

WP/13/74

IMF Working Paper

Rebalancing: Evidence from Current Account Adjustment in Europe

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European Department

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Authorized for distribution by Bas Bakker

March 2013

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Abstract

After the 2003-2007 economic boom, European countries with large pre-crisis current account imbalances are undergoing adjustments. Countries are adjusting at different paces and ways reflecting the source and magnitude of imbalances, availability of financing, competitiveness of the tradable sector and external environment. While emerging European countries with large pre-crisis imbalances and a fixed exchange rate regime have seen sharp current account adjustments and a rebound in growth, adjustment in the euro zone periphery countries, which are also carrying a legacy of pre-crisis CA imbalances, has been gradual with difficulties bringing back growth. This paper is an empirical investigation of current account adjustment in Europe with a focus on these two groups, looking at contributions from cyclical and other factors, and seeking to draw policy conclusions.

JEL Classification Numbers: E21, E62, F14, F15.

Keywords: Current Account adjustment, Rebalancing, Competitiveness, Euro Zone Periphery

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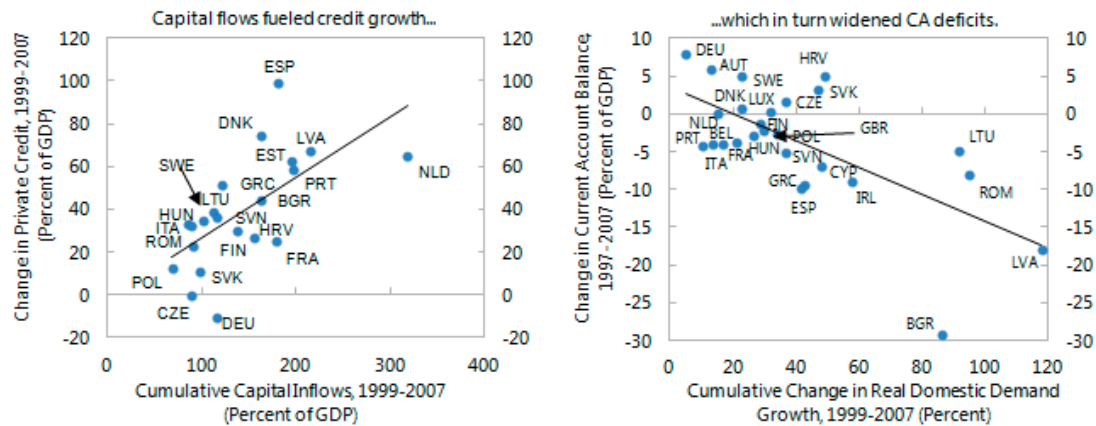
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I. BACKGROUND: THE BOOM AND THE BUST¹

The adoption of the common currency brought in an era of widening current account (CA) deficits in Euro Zone (EZ) periphery countries.² While Greece and Portugal had already sizable CA deficits by the time of euro accession, Spain had a moderate deficit, and Ireland had a balanced CA. During 1999-2007, all countries saw their CA balance worsen, except Portugal where the CA deficit remained at an elevated level reached in early 2000. Many in emerging Europe, particularly countries with fixed exchange rate regimes, experienced a similar event during this period. Their CA deficits ballooned reaching as high as 25 percent of GDP in the run-up to the financial crisis.

The story has by now been widely documented in various studies (Berger and Nitsch, 2010; Jaumotte and Sodsriwiboon, 2010; and Chen and others, 2011). A short summary plays like this: bank-intermediated large scale foreign capital inflows fueled a domestic demand boom, which then also spilled over into imports and consequently widened the CA deficit (text Figure). For the EZ periphery, a rapid decline in borrowing costs and abundant global liquidity facilitated large foreign capital inflows. For emerging Europe, EU accession signaled prospects for faster income convergence and ushered in foreign capital flows. As credit benefited various non-tradable sectors, ranging from construction to retail shopping, growth was built on unsustainably high domestic demand. Moreover, large increases in wages and prices—often rooted in expectations of fast income convergence—eroded the tradable sector in these economies. The result was: an excessive build-up of debt, mostly owed to foreigners, without a corresponding debt-servicing capacity; deterioration of competitiveness; and inadequate policy space.

E.U.: Capital Flows and Current Account, 1999–2007



Sources: IMF, *International Financial Statistics*; IMF, *World Economic Outlook*; and IMF staff calculations.

¹ We gratefully acknowledge helpful comments from Céline Allard, Bas Bakker, Helge Berger, Mali Chivakul, Albert Jaeger, Kenneth Kang, Wojciech Maliszewski, Alasdair Scott, Antonio Spilimbergo, Alexander Tieman, Thierry Tressel, Shengzu Wang, and seminar participants in the European Department.

² For this paper, EZ periphery includes the following countries: Greece, Ireland, Portugal, and Spain.

Notwithstanding some common themes, demand booms and associated CA deficits were driven by different factors in EZ periphery and emerging Europe. Large pre-crisis CA deficits in emerging Europe were predominantly a private sector undertaking, due to actions by both households and non-financial corporates (NFCs), while public sector recorded a small surplus everywhere except Lithuania (Figure 1). For EZ periphery countries, public sector imbalances were a major contributor to pre-crisis CA deficits in Greece and Portugal. Household imbalances were large in Greece and Ireland, resulting from a consumption and housing boom, while for Portugal and Spain, NFCs negative imbalances drove large CA deficits.

Disaggregation of sectoral savings and investment during 1999-2007 also shows important cross-country differences: CA widening was predominantly an investment boom in emerging Europe, and a consumption boom in the EZ periphery (Figure 2).

- For emerging European countries with a fixed exchange rate, the widening CA deficit during 1999-2007 mostly reflected *increasing private investment*.³ The investment booms were driven by NFCs, as shown by increase in NFC investment everywhere, but also by household in Estonia, which experienced a housing boom. All four countries also experienced large declines in household savings due to increased consumption, which were partly compensated by increased NFC savings in Estonia and Lithuania, reflecting high profitability of the corporate sector.
- For EZ periphery countries, the rise in the CA deficit during 1999-2007 mostly reflected *declining private sector savings* while private investment showed mixed developments. Savings of NFCs declined everywhere, while in Portugal household savings also declined. Investment by NFCs increased by small amounts during the boom period everywhere except Ireland.

Public sector imbalances were important in EZ periphery as discussed above, and played mostly a secondary, but critical, role in the pre-crisis CA widening episodes in emerging Europe.

- In the EZ periphery, *public investment showed little movement* during this period while *public savings showed disparate developments*. Public savings declined everywhere but Spain, indicating a pro-cyclical fiscal widening.
- Emerging Europe, on the contrary, experienced *increased public investment*, although much lower than the increase in private sector investment. *Public sector savings also improved* benefiting from windfall revenues. Small and improving public sector balances during the pre-crisis boom however masked a pro-cyclical fiscal stance in most

³ Unlike in the EZ periphery, a good part of foreign capital inflows to emerging Europe was in the form of FDI rather than debt. This reflects the investment needs experienced by many of these emerging market economies that were still undergoing transition and privatization in the run-up to the crisis. A higher share of FDI in foreign capital dampened the risk of sudden withdrawal, although the long-term growth-enhancing effect is unclear as much of the FDI in emerging Europe went into non-tradable sectors (see Kinoshita 2011).

countries.⁴ Pursuing a pro-cyclical fiscal policy during these years had medium-term consequences: not only did fiscal policy fail to dampen the growing and unsustainable domestic demand boom; it hampered the ability of countries to provide the needed fiscal support once the boom turned to bust. However, it is fair to say that private capital inflows were such a force of nature that conservative fiscal policy alone would not have been sufficient to lean against the wind in these countries (Atoyán and others, 2012).

Since the crisis, these two regions have shown a different *pace* of adjustment (Figures 1 and 3). While most countries in emerging Europe saw a sharp and quick adjustment in their CA deficits, rebalancing in EZ periphery countries has progressed at a slower pace, with a pickup only recently in 2012. On average, the four emerging European countries showed an adjustment of 4.6 percentage points per year relative to its trough CA/GDP ratio, with most countries adjusting enough to reverse their entire pre-crisis widening by 2011. After a sharp adjustment, household sector in Baltic countries even returned to a deficit in 2012 signaling resumption of private consumption and end of household deleveraging (Figure 1).

CA deficits in the EZ periphery, particularly in Greece and Portugal, while smaller in levels compared to emerging Europe, have shown a slower adjustment pace. For Greece, household sector remains a large contributor to CA deficit, and in Portugal adjustment by NFCs has been much slower than elsewhere. In Ireland and Spain, private sector reached a balanced position by 2009 or 2010, and CA deficits are now the result of large public sector deficits which were non-existent before the crisis. As these countries' highly indebted household and/or NFCs go through balance sheet adjustment, public sector may need to pace its adjustment implying a slow pace.

Besides the pace of adjustment, the *composition* of adjustment has been different across countries. For emerging Europe, both import compression and export recovery played a part in CA adjustment (Figure 3). A sudden stop or withdrawal of foreign capital halted financing and choked demand for imports (Figures 3 and 4a). At the same time, wage adjustment in the tradable sector and growth in trading partners helped with exports. In EZ periphery, imports contracted, though not as much as in emerging Europe, and exports did not provide sufficient support. The weaker export performance in most EZ periphery countries, which trade a lot with each other, reflects weaker import demand in partner countries, a smaller share of tradable goods in production, and slower wage and price adjustments.

The slower import contraction in the EZ periphery is also partly explained by availability of financing (Figure 4b). In the run-up to the crisis, deficits, both public and private, were financed by cheap private credit made possible by falling interest rates that converged to the euro area average as investors assumed euro area membership signaled a low risk of default. As private financing began to slow during the bust, deficits continued to be financed by the European

⁴ With the exception of Bulgaria, Denmark, Finland, Luxembourg, Spain, and Sweden, all other EU countries pursued a pro-cyclical fiscal position during 2003-07, as captured by the cyclically-adjusted fiscal balance in the WEO database. Rahman (2010) shows that most countries in emerging Europe experienced pro-cyclical revenue boom during 2003-7, but only a few countries managed to translate this into higher fiscal space as expenditure policies were also pro-cyclical.

Central Bank (ECB) through its Trans-European Automated Real-Time Gross Settlement Express Transfer (TARGET 2) facility, thus dampening the need for import contraction.⁵ Indeed, CA deficits of Greece and Portugal were almost entirely financed by TARGET 2 credits, while TARGET 2 support for Ireland accommodated a major capital flight in excess to fully covering CA deficits (Figure 4b).

