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Large net foreign liabilities of euro area countries

Risks, prospects and policy options

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Abstract

Over recent years, several euro area countries have registered large and persistent net foreign liabilities. This paper examines the risks arising from these external stock imbalances, the prospects for their smooth unwinding and the menu of policy options. The paper demonstrates that external stock imbalances remain a source of vulnerabilities in the (former) programme countries and, to a lesser extent, the euro area countries in central and eastern Europe. The net foreign liabilities of these economies stand at levels that are typically associated with an increased susceptibility to external crises. Mechanical projections indicate that the net foreign liabilities of the (former) programme countries will remain at elevated levels over the next decade despite some gradual adjustments, while those of the central and eastern European (CEE) countries could return to more sustainable levels more quickly. There are also vulnerabilities related to the composition of external positions, most notably the unfavourable debt-equity mix in the (former) programme countries. However, the long maturity of public external debt – which is often owed to official creditors – and, in the CEE countries, the prevalence of stable foreign direct investment should mitigate external sustainability risks. Furthermore, the net payments associated with the external positions of the euro area debtor countries are relatively low at the current juncture, although the burden could increase markedly if euro area interest rates were to normalise again. Against this backdrop, a timely and well-designed policy response would provide critical support to the orderly unwinding of the remaining external stock imbalances in the euro area. An optimal policy mix would consist of measures simultaneously fostering GDP growth and sustainable current account improvements in the debtor economies, in particular reforms aimed at enhancing productivity growth and export performance.

Keywords: external adjustment, external imbalances, external sustainability, international investment positions, valuation effects

JEL codes: F21, F32, F34, F36, F45

Non-technical summary

In the years leading up to the global financial crisis, several euro area countries accumulated large net foreign liabilities ("external stock imbalances") on the back of persistent current account deficits. In the post-crisis period, the net liabilities of these economies have remained stubbornly high despite marked current account adjustments. Particularly large net foreign liabilities are currently recorded in the countries that were subject to an EU-IMF financial assistance programme during the crisis, i.e. Ireland, Greece, Spain, Cyprus and Portugal. Sizeable net foreign liabilities are also observed in the euro area countries in central and eastern Europe. Since other euro area countries, such as Germany, register net foreign assets, the net international investment position (NIIP) of the euro area as a whole is close to zero.

Against this backdrop, this paper provides an in-depth analysis of external stock imbalances in the euro area. The paper studies the remarkable persistence of these imbalances in the post-crisis years, the associated risks to external sustainability, the prospects for their smooth unwinding and the menu of policy options.

The paper shows that the persistence of external stock imbalances in the post-crisis period can be explained by the gradual nature of the current account adjustments and the crisis-related hit to nominal GDP growth. Many debtor countries started to register NIIP improvements only recently on the back of the ongoing economic recovery and current account surpluses. Valuation effects stemming from changes in asset prices and exchange rates have made only a rather limited and transitory contribution to the unwinding of external stock imbalances. The "traditional" adjustment channels, i.e. the correction of trade flows and growth-enhancing policies, therefore remain essential for a sustainable unwinding of these imbalances.

External stock imbalances matter since they conjure up the risk of future crises. There is ample evidence that excessive net foreign liabilities are a common harbinger of external crises, which often lead to severe output losses. A standard early warning model indicates that net foreign liabilities in excess of around 35% of GDP are associated with heightened risks of an external crisis. The risks become even more substantial at levels beyond 50% of GDP. These thresholds are broadly consistent with those used in the literature and the EU's macroeconomic imbalance procedure (MIP). All CEE countries, except Slovenia, currently register net foreign liabilities in excess of 35% of GDP, while the (former) programme countries still breach the 50% threshold.

While external sustainability crucially depends on the level of the NIIP, vulnerabilities may also relate to its composition. In the (former) programme countries, net foreign liabilities largely consist of debt instruments whose non-contingent nature complicates the absorption of shocks. However, there are also important mitigating factors, such as the favourable maturity structure of external debt in the public sector and, in the CEE countries, the prevalence of stable foreign direct investment (FDI).

The NIIP burden – as measured by the investment income balance – is currently relatively light in most of the (former) programme countries. This reflects the broad-based decline in aggregate yields in the post-crisis period, particularly for portfolio debt and "other investment", along with the shift from market funding towards official funding. However, a scenario analysis suggests that a future normalisation in aggregate yields could lead to a marked increase in the NIIP burden.

The paper also studies the medium-term prospects for the unwinding of external stock imbalances in the euro area. To this end, the IMF's macroeconomic forecasts are fed into a simple accounting framework. The mechanical projections suggest that the net foreign liabilities of the (former) programme countries are likely to remain at elevated levels over the coming years, despite some gradual adjustments. By contrast, the NIIPs of the CEE countries could return to more sustainable levels above -35% over the next ten years if current expectations of robust nominal GDP growth and sustainable current account balances materialise. The euro area as a whole is set to soon become a net external creditor for the first time since 1999.

The mechanical projections illustrate that additional adjustment efforts – going beyond those entailed in the baseline – are needed in all (former) programme countries to bring the NIIP to more sustainable levels over the medium term. Halving net foreign liabilities from their current levels appears to be within reach in many (former) programme countries. The corresponding adjustment needs pale in comparison to the corrections already achieved since the crisis.

An important lesson from the recent crisis is that external imbalances, if allowed to fester for too long, are a source of vulnerabilities. Such vulnerabilities could become particularly acute if euro area interest rates were to increase again towards pre-crisis levels. Hence, a timely and well-designed policy response would provide critical support to the orderly unwinding of the remaining external stock imbalances in the euro area.

Broadly speaking, there are two levers for policy action: facilitating a faster repayment of external liabilities and helping the economy to "grow out" of the liabilities incurred in the past. However, neither of these adjustment channels is likely to achieve sufficiently large NIIP improvements when pursued in isolation, as illustrated by scenario analyses. Hence, an optimal policy mix consists of measures simultaneously fostering both sustainable current account improvements and nominal GDP growth, building on the post-crisis adjustments in relative prices. Structural policies must play a central role, in particular measures aimed at fostering productivity growth and export performance. This could be flanked with measures tailored to vulnerabilities embedded in the international balance sheets, in particular policies to attract FDI. Net creditor countries could support the adjustment in the debtor economies and stabilise their own external positions by means of growth-enhancing policies, such as the opening-up of services markets. At the global level, it is essential to preserve the open exchange of products and ideas, one of the most powerful drivers of long-term prosperity. Taken together, such a policy agenda would help ensure that the legacy of external stock imbalances gradually disappears,

allowing the euro area economy to emerge from the crisis years with stronger and more resilient foundations.

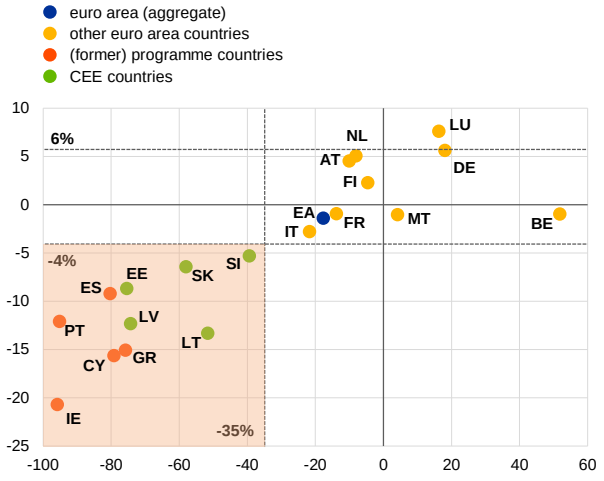
1 Introduction

On the eve of the global financial crisis, the euro area as a whole appeared to be in external equilibrium. Its net international investment position, i.e. the difference between residents' external financial assets and liabilities, stood at only moderately negative levels and its current account close to balance. Below this benign surface, however, large net foreign liabilities and persistent current account deficits had built up in several euro area countries. At the area-wide level, these positions were broadly offset by the net foreign assets and current account surpluses of other euro area countries.

Chart 1

Pre-crisis imbalances: NIIPs and current account balances in 2008

(percentage of GDP; x-axis: net international investment position (NIIP); y-axis: current account balance)



Sources: ECB and Eurostat.
Notes: The dashed lines show the threshold values used in the MIP scoreboard, i.e.−4%/+6% for the current account balance and -35% for the NIIP. EA stands for euro area.

In the pre-crisis years, particularly large net foreign liabilities in excess of 35% of GDP were recorded in two groups of euro area "debtor countries":[1] (i) the countries that were later subject to an EU-IMF financial assistance programme, i.e. Ireland, Greece, Spain, Cyprus and Portugal; and (ii) the CEE economies, i.e. Slovakia, Slovenia and the three Baltic countries.[2] In 2008 net foreign liabilities reached up to 96% of GDP in the first group, while ranging between 39% and 75% in the CEE countries (**Chart 1**). In all these economies, large net foreign liabilities went hand in hand with significant current account deficits and severe losses in price competitiveness. They also often interacted with domestic macroeconomic imbalances, such as housing market bubbles and imprudent fiscal policies. The other euro area countries, with the exception of Belgium, registered relatively moderate net foreign assets/liabilities before the crisis.

When the global financial crisis erupted, many euro area debtor countries witnessed a "sudden stop" of private capital inflows.[3] International investors were no longer willing to finance the large current account deficits in these economies or to roll over legacy debt. This was only partly cushioned by official financial inflows, such as EU-IMF programme loans and changes in TARGET2 balances. Therefore, the debtor countries had to undergo a process of external rebalancing, involving adjustments in domestic prices and costs as well as a compression of domestic demand. Between 2008 and 2016, their current account balances improved on

1 The statistical criterion to identify "large" net foreign liabilities is consistent with the alert threshold of 35% of GDP underlying the scoreboard of the EU's macroeconomic imbalance procedure (MIP). The NIIPs of EU Member States with a derogation are also examined in the ECB's Convergence Reports.

2 For analytical purposes, Latvia is allocated to the second group despite the multilateral financial assistance received during the crisis. Some debtor countries had not yet adopted the euro in 2008.

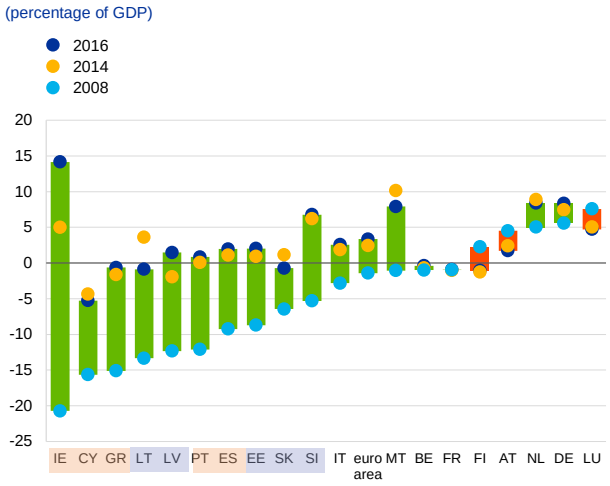
3 See Forster et al. (2011) and Merler and Pisani-Ferry (2012).

average by around 15% of GDP (unweighted), often moving into surplus territory (**Chart 2** and **Box 1**).

