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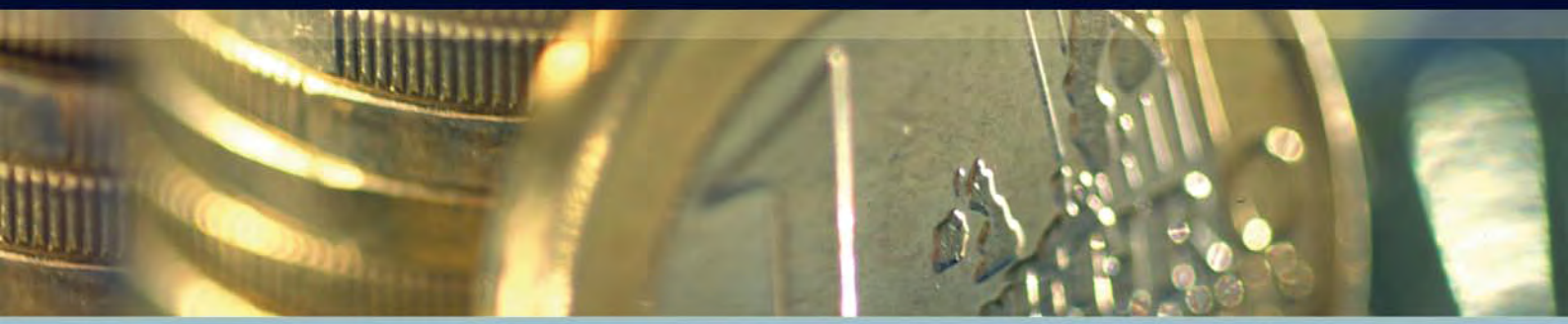

From CAB to CAAB? Correcting Indicators of Structural Fiscal Positions for Current Account Imbalances

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From CAB to CAAB?
Correcting Indicators of Structural Fiscal Positions for Current Account Imbalances

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Abstract

In the past decade, a series of EU countries have witnessed absorption booms and growing current account deficits as a result of falling risk premia and rapid financial integration. At the same time, fiscal policy in those same countries has not been leaning against the wind effectively so as to contain boom-bust dynamics. This paper addresses the question whether buoyant temporary revenues during absorption booms contributed to excessive complacency by policy-makers and an insufficiently counter-cyclical response of fiscal policy. The paper shows that standard approaches for adjusting budget balances for the cycle could miss part of the temporary revenues accruing during absorption booms and that, in some instances, this could have mattered substantially for a proper assessment of structural fiscal positions. The paper also shows by means of DSGE model simulations that targeting a proper indicator of the underlying (structural) fiscal balance could have contributed substantially to the containment of macroeconomic imbalances and to avoiding boom-bust dynamics. The findings have implications for the conduct of discretionary fiscal policy and the design of fiscal rules and multi-annual fiscal frameworks.

Keywords: cyclically-adjusted budget balance, current account balance, boom-bust dynamics.

JEL classification: E62, E65, E32, F32.

 The paper benefits from useful discussion with Albert Jaeger and comments by Marco Buti, Martin Larch, and Werner Roeger.

1. Introduction

A series of EU countries, most notably New Member States but also some euro-area countries, experienced in the past decade absorption booms (phases of buoyant domestic demand) that were coupled with widening current account deficits. Strong growth in absorption during the boom phase had a positive effect on fiscal revenue, which contributed to very sizeable improvements in the fiscal accounts. In some cases, however, the increase in absorption was "excessive", and reflected a deviation from fundamentals. With hindsight, there is also growing awareness that current account imbalances were, in many instances, aggravated by fiscal policy ineffectively leaning against the wind during good times. Moreover, it was also observed that, when the external imbalances underwent a sharp correction following the global crisis of 2008, the fiscal position abruptly shifted from apparently sound to large deficits and, in some cases, distressed situations.

Building on the above considerations, this paper discusses ways to construct indicators for the conduct of fiscal policy that permit to take into account not only the impact of the output cycle but also phases where absorption, and therefore the current account, deviate from prudent paths. Building on previous work by Jaeger and Klemm (2007), the paper shows that compared with the conventional cyclically-adjusted budget balance (CAB), correcting budgetary indicators also for absorption booms and busts permits to dispose of a better gauge of the structural fiscal position in countries experiencing large swings in their current account, and that the difference between this alternative cyclically and absorption-adjusted budget balance (CAAB) and the CAB was in some instances large among EU countries in the past decade. The paper also shows by means of DSGE model simulations that disposing of an appropriate calibration of the fiscal impulse would have mattered considerably for some countries undergoing boom-bust cycles: this would have implied a more prudent fiscal stance, smoother output dynamics, and contained macroeconomic imbalances.

The remainder of the paper is organised as follows. The next section reviews a series of macroeconomic developments across EU countries in the past decades, identifies few stylised facts and illustrates the main issues tackled in this paper. Section 3 discusses the links between current account imbalances and the measurement of structural fiscal positions, and develops and indicator of the fiscal position that takes into account both the output cycle and absorption booms. Section 5 compares CAB and CAAB figures for EU countries. In section 4 DSGE model simulations are shown that point to a relevant impact from targeting an appropriate indicator of the fiscal stance during absorption booms. Section 6 concludes.

2. Absorption booms, current accounts, and fiscal policy

Over the last decade, vanishing exchange rate risk among euro-area countries, financial integration and deepening in EU New Member States (NMS), and a general trend towards low interest rates and falling premia to compensate for default risk translated into massive absorption booms in a series of EU Member States. Falling interest rates led to consumption and investment booms, with a consequent fall in the saving-investment balance and higher current account imbalances. Absorption booms coincided in several cases with boom-bust dynamics. The most notable cases were those of the Baltic countries that started experiencing current account reversals and deep recessions already before the burst of the financial crisis in Autumn 2008 (see European Commission, 2010). Absorption booms were also observed in some euro-area countries before the financial crisis, with current account deficits ballooning in Greece, Spain and Portugal, thereby posing an issue of intra-area adjustment (European Commission, 2008).

With the financial crisis, the re-appreciation of risk in financial markets caused sudden stops in capital inflows and sharp current account adjustments in the number of EU Member States. Those countries that experienced the largest absorption booms before the crisis ended up also being those hit harder by the recession. The consequence for public finances was rapidly falling revenues and growing deficits. Figure 1 shows that the deterioration of fiscal positions after the crisis was stronger for the countries having previously experienced larger current account deficits. The issue arises whether this strong deterioration was only the result of stronger recessions or related also to output becoming less tax-rich.

[Figure 1 here]

To better understand regularities concerning fiscal developments during absorption booms we undertake a simple event analysis. We look at average macroeconomic and fiscal developments during absorption booms among EU and OECD countries over the 1975-2008

period.[1] Absorption boom episodes are defined – in a somehow arbitrary way that allows defining a sufficient number of observations to draw meaningful conclusions – as periods where the share of absorption in GDP increases by more than 5 percent over a period of 5 years, and reaches a level above 100 percent. This allows selecting 20 events (see Table A.1. for a description of the episodes). We also look at macroeconomic and fiscal developments after the boom, to assess how fast potential excesses are corrected and the impact on fiscal variables. The results are summarized in Table 1 and Figure 2.

