooses the level of public employment. Public wages are fixed in a wage bargaining process, where a wage mark-up captures the bargaining power of public-sector employees. Consequently, a public-sector wage reduction is captured by a fall in the wage mark-up in the public sector. The reduction is transmitted to the private sector via an increase of the labour supply to this sector as households try to offset the fall in income from the public sector.⁽³²⁾

Graph II.1.2 displays the impulse responses of selected variables to a *permanent* 8% reduction in the public-sector mark-up, which implies a permanent public-sector wage reduction of around 9-10% below the initial baseline in real terms in the long run. This amounts to an ex-ante fiscal consolidation of around 0.9-1% of baseline GDP, in contrast to the tax shift scenario discussed above, which was ex-ante budgetary neutral. However, over time, the debt rule with an unchanged long-run debt target enforces long-run budgetary neutrality. This is achieved by a progressive decrease in the labour income tax.

⁽³¹⁾ Total government consumption amounted to around 22% of GDP in the euro area in 2010, out of which the compensation of public employees accounted for around 10.5% of GDP.

⁽³²⁾ The transmission mechanism in the model is fully endogenous. It does not rely on a more direct signalling role of the government on private wage setting.

Graph II.1.2: Public-sector wage reduction (deviation from baseline)



(1) Main scenario: debt rule switched on; (2) Debt reduction scenario: debt rule switched off, change in long-run debt target.

Source: European Commission, QUEST simulations.

The simulations confirm the spillover of the public wage reduction to the private sector. In contrast to the impact of the tax reform, this policy measure leads to a long-lasting (although relatively small) private wage moderation of around 0.3%.

The public wage reduction affects the economy *directly* through the fall in employees' labour income (contractionary effect) and *indirectly* through the downward pressure on private-sector production costs (expansionary effect). The simulations suggest that the expansionary effect dominates over the medium term: private and total employment, private-sector output, investment and household consumption all increase in response to the policy under the baseline scenario. In the short run, however, domestic demand as well as private output fall below their baseline levels.

The public wage reduction affects relative trade prices and trade volumes via declining domestic production costs. The simulations show that the real effective exchange rate depreciates by around 0.5% after 3 years.

The real depreciation leads to an expansion in *export* volumes. At the same time, the falling export prices dampen the resulting improvement in external balances in value terms. *Imports* decline in the short run but then tend to increase over time along with increasing domestic demand.

In spite of the permanent wage reduction, the overall impact of the public wage reduction on the *external balances* is fairly modest: the 10% wage reduction in the public sector is found to lead to a transitory improvement in the trade balance, with a peak of around 0.2% of GDP translating into an improvement in the NFA-to-GDP ratio by around 0.8% after ten years.

Sensitivity analyses. The baseline wage reduction scenario assumes no change in the *long-run government debt target* and allows the labour income tax to be progressively reduced. This allows an additional reduction in firms' labour cost which *per se* contributes to the gain in competitiveness and the improvement in the external position.

If the public wage reduction is not recycled through a labour tax cut but is used instead to reduce the public debt, the gains in the external balances achieved by the wage reduction turn out to be markedly larger. This is because the

domestic expansion is, in that case, curtailed by the uncompensated fall in wages. Lower domestic demand leads to a steeper fall in prices (real depreciation) and a more persistent fall in imports and hence to a much more persistent improvement in the trade balance than otherwise (see dashed line in Graph II.1.2).⁽³³⁾ This, however, comes at the cost of persistently lower household consumption and investment.

As in the case of the tax-shift scenarios, the results of the public-sector wage reduction scenarios depend on the *structure of the labour market*. The propagation of the public-sector wage moderation is also contingent on the labour market structure. When labour supply reacts more sensitively to changes in wages, the same 10% public wage moderation is more strongly transmitted to private wages and thereby amplifies the gain in competitiveness. In particular, with higher labour supply elasticity, the transmission of the public wage moderation to private wages could even double. External balances would also improve more, though their improvement is somewhat dampened by increasingly deteriorating terms of trade. The NFA-to-GDP ratio is found to improve by around 1.2% of GDP after ten years.⁽³⁴⁾

Relationship with the economic literature. The results of the model simulations presented in this section are broadly in line with recent findings in the macroeconomic literature. Evidence presented in a number of empirical studies supports the interaction between private and public wages. Positive co-movement between private and public wages, as established in the QUEST model, is reported e.g. by Afonso and Gomes (2008), Lamo, Pérez and Schuknecht (2008) for OECD countries and Holm-Hadulla et al. (2010) for the euro area.⁽³⁵⁾ The above-cited papers as well as Pérez and Sanchez (2010) also agree on the bidirectional causal relationship between wages in both sectors. Most evidence suggests causality runs from the

⁽³³⁾ Technically this is done by switching off the debt rule for the first 20 years of the simulation and by reducing the debt target by 20 pp in the long run.