There are also differences in rebalancing in these two regions in terms of savings and investment behavior (Figure 5).

- Most of the rebalancing in the EZ periphery is taking place via *declining private sector investment* while private savings have not improved much, except in Spain and Portugal. Given that declining private savings were the main force behind CA widening in the EZ periphery, the current composition of rebalancing has not addressed the source of CA excesses built up during the boom period. Adjustment in emerging Europe has been driven by a combination of declining investment and increasing savings. Large savings by households in emerging Europe probably reflects sizable declines in house prices, which is not the case for EZ periphery countries except in Ireland (Figure 5).
- For the public sector, the savings-investment position worsened in both groups as one would expect during recessions. For both groups, expenditure increased in percent of GDP, while revenue performances differed reflecting the length of the recession and fiscal measures.

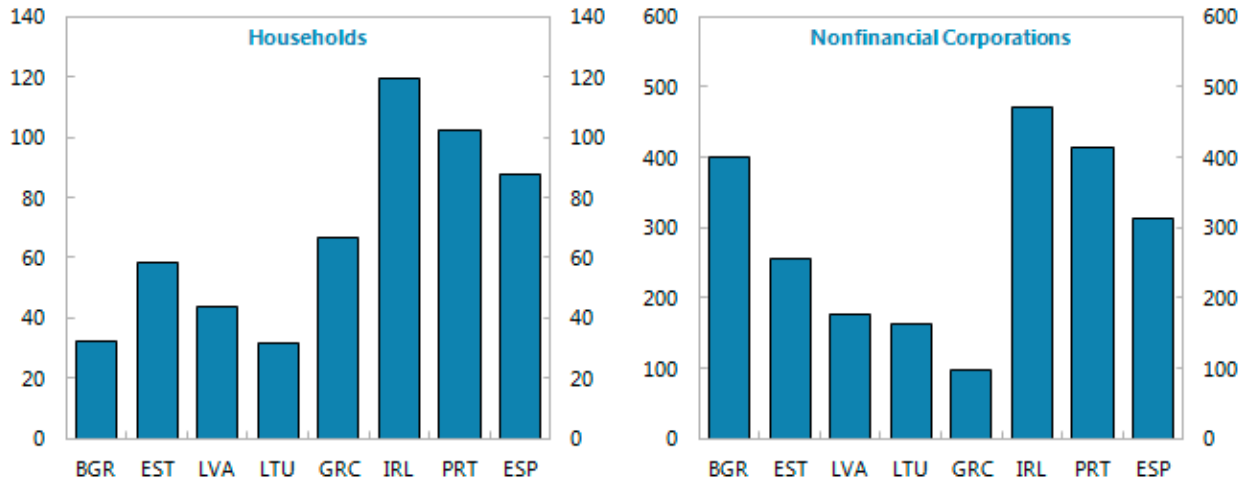
This paper aims to explain CA adjustment across European countries with a focus on the above two groups.⁶ For both of these groups, large pre-crisis CA deficits necessitated a correction and they are both correcting these imbalances without using the exchange rate as a policy tool. These characteristics make their comparison relevant. But there are also important differences. The EZ periphery countries are more closed economies implying a much larger impact from fiscal policy, particularly during recessions. This may constrain the scope for fiscal consolidation.⁷ They have access to emergency financing which provides cushion against private capital outflows, something that emerging European countries do not have. There are also structural differences in terms of labor market flexibility and export structure. And finally, the level of indebtedness, particularly for households, is considerably higher for EZ periphery countries.

⁵ Sinn and Wollmershaeuser (2011), and Merler and Pisani-Ferrey (2012) document that without TARGET 2 support, many of the EZ periphery countries would have experienced a balance of payments crisis.

⁶ In this paper, we do not attempt to investigate whether adjustment has been “complete” against some equilibrium benchmark, but simply explain how changes in CA balances have been affected by changes in various explanatory variables. This paper also does not address the issue of intra-euro zone imbalances and treats countries in the euro zone as individual countries without exchange rate policy option.

⁷ In times of negative output gap, the proportion of credit-constrained households and firms, which adjust spending in response to a change in disposable income, is higher. See Baum and others (2012).

EZ Periphery and Emerging Europe: Gross Private Sector Liabilities, 2011 (Percent of GDP)



Sources: Eurostat and IMF staff calculations.

This paper empirically investigates the respective roles and relative importance of these and other factors in CA developments, differentiating between pre- and post-crisis periods.

The remainder of the paper is structured as follows. Section II provides a selected literature survey followed by section III presenting the empirical strategy of this study. Section IV discusses empirical results while section V delves into relative roles of different variables in explaining CA developments in selected countries. Section VI offers some policy conclusions.

II. LITERATURE SURVEY

There is a sizable recent literature that explores *CA dynamics in the EZ periphery*, mostly focusing on the boom period. There are also a few studies that look into CA developments in emerging Europe leading up to the financial crisis. We discuss them below in turn.

Studies that look into CA developments in the EZ periphery find mixed evidence as to the reason for the build-up of large imbalances. Some find that the explanation lies on the financing side: without massive capital inflows to the EZ periphery, CA imbalances would have never been so large. Others find that the build-up of imbalances has more to do with the loss of export competitiveness.

Ahearne, von Hagen, and Schmitz (2007) and Schmitz and von Hagen (2011) investigate intra- and extra-EZ imbalances. They find that for intra-EZ imbalances, differences in income per capita between the periphery and the core was a key factor in attracting foreign capital and causing the CA balance to widen. The impact of income differentials on intra-EZ imbalances strengthened further after the introduction of the common currency. For extra-EZ imbalances, real appreciation of the euro against main trading partners mattered. This relationship varied across countries with Germany's trade balance showing the strongest response to real appreciation, while those of Italy and Spain showing a rather weak response.

Similarly, Jaumotte and Sodwriwiboon (2010) investigate overall CA imbalances in Southern EZ countries and find a strong role for financial integration and capital inflows. They conclude that most of the declines in CA balances in Southern EZ countries since the mid-1990s would not have occurred were it not for the monetary union that enhanced access to foreign savings. This would be true even if private savings had not declined as much as they did. They also find that these imbalances were larger than can be explained by fundamentals.

In contrast, Kentsch (2010), who delves into intra-EZ trade imbalances, finds that they were mainly driven by diverging export performance between the EZ periphery and the core of EZ countries. This was particularly true since 2003, the period when the evolution of imports was similar across the region. In other words, CA imbalances were caused more by the loss of export competitiveness than an excessive amount of capital inflows introduced by financial integration.

Berger and Nitsch (2010) study bilateral trade balances in European countries during 1948-2008 and finds that intra-euro area imbalances have become more persistent with the introduction of the euro. They find that countries with relatively higher fiscal deficits and less flexible labor and product markets show systematically lower trade surpluses than others.

Belke, Schnabl, and Zemanek (2009) test the impact of private adjustment and structural reforms on intra-EZ imbalances in a panel econometric approach. They find that less flexible labor markets combined with state welfare that hampers incentives for work prolonged CA imbalances.

Chen, Milesi-Ferretti, and Tressel (2012) examine extra-EZ imbalances and find that the rise of China, the integration of Central and Eastern European countries with the rest of Europe, nominal euro appreciation, and rising oil prices contributed to the divergence of external balances in the EZ. While both the EZ periphery and core EZ countries faced these pressures, they were affected differently. In particular, exports of several EZ periphery countries were negatively affected by competition from China, while Chinese import demand provided little benefits to the trade balance of these countries. These results are also found in Filho (*forthcoming*, 2013) who uses revealed comparative advantage analysis to determine how China's entry into the WTO affected EZ trade imbalances.

Holinski, Kool, and Muysken (2012) find that most of the CA surplus in northern EZ countries is a result of substantial fiscal consolidation, relatively stable private sector savings and investment, stronger competitiveness, and higher net factor income from abroad. The EZ periphery, on the contrary, experienced declining private savings since 1992 resulting in increased borrowing and worsening trade balances. The EZ periphery also experienced a trend-like increase in net factor income payments resulting from foreign borrowing. However, the authors conclude that this does not capture the full extent of imbalances built up in the EZ periphery, and conjecture that excessive risk-taking by banks and the pro-cyclical effect of the common monetary policy in the euro area may have contributed to the large CA imbalances just before the crisis.

Alcidi and Gros (2011) explore why the EZ periphery is experiencing adjustment difficulties. They conclude that being relatively closed economies with low savings rates amplify fiscal

multipliers creating negative pressures on growth from fiscal consolidation. Low growth, in turn, is creating adjustment difficulties for the private sector.

Most studies on *emerging Europe* focus on capital flows rather than CA imbalances (a result of the former), and try to assess whether these flows and their economic impact reflect certain fundamentals or various excesses. Abiad, Leigh and Mody (2007) investigate capital inflows within Europe that facilitated the buildup of large CA imbalances prior to the crisis and conclude that they have been associated with a significant acceleration of income convergence. Vamvakidis (2009) examines CA imbalances in emerging Europe and concludes that they were mainly a result of income convergence driven by strong fundamentals. This phenomenon is expected to continue, but at a slower pace.

Hermann and Winkler (2008) consider CA imbalances in the context of income convergence and compare emerging Asia with emerging Europe. They find that financial market characteristics are major determinants of CA developments. Catching-up countries with more developed and integrated financial markets are able to borrow from abroad and raise domestic consumption and savings. Europe's convergence model based on large CA deficits was thus a result of a better developed and more integrated financial sector.

Rahman (2008) investigates CA developments in new member states of the EU to determine whether large CA imbalances were driven by fundamentals. The author finds that for a number of emerging European countries, such as the Baltic countries, Bulgaria and Romania, the CA widened much more than what could be expected from fundamentals. Both cyclical factors, such as the output gap, and structural factors, such as cost competitiveness of the tradable sector and financial deepening, explain large CA divergence from norms found in these countries.

Purfield and Rosenberg (2010) examine CA adjustment in the Baltic countries during the 2008-9 crisis. They conclude that the internal devaluation strategy pursued by these countries relied on unprecedented fiscal and nominal wage adjustment. Steps to preserve financial sector stability and efforts to facilitate private sector debt restructuring also played a key role in improving external balances and competitiveness.