[Table 1 here]

While the increase in *absorption* tends to be (on average) gradual and almost linear during the boom phase, this is generally followed by a rather abrupt correction after the peak. On average, it takes only two years to return to the absorption level observed 4 years before the peak. The current account balance follows broadly the same path, with a sharp reduction of the deficit in the years immediately following the peak, which seems very much in line with developments observed in a number of EU countries of late 2000s. Absorption booms also tend to coincide with periods of high real and nominal *GDP growth*. Real GDP grows on average by 4½ percent a year during the boom phase, with an acceleration at the end of the boom. It falls to only 1½ percent in the post-boom years, and turns negative in at least one of the three years following the peak in absorption in 15 out of the 20 observations in the sample. Similarly, nominal GDP growth tends to be much higher during the boom phase, suggesting that absorption booms coincide with periods of high inflation, where the economy is overheating.

[Figure 2 here]

[1] The data source is the AMECO database developed by DG ECFIN and the countries considered in the analysis are Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxemburg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, UK, US, Japan, Canada, Norway, Iceland, Mexico, South Korea, Australia, New Zealand. At the time of the analysis, data were available until 2011 on the basis of the European Commission services 2010 Spring Forecast.

Unsurprisingly, the *government balance* improves during absorption booms, by over 3 percent of GDP over the 5-year period preceding the peak in absorption. However, this increase is concentrated in the first years of the boom. In the last 2-3 years of the boom, the government balance stops improving – despite the continued increase in the government revenue ratio. In line with developments observed recently, the government balance deteriorates sharply in the years following the absorption boom – by 4½ percentage points of GDP on average, with the decline concentrated in the first two years after the peak in absorption.

The path followed on average by the *CAB* seems instead less obvious. Over absorption booms the CAB remains on average broadly stable. However, it sharply worsens – by around 2½ percent of GDP on average – in the years immediately following the boom. This suggests that the temporary elements of the budget may not be fully extracted from the CAB during absorption boom and busts.

Turning to *revenue and expenditure* developments, it appears that the government revenue ratio increases significantly during the boom years. This is primarily driven by an increase in the ratio of indirect taxes. However, both increases are reversed in the post boom phase. [2] Direct taxes follow a similar path as indirect taxes, but fluctuations in the ratio are less pronounced. Social contributions are constant as a share of GDP during the boom phase, and increase in the post-boom phase. [3]

The ratio of total government expenditure to GDP tends to decline significantly during absorption booms. However, the reduction is concentrated in the early years of the boom. During that period, government spending increases in line with its historical trend, and the boom in nominal GDP brings the expenditure ratio down. However, in the late phase of the absorption boom, the expenditure ratio stabilises, as nominal spending growth is adjusted upward to match buoyant government revenue. This suggests a shift to a procyclical policy stance. The fall in the government spending to GDP ratio observed during the boom years is however typically more than reversed in following period, with very significant increases in the two years immediately after the peak in absorption.

[2] One interesting element is that the increases in the total revenue and indirect taxes ratios stop in the last year of the absorption boom, which may reflect the effect of policy measures when the fiscal position reaches a comfortable position.

[3] This may reflect a lag in employment developments – employment and social contributions continue to increase in the years immediately following the downturn – and discretionary increases in social contributions to finance the deficit of social regimes in the bust phase – social benefits increase sharply in the low-growth years following the boom phase.

These developments have important implications for *government debt*. While the dynamism of nominal GDP and reduction in the government deficit lead to a significant decline in the debt ratio during the absorption boom – 6 percent of GDP on average across the sample – this decline is more than reversed in the post-boom phase. On average, the increase in the debt ratio in the 5 years following the peak in absorption reaches 14 percent of GDP, more than twice as much as the decline in the ratio observed during the boom.

In terms of policy, the data largely confirm that fiscal policy is often ineffective in stabilising output during absorption booms. The cyclically-adjusted budget balance does not significantly improve during the boom phase, despite the overheating economy. More interestingly, the data suggest that the actual structural fiscal position during absorption booms could be less rosy than depicted by the CAB. In countries experiencing fast growth of domestic demand and widening current account deficits, developments in tax elasticities contribute to artificially push up cyclically-adjusted balances because indirect taxes are linked to absorption rather than output, as assumed when computing CABs. When the absorption boom turns into a bust, the CAB is instead pushed down by the rapidly falling indirect tax ratios on GDP. Overall, the event analysis suggests that standard fiscal policy indicators (CAB) may not send the right signals to policy makers during absorption boom calls for refinements in the calculations of indicators to assess the fiscal stance and the underlying fiscal position.

3. From CAB to CAAB: linking structural fiscal balances to current accounts

The problems with the measurement of the structural budgetary position by means of the CAB are well known. However, introducing well-founded improvements in the CAB is not an easy task. In particular, despite the consensus that the CAB may not always send the right signals due to fluctuating revenue elasticities, progress to address the issue has been only partial. The CAB approach employed in EU budgetary surveillance (see, e.g., European Commission, 2006, Box II.3) measures the cycle with the output gap and adopts budgetary elasticities (measuring the percentage change of budgetary items associated with a percentage output change) that are kept constant, with sensitivities (measuring value changes in budgetary items associated with value changes in output) that vary in proportion with the share of budgetary items on GDP. With this approach, the impact of the cycle on revenues is not assumed to be strictly constant, but varies only due to changing revenue composition, while the composition of tax bases plays no role. An alternative approach is to take into account cycles in the different tax bases (by considering gaps between the actual and the

filtered value of tax bases, see, e.g., Bouthevillan et al., 2001). This approach permits to take also into account whether tax bases are unusually high or low compared with their trend. However, the benchmark tax base composition (all tax bases in line with trend) has no strong conceptual underpinning and neglects the possibility of structural transformations that may justify persistent recompositions in tax bases.

The main idea behind the fiscal indicator taking into account the impact of absorption booms and busts developed in this paper is that the definition of a well-founded benchmark for *tax bases' composition* can be naturally related to the *need of countries to maintain prudential current account positions*. In line with the approach proposed by Jaeger and Klemm (2007), the idea is to strip out from the actual balance the automatic effects of both output and absorption and not only output as assumed with the CAB. Hence we develop a notion of cyclically and absorption adjusted budget balance (CAAB) where "gaps" not only in output but also in absorption play a role in capturing temporary budgetary components.

A meaningful notion of "absorption gap" should ideally capture the difference between actual and "potential" absorption, where by *potential absorption* is meant absorption in line with output *being at potential and current account balances being in line with fundamentals*. A common benchmark for current accounts consistent with fundamentals is provided by the computations of so-called "current account norms", namely current account values consistent with medium-term determinants of the saving-investment balance (e.g., Chinn and Prasad, 2004; Lee et al., 2008).