⁽³⁴⁾ The baseline scenario assumes a labour supply elasticity of 0.2. This alternative scenario is based on an elasticity of 0.5 instead.

⁽³⁵⁾ Afonso, A. and P. Gomes (2008), 'Interactions between private and public sector wages', *ECB Working Paper Series*, No 971; Lamo, A., J. Pérez and L. Schuknecht (2008), 'Public and private sector wages: Co-movement and causality', *ECB Working Paper Series*, No 963; Holm-Hadulla, F., K. Kamath, A. Lamo, J. Pérez and L. Schuknecht (2010), 'Public wages in the euro area: Towards securing stability and competitiveness', *ECB Occasional Paper Series*, No 112.

private to the public sector; nevertheless, public wages may take the lead in many instances.

In addition, there is also broad agreement among these studies that public wage moderation is transmitted to private wages and also has a stimulating impact on private employment by orders of magnitude similar to those found in our simulations. The implications for total employment and further propagation to the economy depend, however, on the specific policy measure as well as on the modelling assumptions; see Finn (1998), Pappa (2003), Ardagna (2007), Quadrini and Trigari (2008) and Gomes (2010).⁽³⁶⁾

To the best of our knowledge, there are no empirical studies on the effect of public employment policies on external (im)balances. However, the relationship between a broader set of fiscal policies and external balances is also supported by empirical evidence. Using a broad database, Abbas et al. (2010) estimate that a fiscal expansion of 1% of GDP worsens the current account by 0.2-0.3% of GDP.⁽³⁷⁾ The impulse responses generated by the QUEST model predict very similar magnitudes. In another study, Nickel and Vansteenkiste (2008) also establish a positive relationship between fiscal deficits and current account deficits. According to their estimations, however, the strength (and the presence) of this relationship depends on the public debt level.⁽³⁸⁾

Concluding remarks

The results presented in this section show that the effects of nominal exchange rate devaluations can be mimicked by internal devaluations, which can lead to similar expenditure switching from foreign to domestic output.

Internal devaluation measures, such as a tax shift from labour to consumption or public-sector wage moderation, increase trade competitiveness by reducing domestic production costs and hence improve external balances over the short term.

The decline in relative domestic tradable prices is similar to the competitiveness effect of nominal exchange rate devaluations. Moreover, permanent internal devaluation measures have a long-lasting impact on competitiveness (real effective depreciation), contrary to permanent nominal exchange rate devaluation, where the effect is only transitory (nominal depreciation passes through into higher prices of intermediate imports and raises production costs and prices at horizons over which these are flexible).

However, the long-lasting competitiveness gain from a permanent internal devaluation measure does not result in a permanent improvement in the trade balance. The tax shift from labour to consumption and public-sector wage moderation boost GDP and employment over time, translating into higher domestic and (with unchanged preferences) import demand. The positive income effect of internal devaluation largely offsets the improvement in the trade balance over the longer horizon.

Supplementing internal devaluations with fiscal consolidation reinforces the positive trade-balance effect over the short and medium term. Internal devaluation acts mainly through the supply-side channel, i.e. lower production costs and tradable prices. Fiscal consolidation adds negative demand effects (lower public-sector demand, higher taxes), which reduce domestic and import demand and weaken and/or delay the positive income effect of the supply-side measures. The result illustrates that a long-lasting rebalancing of external accounts crucially depends on the rebalancing of domestic demand.

Overall, the effects of internal devaluations on external balances are similar to those of external exchange rate devaluations, which also have positive effects on trade in the short run, but do not lead to permanent trade-balance improvements in the long run.

⁽³⁶⁾ Finn, M. (1998), 'Cyclical effects of government's employment and goods purchases', *International Economic Review*, Vol. 39, No 3; Pappa, E. (2004), 'New Keynesian or RBC transmission? The effects of fiscal policy in labour markets', *IGIER Working Paper*, No 293; Ardagna, S. (2007), 'Fiscal policy in unionised labour markets', *Journal of Economic Dynamics and Control*, Vol. 31, No 5, pp. 1498-1534; Quadrini, V. and A. Trigari (2008), 'Public employment and the business cycle', *Scandinavian Journal of Economics*, Vol. 109, No 4, pp. 723-742; Gomes, P. (2010), 'Fiscal policy and the labour market: The effects of public sector employment and wages', mimeo, London School of Economics.

⁽³⁷⁾ Abbas, A., J. Bouhga-Hagbe, A. Fatás, P. Mauro, and R. Velloso (2010), 'Fiscal policy and the current account', *IMF Working Paper*, No 10/121.

⁽³⁸⁾ Nickel, C. and I. Vansteenkiste (2008), 'Fiscal policies, the current account and Ricardian equivalence', *ECB Working Paper Series*, No 935.