Despite the current account reversals, the net foreign liabilities of most debtor countries remained stubbornly high and, in some cases, even deteriorated further in the post-crisis period (**Chart 3**). In 2016 the net foreign liabilities of Spain stood just below 90% of GDP, while Portugal, Cyprus and Greece even recorded net foreign liabilities in excess of 100%. External positions at such levels are exceptional also in an international comparison. The increase in Ireland's net foreign liabilities to almost 190% of GDP largely reflects special factors related to the activities of multinational companies (Chapter 2). In all CEE countries except Slovenia, net foreign liabilities also continued to exceed 35% of GDP. Estonia came close to this benchmark, following NIIP improvements of almost 40% of GDP since 2008. Over recent years, most euro area debtor countries have registered some NIIP improvements, as indicated by the changes since 2014. However, the adjustments have overall remained gradual and incomplete. Meanwhile, the Netherlands, Malta and Germany saw notable increases in their net foreign assets over the post-crisis period. The NIIP of the euro area increased from -18% of GDP in 2008 to -6% of GDP in 2016.

Chart 2

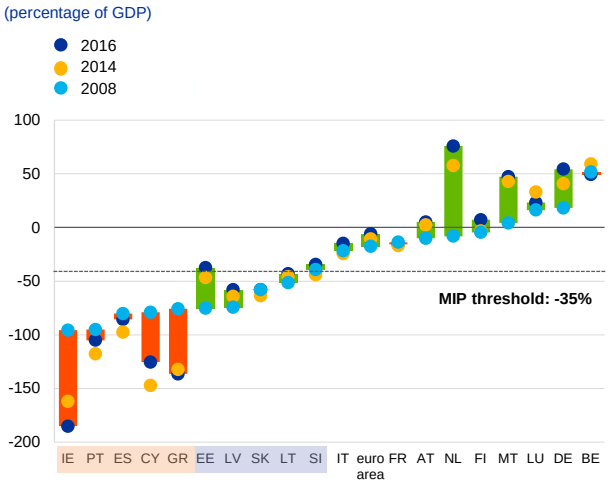
Post-crisis adjustment: Current account balances



Sources: ECB and Eurostat.
Notes: The green (red) bars indicate an improvement (a deterioration) in the current account balance between 2008 and 2016. The country codes of the (former) programme countries are highlighted in red, those of the CEE countries in blue.

Chart 3

Post-crisis adjustment: NIIPs



Sources: ECB and Eurostat.
Notes: The green (red) bars indicate an improvement (a deterioration) in the NIIP between 2008 and 2016. The dashed line corresponds to the threshold of -35% used in the MIP scoreboard. The country codes of the (former) programme countries are highlighted in red, those of the CEE countries in blue.

The large net foreign liabilities persisting in several euro area countries matter, since they conjure up the risk of renewed external crises in the future. Therefore, this paper focuses mainly on the euro area countries with large net foreign liabilities or, in brief, countries with "external stock imbalances". Chapter 2 looks into the factors explaining the persistence of these imbalances in the post-crisis period. Chapter 3 analyses the external sustainability risks associated with the large net foreign liabilities in some euro area countries and the vulnerabilities linked to their composition. In this context, the paper also develops an early warning model for external crises. Chapter 4 describes the medium-term prospects for a smooth

unwinding of the external stock imbalances in the euro area. The paper concludes with a discussion of the policy measures that could facilitate this adjustment process.

Box 1

The post-crisis correction of external flows in the (former) EU-IMF programme countries[4]

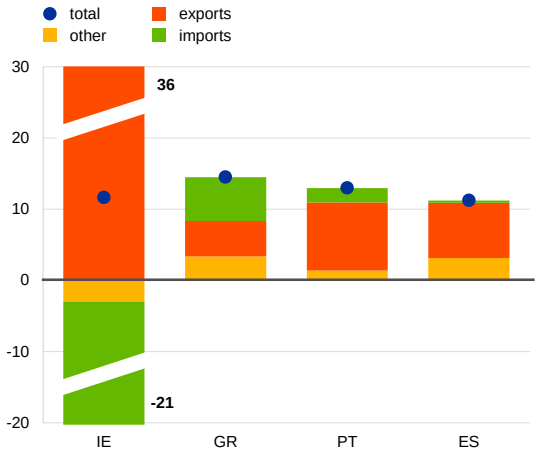
Since the global financial crisis, the euro area debtor countries have seen remarkable adjustments in external flows. In most of these countries, the current account balance turned from a deficit into a surplus. This box takes a closer look at the factors driving these current account improvements, focusing on the (former) EU-IMF programme countries.

Current account deficit reversals are usually driven by a reduction in imports, an expansion of exports or a combination of both. In Portugal and Spain, the largest part of the improvement in current account balances between 2008 and 2016 is attributable to an increase in exports relative to GDP, while in Greece a compression of imports played a key role (Chart A). In all these economies, the importance of import compression was most pronounced at the height of the crisis but diminished over time. In Ireland, exports have increased strongly since 2008, while imports contracted only in the initial stages of the adjustment and by now exceed their pre-crisis level.

Chart A

Contributions to the change in current account balances between 2008 and 2016

(percentage of GDP)

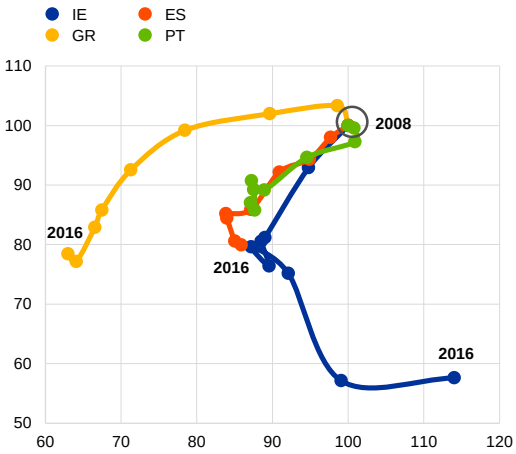


Sources: ECB and Eurostat.
Notes: A decline in imports results in a positive contribution. "Other" captures changes in the primary and secondary income account.

Chart B

Key drivers of external rebalancing: Real exchange rates and relative demand

(index: 2008 = 100; x-axis: relative demand; y-axis: real effective exchange rate)



Sources: ECB and European Commission.
Notes: The x-axis shows real domestic demand relative to the rest of the world. A decrease in the real effective exchange rate is a competitiveness gain. The real effective exchange rate is deflated by unit labour costs in the total economy as measured by the ECB's Harmonised Competitiveness Indicators for euro area countries.

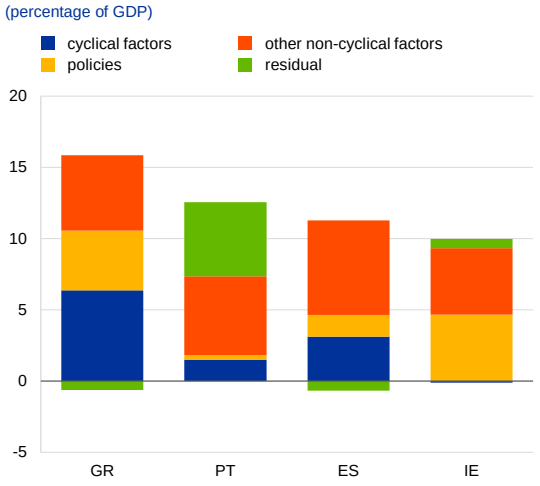
The adjustment in exports and imports, in turn, typically reflects a decline in domestic demand relative to foreign demand or a depreciation of the real effective exchange rate. In the (former) programme countries, a combination of both mechanisms has been at work, with interesting patterns across countries and over time (Chart B). Ireland and Greece mark the two extremes. In Ireland, the real effective exchange rate depreciated rapidly and significantly in the aftermath of the

[4] See also Bartelsman et al. (2015) and ECB (2014a). The box excludes Cyprus due to data limitations.

global financial crisis. This helped to minimise the adjustment costs in terms of output losses and paved the way for rapid growth coupled with current account surpluses over recent years. By contrast, Greece's real effective exchange rate was very slow to adjust, partly due to structural rigidities. Instead, the adjustment operated mostly through a drastic decline in domestic demand, coupled with a sharp increase in unemployment. The developments in Portugal and Spain were somewhere between these two poles, albeit closer to Ireland. By 2016, the real effective exchange rates of all (former) programme countries had returned to levels prevailing at the launch of the single currency.

Chart C

Model-based decomposition of the change in current account balances since 2008



Source: ECB staff calculations.
Note: The decomposition is based on the model presented in the Appendix.

To obtain further insights into the drivers of the external rebalancing, one can draw on a standard model relating the current account to a broad set of determinants: (i) cyclical factors, in particular the output gap; (ii) fundamentals, such as demographics; and (iii) policy variables, such as the cyclically adjusted fiscal balance. The model is described in more detail in the Appendix. Seen through the lens of this model, the current account improvements in the (former) programme countries since 2008 have been largely driven by policies and other non-cyclical factors (Chart C). To some extent, this reflects adverse factors, such as a reduction in future growth potential. Cyclical factors, such as the output gap, appear to have played a less prominent role in these countries, with the notable exception of Greece. These findings are robust to the use of different measures of the output gap.

Although some deterioration in current account balances is to be expected once output returns to potential, the findings presented in this box suggest that a significant part of the adjustment achieved so far is likely to be maintained in the near future. Whether this is sufficient to bring net external liabilities to safer levels over the medium term will be examined in Chapter 4.

2 The persistence of external stock imbalances

In several euro area countries, net foreign liabilities have remained stubbornly high in the post-crisis period despite marked current account adjustments (Chapter 1). This chapter sheds some light on the remarkable persistence of these external stock imbalances. It is useful to start with a decomposition of the post-crisis changes in the NIIP-to-GDP ratio into three components: (i) *transaction effects* due to the net acquisition of foreign financial assets/liabilities as measured by the financial account balance (broadly the mirror image of the current account balance); (ii) *GDP effects* representing mechanical changes in the NIIP-to-GDP ratio stemming from the denominator; and (iii) "*valuation and other effects*" capturing, inter alia, the revaluation of foreign assets and liabilities owing to changes in asset prices and exchange rates vis-à-vis non-euro area countries.[5] The breakdown implies that an economy's net foreign liabilities will shrink if it accumulates foreign assets or pays down its foreign liabilities, "grows out" of its net liabilities or benefits from favourable changes in market valuations.

The persistence of external stock imbalances in the post-crisis period can largely be explained by the gradual nature of the current account adjustments in many euro area debtor countries and the crisis-related hit to nominal GDP growth (**Chart 4**). In those debtor countries where the NIIP deteriorated or remained broadly unchanged between 2008 and 2016, the pre-crisis current account deficits were eliminated only gradually. With the current account balance often remaining in negative territory for several years, these economies continued to accumulate foreign liabilities in net terms. Moreover, nominal GDP declined during the crisis, making it more difficult to shoulder the liabilities incurred in the past. Taken together, these two factors explain most of the NIIP deteriorations in the first years after the eruption of the financial crisis. More recently, the net foreign liabilities of these economies stabilised or even started to shrink, as the current account moved into, or close to, positive territory and nominal GDP started to recover. In those debtor economies where the NIIP improved between 2008 and 2016 (most notably the Baltic countries), the current account balance turned positive shortly after the onset of the global financial crisis and growth recovered following a front-loaded adjustment. As a result, the NIIP improvements have overall been more pronounced. Notably, the post-crisis increases in the euro area NIIP were driven by transaction effects, particularly on account of sustained current account surpluses in Germany and the Netherlands.