Regarding the determination of the parameters linking the output gap and the absorption gap to the CAAB, a natural benchmark is provided by the shares of direct and indirect taxes. While direct taxes are linked to incomes and therefore value added (GDP), the tax base of indirect taxes is rather correlated to absorption because indirect taxes are levied on imports whereas exported output is not affected.

Based on the assumptions above, the CAAB is calculated as the difference between the actual budget balance and two terms reflecting temporary budgetary components: one linked to the output gap and the other linked to the absorption gap. Denoting by b the budget balance, by y and y^* actual and potential output, by $ygap$ and $agap$ the output gap and the absorption gap, by a and a^* absorption and potential absorption, by ca^* the current account norm, and by it the sum of net foreign income and net transfers, the following equations can be derived:

(1) $CAB_t = (b/y)_t - \lambda\ ygap_t$

(2) $CAAB_t = (b/y)_t - \beta_t\ ygap_t - \gamma_t\ agap_t,$

(3) $agap_t = [(a_t - a^*_t)/y^*_t],$

(4) $a^*_t = y^*_t - ca^*_t + it_t.$

In equation (1), λ_t is the standard budgetary *sensitivity* used in EU budgetary surveillance. In light of the previous discussion, the sensitivity parameter to absorption, γ_t in equation (2) is given by the share of indirect taxes in GDP. Given the unitary *elasticity* of indirect taxes with respect to absorption and the linearity of the CAB with respect to output it follows that

(5) $\beta_t = \lambda_t - \gamma_t.$

From equations (1) and (2) it is evident that the difference between the CAB and the CAAB originates from the fact that with the CAAB indirect taxes are linked to the absorption gap rather than the output gap. This has the implication that the CAAB will differ from the CAB especially when the share of indirect taxes on output is large (which is normally the case the case during absorption booms) and when absorption dynamics deviate substantially from those of output. From equations (1), (2) and (6) is indeed easily obtained that:

(6) $CAAB_t = CAB_t - \gamma_t\ (agap_t - ygap_t)$

4. Not quite peanuts: comparing CAABs and CABs in the EU

In principle, adjusting fiscal positions for absorption gaps is expected to yield different results compared with the standard CAB. However, whether or not the CAAB is significantly different from the CAB is a matter of empirical measurement. With the purpose of gauging the order of magnitude of such a difference we compared CAB and CAAB values for EU countries during the last decade, which was characterised by diverging current account dynamics among euro-area countries and absorption booms in a series of NMS.

The variables used for the computation of CAABs are all obtained from the DG ECFIN AMECO database, except for the computation of current account norms that require additional data sources. Parameter “gamma”, the share of indirect taxes in GDP, The approach followed to compute the current account norms is akin to that in Chinn and Prasad (2003) and Lee et al. (2008). Regressions of the current account/GDP ratios on a set of explanatory variables were carried out on pooled data from 60 industrial and emerging

economies over the 1970–2009 period (see Appendix A.1). The estimated current account norms were obtained as the linear predictions from those estimated. The explanatory factors, aimed at capturing the determinants of the balance between national savings and investment over the medium-to-long term, were chosen as follows:

- General government budget balance/GDP ratio. The higher the government budget balance surplus, the higher national savings and therefore the current account balance.
- Old-age dependency ratio. Life-cycle consumption theory predicts that the higher the old-age dependency ratio, the lower the share of savings on GDP and the current account/GDP ratio.
- Real GDP per capita at purchasing power parity. Countries with relatively high (low) per-capita GDP are more likely to lend (borrow) to (from) other countries, and to run, *ceteris paribus*, a higher current account surplus (deficit).
- Real GDP per capita growth. Countries characterised by relatively high (low) growth rates of GDP per capita are more likely to borrow (lend) from (to) other countries, and to run, *ceteris paribus*, lower current account surpluses (deficits).
- Net foreign asset/GDP ratio. A high stock of net foreign assets implies, *ceteris paribus*, higher net investment income and therefore higher current account surpluses on GDP.
- Oil balance. In light of the price rigidity of the demand for oil, a higher imbalance between oil consumption needs and production capacity translates into a higher current account deficit.

The estimated current account norms indicate that for relatively high income countries like Belgium, Germany and the Netherlands small deficits or surpluses are expected, while larger deficits are expected for relatively low income, catching up economies.

Results in Table 2 displays results for all EU countries for the 2005-2009 period. It shows that, although in most cases the two indicators present a similar picture and tend to evolve in parallel, in some cases the divergence is large. These cases correspond to those countries where the current account underwent periods of exceptionally large deficits or surpluses and normally coincide with the same countries for which absorption booms are identified in the event analysis discussed above (Table A.1).

[Table 2 here]

Figures 3 and 4 illustrate the evolution in the difference between the CAAB and the CAB since 2000 in selected countries. Figure 3 depicts the case of selected Euro Area countries. It suggests that the underlying fiscal position at the outset of the crisis (2007–08) was significantly worse according to the CAAB than according to the CAB in Greece and Portugal, countries that were experiencing sizable current account deficits at that point in time. Symmetrically, in countries that were accumulating surpluses in the years before the crisis, like Germany, the Netherlands, and Sweden, the underlying budgetary position estimated by the CAAB appears stronger than that revealed by the CAB. This evidence suggests that an assessment of the underlying fiscal position based on the CAAB could have helped develop policies that were more consistent with a prudent development of external imbalances and which could have contributed to containing intra-Euro Area current account and competitiveness divergences.

Figure 4 depicts the evolution of the CAAB and the CAB for selected New Member States: Bulgaria, the Baltic countries and Romania. In the past decade, all these countries underwent boom-bust dynamics fuelled by rapid financial integration and abundant capital inflows. Absorption grew at very high rates and current account deficits reached record values between 2007 and 2008, while the global crisis was accompanied by major current account reversals linked to capital outflows and major contractions in absorption. During the boom years, the underlying fiscal position in these countries would have looked considerably less optimistic if judgement were based on the CAAB. In the case of Bulgaria the difference between the CAAB reached almost 4 percent of GDP; in the case of Latvia it reached about 2.5 percent. Such an assessment could have contributed to more prudent fiscal policies during the boom years.

[Figures 3 and 4 here]

4. Does targeting the CAAB make a difference?

The aim of this section is to illustrate to what extent differences between CAAB and CAB could matter to contain boom-bust dynamics. To this aim, we compare the impact of a CAAB and a CAB based fiscal adjustment in an economy experiencing an absorption boom. The simulations use a small open economy version of the Commission's dynamic general equilibrium model QUEST III. The model is based on optimising behaviour of domestic and foreign households and firms and also incorporates fiscal and monetary policy authorities. Various real and nominal frictions are introduced so as to bring the dynamics implied by the model closer to data. The model is sufficiently rich to capture both current account dynamics and fiscal developments in a realistic manner (for a more detailed description of the model see Appendix A.2).