Our paper adds value to this literature by looking at CA dynamics in entire Europe and focusing on adjustment since the crisis.

III. EMPIRICAL METHODOLOGY AND DATA

The literature survey and the stylized facts presented above suggest that a reduced-form model of CA developments needs to capture the interplay of three broad dimensions (Table 1):⁸

- *Cyclical position.* To account for the large cross-country variation in terms of cyclical positions driven by dynamics of private/public saving and investments, the model includes variables capturing capital inflows, behavior of real credit growth to the private sector, unemployment rate, as well as the overall general government balance (in percent of GDP).
- *External competitiveness.* To account for diverging trends in external competitiveness, the model tests the importance of relative wages in manufacturing (expressed as a ratio to those in trading partners), ULC-based real effective exchange rate, as well as nominal effective exchange rates and various domestic price indices. As price competitiveness is likely to be influenced by differences in monetary policy and exchange rate regimes, we also include a floating exchange rate regime dummy.
- *External environment.* To account for swings in external demand, the model accounts for movements in trading partners' demand as proxied by trade-weighted real GDP or import growth. We also control for overall market sentiment towards risk through inclusion of the VIX index.

In addition, we also include household indebtedness to capture effects of balance sheet recession on private sector's savings and investment decisions. To account for potential crisis-driven nonlinearities and to explicitly differentiate between the driving forces during the boom and crisis periods, we estimate the model including interaction terms between explanatory variables and a crisis dummy variable.⁹ These are important to accommodate interplay of additional possible effects of heightened stress in the financial markets, collapse in export demand, or changes in attitudes towards consumption-saving decisions of economic agents.

To assess the relative importance of these factors in explaining changes in CA balance, we follow the estimation strategy of Fernandez-Arias (1996) and Atoyan, Jaeger and Smith (2012). We estimate the reduced-form equation for CA deficit by OLS using annual data for 2000–12 for a panel of 28 European countries (current EU members plus Croatia). Country-specific effects are treated as unobservable. These effects are estimated as the residual CA balance movements which are not accounted for by other variables in the model. As such, the country-specific intercepts would reflect not only country-specific characteristics (such as income level, population size, and geography), but also a country's movements along the value ladder of its trade flows, shifts in the extent of regional integration, as well as systematic differences in other

⁸ While all three dimensions are clearly interlinked, this simplistic representation nevertheless offers a useful and intuitive framework to analyze the relative importance of different groups of factors on current account developments before and during the crisis.

⁹ The crisis dummy variable is equal to one in 2008–11 and zero for other years.

policies, including structural reforms, prudential and regulatory financial sector policies. To facilitate cross-country comparisons, without relying on an implausible assumption of structural similarity, all variables in the model are expressed in terms of their deviations from 2000 levels. This transformation eliminates structural differences across countries and the model explains the changes in CA deficit (i.e., CA adjustment) in terms of changes in the explanatory variables, taking 2000 as a benchmark.¹⁰

IV. EMPIRICAL RESULTS

Consistent with stylized facts discussed in earlier sections, our empirical findings confirm that cyclical factors, such as abundant capital inflows, high credit growth and low unemployment rates, largely determined *CA developments during the boom period* (Table 2). Estimated coefficients on these variables are all statistically significant and have the expected signs: lower unemployment, higher annual credit growth, and larger capital inflows pushed the CA balance further into negative territory. In our model, the variable unemployment captures domestic demand boom and positive output gap during the boom period, fueled by capital inflows and credit growth. It is interesting to note that both gross capital inflows and credit growth show a statistically significant impact on CA balances over and above what is captured by cyclical factors in the real economy, such as unemployment, emphasizing the role of financing.¹¹

The fiscal balance, on the other hand, does not seem to have a statistically significant impact during the boom period for the whole sample or the EM sub-sample. This is either because fiscal balances did not vary much during the boom years in this sub-group, or their movements were relatively small compared to—and highly correlated with—the movements in other variables such as capital inflows or credit growth.¹² For advanced Europe, headline fiscal balances affected CA developments significantly during the boom period reflecting greater variability and possibly higher impact of fiscal policy in this group, given relative closeness in some economies. The ULC-based real effective exchange rate (REER-ULC), a proxy for competitiveness, is statistically significant for the whole sample and EM Europe during the boom period. The openness of EM economies made this price competitiveness variable significant for export sector developments. For advanced Europe, this variable is statistically insignificant in explaining CA developments during boom years.

Cyclical variables, when interacted with crisis dummy, were not always significant. The role of credit growth seems to be reinforced during post-crisis years as reflected by larger and more statistically significant coefficients, highlighting the key role credit crunch played in bringing down private sector adjustment in most countries. The interaction variable of gross capital flows and the crisis dummy is statistically insignificant for the whole sample, but highly significant

¹⁰ Model findings are robust to the choice of an alternative base year.

¹¹ These results are robust to alternative choice of variables capturing financing, such as BIS reporting banks' flows.

¹² During the boom period of 2000-07, fiscal balances in the EM sub-sample changed on average by 0.4 percent of GDP annually.

for emerging Europe (Table 2). This is not surprising given that a sudden stop in capital flows was an important factor in CA adjustment in emerging Europe, but not for advanced Europe where EZ periphery countries were able to tap into public financing support through TARGET 2 and financing constraint was less binding.

Post-crisis adjustment is also affected by fiscal policy stance and the REER-ULC as witnessed by statistically significant coefficients on interactions of these variables with the crisis dummy. Indeed, while the fiscal balance does not seem to have had a significant impact on the CA balance during pre-crisis years for the whole sample, it gained significance during post-crisis adjustment with higher fiscal balances resulting in stronger CA adjustment. Similarly, REER-ULC, which was not significant in explaining pre-crisis boom for advanced Europe, becomes significant in explaining post crisis CA adjustment in this sub-group.

Interestingly, the impact of unemployment rate on CA adjustment declined during crisis years. In other words, during periods of overheating, declining unemployment worsens the CA balance. However, during periods of recessions, the impact of change in unemployment is less on CA balance possibly due to the sizable share of cash-constrained households. Floating exchange rate regimes seemed to have helped with the CA adjustment, but the results are not statistically significant. Finally, partner country import demand was significant in only some versions of the regression, sometimes with the opposite sign than expected: rising demand in partner countries seems to worsen CA balances. This could be either because the variable we are using is an imperfect proxy or demand in partner countries (most of which are also in the European Union) is correlated with other cyclical variables in the regression (such as unemployment, capital flows or credit growth).

In summary, pre-crisis CA developments in emerging Europe was driven by capital flows and competitiveness, as captured by REER-ULC, while pre-crisis CA developments in advanced Europe was driven by fiscal balance, real credit growth, capital flows, exchange rate regime and unemployment rate (text table). These differences partly reflect the relative roles of private investment and consumption played in the widening of CA balances in these two groups, and the differing role of fiscal policy in advanced economies that we discussed in section I. During post-crisis adjustment, for emerging Europe, capital inflows made a difference showing the significant of financing or capital account developments in determining CA in emerging economies. For advanced Europe, post-crisis CA developments have been affected by competitiveness (REER-ULC), real credit growth and import demand from partner countries. This highlights the role of both import compression (real credit growth) and a lack of exports increase making adjustment more difficult and less growth-friendly in EZ periphery.

Table. EM and Advanced Europe: Variables Affecting Pre- and Post-crisis CA Adjustment

	EM Europe	Advanced Europe
Pre-Crisis CA Developments	<i>Capital flows, REER-ULC</i>	<i>Fiscal balance, real private credit growth, exchange rate regime, unemployment rate and capital flows</i>
Post-Crisis CA Developments	<i>Capital flows</i>	<i>Real credit growth, REER-ULC, partner country import growth</i>

V. EMPIRICAL DECOMPOSITIONS: COUNTRY-SPECIFIC DISCUSSION

While empirical results reported above are useful to describe the qualitative characteristics of the CA dynamics, individual developments are important to understand heterogeneity of driving forces in each country. In this context, we use the estimated model to decompose CA adjustments into proximate causes. We pick four EZ periphery countries: Ireland, Greece, Portugal and Spain; and four emerging European countries with a fixed exchange rate regime: Estonia, Bulgaria, Latvia, and Lithuania for a more in-depth discussion. Country-specific decompositions are presented in Figures 6a and 6b. These decompositions are constructed by taking the country's value of each explanatory variable (measured in terms of changes from its 2000 level) in each period and multiplying by the corresponding estimated coefficient in the preferred model specification (Regression 4 in Table 2) using the whole sample.

EZ periphery

For *Ireland*, CA imbalances widened during 2004-8, then sharply improved during 2009-10 closing the gap completely (Figure 6a). During 2006-8, capital inflows seemed to matter in CA widening. The contribution of household sector, which was the main driver of pre-crisis widening, does not seem to take place through lower unemployment but through higher wages and real credit growth. The sharp adjustment in the post-crisis years was driven by credit contraction, capital flow reversal, rising unemployment, and partner country demand for imports.

Greece has seen more modest and slow-paced adjustment (Figure 6a). Pre-crisis widening during 2004-7 was largely a result of lower unemployment and capital inflows. The REER-ULC contributed to widening until 2009. Post-crisis adjustment has been aided by credit contraction, and more recently by higher unemployment causing household sector to adjust. Fiscal position and slow private sector adjustment financed by deposits outflows is keeping CA imbalances wide. Positive contribution from wage adjustment has only started to kick in.

Portugal's CA imbalances were very large in early 2000. This is why our dependent variable, which measures CA in terms of deviations from 2000, does not show a large widening. It is

interesting to note that Portugal is the only country where unemployment contributed to CA adjustment during pre-crisis years. This is consistent with the fact that, unlike in the other three countries, household sector had little contribution to pre-crisis widening as large unemployment held back household consumption (Figure 1). Nonetheless, household sector is contributing positively to CA adjustment after the crisis. Until recently, large fiscal deficits, even with private sector adjustment due to higher unemployment and credit contraction, have prevented CA adjustment. REER-ULC's contribution to adjustment has increased in 2012.

For *Spain*, pre-crisis CA widening was driven mostly by declining unemployment. Post-crisis CA adjustment has taken place through this channel as well given the loss of jobs in cyclical sectors as well as through credit contraction. The large, significant and persistent role of unemployment in Spain may reflect the particular role construction sector played in growth and employment. Given that some of the construction jobs may be lost permanently, high unemployment rate may persist for a long time continuing to contribute to higher household savings and CA adjustment, unless jobs are created in other sectors. Large fiscal deficits are acting as a drag on CA adjustment.