"Valuation and other effects" overall played a limited role in most debtor countries in the post-crisis period. Greece was the only debtor country with a non-negligible net

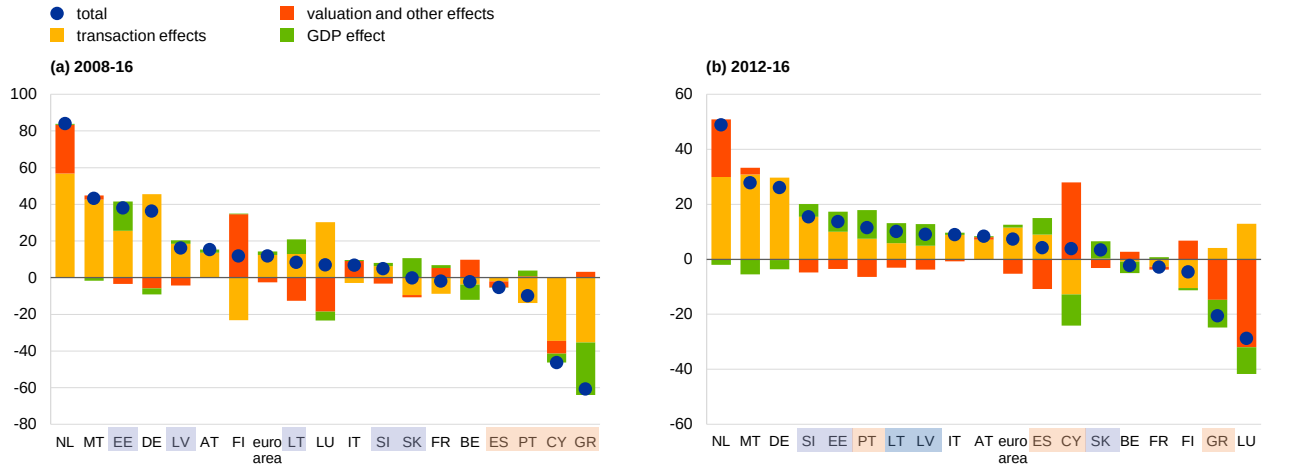
[5] Since the third component is computed as a residual, valuation effects cannot be disentangled from so-called "other volume changes" (arising, for instance, from changes in residency). Based on ECB data, such a breakdown is generally available only from 2013 onwards. In terms of the cumulated valuation effects for the period 2013-16, the two series show a correlation of 0.96. Ireland and the Netherlands are two notable outliers where "other volume changes" played a key role.

valuation gain between 2008 and 2016, mainly due to a decline in the market value of portfolio debt securities issued by Greek residents. As foreign investors lost their appetite for Greek bonds, the market value of these liabilities declined. As a financial centre with large gross external positions, Cyprus recorded sizeable but volatile valuation effects. Ireland is a special case, since the post-crisis deterioration in the NIIP of around 90% of GDP mainly reflects the fact that multinational companies have moved entire balance sheets to Ireland over recent years (resulting in so-called "other volume changes").[6] Notably, Germany's apparent valuation losses largely stem from statistical factors and the liabilities side, casting doubt on the often-heard hypothesis that they reflect poor investment decisions by German investors.[7]

Chart 4

Decomposition of NIIP changes

(percentage of GDP)



Sources: ECB and Eurostat.
Notes: IE excluded for readability. The country codes of the (former) programme countries are highlighted in red, those of the CEE countries in blue.

Over shorter time periods, particularly during the global financial crisis and at the height of the sovereign debt crisis, valuation effects were of a stabilising nature in most – albeit by no means all – euro area countries. In particular, many of those countries that had recorded a negative (positive) NIIP in 2008 registered positive (negative) valuation effects over the next two years (**Chart 5**). However, such valuation effects were usually of a rather limited size and/or reversed quickly. The euro area experience is consistent with the recent literature, which finds that valuation effects account for a significant share of NIIP changes in the short run, whereas transaction effects account for the bulk of secular NIIP trends.[8] This is intuitive, since asset prices and nominal exchange rates can adjust instantaneously when the economy is hit by a shock, whereas other adjustment channels take a longer time to take full effect.

6 These "other volume changes" more than offset the sharp increase in Ireland's GDP over the same period. For more details, see European Commission (2017).

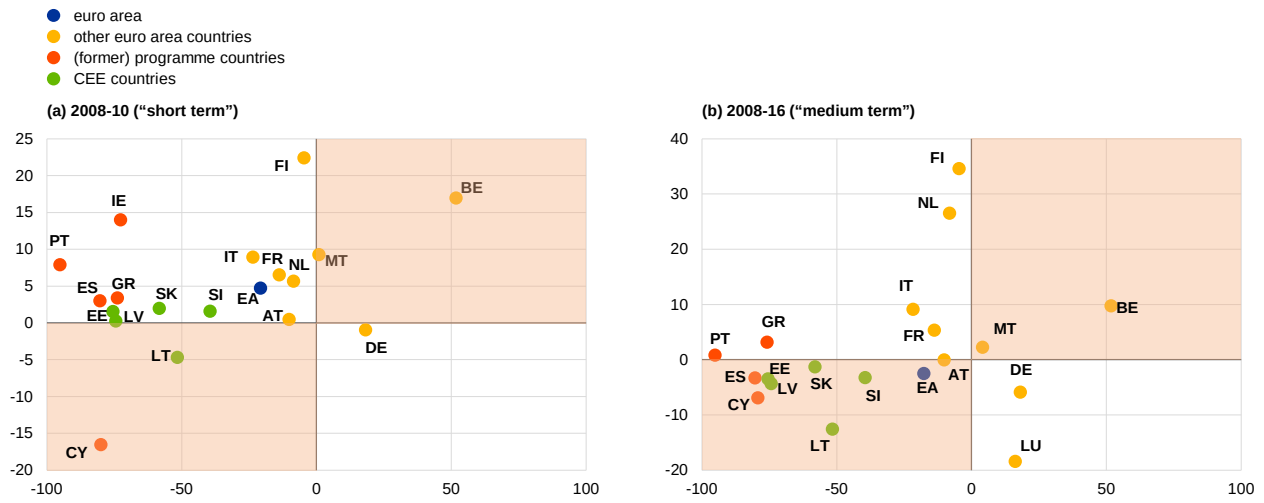
7 Statistical factors explain around 60% of the discrepancy between the change in Germany's NIIP and the cumulated financial account balances, according to Deutsche Bundesbank (2014).

8 See Evans (2017), Gourinchas and Rey (2007a) and, for the post-crisis period, Bergant (2017).

Chart 5

"Valuation and other effects" and pre-crisis NIIP levels

(percentage of GDP; x-axis: NIIP in 2008; y-axis: valuation and other effects)



Sources: ECB and Eurostat.
Notes: IE and LU are excluded for readability. Observations within the shaded areas indicate destabilising valuation effects.

For the euro area as a whole, ECB data offer a more detailed breakdown of the NIIP dynamics and disentangle valuation effects from "other volume changes". Between 2008 and 2016, the euro area benefited from a significant valuation gain of almost €800 billion on account of exchange rate changes (**Chart 6**). Over this period, the euro depreciated significantly vis-à-vis the US dollar and in nominal effective terms. The euro area tends to record valuation gains if the euro weakens, since foreign assets are partly denominated in foreign currency while foreign liabilities are largely denominated in euro. Between 2008 and 2016, the contribution from price changes was broadly neutral at the euro area level.[9]

From a policy perspective, an important question is why some euro area debtor countries have made more tangible progress than others when it comes to the unwinding of external stock imbalances. Overall, flexible economies, such as the Baltic countries, tended to record larger post-crisis NIIP improvements. This is consistent with recent econometric evidence showing that structural reforms increase the responsiveness and resilience of the economy to external shocks, in particular by facilitating the reallocation of resources.[10] In flexible economies, prices and wages can adjust quickly and resources are reallocated more easily across sectors and firms. As a result, external rebalancing is faster and, overall, relies to a lesser extent on demand compression (**Box 1**). A higher degree of trade openness also appears to have been conducive to a faster unwinding of external stock imbalances. In very open economies, such as the Baltic countries, real depreciations translate into larger improvements in external flows. Other factors may have also played a role, in particular foreign demand conditions and sovereign debt levels.

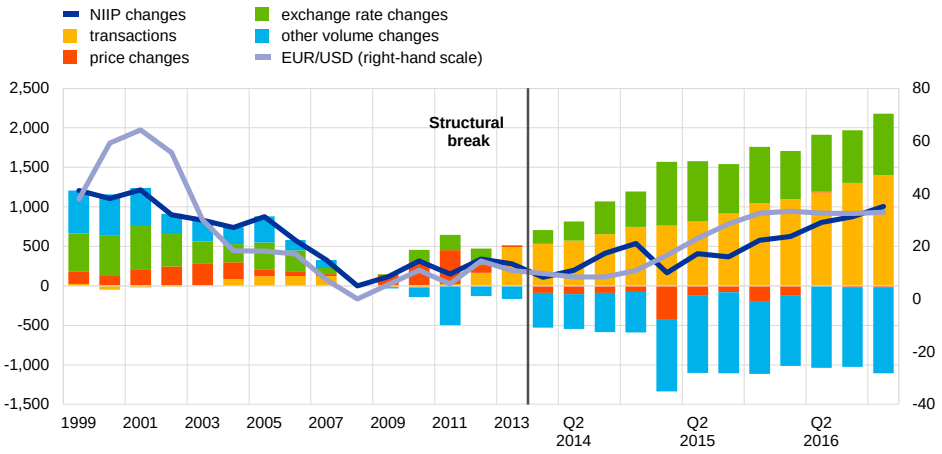
9 Comparable data for individual euro area countries are generally available only for the period 2013-16. In this period, price changes accounted for the bulk of the valuation effects, with large gains in Cyprus and notable losses in most of the other debtor countries.

10 See Culiuc and Kyobe (2017).

Chart 6

Breakdown of NIIP dynamics in the euro area and the EUR/USD exchange rate

(NIIP dynamics: cumulated change compared with 2008, EUR millions; EUR/USD: percentage change since 2008)



Source: ECB.
Notes: The data are linked backwards due to a structural break in the decomposition of the NIIP changes. An increase in the exchange rate indicates a euro depreciation. Quarterly frequency from 2014 onwards.