In the simulations, the *absorption boom* is induced by an exogenous fall in the external risk premium. It is calibrated so as to roughly match current account deficits observed in the Baltics during their boom period (2001-2007). The *baseline scenario* assumes no policy change; i.e. all tax rates are fixed and the government expenditure items are kept constant in real terms over the boom period. The *fiscal adjustment scenarios* start from the boom baseline and assume that the fiscal authority aims at keeping the structural balance at zero. To that purpose, two alternative indicators are considered: the CAB or the CAAB. For the simulations targeting the CAB the adjustment is assumed to start in 2005, where the CAB records a value of -1.5%, and to end in 2007, were the CAB reaches about -4%. Since the aim of the government is to bring the CAB to balance, the simulated consolidation path implies a change in the CAB equal to the observed CAB between 2005 and 2007, taken with minus sign. As for the CAAB-based simulated consolidation, it is assumed to start already in 2004 and to equally end in 2007. In 2004, according the CAAB, the structural deficit was about 1% GDP higher compared with what measured by the CAB (Figure 4). On this basis, one can assume that, by looking at this indicator, the authorities would have started consolidation earlier than what they would have done by taking the CAB as reference. The consolidation culminates with an improvement in the CAAB by about 7% compared with baseline in 2007. In the simulations, the whole adjustment is assumed to be achieved by means of a cut in government consumption. This assumption has no major implications for qualitative results.

As shown in Figure 5, since a fiscal policy stance based on the CAAB would have been more timely and implied and less expansionary fiscal stance than that based on the CAB, the CAAB-based adjustment would have implied a more effective leaning against the wind by fiscal policy. The improvement in the nominal budget balance during the boom would have

been larger by targeting the CAAB. The results from the simulation show that a more timely and better calibrated fiscal contraction would have contributed to contain more effectively the overheating of the economy. The simulations also suggest that targeting the CAAB rather than the CAB would have implied a considerably more effective action to contain current account deficits (lower by about one percentage point of GDP), with the effect arising not only from reduction in incomes induced by the consolidation (and therefore import demand) but also by a reduction in inflation, the terms of trade and therefore an improvement in price competitiveness.

Overall, model-based simulations suggest that targeting a structural fiscal balance indicator that captures developments in elasticities associated with absorption booms rather than the CAB would matter quantitatively to contain the overheating and correct external imbalances in an orderly way.

5. Conclusions

The recent experience with a series of EU countries of recent accession of belonging to the euro-area periphery underscores the difficulties with keeping a counter-cyclical fiscal policy during absorption booms. Event analysis on EU and OECD countries confirms that the fiscal stance during absorption booms was generally pro-cyclical and reveals a quite typical pattern: standard indicators of structural fiscal policy (the CAB) fail to capture large increases in indirect taxes during the year where absorption is booming and current account deficits are widening while, when the absorption boom turns into bust, the CAB abruptly shifts to a large deficit. This evidence suggests that sub-optimal policy behaviour may be partly explained by limitations of the tools at the disposal of policy makers, with the CAB failing to send the right signals to policy makers during absorption booms.

A meaningful indicator complementing conventional CAB measures in fiscal surveillance could be based on a notion of "absorption gap", building on the fact that deviations from current account balances from values consistent with fundamentals can have sizeable fiscal implications. The paper develops the notion of a cyclically and absorption adjusted budget balance (CAAB), which has a number of desirable properties. The indicator permits to address the issue of the fluctuating composition of tax bases, thus usefully complementing the standard CAB. Although identifying a benchmark value for absorption on which to base a meaningful notion of absorption gap is not obvious, resorting to the requirement that current

accounts are expected to be in line with values consistent with fundamentals (current account norms) provides economic foundations to a notion of absorption gap.

Comparing the CAAB to the standard CAB reveals that when the economies are experiencing absorption boom or bust and current account imbalances, there can be substantial divergences between the two measures. DSGE model simulations calibrated to the experience of the booming Baltic economies show that targeting the CAAB rather than the CAB could significantly contribute to containing external and internal macroeconomic imbalances during absorption booms.

Complementing standard fiscal indicators with the CAAB when assessing the fiscal impulse has implications for the conduct of discretionary fiscal policy and the design of fiscal rules and multi-annual fiscal frameworks; implications that could be of high relevance especially for countries undergoing absorption booms and busts.

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Appendix

Appendix A.1. Computing current account norms

A.1.1. Concept and specification.

The current account norm of a country is the current account consistent with fundamentals. The explanatory variables used for the estimation of current account norms are aimed at capturing structural medium-to-long term determinants of the saving-investment balance, the trade balance, the net income balance. In analogy with Chinn and Prasad (2003) and Lee et al. (2008), the following explanatory variables are considered:

- **General government budget balance/GDP ratio**. The higher the government budget balance surplus, the higher national savings and therefore the current account balance. Source: AMECO complemented by IMF, World Economic Outlook database, Global Insight, World Bank, World Development Indicators.
- **Old-age dependency ratio** (fraction of population older than 65 years over the working-age population (between 15 and 64 years old)). Life-cycle consumption theory predicts that the higher the old dependency ratio, the lower the share of savings on GDP and the current account/GDP ratio. Source: AMECO, complemented by United Nations.
- **Real GDP per capita at purchasing power parity (PPP)** (ratio with respect to US). Countries with relatively high (low) per-capita GDP are more likely to lend (borrow) to (from) other countries, and to run ceteris-paribus a higher current account surplus (deficit). Source: Penn World Tables (data beyond 2007 projected forward using GDP per-capita growth rates from AMECO).
- **Real GDP per capita growth**. Countries characterised by relatively high (low) growth rates of GDP per capita are more likely to borrow (lend) from (to) other countries, and to run ceteris-paribus lower current account surpluses (deficits). Source: AMECO complemented by World Bank, World Development Indicators.
- **Net foreign asset/GDP ratio** (value at the beginning of each 4-year sample sub-period). A high stock of net foreign assets implies ceteris-paribus higher net investment income and therefore higher current account surpluses on GDP. This effect is likely to prevail over an opposite effect on the trade balance, which can be lower while keeping the stock

of NFA on GDP stable the higher is the initial NFA/GDP ratio. Source: AMECO, complemented by IMF Balance of Payments and Lane and Milesi and Ferretti (2007) data.

- **Oil balance** (percentage difference between oil barrels per year produced and consumed). In light of the price rigidity of the demand for oil, a higher imbalance between oil consumption needs and production capacity translates into a higher current account deficit. Source: BP and US Energy Information Administration.

A.1.3. Estimation and results

Regressions on an unbalanced panel of 60 industrial and emerging economies over the 1970-2010 period are used to estimate the link between current account and a series of explanatory variables representing fundamental determinants.[4] The estimated current account norm for each country and each of the 4-year sub periods are obtained as in-sample predictions from these regressions.

In order to correct for cyclical fluctuations, yearly data are transformed into 4-year non-overlapping averages (7 years for the 2004-2010 period). Since most variables are broadly stationary, OLS estimation techniques are used without resorting to panel cointegration techniques.