Emerging Europe

In *Bulgaria*, large CA imbalances were the result of sharply falling unemployment rates and credit growth (Figure 6b). Capital flows seem significant during 2006-8. During post-crisis years, adjustment—the largest in Europe—has been helped by slowdown in credit growth. It is important to note, however, that a significant part of CA movements in Bulgaria, both prior to and in the aftermath of the crisis, remains unexplained by the model.

For the three *Baltic countries*, pre-crisis developments are similar to that of Bulgaria given the strong role of declining unemployment. During post-crisis years, a credit crunch, capital outflows, as well as gaining competitiveness from wage adjustment helped with the sharp CA adjustments (Figure 6b). The latter (wage adjustment) is most visible in Latvia and least visible in Estonia among Baltic countries.

Finally, while the overall explanatory power of the estimated model is strong, it is important to note that unexplained residuals are larger at the peak of the crisis (2008-09), particularly in countries that experienced abrupt and large reversals in CA deficits. This seems to suggest that there are likely to be additional non-linear effects that go beyond what we attempted to model here. While many factors are at play here, negative residuals (the model predicts larger CA adjustments than actually observed) during post-crisis years (visible in EZ periphery) could have happened if, notwithstanding rising unemployment, households' spending persisted at their pre-crisis pace being temporarily financed through winding down savings. On the other hand, positive residuals (the model predicts smaller CA adjustments than actually observed) during post-crisis years (visible in EM Europe) could have happened if, against the background of massive credit crunch and skyrocketing unemployment, economic agents postponed their consumption and investment decisions until the times of lesser economic uncertainty.

VI. POLICY IMPLICATIONS

In this paper, we investigate CA developments in Europe, with a comparative focus on the EZ periphery and emerging European countries with fixed exchange rate regimes. We find that generally speaking, similar dynamics played out in these two regions during pre-crisis years where a strong private-sector led domestic demand boom created large CA imbalances. In the case of emerging Europe, rising investment played a stronger role than declining savings. In the case of the EZ periphery, CA imbalances were mostly a result of declining private sector savings. Public sector contributed to external imbalances in some EZ periphery countries, namely Greece and Portugal, but not in EM Europe. However, the absence of counter-cyclical fiscal policy during the boom years failed to dampen overheating and create needed policy space to offset the economic downturn that followed.

Faster adjustment in emerging Europe has been facilitated not only by sudden capital outflows, but also through wage adjustment, and faster adjustment in the public sector. Wage adjustment, was enabled by more flexible labor markets and large fiscal adjustment was forced by a lack of financing, and pressure to continue market confidence. At the same time, lower levels of household indebtedness helped with the return of private sector consumption. This in turn has helped output and domestic demand to rebound much quicker than in the EZ periphery.

Our regression results also show the significance of REER-ULC and partner country import demand in explaining post-crisis CA adjustment in advanced Europe. To allow for a more growth-friendly adjustment in the EZ periphery, exports will need to play its part. Relying on import compression alone has had severe contractionary effects for these economies just when growth is needed to improve the fiscal balance and bring back market confidence. The road to increased exports will unfortunately not be a quick one given the low weight of tradable sector, competitiveness/labor market problems, larger share of trade with each other, and an external environment of tepid global growth. But it is the only road to sustainably reversing the large CA imbalances accumulated during the boom years.

The comparative experience of these two groups highlights the importance of the appropriate macroeconomic policy mix. While exchange rate flexibility provides an extra policy tool, particularly in times of economic downturn, the presence of such a tool is not inevitable for successful adjustment as long as supportive policies allow for wage and price adjustment. For example, flexible conditions in the labor market aid with wage adjustment and do not place all the burden of adjustment on unemployment. Such price adjustments, together with a well-diversified export market, help achieve rebalancing in a growth-friendly manner. And finally, the role of counter-cyclical fiscal policy during boom years is of paramount importance not just to dampen the boom but to create policy space. This is all the more important in countries with relatively closed economies as fiscal policy plays a more important role in countering economic cycles.

Our analysis also shows the importance of country-specific circumstances. The pace and composition of CA adjustment is influenced by the sources of pre-crisis boom. If a particular sector played a disproportionately large role in pre-crisis growth and employment (for example, the construction sector in Spain), post-crisis adjustment may have unfavorably large consequences for growth and employment. In the case of a small open and competitive economy with well-functioning labor market, fiscal strength, and positive export demand, such impact may be mitigated through positive impulse from the external sector. But for a less open economy with an impaired public sector, this may create a vicious cycle of high unemployment, too much private sector adjustment, low growth, and worsening fiscal problems. Policies would therefore need to take country-specific circumstances into account to ensure CA adjustment help and not hinder growth.

Table 1. European Advanced and Emerging Market Countries: Data Appendix

Variable	Definition	Source
Dependent variable		
Current account balance (percent of GDP)	Current account balance (in U.S. dollars) in percent of GDP	IMF, <i>World Economic Outlook</i>
Cyclical factors		
General government balance (percent of GDP)	Overall fiscal balance of the general government in percent of GDP	IMF, <i>World Economic Outlook</i> ; Croatia 2004 Statistical Appendix; and Ireland 2012 Article IV and 7th Review Staff Report
Real private credit growth	Year-on-year percent change in other depository corporations' domestic claims on the private sector deflated by consumer price index	IMF, <i>International Financial Statistics</i> and IMF country reports (private credit); and IMF, <i>World Economic Outlook</i> (consumer price index)
Unemployment rate (percent)	Unemployment rate	IMF, <i>World Economic Outlook</i>
Total gross capital inflows (percent of GDP)	Sum of direct investment in reporting economy, portfolio investment liabilities, and other investment liabilities (all in U.S. dollars) in percent of GDP	IMF, <i>World Economic Outlook</i>
External competitiveness		
Floating exchange rate regime dummy	Set to '1' for floating economies: Czech Rep. in 2001 and 2006–11, Hungary in 2007–11, Poland, Romania in 2008–11, Sweden, and United Kingdom	IMF Research Department
Nominal effective exchange rate growth	Year-on-year percent change in nominal effective exchange rate calculated by IMF staff	IMF, internal database
Growth in ratio of GDP deflator to trade-weighted GDP deflator	Year-on-year percent change in ratio of GDP deflator to GDP deflator weighted by imports of advanced economy partners	IMF, <i>World Economic Outlook</i> (GDP deflator); and IMF, <i>Global Economic Environment</i> database (trade-weighted GDP deflator)
Manufacturing wages to trade-weighted manufacturing wages	Ratio of hourly manufacturing wages (converted to euros using average exchange rates) to weighted manufacturing wages (weighted by trade weights of top 20 to 25 trade partners)	U.S. Bureau of Labor Statistics and Haver (manufacturing wages); and IMF, internal database (trade weights)
ULC-based real effective exchange rate growth	Year-on-year percent change in ULC-based real effective exchange rate as calculated by Eurostat using 36 trade partners	Eurostat
External environment		
Partners' GDP growth	Year-on-year percent change of real GDP of all trade partners weighted by exports	IMF, <i>Global Economic Environment</i> database
Partners' import growth	Year-on-year percent change of real imports of all trade partners weighted by exports	IMF, <i>Global Economic Environment</i> database
VIX	Volatility index as listed on the Chicago Board options exchange	Bloomberg
Other		
Crisis dummy	Crisis dummy set to '0' before the crisis and '1' during the crisis. Crisis year begins in 2008 for BGR, HRV, CZE, EST, HUN, LVA, LTU, POL, ROM, SVK, and SVN. Crisis year begins in 2010 for all others.	Authors
Household liabilities (percent of gross national income)		

Source: IMF staff.

Table 2. European Advanced and Emerging Market Countries: Current Account Adjustment, 2000–12 1/

Dependent variable: current account balance (percent of GDP)	R1	R2	R3	R4	R5	R1	R2	R3	R4	R5	R1	R2	R3	R4	R5
	All Countries in Sample					Advanced Economies 2/					Emerging Markets 3/				
General government balance (percent of GDP) 4/	0.098	0.176	0.031	0.147	0.217**	0.300**	0.439***	0.288**	0.427***	0.619***	-0.043	-0.184	-0.094	-0.148	-0.398**
Interacted with crisis dummy	0.338***	0.285**	0.360***	0.344***	0.292**	0.002	0.089	0.003	0.156	0.201	0.218	0.281	0.228	0.186	0.394**
Real private credit growth (year-on-year percent change) 5/	-0.070***	-0.051**	-0.028	-0.042**	-0.056***	-0.123***	-0.138***	-0.096**	-0.185***	-0.151***	-0.018	-0.002	-0.005	0.002	-0.015
Interacted with crisis dummy	-0.161***	-0.117***	-0.162***	-0.129***	-0.078**	-0.168***	-0.139	-0.084	-0.044	-0.212*	-0.034	-0.015	-0.027	-0.026	0.002
Floating exchange rate regime dummy	0.381	1.631	2.810***	1.024	2.081***	3.145***	2.082**	4.491***	2.199**	3.514***	1.685	0.438	0.659	0.304	0.803
Nominal effective exchange rate (year-on-year percent change) 5/	-0.027	0.036	...	...	...	0.077	0.086	...	...	...	-0.066	-0.028	...	...	...
Interacted with crisis dummy	-0.165*	-0.116	...	...	...	0.029	0.194	...	...	...	-0.071	-0.038	...	...	...
GDP deflator to trade-weighted GDP deflator (year-on-year percent change)	-0.408***	...	...	...	...	0.025	...	...	...	...	-0.181**	...	...	...	...
Interacted with crisis dummy	-0.046	...	...	...	...	0.193	...	...	...	...	-0.019	...	...	...	...
Manufacturing wages to trade-weighted manufacturing wages (hourly, euros) 6/	-0.116***	-0.082***	...	...	...	-0.079***	-0.080***	...	...	...	0.223*	0.178	...	...	...
Interacted with crisis dummy	0.089**	0.074*	...	...	...	0.100**	0.038	...	...	...	-0.108	-0.127	...	...	...
ULC-based real effective exchange rate (year-on-year percent change) 5/	...	...	-0.064**	-0.077**	-0.081***	...	...	0.054	0.091	-0.039	...	...	-0.072**	-0.073***	-0.081**
Interacted with crisis dummy	...	...	-0.087**	-0.065**	-0.044	...	...	-0.125**	-0.109**	-0.152*	...	...	-0.001	-0.003	0.016
Unemployment rate (percent)	...	0.758***	0.545***	0.649***	0.926***	...	0.410***	0.522***	0.394**	0.701***	...	0.320**	0.243	0.253*	0.237
Interacted with crisis dummy	...	-0.336	-0.358*	-0.416**	-0.670***	...	-0.254	-0.314	-0.110	-1.059***	...	0.151	-0.005	-0.018	0.092
Household liabilities (percent of gross national income)	...	...	-0.125***	...	...	...	...	-0.089***	...	...	...	...	-0.000	...	...
Interacted with crisis dummy	...	...	0.025	...	...	...	...	0.022	...	...	...	...	-0.031	...	...
Partners' GDP growth (year-on-year percent change)	-0.210	...	-0.265**	...	...	-0.248	...	-0.231**	...	...	...	...	0.011	...	...
Interacted with crisis dummy	-0.032	...	-0.197	...	...	1.510***	...	0.866***	...	...	...	...	-0.280	...	...
Partners' import growth (year-on-year percent change)	...	-0.032	...	-0.009	-0.046	...	-0.082*	...	0.001	-0.128***	-1.481***	0.004	...	-0.072	-0.043
Interacted with crisis dummy	...	-0.096	...	-0.037	0.011	...	0.558***	...	0.183**	0.244*	1.259***	-0.091	...	0.002	-0.021
Total capital inflows (percent of GDP)	-0.028***	-0.028**	-0.026***	-0.024*	-0.017	-0.033***	-0.026***	-0.026***	-0.023***	-0.021	-0.353***	-0.367***	-0.357***	-0.343***	-0.386**
Interacted with crisis dummy	-0.003	0.004	-0.026	-0.015	-0.021	0.003	-0.017	-0.019	-0.015	-0.046**	-0.197**	-0.136*	-0.190*	-0.162*	-0.075
VIX	-0.090**	-0.083**	-0.113***	-0.031	-0.056	-0.153***	-0.127***	-0.105***	-0.070*	-0.113***	-0.145**	-0.051	-0.083	-0.092*	-0.130**
Number of observations	286	286	264	300	300	165	165	154	180	180	121	121	110	120	120
R ²	0.663	0.684	0.762	0.716	0.471	0.771	0.785	0.835	0.800	0.410	0.887	0.890	0.865	0.887	0.848
Country dummies	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No