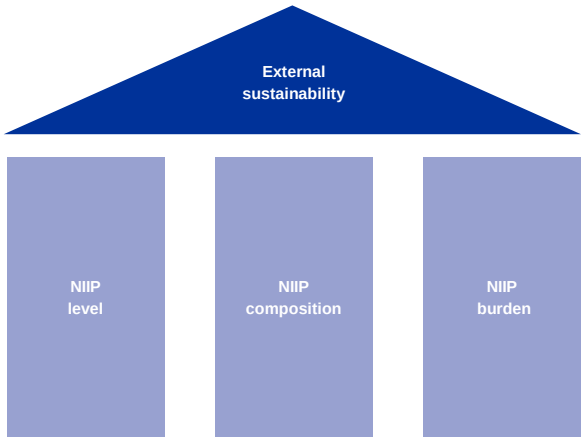
The post-crisis NIIP developments offer several lessons for the future unwinding of the remaining external stock imbalances in the euro area. *First*, the unwinding of the net foreign liabilities accumulated in the pre-crisis period is a longer-term challenge, with only partial progress having been made in the first decade after the start of the adjustment. *Second*, the "traditional" adjustment channels, i.e. the correction of trade flows and growth-enhancing policies, remain essential for a sustainable unwinding of these external stock imbalances. While valuation effects constitute a potentially powerful external adjustment channel, their contribution is unlikely to be systematic, sustained and sizeable enough to eliminate the remaining stock imbalances. This is in line with the evidence found by Fidora et al. (2017) for a broad sample of net foreign liability reduction episodes across advanced and emerging economies. *Third*, flexible economies with a high degree of trade openness have so far achieved more tangible progress with the external stock adjustment. Against this backdrop, Chapter 4 will explore the prospects for a smooth unwinding of the remaining external stock imbalances in the euro area, along with the available policy options.

3 External sustainability

3.1 The three pillars of external sustainability

Large net foreign liabilities can be a threat to external sustainability. According to the definition used in this paper, external sustainability requires that the economy's intertemporal external budget constraint be satisfied without disruptive macroeconomic adjustment (**Box 2**).

Figure 1
The three pillars of external sustainability



Source: ECB staff.

The literature has identified a variety of indicators that are relevant for external sustainability assessments. The most important ones can be grouped into three "pillars" (**Figure 1**): the level of the NIIP, its composition and the burden associated with NIIP-related payments. In the following, each of these pillars will be taken up in turn.

As a caveat, it should be stressed that external imbalances may linger for a prolonged period of time until a shock – such as changes in financial conditions – suddenly reveals their unsustainable nature. Moreover, external sustainability analysis often resembles a look into the rear window. Owing to publication time lags, balance of payments and NIIP data can hardly be used for the real-time monitoring of an unfolding external crisis. This highlights the crucial importance of adequate crisis prevention, including ex ante surveillance of external stocks and flows.

Box 2
External sustainability: Definition and measurement issues

In the literature, the notion of "external sustainability" is often used synonymously with that of "external solvency". The economy is deemed to be externally solvent if the intertemporal external budget constraint (IEBC) is satisfied. Loosely speaking, the IEBC stipulates that the present value of future trade surpluses be equal to current net external liabilities. This basic definition suffers from a number of shortcomings. Most importantly, fulfilment of the IEBC is a very weak requirement. Bohn (2007) shows that a sufficient – albeit not necessary – condition for the IEBC to hold is that the NIIP is integrated of order *m*.[11] In practice, this solvency condition is likely to be fulfilled in most cases, since macroeconomic variables tend to be integrated of a finite, and usually relatively low, order. Even a rejection of the standard solvency tests cannot be interpreted as evidence of

[11] The order of integration, *m*, denotes the minimum number of differences required to obtain a stationary time series, i.e. a series with time-invariant statistical properties (such as mean and variance).

insolvency, since the underlying conditions are sufficient but not necessary for solvency.[12] Hence, it is difficult to detect unsustainable external positions using this approach.

Therefore, this paper follows the more demanding – and also more policy-relevant – definition proposed by Milesi-Ferretti and Razin (1996) according to which external sustainability requires that the IEBC be satisfied *without disruptive macroeconomic adjustment*. More specifically, external positions are deemed unsustainable if fulfilment of the IEBC is likely to require a drastic adjustment in macroeconomic fundamentals (e.g. severe demand compression or currency devaluation) or an outright external crisis. An external crisis can take several forms, such as a (partial) default on external liabilities, debt restructuring or recourse to international financial assistance.

In principle, external sustainability concerns should be visible in market signals, such as changes in risk premia and financial flows. However, as already emphasised by Milesi-Ferretti and Razin (1996), financial markets might fail to signal sustainability problems until they become acute. The developments in the euro area prior to the global financial crisis are a case in point. Moreover, since the NIIP covers a very large set of financial assets and liabilities, it is not straightforward to summarise the market information in a single measure. Against this backdrop, a wider range of external sustainability indicators should be monitored closely, as illustrated in the following.

3.2 Pillar 1: NIIP level

In principle, even an NIIP deep in negative territory can reflect welfare-enhancing intertemporal trade fostering consumption smoothing and an efficient international allocation of capital. However, large net foreign liabilities can also be a threat to external sustainability. They are often accumulated in times of exuberant expectations about future investment returns and domestic growth. With a change in economic and financial conditions, foreign investors may suddenly come to the conclusion that the economy will have difficulties honouring its external liabilities. As a result, risk premia may increase or private capital inflows may come to a grinding halt, as was the case in many euro area debtor countries after the onset of the global financial crisis. Maturing liabilities can no longer be redeemed by issuing new ones (rollover risk). Such a “sudden stop” scenario can be very costly, as it usually goes hand in hand with a disruptive compression of domestic demand, a spike in unemployment or outright default on external liabilities.[13] The necessary adjustment can be complicated further by structural rigidities and the absence of the nominal exchange rate as a country-specific shock absorber.

There is some evidence that excessive external liabilities can also have adverse consequences for GDP growth over the longer term. The “debt overhang” literature has found a non-linear relationship between external debt and GDP growth. The estimates suggest that gross external debt starts having a negative impact on growth

[12] The recent literature has shifted the focus from testing for external solvency to learning more about the underlying adjustment process (e.g. Durdu et al., 2013, Schoder et al., 2013 and Towbin, 2013).

[13] This is documented by the literature on sudden stops and current account reversals. See Calvo (1998), Edwards (2004), Freund (2005), Freund and Warnock (2007) and Milesi-Ferretti and Razin (1998).

when it reaches levels of around 35-60% of GDP in emerging markets and around 90% of GDP in advanced economies, possibly due to a worsening of the investment climate and reform incentives.[14]

Table 1

External sustainability heat map

(percentage of GDP)

	NIIP level	
	2008	2016
A. Debtor countries		
(a) (Former) programme countries		
IE	-95.8	-185.3
GR	-75.8	-136.5
ES	-80.2	-85.7
CY	-79.1	-125.4
PT	-95.1	-105.1
(b) CEE countries		
EE	-75.4	-37.4
LV	-74.2	-58.2
LT	-51.5	-43.3
SI	-39.4	-34.5
SK	-58.1	-58.1
B. Other euro area countries		
FR	-13.8	-15.8
IT	-21.7	-14.9
FI	-4.6	7.1
BE	51.8	49.5
DE	18.2	54.4
LU	16.3	23.2
MT	4.2	47.4
NL	-8.1	75.9
AT	-10.1	5.2
C. Euro area		
EA	-17.6	-5.9

Sources: ECB and Eurostat.
Notes: The colour codes indicate the risk categories, i.e. low risk (green), heightened risk (yellow) and substantial risk (red). The corresponding NIIP thresholds are -35% (yellow) and -50% (red) of GDP.

Past evidence clearly shows that large net foreign liabilities increase the likelihood of an external crisis (Catão and Milesi-Ferretti, 2014). This robust empirical relationship makes it possible to assign external sustainability risk ratings to the NIIP levels of individual countries. Given the considerable degree of uncertainty involved, this paper refrains from a continuous risk metric and defines three broad categories instead: low risk (green), heightened risk (yellow) and substantial risk (red). The underlying NIIP thresholds are motivated by the early warning model developed in

[14] See Patillo et al. (2011), Imbs and Rancière (2005) and Reinhart and Rogoff (2010). The estimates should be interpreted with caution, since they vary markedly across specifications and samples.

Box 3. The first threshold, at -35% of GDP, separates the green and yellow risk categories. It is identical to the threshold used in the scoreboard of the EU's macroeconomic imbalance procedure and very close to the median NIIP reported ahead of past external crises in advanced economies. The second threshold, at -50%, delineates the yellow and red risk categories. It is motivated by the finding that the probability of an external crisis increases significantly – and in a non-linear way – once the NIIP reaches such levels. The thresholds should not be interpreted as sharp watersheds, but rather as indicative yardsticks in a continuous, albeit non-linear, mapping of NIIP levels into external sustainability risks.

Table 1 maps the NIIP levels of the euro area and all euro area countries into the three indicative risk categories defined above. Taken at face value, the "heat map" suggests that the (former) programme countries, together with Slovakia and Latvia, are currently in the "red" category with "substantial" external sustainability risks. Estonia and Lithuania belong to the "yellow" category with "heightened risks". Slovenia stands out as the only country that has reduced its net foreign liabilities to levels (just) below 35%, partly due to a relatively favourable starting position. The other euro area countries and the euro area as a whole display low external sustainability risks, with Italy and France coming closest to the -35% threshold. Of course, this is only a snapshot in time. Therefore, Chapter 4 will complement this analysis with a forward-looking assessment based on medium-term NIIP projections. Moreover, the results should not be interpreted in isolation of the other pillars of the external sustainability assessment.

Box 3
An early warning model for external crises

Excessive net foreign liabilities are a common harbinger of external crises. This well-established fact can be used to derive alert thresholds for the NIIP and, ultimately, predict external crises. To this end, this box sets up an early warning model in the vein of Catão and Milesi-Ferretti (2014). The model links the incidence of external crises to the NIIP and other relevant factors. The crisis dummy takes the value 1 if (i) there is a default or rescheduling event or (ii) the country receives substantial support from the IMF and/or the European institutions.[15] Otherwise the dummy takes the value 0. For crises lasting more than one year, only the starting year is kept in the sample.

For illustrative purposes, it is useful to start with a univariate model linking external crises to the (lagged) NIIP-to-GDP ratio. The model is estimated over the period 1975-2015 at annual frequency for 66 countries (excluding financial hubs and low-income countries), using a pooled probit. The estimates confirm that countries with large net foreign liabilities are more likely to experience an external crisis (Table A, column 1). The predictive power of the model can be improved further by adding additional regressors that the literature has identified as important determinants of external crises. The multivariate model shows that not only the level of the NIIP but also its composition plays a role (Table A, column 2). For any given NIIP level, larger reserve assets and higher net foreign liabilities in direct investment go hand in hand with lower crisis probabilities. The coefficient for portfolio equity is statistically insignificant. Hence, it is the net debt component of the NIIP that

[15] The definition follows Catão and Milesi-Ferretti (2014), while also including EU financial assistance programmes. Substantial IMF support is assumed if a country's use of its IMF quota exceeds 200%.

ultimately drives the negative relationship between external crises and the NIIP. Current account and budget deficits as well as higher levels of global risk aversion (proxied by the yield differential for Aaa and Baa-rated corporate bonds in the US) also increase the probability of an external crisis. The coefficient for GDP per capita is negative, since advanced economies tend to be less prone to external crises. As regards the marginal effects, a one standard deviation (i.e. 32% of GDP) higher net foreign liability position increases the probability of a subsequent external crisis by around 5%. The main results are robust to the use of alternative crisis definitions and additional regressors.[16] In particular, the NIIP coefficient remains negative and highly significant if credit growth – measured as the annual change in the credit-to-GDP ratio – is included (Table A, column 3). It is also noteworthy that net external positions are a better predictor than gross external liabilities (results not reported).