Regression results are in line with expectations (Table A.2)**.** The regression explains about 40 per cent of the variance of current account / GDP ratios. Regression coefficients have the expected sign. The size of the coefficients is also on line with that of existing studies (Lee et al., 2008). The estimated current account norms were obtained as the linear predictions from those estimated.

Appendix A.2. DSGE simulations

A.2.1. Model description

[4] Data for 2009 and 2010 are based on forecasts. The following countries are included in the sample: Albania, Argentina, Australia, Austria, Belgium, Belarus, Brazil, Bulgaria, Canada, Chile, China, P.R.:Hong Kong, China,P.R.: Mainland, Colombia, Croatia, Cyprus, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Morocco, Mexico, Netherlands, Norway, New Zealand, Philippines, Poland, Portugal, Romania, Russia, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Tunisia, Turkey, Ukraine, United Kingdom, United States, Uruguay.

We use the Commission services' DSGE model QUEST III for the simulations.[5] QUEST III is a New-Keynesian open-economy model: it is based on the optimising behaviour of households and firms with an external sector. The model features various real and nominal frictions.

Households choose how much to consume, invest and to work in each period. There are two types of households: a share of households (Ricardians) has full access to both domestic and foreign capital markets and bases its decisions on their permanent income. Another part of households are liquidity constrained: having no access to capital markets, these households can only spend what they earn in a given period.

Domestic firms are owned by Ricardian households. They can sell their goods both in domestic and foreign markets. The demand for their output depends on total demand and on relative prices with the impact of the latter being governed by the demand's price elasticity. Symmetrically, foreign firms can sell their products in the domestic market (import). We set the domestic economy to be small: total foreign demand, prices and the interest rates are therefore exogenous.[6] Trade shares are calibrated to roughly match the Baltic economies import-to-GDP shares.

Monetary policy regime is assumed to be a fixed exchange rate regime (alternatively monetary union with the foreign country). Fiscal revenues consist of consumption tax, corporate and labour income taxes. Fiscal expenditures include government consumption, government investment, unemployment benefits, lump-sum transfers and interest expenditures. Fiscal policy can intervene both following a debt rule and via discretionary measures.

In equilibrium, all markets clear, i.e. prices adjust such that supply equal demand.

A.2.2. Description of shocks

- **Base scenario**

  The base scenario captures a stylised absorption boom driven by a persistent fall in external risk premia (annual 500 bp on impact). It was calibrated to roughly match the current account deficit observed in the Baltic economies 2001-07. The boom simulation starts in 2001.

- **Consolidation targeting the CAB**

[5] For a detailed description of QUEST see Ratto et al. (2008).

The CAB-targeting consolidation starts in 2005. It departs from the base scenario and introduces a progressive cut in government consumption reaching a 4% of GDP ex-ante structural fiscal adjustment by 2007. This is roughly equal to the adjustment trajectory which was indicated by the CAB for Latvia 2005-07. The difference between the CAB consolidation lines and the base scenario in Figure 6 shows the impact of the CAB-targeting adjustment.

- **Consolidation targeting the CAAB**

  The CAAB-targeting consolidation differs from the CAB-targeting consolidation in two respects: (i) the date where consolidation is started (2004 rather than 2005); (ii) the size of the fiscal adjustment, which is larger the higher the current account deficit. The difference between the CAAB consolidation lines and the base scenario in Figure 6 shows the impact of the CAAB-targeting adjustment.

[6] Note that foreign demand for domestically produced goods still depends on relative prices.

Figure 1. Change in government budget balance after the financial crisis and previous current account positions across EU countries