1/ Unless otherwise indicated, all variables are expressed in changes from 2000 levels. *** indicates variable is statistically significant at the 99% level or above; ** at 95%; and * at 90%.

2/ Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, and Portugal, Spain, Sweden, and United Kingdom.

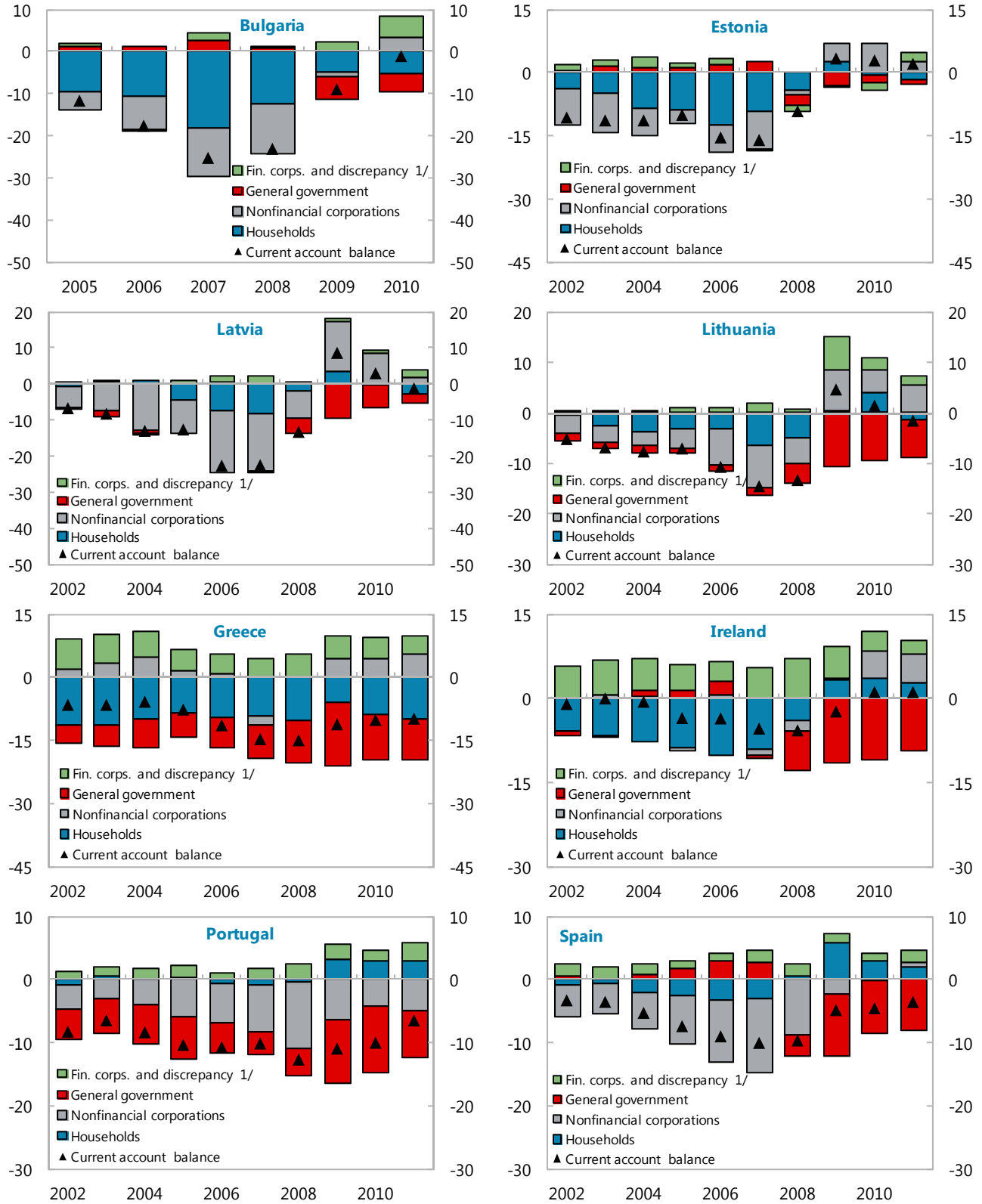
3/ Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, and Slovenia.

4/ Cash balance for Ireland excludes bank recapitalization.

5/ Data for 2012 as of 2012Q3.

6/ Data as of 2011.

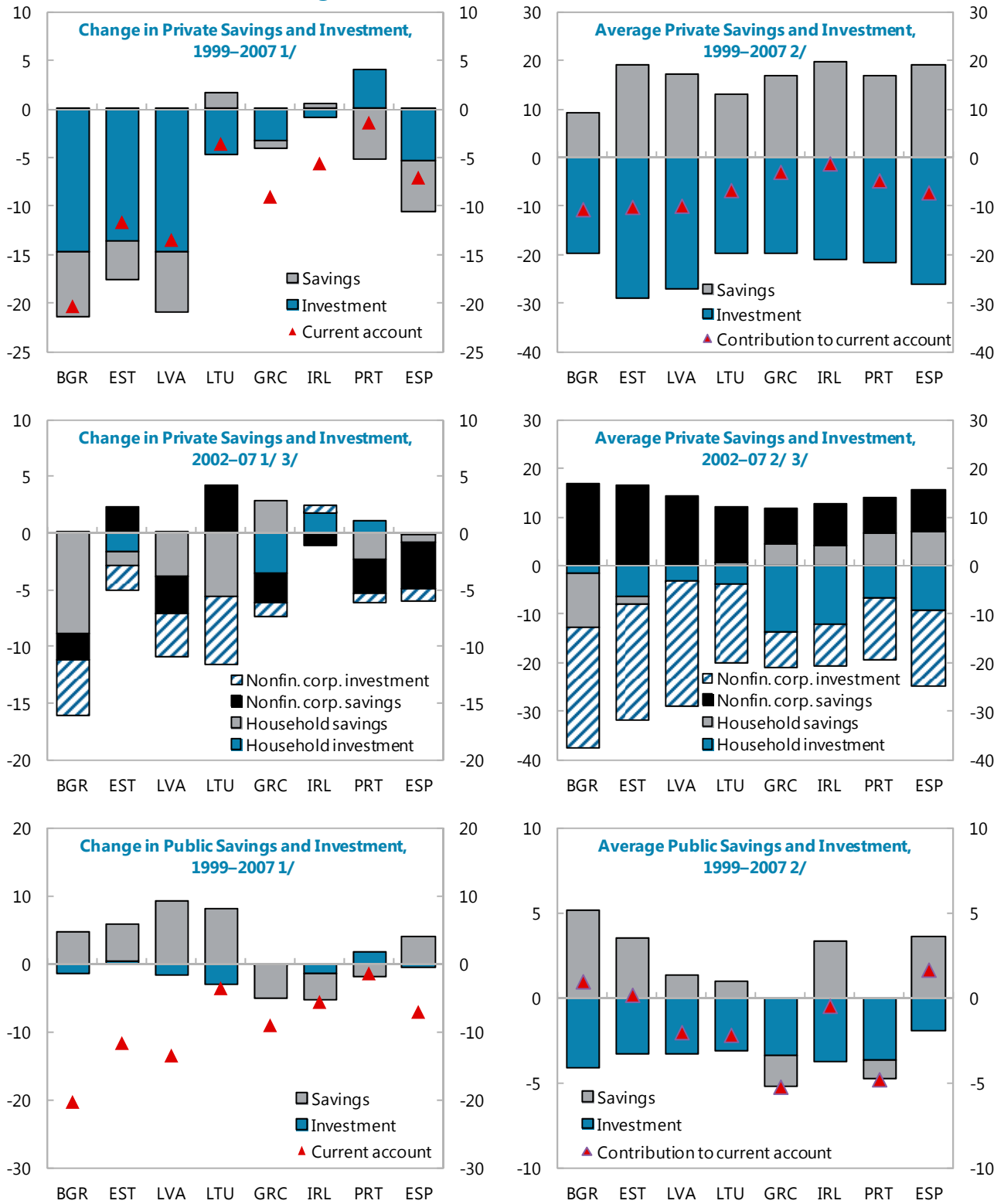
Figure 1. EZ Periphery and Emerging Europe: Sectoral Current Account Balance, 2002–11 (Percent of GDP)



Sources: Eurostat; Haver; IMF, World Economic Outlook; and IMF staff estimates.