Table A

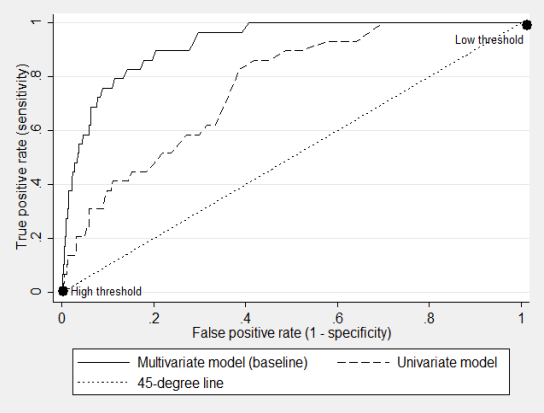
Early warning model: regression results

	Dependent variable: External crisis dummy		
Variable	(1)	(2)	(3)
NIIP	-1.10 ***	-1.43 ***	-1.29 ***
Net FDI		1.74 ***	2.10 ***
Net portfolio equity		-0.05	0.13
Reserves		-2.86 *	-4.53 **
Relative income		-2.20 ***	-2.43 ***
Current account (2Y ma)		-5.75 ***	-10.01 ***
Global risk aversion		0.62 ***	0.26
Fiscal gap		-6.27* *	-4.34
Credit growth			2.66
Obs.	1,603	1,603	1,313
Pseudo R2	0.09	0.29	0.33
AUROC	0.76	0.92	0.94

Source: ECB staff estimations.
Note: Probit regression, with robust country-clustered standard errors. All explanatory variables, except risk aversion, are lagged by one year.

[16] The main findings also remain intact based on a logit regression with country fixed effects, although the coefficients of some of the control variables are less precisely estimated. Notably, in this case all non-crisis countries need to be dropped from the sample. As explained by Catão and Milesi-Ferretti (2014), the estimates also suffer from the incidental parameter problem, whereby estimation errors in the fixed effects contaminate all other parameters.

Chart A
ROC curves



Source: ECB staff estimations.
Note: The ROC curve plots the fraction of correctly predicted crises against the fraction of false alarms for various probability thresholds.

In the next step, an alarm threshold for the model-implied crisis probabilities is chosen. If the predicted probability exceeds the threshold, this is seen as a warning signal. There is a trade-off between maximising the number of good calls and minimising the number of false alarms. This trade-off is illustrated by the so-called "ROC curve", which plots the fraction of correctly predicted crises against the fraction of false alarms for various probability thresholds (Chart A).[17] A reduction of the probability threshold from 100% in the lower left corner to 0% in the upper right corner simultaneously increases the fraction of good calls and false alarms. Several standard criteria are used to select the optimal point (or range) on the ROC curve.[18] In the bivariate model, these criteria point to an optimal threshold for the NIIP between -30% and -35% of GDP. This is very close to the median NIIP in the run-up to external crises and the threshold of -35% used in the context of the EU's MIP. For the multivariate model, the optimal probability cut-point is associated with NIIP levels of around -50% of GDP. Once the NIIP reaches such levels, the likelihood of an external crisis increases substantially and in a non-linear way, controlling for other determinants. Based on the optimal threshold, the multivariate model correctly calls almost 90% of all external crises, while keeping false alarms at an acceptable level of around 18%. A signal is counted as a good call if it correctly predicts a crisis either one or two years ahead. Notably, the model correctly signalled all external crises hitting euro area countries in the wake of the global financial crisis.

3.3 Pillar 2: NIIP composition

While the level of the NIIP is key for external sustainability, both the size and the composition of the international balance sheet also need to be monitored closely. Vulnerabilities embedded in the balance sheet may exacerbate the risks stemming from the NIIP level. Such vulnerabilities are usually related to (i) the size of *gross*

17 For models without predictive power, the ROC curve coincides with the 45-degree line; for better models, it is bowed towards the upper left corner. The larger the area under the ROC curve (AUROC), the higher a model's predictive power.

18 Four different criteria are used: (i) maximising the product of the true positive ratio and the true negative ratio (Liu criterion); (ii) maximising their sum (Youden criterion); (iii) the point on the ROC curve closest to (0,1); and (iv) minimising the sum of type I and type II errors. The noise-to-signal criterion is disregarded, as it puts too much weight on noise minimisation at the cost of missed crises if crises are rare.

external assets and liabilities, (ii) the debt-equity mix, (iii) the sectoral composition, (iv) geographical exposures or (v) maturity and currency mismatches.[19]

3.3.1 Balance sheet size: Gross positions

Large *gross* external positions increase an economy's exposure to fluctuations in exchange rates and other asset prices. Such valuation effects are a channel for international risk-sharing and usually cancel out at the country level over the medium term. However, in the short run they can rapidly undermine the sustainability of external positions. Moreover, large gross external positions can lead to pronounced swings in external flows if investors seek to rebalance their portfolios.

The brisk financial integration in the decades before the global financial crisis resulted in very large gross external positions in many advanced economies. In the euro area, financial centres – such as Luxembourg and Malta – record particularly large gross external positions (**Table 2**, column 1). This partly explains why many of these countries witnessed large valuation effects, in absolute terms, during the post-crisis period (Chapter 2). The CEE economies and Italy show relatively small gross positions. In the other euro area countries, gross positions are at intermediate levels, albeit still sizeable by international standards.

In most euro area countries, in particular high-income economies and financial centres, trade in financial assets is of a two-way nature. In other words, large gross external assets and liabilities usually go hand in hand, serving the purpose of mutual risk diversification and reflecting a sizeable financial industry operating across borders (**Table 2**, column 2). Euro area countries with lower income per capita tend more towards one-way asset trade.

[19] The so-called "balance sheet approach" also points to the relevance of claims among domestic residents. However, such an analysis is beyond the scope of this paper. Moreover, particularly relevant domestic positions, such as FX loans, play a relatively small role in the euro area.

Table 2

Measures related to gross external positions in 2016

(percentage of GDP, index)

	Gross positions	Grubel-Lloyd index
A. Debtor countries		
(a) (Former) programme countries		
IE	3,862.2	0.95
CY	2,796.9	0.96
PT	469.8	0.78
GR	404.3	0.66
ES	404.0	0.79
(b) CEE countries		
LV	325.9	0.82
EE	321.1	0.88
SI	242.6	0.86
SK	212.3	0.73
LT	191.7	0.77
B. Other euro area countries		
LU	38,015.5	1.00
MT	4,542.5	0.99
NL	2,229.5	0.97
BE	923.8	0.95
FI	640.4	0.99
FR	615.8	0.97
AT	492.5	0.99
DE	472.8	0.88
IT	312.5	0.95
C. Euro area		
EA	479.9	0.99
D. Other major economies		
UK	1,030.8	1.00
JP	313.0	0.78
US	298.6	0.86

Sources: ECB, Eurostat and Lane and Milesi-Ferretti (2017).
Notes: The first column shows the sum of gross external assets and liabilities as a percentage of GDP. The Grubel-Lloyd index ranges between zero and one, with higher values indicating that gross assets are largely offset by liabilities. It is defined as 1-ABS(Assets - Liabilities)/(Assets + Liabilities), where "ABS" denotes the absolute value. The data for the "other major economies" are taken from Lane and Milesi-Ferretti (2017) and refer to 2015.

3.3.2 The debt-equity mix

Broadly speaking, international trade in financial assets involves either debt or equity instruments.[20] All other things being equal, an international portfolio geared towards

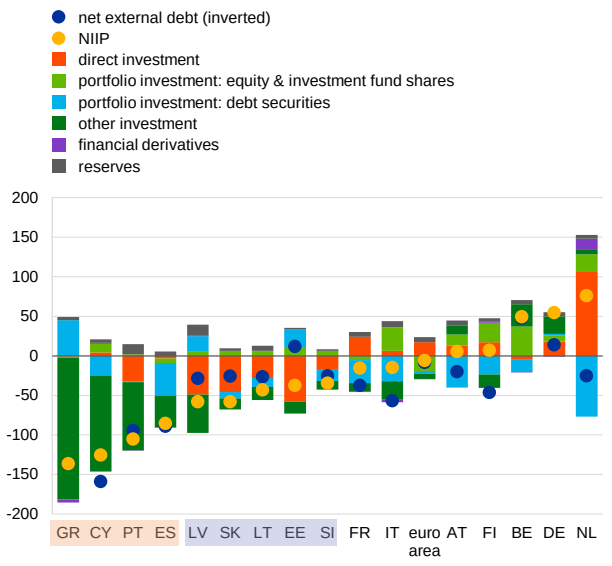
[20] Net external debt is the outstanding amount of actual net liabilities vis-à-vis non-residents that require payment(s) of principal and/or interest by the debtor at some point in the future. This category covers portfolio debt securities, "other investment" and some forms of direct investment.

debt is typically associated with higher sustainability risks, since the non-contingent nature of debt complicates the absorption of shocks. Debt has to be serviced under all circumstances, which may require a reduction in consumption and investment in times of crisis. By contrast, equity involves state-contingent returns. Thus, economies with short equity positions can share idiosyncratic risks with foreign residents.[21] While equity is beneficial in terms of risk-sharing (Bracke and Schmitz, 2011), it is usually associated with a risk premium. Advanced economies tend to be short in debt and long in equity (Lane and Milesi-Ferretti, 2007). This portfolio composition can be expected to deliver relatively high net returns in normal times, although it is subject to the risk that funding conditions deteriorate at the same time as foreign equity assets decline in value. In fact, debt flows tend to be particularly volatile and sensitive to changes in financial conditions, consistent with the experience of many euro area countries during the global financial crisis.[22]

Chart 7

NIIP breakdown in 2016 by financial instrument

(percentage of GDP)



Sources: ECB and Eurostat.
Notes: IE, LU and MT are excluded for readability. The country codes of the (former) programme countries are highlighted in red, those of the CEE countries in blue.

Direct investment – which can take the form of either debt or equity – is a special case, as it involves not only financial claims but also a (partial) transfer of corporate control. Most studies, such as Levchenko and Mauro (2007), find that FDI is more stable and less prone to reversals than portfolio (debt) investment, partly due to its relatively low liquidity. FDI is also conducive to growth in income and exports, i.e. the economy's repayment capacity, for instance due to the transfer of technology and best practice in corporate governance.