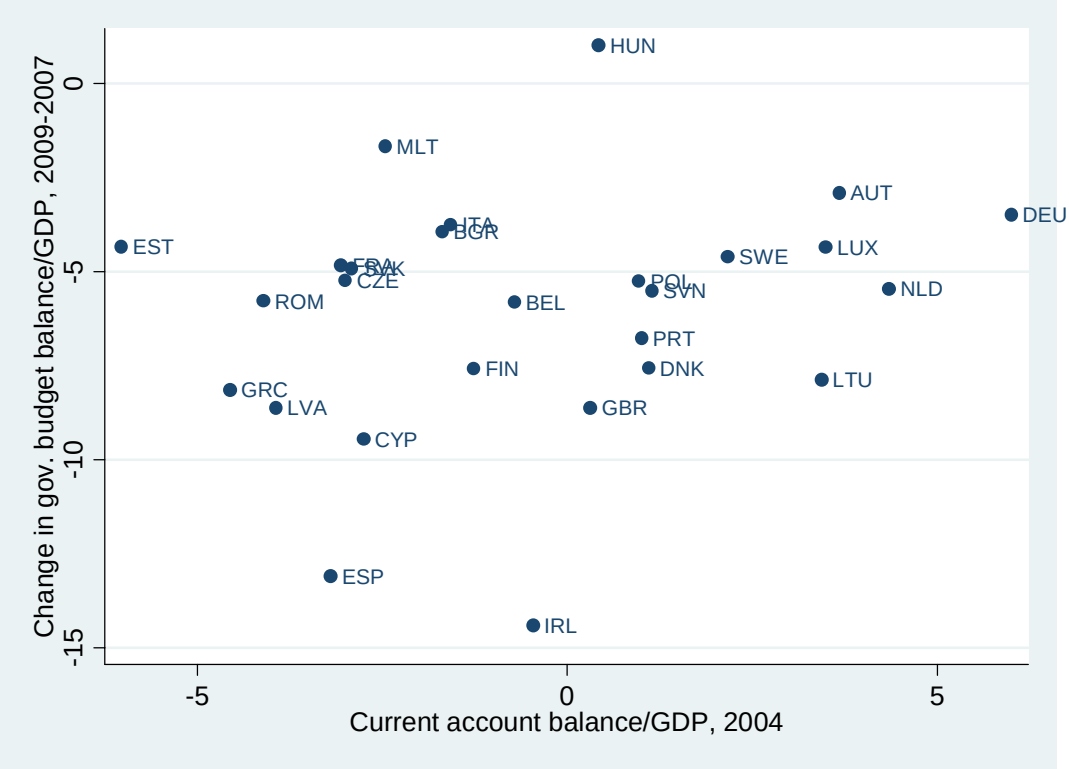

Table 1. Macroeconomic developments during and after absorption booms 1/

	Absorption boom (T = peak year)						Post boom (bust) 3/					Change from	Change from
	T-5	T-4	T-3	T-2	T-1	T	T+1	T+2	T+3	T+4	T+5	T-5 to T	T to T+5
						(Percent of GDP)							
Absorption	102.9	103.5	104.7	106.6	107.7	**110.1**	107.3	103.6	102.8	102.4	101.9	7.2	-8.2
Current Account balance	-2.7	-3.0	-4.5	-6.9	-8.8	**-11.9**	-8.6	-5.0	-3.0	-2.8	-2.8	-9.1	9.1
						(Percent change over the previous period)							
Real GDP growth 2/	3.2	3.7	4.1	5.1	5.4	**4.7**	1.3	-1.1	1.0	2.9	3.7	4.6	1.6
						(Percent of GDP)							
Government balance	-4.6	-3.2	-1.8	-1.9	-1.8	**-1.2**	-3.2	-5.4	-5.9	-6.4	-5.7	3.4	-4.5
Government primary balance	-1.5	0.3	0.7	0.3	0.4	**1.0**	-1.0	-2.9	-3.3	-3.6	-2.8	2.5	-3.8
Cyclically adjusted balance	-2.3	-1.8	-2.1	-2.2	-2.5	**-2.3**	-3.9	-4.6	-4.2	-4.8	-4.3	0.0	-2.0
Government gross debt	36.8	35.6	34.6	33.8	32.6	**30.8**	33.3	38.1	42.1	43.7	44.6	-6.0	13.8
Total government revenue	38.3	38.4	38.4	38.6	39.3	**39.0**	38.4	38.5	38.3	37.9	38.2	0.7	-0.8
Tax burden	32.6	32.8	33.2	33.0	33.9	**34.0**	33.5	33.1	32.8	32.5	32.7	1.5	-1.4
Indirect taxes	12.4	12.6	13.2	13.3	13.7	**13.5**	13.0	12.7	12.6	12.6	12.7	1.1	-0.8
Direct taxes	9.6	9.5	9.5	9.4	9.7	**9.9**	9.7	9.4	9.1	8.8	8.9	0.3	-1.0
Social contributions	10.3	10.4	10.4	10.3	10.4	**10.5**	10.7	10.9	10.9	10.9	11.0	0.2	0.5
Other taxes	0.3	0.2	0.1	0.1	0.1	**0.1**	0.0	0.1	0.2	0.2	0.0	-0.1	-0.1
Non tax revenue	5.8	5.6	5.2	5.6	5.4	**5.0**	4.9	5.4	5.5	5.4	5.6	-0.8	0.6
Total government expenditure	43.0	41.7	40.2	40.4	41.0	**40.2**	41.6	43.8	44.1	44.3	43.9	-2.8	3.7
Total primary expenditure	40.2	39.0	37.7	37.9	38.8	**38.0**	39.4	41.4	41.6	41.5	41.0	-2.2	3.0
Interest payments	2.8	2.6	2.5	2.4	2.2	**2.2**	2.2	2.4	2.6	2.8	2.9	-0.6	0.7
Total current primary expenditure	33.3	33.3	33.0	33.0	33.0	**33.0**	33.9	35.6	36.5	36.1	36.0	-0.3	3.0
Social benefits (other than in kind)	11.9	11.8	11.9	11.8	11.7	**11.7**	12.5	13.4	14.2	14.2	14.1	-0.2	2.3
Final government consumption	18.1	18.3	18.6	18.6	18.0	**18.2**	18.5	19.2	19.2	18.8	18.7	0.1	0.5
Other current spending	3.4	3.3	2.5	2.6	3.3	**3.1**	2.9	3.1	3.0	3.2	3.3	-0.2	0.2
Gross capital formation	3.2	3.2	3.2	3.4	3.6	**3.7**	3.9	4.0	3.9	4.0	3.9	0.5	0.2
						(Level)							
Elasticity of total government revenue to GDP	1.00	1.01	1.01	1.04	1.14	**0.95**	0.81	1.04	0.84	0.81	1.16	1.02	0.87
Elasticity of tax revenue to GDP	1.02	1.04	1.11	0.95	1.21	**1.04**	0.79	0.72	0.74	0.83	1.10	1.06	0.77

Source: Authors, Ameco Database

1/ The calculations are made on a sample of 20 episodes of absorption booms in EU and OECD countries over the period 1975-2008. An absorption boom is defined as an episode where the share of absorption on GDP increases by more than 5 percent over a period of 5 years, and reaches a level above 100 percent.

2/ The last two columns show the average growth rate from T-5 to T (one but last column) and the average growth from T+1 to T+5 (last column).

3/ For the absorption boom event in 2008, the estimate for year T+4 and T+5 (2012, 2013) assumes that the variables remain at the same level as 2011.

Figure 2. Developments in macroeconomic and fiscal variables during and after absorption booms

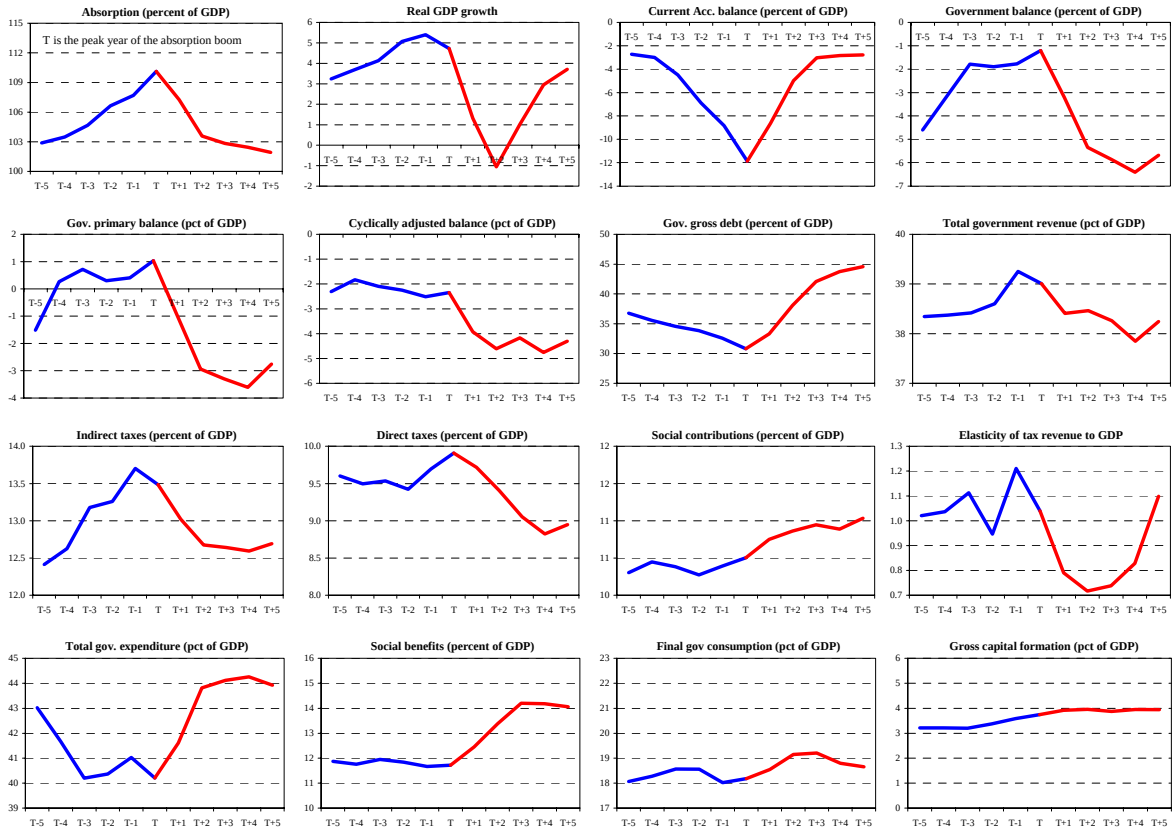

Table 2. Cyclically-adjusted budget balances (CAB) and cyclically and absorption-adjusted budget balances (CAAB) in EU countries