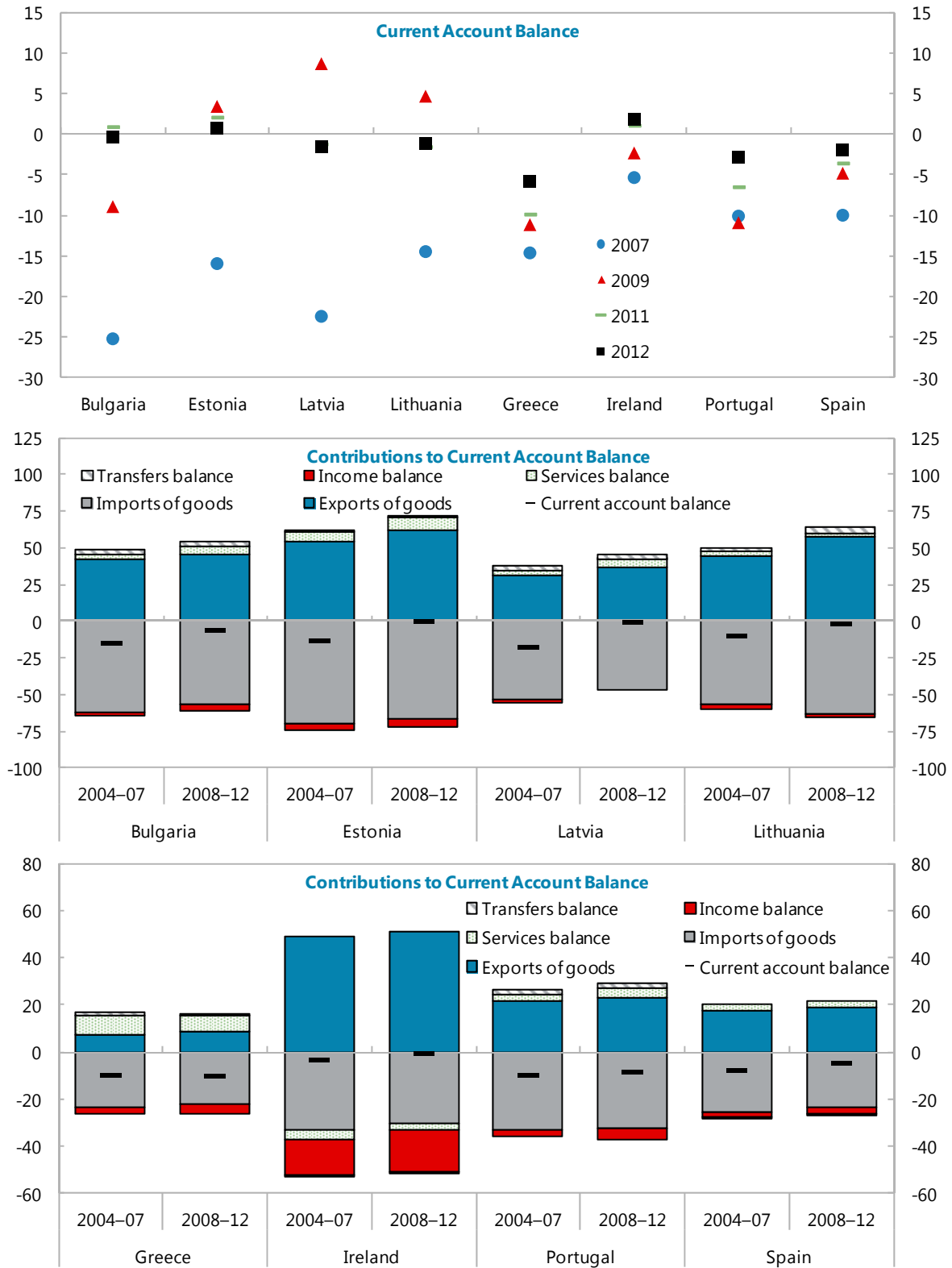
1/ Some discrepancy arises from comparing current account balance to nonfinancial accounts.

Figure 2. EZ Periphery and Emerging Europe: Contribution of Saving and Investment to Changes in Current Account, 1999–2007 (Percent of GDP)



Sources: Eurostat; Haver; IMF, *World Economic Outlook*; and IMF staff calculations.
 1/ A decline in savings and increase in investment recorded as a negative number.
 2/ Positive investment recorded as a negative number.
 3/ 2005–07 for Bulgaria.

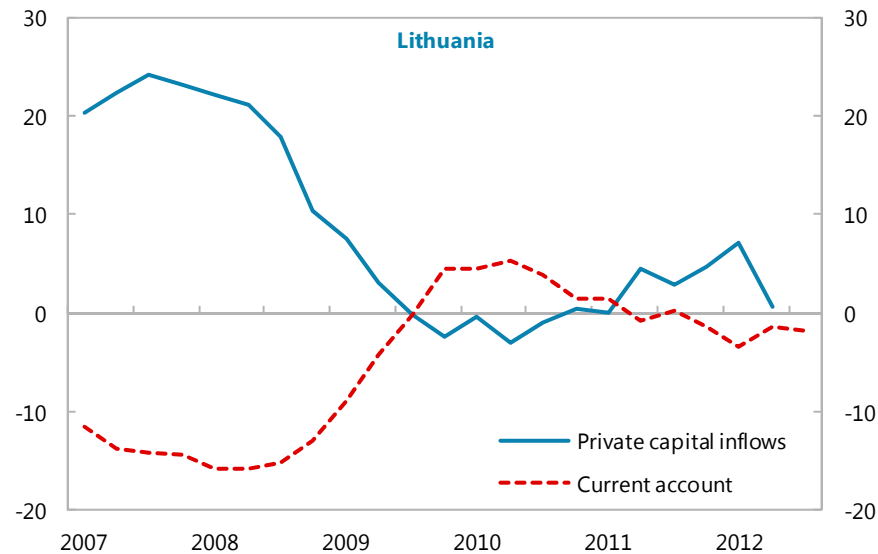
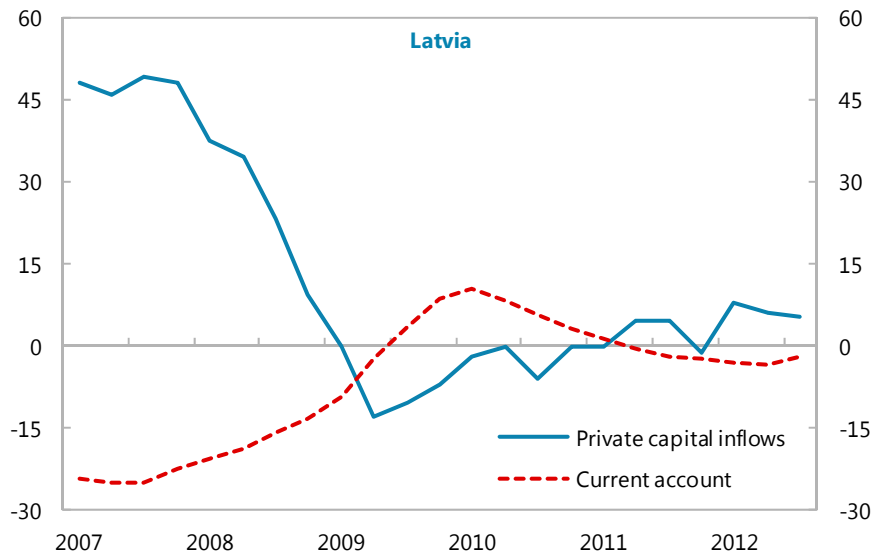
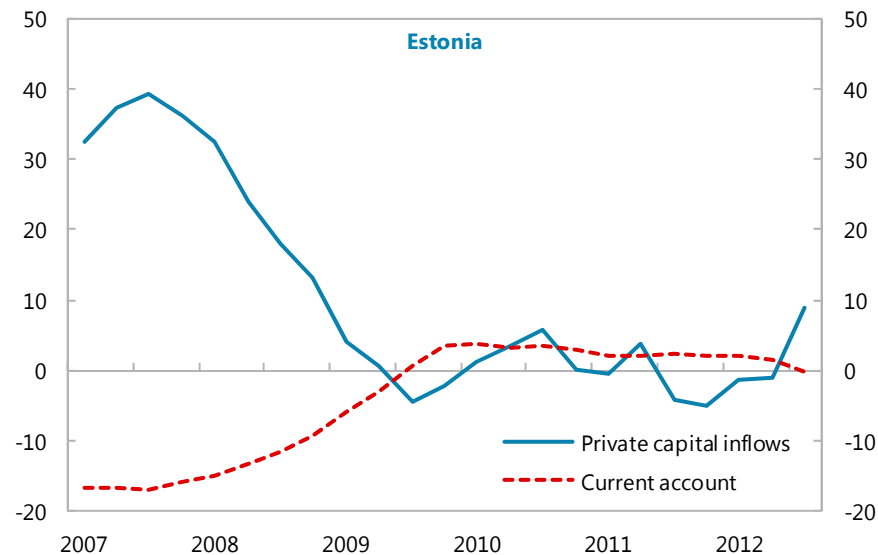
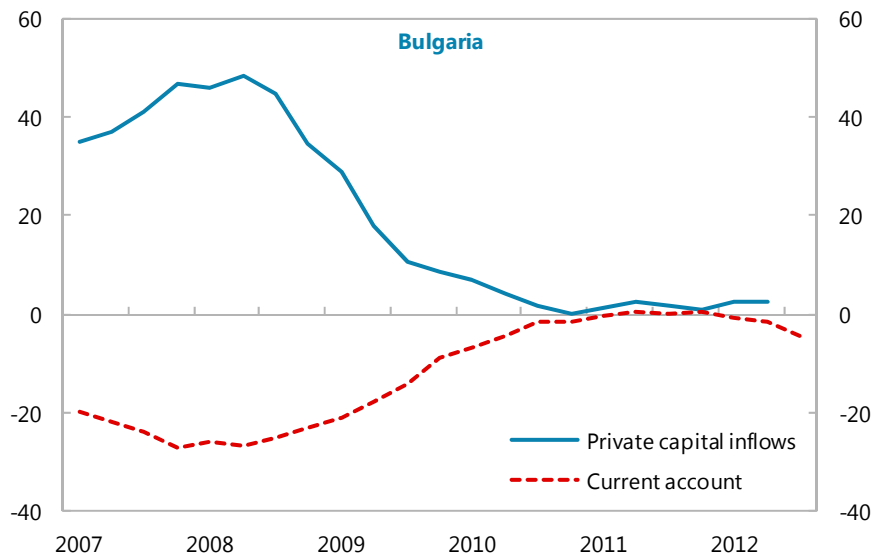
Figure 3. EZ Periphery and Emerging Europe: Contributions to Current Account, 2004–12 (Percent of GDP)



Sources: Haver; IMF, International Financial Statistics; IMF, World Economic Outlook; and IMF staff calculations.