The net foreign liabilities in the (former) programme countries, except Ireland, largely consist of debt instruments (**Chart 7**). This is mostly due to "other investment", a category including EU-IMF programme loans, the TARGET2 balances of the national central banks as well as private sector cross-border loans and deposits.[23] Spain also records sizeable net liabilities in portfolio debt instruments, such as bonds. By contrast, Greece's net position in portfolio debt turned positive in the wake of the sovereign debt crisis. In the CEE countries, the prevalence of stable foreign direct investment is an important factor that mitigates external sustainability risks. Being long in debt and short in equity, Estonia and Ireland are special cases, which partly reflects the presence of multinational companies and, in Ireland, a large mutual fund sector. Most of the other euro area countries are short in debt and long in equity. More specifically, many of these economies record net liabilities in relatively safe and liquid portfolio debt, along with net assets in "risky" direct (equity) investment and/or

21 A negative (positive) net equity position is often referred to as a "short" ("long") position.

22 See Debelle and Galati (2005), Forbes and Warnock (2014) and Forster et al. (2011).

23 TARGET2 is an electronic settlement system operated by the Eurosystem. TARGET2 balances, which represent claims/liabilities of the national central banks vis-à-vis the ECB, are recorded under "other investment" in the NIIP.

portfolio equity. This resembles the NIIP composition of the United States, which has been described as the footprint of a global “venture capitalist” (Gourinchas and Rey, 2007b).

3.3.3 Sectoral composition

The sectoral composition of external positions can reveal imbalances that are not visible at the aggregate level due to mutually offsetting positions across sectors.[24] There are four broad institutional sectors: (i) the general government; (ii) the central bank; (iii) monetary financial institutions (MFIs), i.e. essentially credit institutions and money market funds; and (iv) “other sectors”, including non-financial corporations, households and financial corporations other than MFIs (e.g. pension funds).

The public sector, and in particular the general government, currently accounts for the largest part of the external stock imbalances in the euro area (**Chart 8**). In the CEE countries and Spain, the net external debt of the *general government* mainly reflects outstanding bonds. In Portugal and, most notably, Greece, EU-IMF programme loans play a dominant role. However, most of the other euro area countries also register sizeable net foreign liabilities of the general government. This reflects the fact that the sovereign’s gross foreign assets tend to be negligible, while its (usually euro-denominated) debt is often held by foreign investors. The *national central banks* of the (former) programme countries also register negative net debt positions, mostly on account of TARGET2-related liabilities. Since TARGET2 liabilities are incurred vis-à-vis the ECB and programme loans vis-à-vis official creditors (e.g. the ESM and the IMF), a significant share of the net foreign liabilities of the (former) programme countries consists of liabilities of the domestic public sector vis-à-vis the foreign public sector. Private sector net external debt currently plays a relatively small role in virtually all euro area debtor countries. The *MFI* sector registers relatively small net external positions in most debtor countries, in contrast to other euro area countries such as the Netherlands and Finland. It should be noted, however, that the net positions of the MFI sector may conceal significantly larger gross positions.[25] Taken together, the “other sectors” usually record a positive net external debt position. For the euro area as a whole, the net foreign liabilities of the public sector are largely offset by the net foreign assets of the private sector.

The current distribution of net external positions hides a striking shift from the private sector to the public sector in the post-crisis period (**Chart 9**). Between 2008 and 2016, the debtor countries saw a massive deleveraging of the private sector, particularly MFIs.[26] Over the same period, the net external debt of the public sector deteriorated significantly in most of these countries on account of increased government debt and rising TARGET2 liabilities. To some extent, this shift reflects

[24] ECB/Eurostat data offer a sectoral breakdown only for the debt component of the NIIP.

[25] See Rodriguez Palenzuela et al. (2016), Box 4, for more details on the link between the gross external positions of euro area MFIs and financial stability.

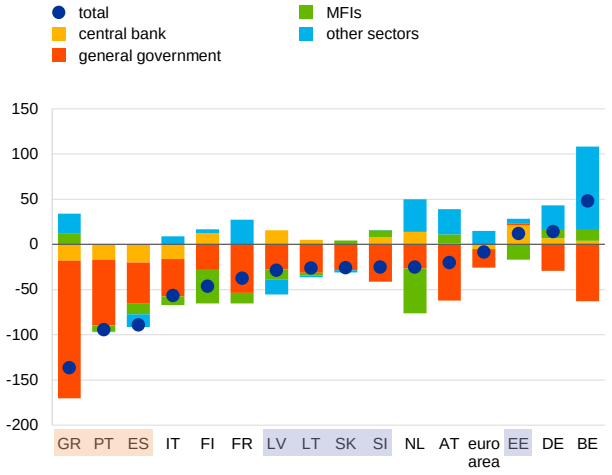
[26] See ECB (2017).

the so-called “deadly embrace” of sovereigns and banks during the crisis, which the European banking union is meant to overcome.

Chart 8

Breakdown of the debt component of the NIIP in 2016 by institutional sector

(percentage of GDP)

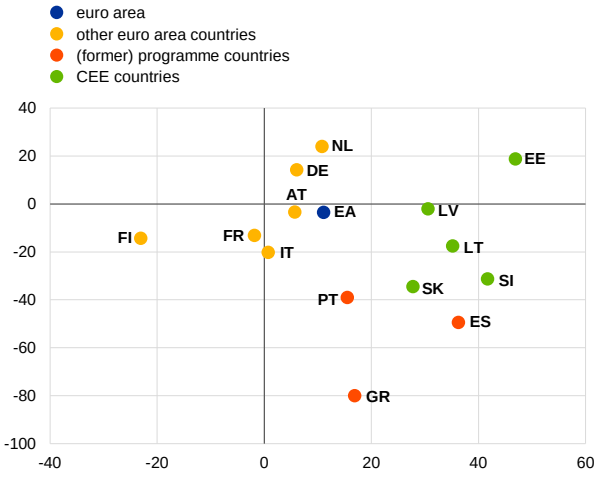


Sources: ECB and Eurostat.
Notes: “Total” refers to the debt component of the NIIP. IE, LU and MT excluded for readability, missing data for CY. The country codes of the (former) programme countries are highlighted in red, those of the CEE countries in blue.

Chart 9

Change in the debt component of the NIIP between 2008 and 2016

(percentage of GDP; x-axis: private sector; y-axis: public sector)



Sources: ECB and Eurostat.
Notes: Numbers may not add up to the change in the debt component of the NIIP due to unallocated elements. BE, IE, LU and MT excluded for readability, missing data for CY.

3.3.4 Geographical composition

External positions can also be decomposed along the geographical dimension, i.e. according to the country of residence of the foreign counterparts. This breakdown sheds light on the concentration of risk in the form of significant exposures to, or dependencies on, specific countries and regions. Unfortunately, official statistics offer only an incomplete geographical breakdown of the NIIP.

For the euro area as a whole, the available data show that gross external positions are heavily skewed towards advanced economies. Taken together, the United States and the United Kingdom alone account for around one-half of the euro area’s gross external positions (**Chart 10**). The total share of advanced economies for which data are available is around 70%, whereas the links with emerging markets are significantly looser. For instance, China accounts for less than 5% of the euro area’s gross external assets. An important caveat is that a significant share of the gross positions is allocated to “offshore financial centres”, which is unlikely to reflect the ultimate risk exposure. For the euro area’s *net* positions, the skew towards advanced economies is less pronounced, consistent with the dominance of risk diversification motives for financial integration among advanced economies.

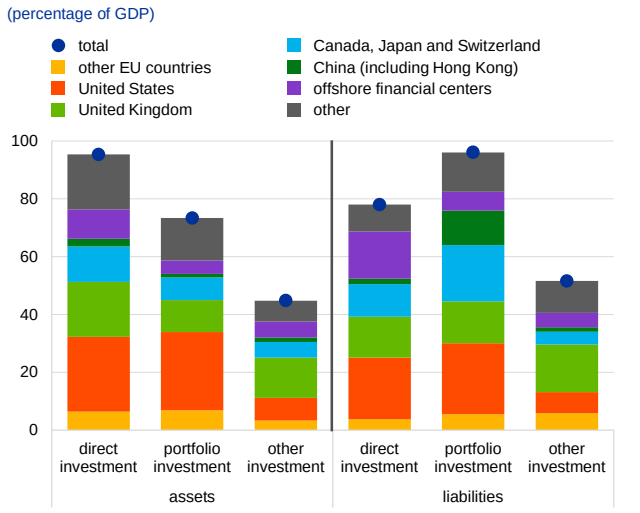
At the level of the individual euro area countries, official statistics do not provide a complete and consistent geographical breakdown of external positions. However,

according to estimates in the literature, intra-area net holdings typically account for a substantial share of the NIIP.[27] Indeed, if intra-area holdings are not netted out, the gross positions of the euro area more than double. Hence, euro area countries are highly financially integrated with each other.

3.3.5 Maturity and currency mismatches

Chart 10

Geographical composition of gross external assets and liabilities of the euro area in 2016



Sources: ECB and Eurostat.
Note: The geographical breakdown is unavailable for financial derivatives and reserves.

Even if an economy's gross external assets and liabilities are of an identical size, mismatches in their composition, in particular with regard to the maturity and currency denomination of debt, may give rise to vulnerabilities. *Maturity* mismatches arise, for instance, if a bank provides long-term loans to foreign clients while seeking funding through revolving short-term borrowing from international creditors. This increases the bank's vulnerability to hikes in interest rates and exposes it to rollover risk. Discrepancies in the *currency denomination* of assets and liabilities expose debtors to currency risk, unless the positions are hedged. Consider a bank with liabilities denominated in US dollars and assets in euro. The bank will suffer a balance sheet loss if the euro unexpectedly depreciates vis-à-vis the US dollar. At the aggregate level, currency mismatches may increase the sensitivity of the NIIP to fluctuations in exchange rates. In the previous example, the bank will also be dependent on foreign exchange markets, which may dry up in times of crisis. During the global financial crisis, several central banks, including the ECB, offered liquidity in foreign currency, backed up by swap lines (ECB, 2014b). However, this source of foreign-currency liquidity may not be available to all debtors at all times.

For the euro area countries, a maturity breakdown is available for external debt excluding FDI, i.e. portfolio debt and "other investment". Net foreign liabilities in short-term portfolio debt, which can be a source of vulnerability in times of financial stress, are relatively limited among the euro area debtor countries (**Table 3**). The largest part of gross assets and liabilities in portfolio debt is of a longer-term nature, with an original maturity of more than one year.[28] In particular, the government sector displays a favourable maturity structure, which helps to mitigate external sustainability risks. Larger negative positions are recorded for short-term "other investment". To a significant extent, these positions reflect euro-denominated liabilities of the national central banks and therefore do not give rise to external sustainability concerns. However, in several euro area countries – some with positive and some with negative NIIPs – the MFI sector also displays negative short-term

[27] See, for instance, Hale and Obstfeld (2016) and Hobza and Zeugner (2014).

[28] Data on mismatches based on *residual* maturity are currently not available on a comprehensive basis.

debt positions, for instance on account of money market funding. While this is not unusual for advanced economies with mature and liquid financial markets, the associated vulnerabilities nevertheless deserve to be monitored.