	CAAB						CAB					
	2005	**2006**	**2007**	**2008**	**2009**	**2005-09**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005-09**
BE	-2.7	-0.2	-1.1	-2.2	-4.7	-2.2	-2.9	-0.4	-1.4	-2	-4.5	-2.3
BG	-1.1	-1.8	-5.6	-4.2	-1.3	-2.8	0.8	1.7	-1.5	0	-2.8	-0.4
CZ	-3.8	-4.1	-3	-4.1	-5.5	-4.1	-3.9	-4	-2.9	-4.5	-5.1	-4.1
DK	5	3.7	3.2	3.6	1.3	3.4	4.7	3.5	3.1	3.3	0.6	3
DE	-2	-1.3	0	-0.5	-1.2	-1	-2.7	-2.2	-1.2	-1.5	-1.8	-1.9
EE	-0.2	-1.7	-2.7	-4.7	0.8	-1.7	0.3	0	-0.7	-4.1	1.3	-0.6
IE	0.3	1.4	-2.4	-7.7	-9.7	-3.6	0.9	2.1	-1.6	-7	-11.4	-3.4
EL	-6.4	-4.9	-6.4	-9.8	-13.2	-8.2	-5.6	-4.7	-7	-9.6	-14.1	-8.2
ES	0.6	1	0.4	-5.1	-10	-2.6	1	1.6	1.2	-4.4	-9.6	-2.1
FR	-3.4	-3	-3.7	-4.1	-7.7	-4.4	-3.4	-3	-3.7	-3.7	-6.2	-4
IT	-4.5	-4.3	-2.9	-3.6	-3.7	-3.8	-4.6	-4.4	-3	-3.3	-3.3	-3.7
CY	-3.4	-2.7	0.2	-3.7	-6.2	-3.2	-2.2	-1.3	2.5	-0.4	-5.8	-1.4
LV	-2.6	-5.9	-7.3	-7.6	-4.9	-5.7	-1.5	-3.2	-4.5	-6.4	-6.3	-4.4
LT	-2.3	-3.2	-5.7	-7.5	-6.6	-5	-1.8	-2.1	-3.7	-5.7	-6.7	-4
LU	-0.1	0.2	1.1	1.1	-0.2	0.4	-0.3	0.1	1.1	2	1.2	0.8
HU	-8.9	-11.1	-6.3	-5	-1.1	-6.5	-8.7	-10.9	-6.4	-5.1	-2.2	-6.7
MT	-3.6	-4	-3.8	-6.4	-4.6	-4.5	-2.5	-2.5	-2.5	-4.9	-3.1	-3.1
NL	0.9	1	-0.5	-0.7	-3.2	-0.5	0.3	0.3	-1	-0.5	-3.6	-0.9
AT	-0.7	-1.5	-1.2	-1.1	-2.9	-1.5	-1.3	-1.9	-1.6	-1.7	-2.4	-1.8
PL	-3.5	-3.9	-3	-4.8	-5.8	-4.2	-3.9	-4	-2.8	-4.6	-6.9	-4.4
PT	-6.2	-4.4	-3.6	-3.7	-7.1	-5	-5.7	-3.7	-3	-2.9	-8.3	-4.7
RO	-3.1	-5.3	-6.4	-9.2	-7.5	-6.3	-2.2	-4.1	-4.7	-8.2	-7.8	-5.4
SI	-1.5	-2.4	-2.8	-4.9	-5.1	-3.3	-1.6	-2.6	-2.9	-4.8	-3.8	-3.1
SK	-3.4	-4.6	-4.2	-5.4	-7	-4.9	-2.5	-3.9	-3.7	-4.5	-6.4	-4.2
FI	3.4	3.4	3.6	3	-0.8	2.5	2.6	2.8	2.6	2.1	0.3	2.1
SE	2.3	2.2	3.8	3.9	1.7	2.8	1	0.3	1.6	1.4	1.9	1.3
UK	-3.9	-3.7	-3.9	-5.6	-10.2	-5.4	-4	-3.5	-3.9	-5.7	-9.7	-5.4

Figure 3. Difference between CAAB and CAB, selected euro-area countries (% GDP)

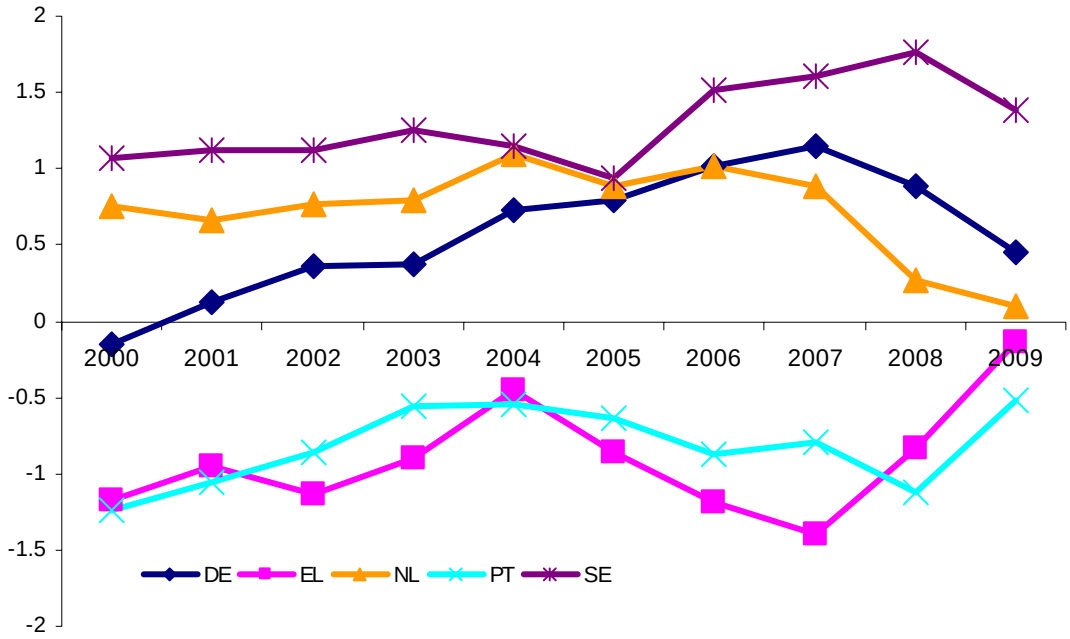

Figure 4. Difference between CAAB and CAB for selected New Member States (% GDP)