Figure 4a. Emerging Europe: Current Account Financing, 2007–12

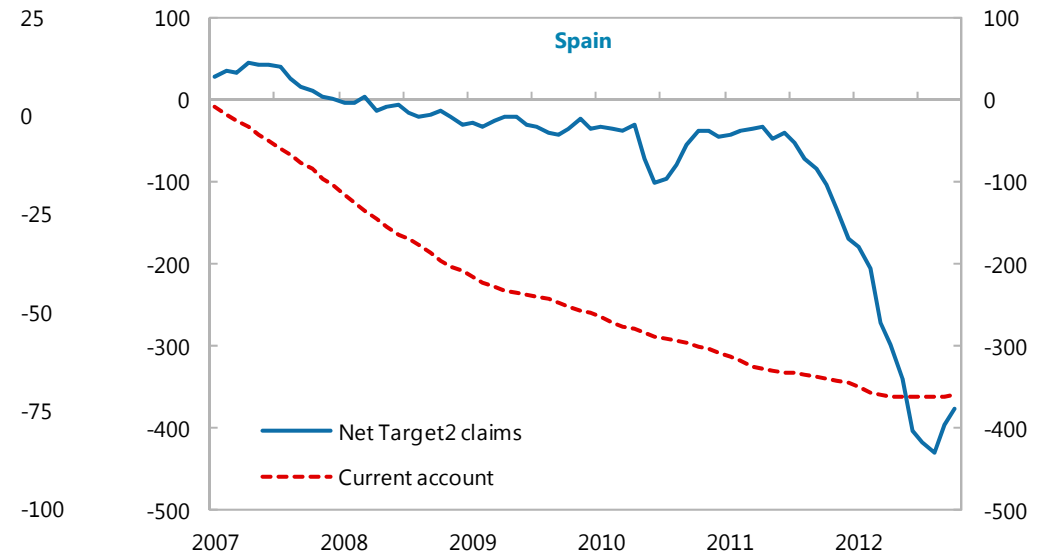
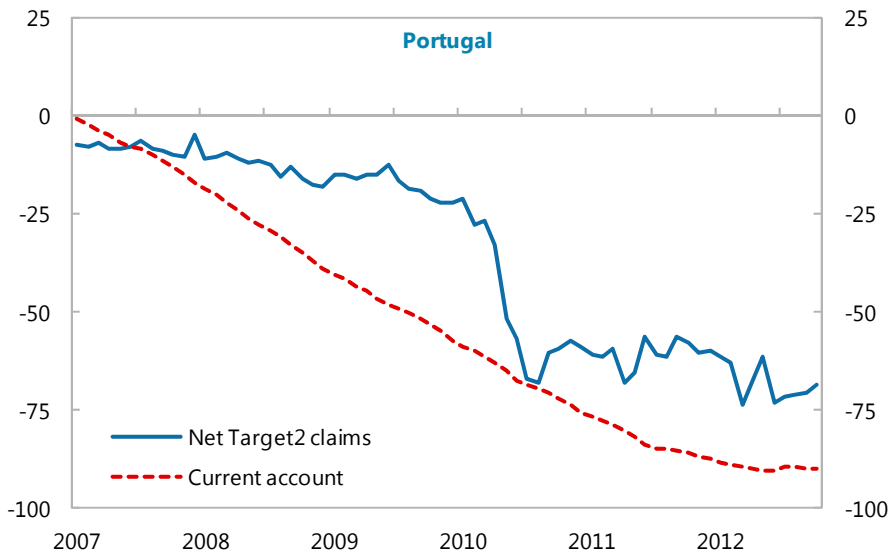
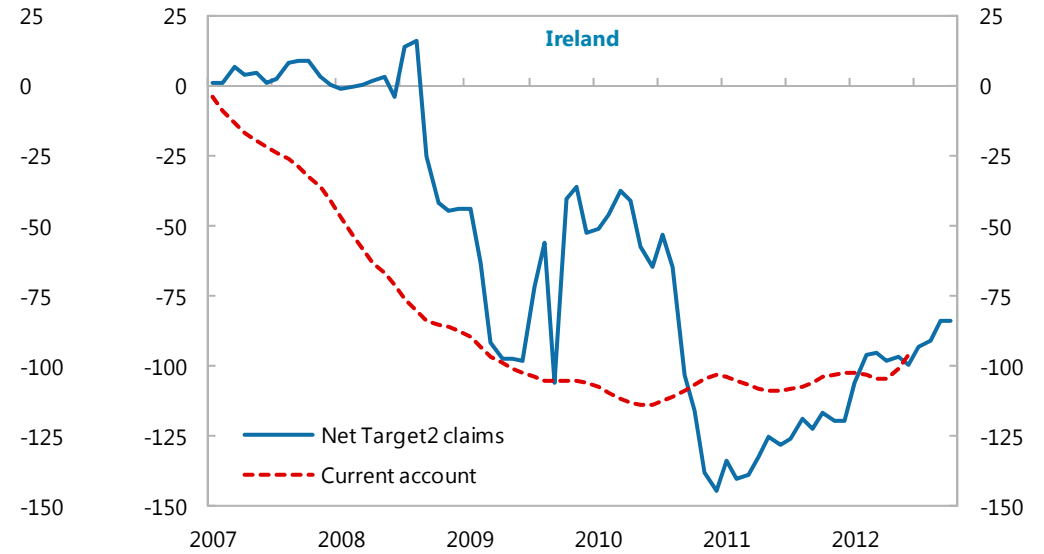
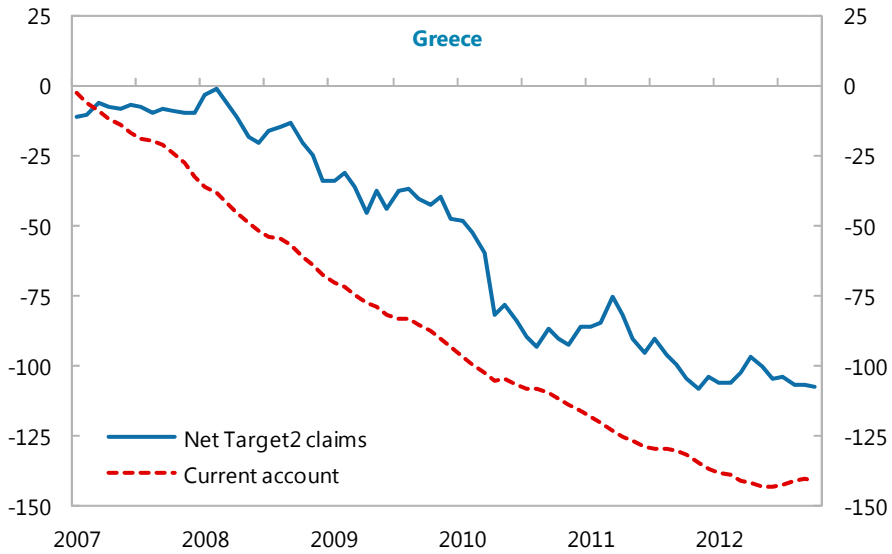
(Percent of GDP)



Sources: Haver; IMF, *International Financial Statistics*; and IMF staff estimates.

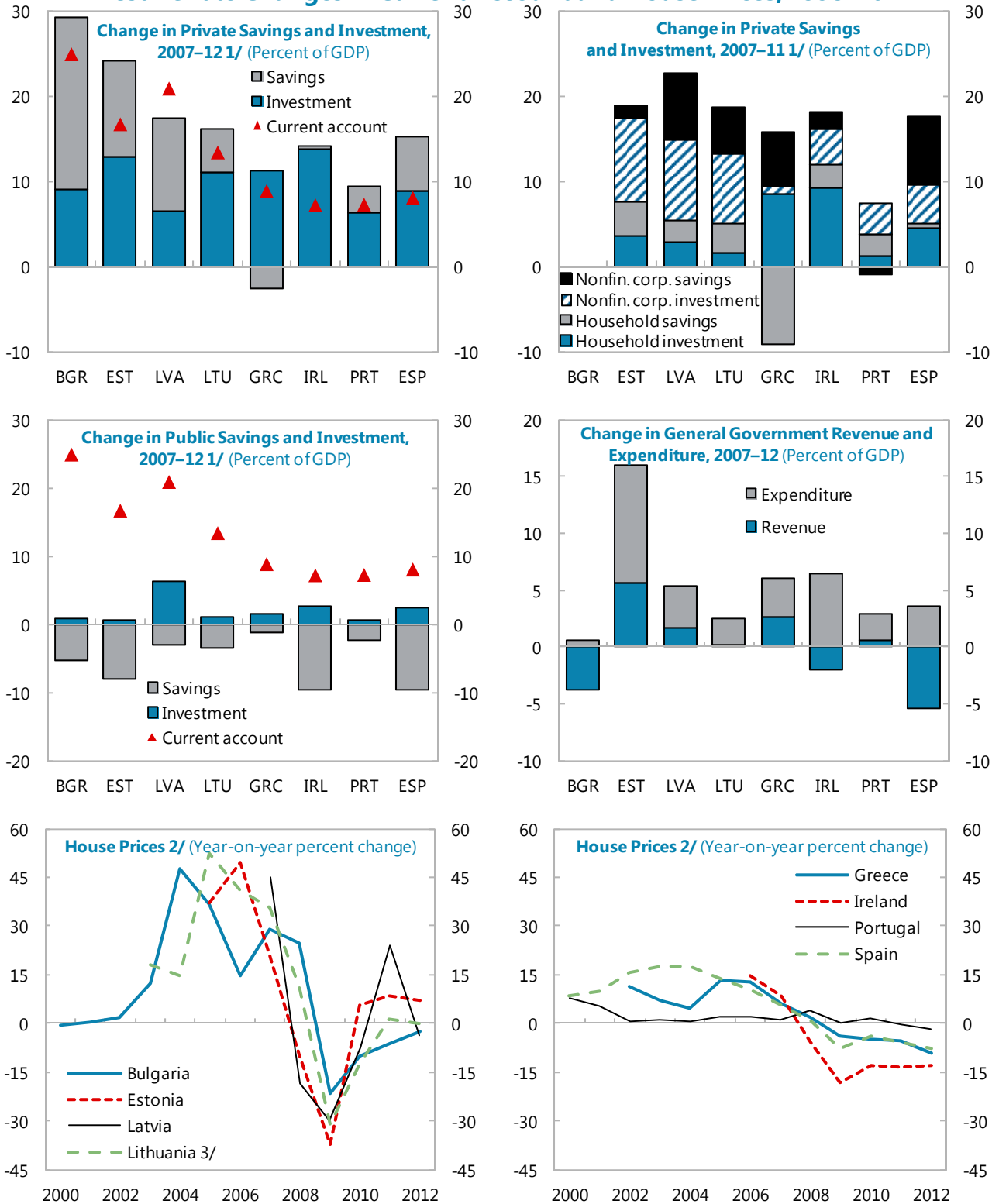
Figure 4b. EZ Periphery: Current Account Financing, 2007–12

(Billions of euros)



Sources: Haver; IMF staff estimates.