Table 3

Outstanding volumes of external debt (excluding FDI) in 2016 by original maturity

(percentage of GDP)

			By financial instrument				By sector							
	Total		Portfolio debt		Other investment		Central Bank		Government		MFIs		Other sectors	
	Long term	Short term	Long term	Short term	Long term	Short term	Long term	Short term	Long term	Short term	Long term	Short term	Long term	Short term
A. Debtor countries														
(a) (Former) programme countries														
IE	266	125	194	160	72	-35	6	-5	-49	-1	43	149	266	-18
GR	-72	-61	46	-1	-119	-60	30	-46	-153	-1	31	-18	19	5
PT	-48	-37	-1	0	-47	-37	16	-28	-73	-3	0	-7	9	0
CY	-113	-34	-26		-87		20	39	-84	0	45	-57	-93	-17
ES	-42	-37	-34	-7	-7	-31	9	-25	-41	-6	-3	-9	-7	2
(b) CEE countries														
LV	12	-30	19	1	-7	-31	36	-8	-30	2	12	-23	-5	0
EE	5	3	20	2	-15	0	18	5	-3	4	-2	-14	-7	9
SI	-30	5	-16	1	-15	4	14	-5	-45	3	2	5	-1	1
LT	-21	-2	-11	0	-10	-2	16	-5	-33	1	-3	0	0	2
SK	-12	-9	-8	0	-5	-8	14	-13	-30	1	0	4	4	-1
B. Other euro area countries														
LU	1,480	786	1,186	443	294	343	6	169	10	1	276	420	1,189	197
MT			209	4										
FR	-23	-16	-28	-1	5	-15	6	-4	-48	-7	-5	-7	24	2
IT	-27	-27	-28	-4	1	-23	5	-19	-38	-4	-7	-3	13	-1
AT	-26	1	-36	-3	11	4	6	-1	-61	-1	11	-1	19	5
FI	-29	-9	-18	-5	-10	-4	7	9	-27	-2	-17	-20	9	4
DE	23	1	6	-4	17	5	3	6	-29	-1	17	-7	33	3
BE	8	7	-5	-10	13	17	8	-1	-58	-6	18	-6	39	20
NL	-77	0	-70	-11	-7	11	4	11	-25	-4	-32	-21	-25	14
C. Euro area														
EA	-1	-7	-6	2	4	-9	3	-5	-18	-2	2	-2	12	2

Sources: ECB and Eurostat.
Note: Short-term debt has an original maturity of up to one year.

As regards currency mismatches, data limitations prevent a full-fledged analysis. However, reliable ECB data are available for the euro area as a whole in the important category “portfolio debt”. On the assets side, 38% of external portfolio debt is denominated in euro, 37% in US dollars and 25% in other foreign currencies. On the liabilities side, the corresponding shares are 63% (euro), 25% (US dollar) and 12% (other foreign currencies). Hence, the share of debt securities denominated in the domestic currency is significantly higher on the liabilities side than on the assets side, a common phenomenon among advanced economies. Given the importance of

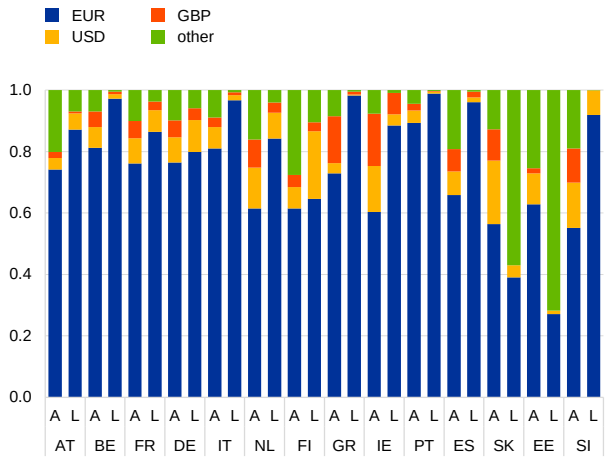
intra-area claims, the share of euro-denominated assets and liabilities is even higher at the level of the individual euro area countries, according to data from Bénétrix et al. (2015) (**Chart 11**).[29] On average, around 70% of gross assets and 80% of gross liabilities are denominated in euro. Slovakia and Estonia stand out with larger shares of liabilities not denominated in euro, at least based on available data up to 2012.[30]

To quantify the impacts of exchange rate changes on the NIIP, the information on currency mismatches can be combined with data on gross external positions. In most euro area countries, a uniform depreciation of the euro against all other currencies by 10% results in an NIIP improvement of around 1-4% of GDP (**Chart 12**). The positive impacts of a depreciation of the domestic currency are generally smaller than for the United States (with a reading of 5.7), given the importance of intra-euro area positions. Larger impacts are found for euro area countries with sizeable gross external positions, such as Ireland. Overall, valuation gains can be expected to complement the positive effects on the trade balance and GDP growth when the euro weakens, at least in the short run.

Chart 11

Currency denomination of gross external assets (A) and liabilities (L)

(share in total)

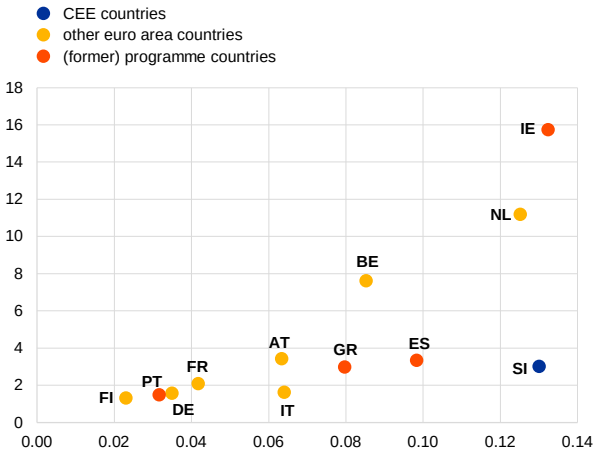


Source: Bénétrix et al. (2015).
Notes: The chart refers to 2012. It covers debt and equity. Countries that adopted the euro after 2012 are excluded.

Chart 12

Quantitative impact of exchange rate movements on the NIIP

(x-axis: aggregate foreign currency exposure, indicator ranging from -1 to 1; y-axis: impact of exchange rate changes on NIIP, percentage of GDP)



Source: Bénétrix et al. (2015).
Notes: The y-axis shows the mechanical impact of a uniform 10% depreciation of the domestic currency against the other currencies on the NIIP. The indicator combines the size of external positions with information on their currency composition. The latter is captured by the indicator on the x-axis, with higher values indicating a composition conducive to valuation gains. EE and SK excluded for readability.

3.4 Pillar 3: NIIP burden

External sustainability depends not only on the level and the composition of the NIIP, but also on the associated "burden" for the domestic economy. A well-known

[29] This analysis rests on the database constructed by Bénétrix et al. (2015), which stops in 2012.

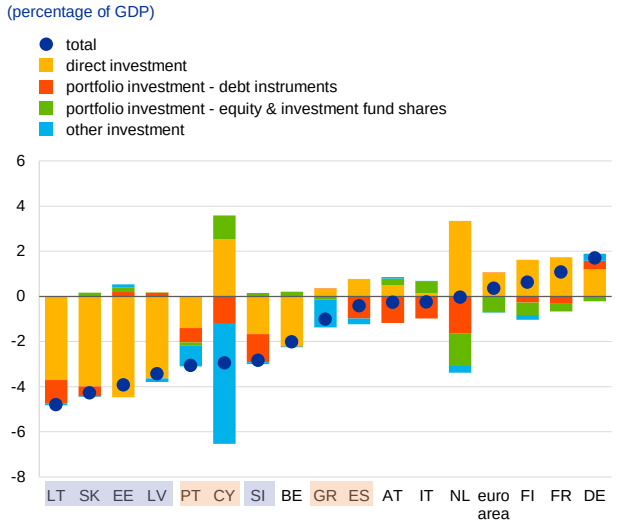
[30] This partly reflects positions incurred before these economies adopted the euro. In Estonia, debt denominated in Swedish krona also plays a role, owing to the activities of affiliates of Swedish banks.

indicator of the NIIP burden is the investment income balance, i.e. the difference between the income received on foreign assets and the income payed on foreign liabilities, expressed as a percentage of GDP. A deficit in the investment income account also acts as a drag on the current account balance, thereby establishing a destabilising link from past imbalances to the present.

In view of the unusually large net foreign liabilities in the (former) programme countries, the corresponding NIIP burden is relatively light at the current juncture (**Chart 13**). For instance, only moderate investment income deficits were recorded in Spain (-0.4%) and Greece (-1.0%) in 2016 in spite of deeply negative NIIP levels. In these economies, payments to the rest of the world were mostly related to portfolio debt securities and "other investment". More sizeable deficits in the investment income account were registered in Ireland (-17.7% of GDP) and the CEE countries (between -2.8% and -4.8%), mostly relating to FDI. Germany recorded a significant surplus of 1.7%, mainly reflecting net equity income from direct investment, such as dividends. The Netherlands and Belgium, while also being creditor countries, recorded deficits in the investment income account. It should be noted that the balances of payments of these two countries are heavily affected by the activities of multinational firms and national tax regimes. The euro area as a whole registered a small surplus in the investment income account despite its negative NIIP, a puzzle explored in **Box 4**.

Chart 13

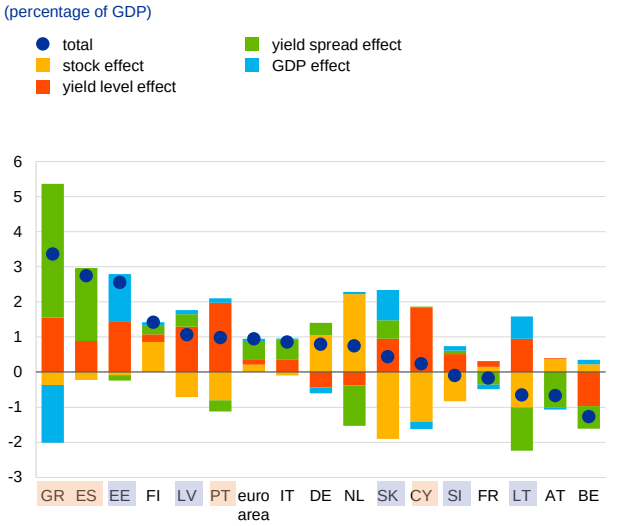
Breakdown of the investment income balance in 2016 by financial instrument



Sources: ECB and Eurostat.
Notes: The contribution of reserves is negligible and thus not shown. IE, LU and MT excluded for readability (all with deficits in the investment income account). The country codes of the (former) programme countries are highlighted in red, those of the CEE countries in blue.

Chart 14

Analytical decomposition of the change in the investment income balance between 2008 and 2016



Sources: ECB, Eurostat and ECB staff calculations.
Notes: IE, LU and MT excluded for readability. The country codes of the (former) programme countries are highlighted in red, those of the CEE countries in blue.