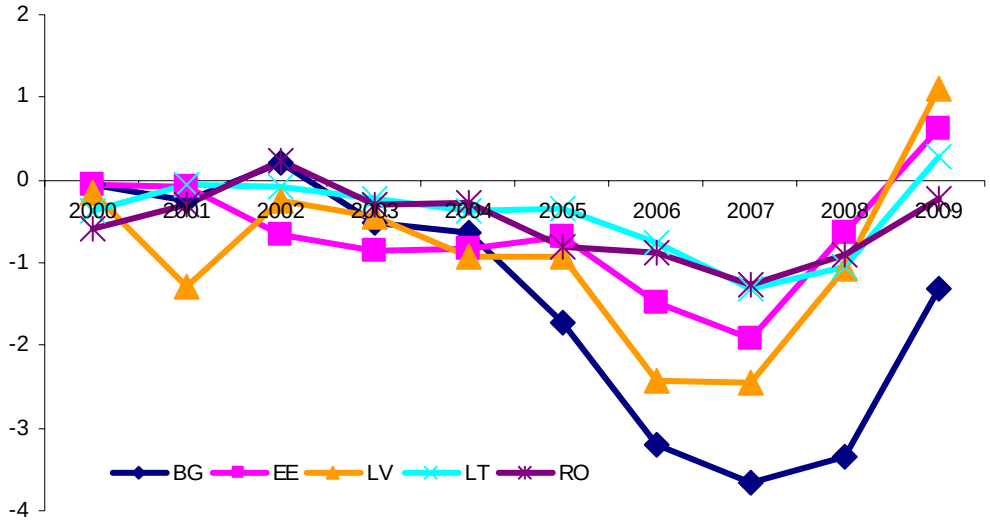

Figure 5. Does it matter targeting the CAAB? DSGE model results

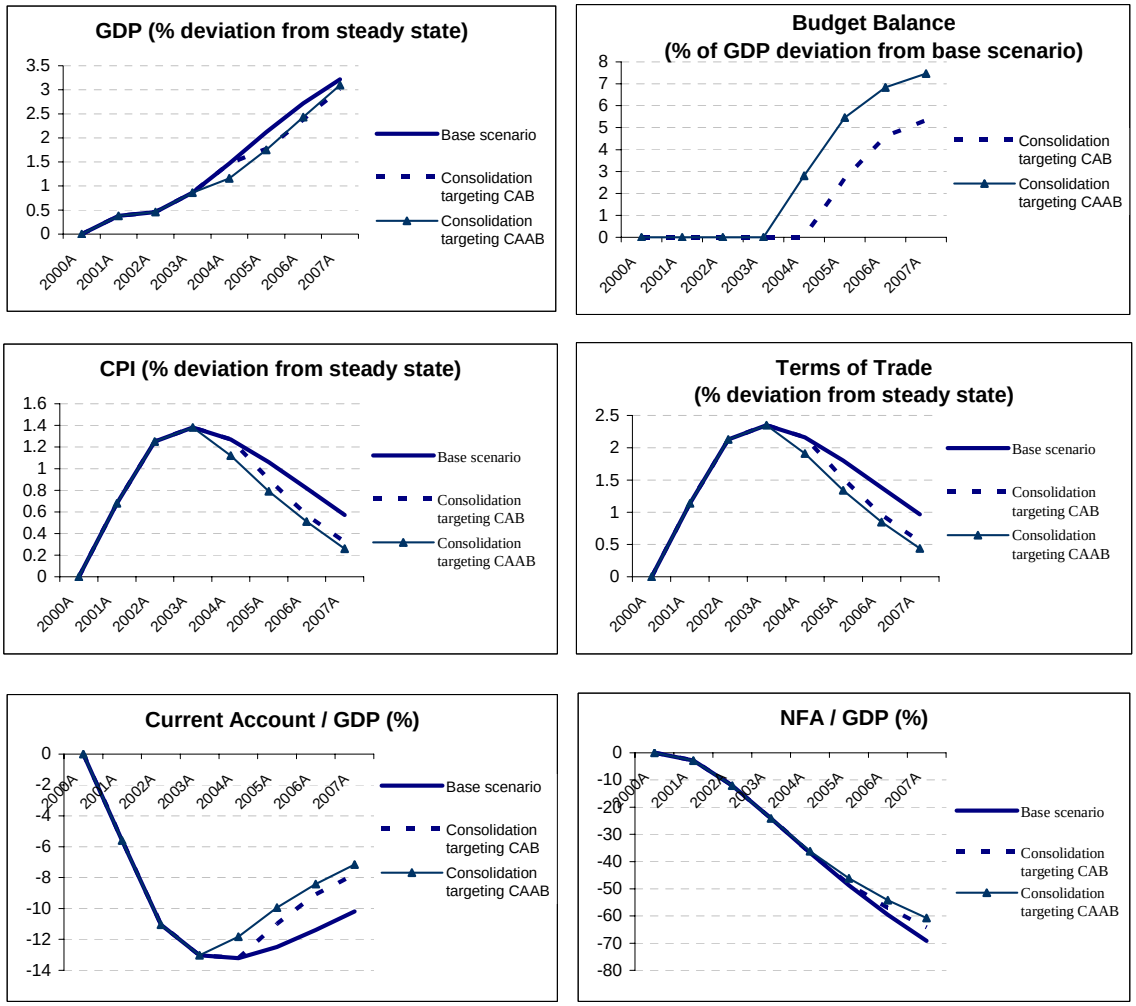

Table A.1. Absorption boom episodes

	Absorption boom Peak year (T)
Ireland	1979
Portugal	1981
Finland	1989
United Kingdom	1989
Hungary	1993
Mexico	1994
Czech Republic	1996
Korea	1996
Lithuania	1998
Slovakia	1998
Slovenia	1999
Poland	2000
Greece	2002
Latvia	2006
United States	2006
Estonia	2007
Spain	2007
Romania	2007
Bulgaria	2007
Cyprus	2008

Source: Authors elaborations on Ameco Database. The calculations are made on a sample of 20 episodes of absorption booms in EU and OECD countries over the period 1975-2008. An absorption boom is defined as an episode where the share of absorption on GDP increases by more than 5 percent over a period of 5 years, and reaches a level above 100 percent.

Table A.2: Determinants of current account norms
(60 countries, 4-year averages over the 1970-2010 period).

Dependent variable: current account/GDP	
Explanatory variables	
Government budget balance/GDP	0.27***
	(3.91)
Old-age dependency ratio	-0.13***
	(-2.77)
Real GDP per capita in PPP term relative to US	2.23**
	(2.06)
Growth rate in GDP per capita	-0.18*
	(-1.83)
Initial NFA/GDP	0.05***
	(6.91)
Oil balance	0.004***
	(3.76)
Constant	2.01**
	(2.46)
N. observations	336
R squared	0.40

Notes: Estimation: OLS with standards errors robust with respect to heteroschedasticity and residual correlation within panels. The absolute value of t tests is reported in parentheses. *,**,*** denote, respectively, statistical significance at 90, 95, 99 per cent. For the last period of estimation the average is over the available observations of the 2004-2010 period: data for 2009 and 2010 are based on the AMECO Autumn 2009 Forecast.