Figure 5. EZ Periphery and Emerging Europe: Contribution of Saving and Investment to Changes in Current Account and House Prices, 1998–2012



Sources: Eurostat; Haver; IMF, *World Economic Outlook*; and IMF staff calculations.

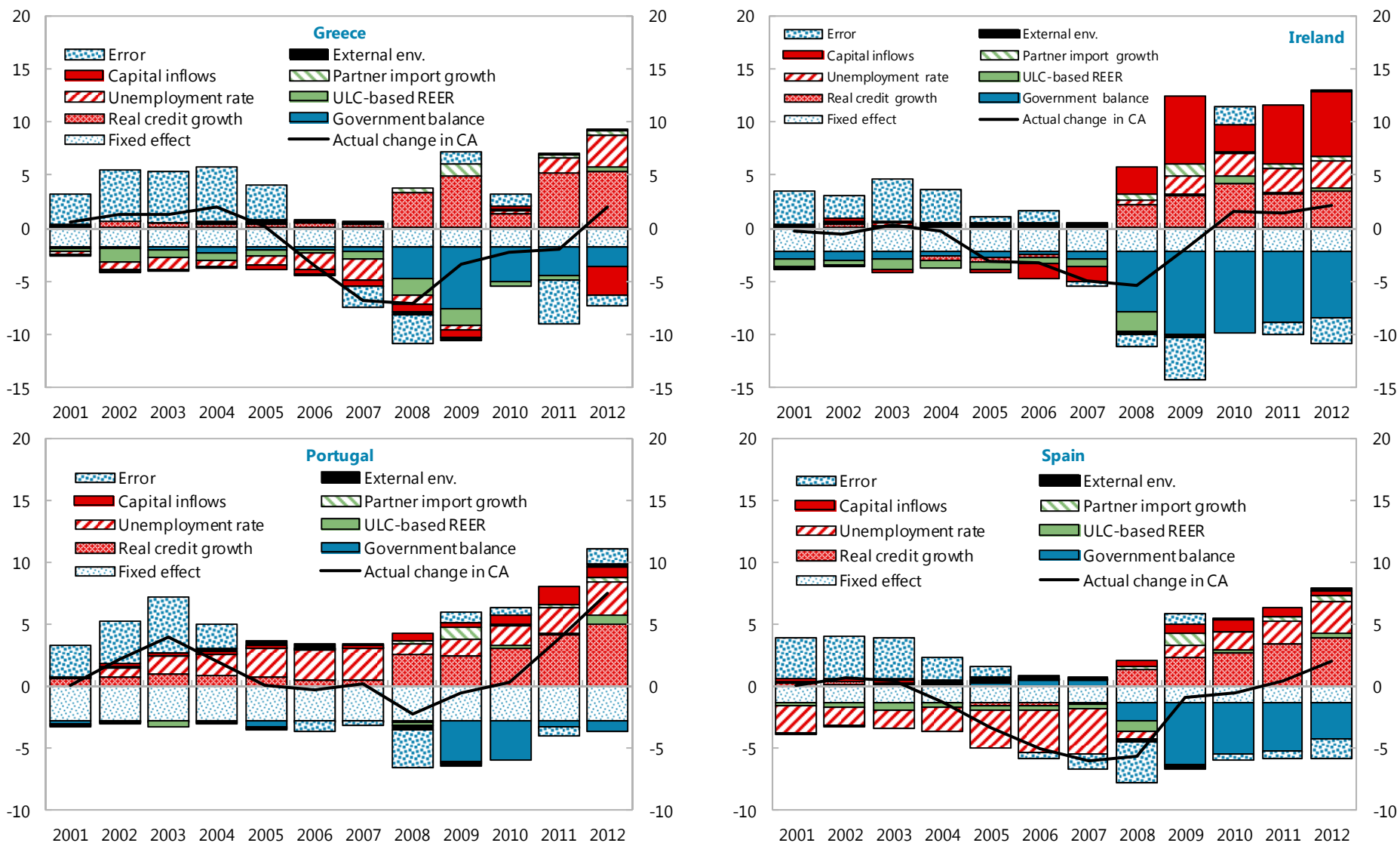
1/ A decline in savings and increase in investment recorded as a negative number.

2/ Data for 2012 as of Q3.

3/ Data for 2012 as of Q2.

Figure 6a. EZ Periphery: Empirical Decomposition, 2001–12 1/

(Percent changes from 2000)

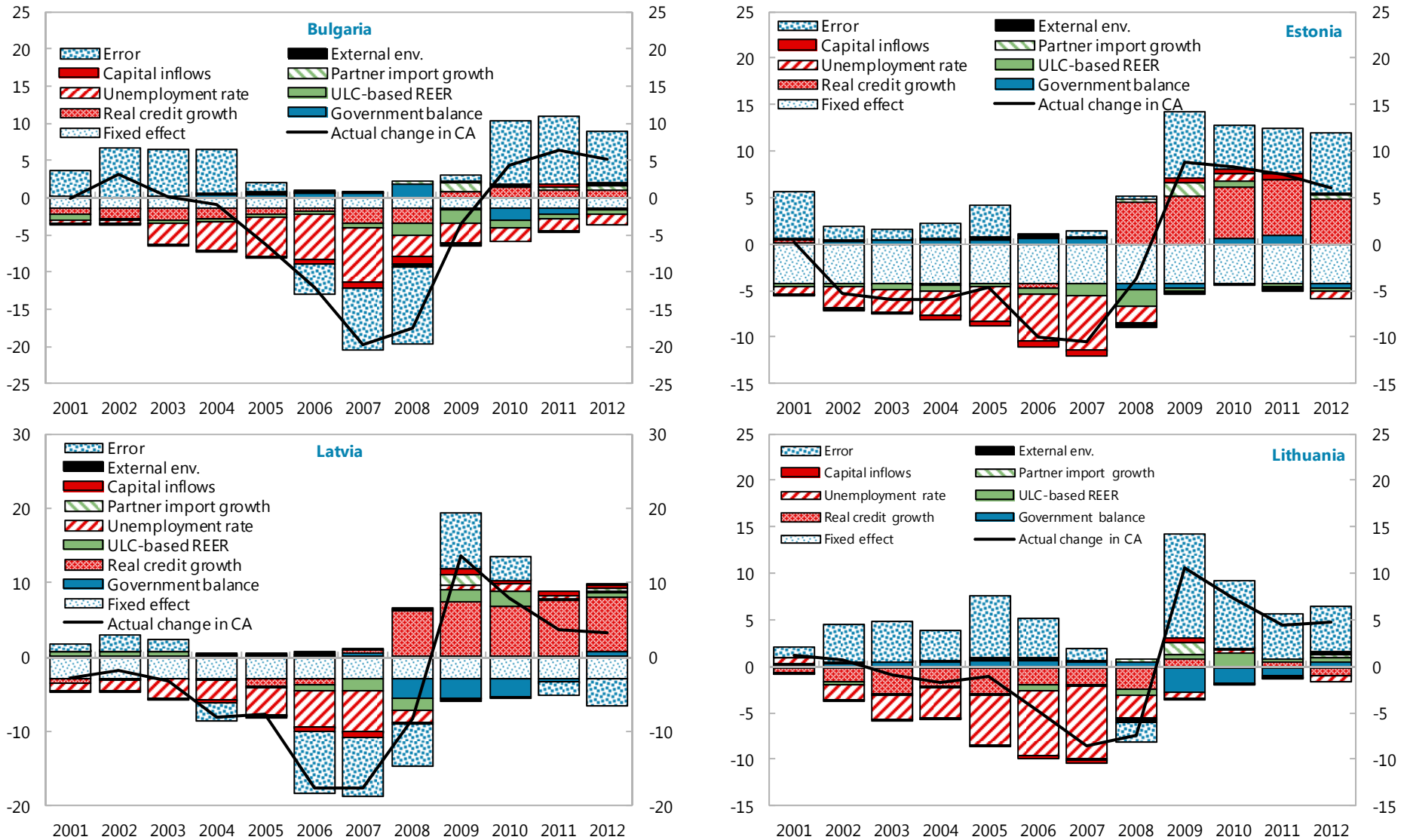


Source: IMF staff estimates.

1/ Empirical decomposition discounts actual data by estimated coefficients found in R4 of Table 1. In the case of interaction with the crisis dummy, actual data is discounted by the estimated coefficient for the crisis dummy. The contribution to change s in the current account shown is the sum of both discounts (coefficients of explanatory variable and the crisis dummy).

Figure 6b. Emerging Europe: Empirical Decomposition, 2001-12 1/

(Percent changes from 2000)



Source: IMF staff estimates.

1/ Empirical decomposition discounts actual data by estimated coefficients found in R4 of Table 1. In the case of interaction with the crisis dummy, actual data is discounted by the estimated coefficient for the crisis dummy. The contribution to change s in the current account shown is the sum of both discounts (coefficients of explanatory variable and the crisis dummy).

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