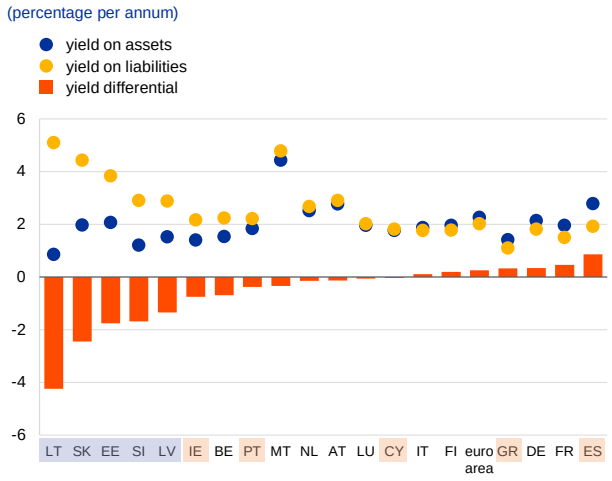
The relatively light NIIP burden in most of the (former) programme countries can be explained by a simple decomposition of the change in the income balance – relative to GDP – into the contributions arising from changes in (i) external stock positions, (ii) yield levels, (iii) yield spreads and (iv) nominal GDP. The yield level is proxied by the aggregate yield on foreign assets, while the yield spread compares aggregate

yields on assets and liabilities. Aggregate yields are calculated as the ratio of gross investment income in the current year and the gross external position at the end of the previous year. At the aggregate level, yields cover all returns attributable to income streams, such as interest and dividend payments.

As expected, in the (former) programme countries the deterioration in external stocks made a negative contribution to the change in the income balance between 2008 and 2016 (**Chart 14**). However, as debtor countries they benefited from the broad-based decline in aggregate yields in the post-crisis period. Moreover, the aggregate yields on their liabilities usually declined more than those on their assets. As a result, the (former) programme countries, with the exception of Ireland, saw an improvement in the income balance. In Greece, the combined yield effects were particularly strong, together lowering the annual NIIP burden by about 5% of GDP. Overall, the yield channel appears to have provided stronger and more persistent support to the external rebalancing in the euro area debtor countries than the valuation channel discussed in Chapter 2. At the same time, falling aggregate yields overall reduced the investment income of creditor countries such as Germany and the Netherlands, although this was counterbalanced by rising NIIPs.

Chart 15

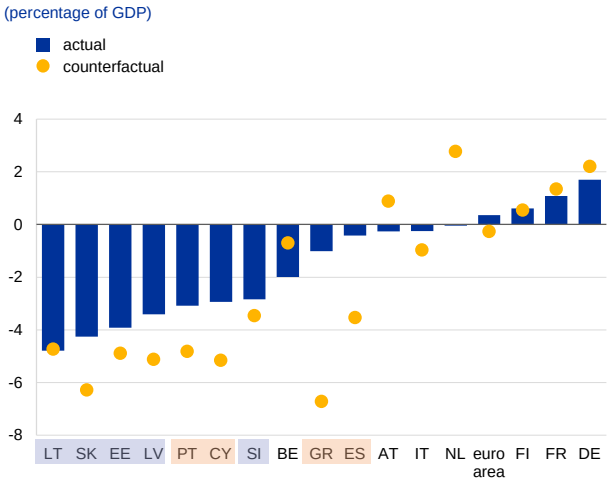
Yields on gross foreign assets/liabilities in 2016



Sources: ECB, Eurostat and ECB staff calculations.
Notes: Aggregate yields are calculated as the ratio of gross investment income in the current year and the corresponding gross position at the end of the previous year. The country codes of the (former) programme countries are highlighted in red, those of the CEE countries in blue.

Chart 16

Investment income balance: Actual and counterfactual



Sources: ECB, Eurostat and ECB staff calculations.
Notes: The counterfactual scenario assumes that aggregate yields return to their 2008 values, while external stocks and nominal GDP remain at their 2016 levels. IE, LU and MT excluded for readability. The country codes of the (former) programme countries are highlighted in red, those of the CEE countries in blue.

In the (former) programme countries, the aggregate yields on external liabilities currently stand at historically low levels and, in some cases, even below the aggregate yields on external assets (**Chart 15**).[31] This partly reflects the decline in interest rates on portfolio debt and "other investment" liabilities, along with a shift from market funding towards more attractive official funding. For instance, the European Stability Mechanism (ESM) currently charges an interest rate of around 1% on funds disbursed under the third programme for Greece. TARGET2 balances

[31] For the drawbacks of this approach, see Curcuru et al. (2008).

are subject to the ECB's main refinancing rate, which is currently zero. The developments in yields on portfolio equity were more heterogeneous across countries and rather volatile. In the CEE countries, aggregate yields on external liabilities remain significantly higher, largely due to yields of up to 10% on liabilities in direct investment. While FDI offers important advantages, such as funding stability, it is relatively expensive. That said, the CEE countries' FDI payments are often state-contingent (e.g. dividends and reinvested earnings). In Germany, the favourable yield spread partly reflects the impacts of safe-haven inflows, but also the solid yield on foreign assets, particularly direct investment.

While the NIIP burden in the (former) programme countries is relatively light at the current juncture, it could increase substantially if aggregate yields were to normalise again. This can be illustrated with a – highly stylised – counterfactual scenario in which external stocks remain at their 2016 values, while aggregate yields return to their 2008 levels. In this scenario, the investment income balance would deteriorate by around 2.4% of GDP, on average, in the euro area debtor countries (**Chart 16**). This would offset substantial parts of the current account adjustments achieved since 2008. Of course, a return of aggregate yields to pre-crisis levels cannot be taken for granted, in particular due to the importance of programme loans with fixed interest rates in some countries. Moreover, the level and the composition of external positions may change going forward. Nevertheless, the scenario illustrates the vulnerability of highly indebted euro area economies to changes in financial conditions and, therefore, the importance of timely policy measures to support a swift and smooth unwinding of external imbalances.

Box 4

An "exorbitant privilege" for the euro area?

For the United States, the literature has documented a persistent excess return on net external assets, which has helped to stabilise the NIIP despite persistent current account deficits.[32] This finding is often linked to the United States' "exorbitant privilege" of being the issuer of the world's leading reserve currency. There is a broad consensus that a large part of the excess return reflects the composition of the US NIIP, with long positions in higher-yielding risky assets and short positions in safe and liquid assets. There is also – more controversial – evidence that the United States persistently earns excess returns within some asset classes, such as FDI. Due to the composition of the US NIIP, excess returns in normal times alternate with losses, i.e. an "exorbitant duty" to maintain long positions, in times of global financial turmoil. Therefore, the role of the United States in the international financial system can be seen as that of a "global insurer" (Gourinchas et al., 2010).

Although the euro is also widely used as a reserve currency, there is no conclusive evidence of a persistent excess return for the euro area as a whole.[33] Over the period 2000-16, the average annual return differential between gross assets and gross liabilities was even slightly negative, standing at -0.3% (Chart A). This reflects a *net valuation loss* of 0.4%, which arose mainly in the

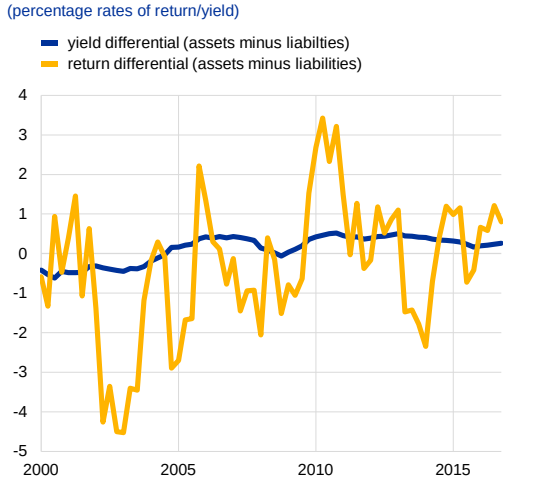
[32] Returns equal the sum of capital/valuation gains and yields. For a recent overview of this literature and the statistical pitfalls, see Gourinchas and Rey (2014), Curcuru et al. (2008) and Curcuru et al. (2013).

[33] Habib (2010) comes to a similar conclusion based on data up to 2007.

first half of the sample when the euro was appreciating. Over the full sample, the euro area earned a positive *yield differential* of 0.1%. The yield differential was relatively persistent, albeit smaller than that usually found for the United States.

Chart A

Euro area: annualised yield and return differentials on external assets and liabilities



Sources: ECB, Eurostat and ECB staff calculations.
Notes: Returns comprise yields and capital/valuation gains, all calculated at the aggregate level. The yield (return) differential is the gap between annualised yields (returns) on gross external assets and gross external liabilities, respectively.

Table A provides a more detailed breakdown of total returns, showing a positive return differential in the post-crisis period (0.6%). The excess return was relatively broad-based across asset classes and reflected a combination of persistent excess yields and capital gains. This contributed to the recent NIIP improvements and helps explain why the euro area usually recorded a surplus in the investment income balance over this period despite its negative NIIP. The excess return in the post-crisis period was driven by favourable return differentials within asset classes, i.e. the "(pure) return effect". It was only partly offset by a negative "composition effect" reflecting an unfavourable distribution of returns across asset classes.

In summary, there is no conclusive evidence of a stable "exorbitant privilege" for the euro area, although the euro area has indeed benefited from favourable return differentials in the most recent years.[34]

[34] Unlike the United States, the euro area does not issue a single safe sovereign asset. The recent literature, such as Gourinchas and Rey (2016), has therefore also examined the returns of "regional safe asset providers", such as Germany. Van Riet (2017) reviews the merits of introducing a single safe sovereign asset for the euro area.

Table A

Euro area: Capital gains, yields and returns on gross external assets and liabilities

(percentage per annum)

	Full sample (2000-16)			Pre-crisis (2000-07)			Financial crisis (2008)			Post-crisis (2009-16)		
	Dif.	Assets	Liab.	Dif.	Assets	Liab.	Dif.	Assets	Liab.	Dif.	Assets	Liab.
	Total											
Capital gain	-0.4	0.3	0.8	-1.0	-1.2	-0.2	-1.4	-7.5	-6.1	0.3	2.9	2.7
Pure return effect	-0.5	-	-	-1.0	-	-	-3.6	-	-	0.6	-	-
Composition effect	0.0	-	-	0.0	-	-	2.1	-	-	-0.3	-	-
Yield	0.1	3.4	3.2	0.0	3.7	3.8	-0.1	3.5	3.6	0.4	3.0	2.7
Pure return effect	0.1	-	-	-0.1	-	-	-0.2	-	-	0.3	-	-
Composition effect	0.1	-	-	0.1	-	-	0.1	-	-	0.1	-	-
Return	-0.3	3.7	4.0	-1.0	2.5	3.6	-1.5	-4.0	-2.5	0.6	6.0	5.4
Pure return effect	-0.4	-	-	-1.1	-	-	-3.7	-	-	0.8	-	-
Composition effect	0.1	-	-	0.1	-	-	2.2	-	-	-0.2	-	-
	Direct investment											
Capital gain	-0.9	1.1	2.0	-2.0	-1.1	0.8	-3.6	-3.1	0.5	0.5	3.8	3.3
Yield	0.4	4.4	4.0	0.1	4.1	4.0	0.1	4.3	4.2	0.7	4.7	4.0
Return	-0.5	5.5	6.0	-1.9	3.0	4.9	-3.5	1.2	4.7	1.3	8.6	7.3
	Portfolio debt securities											
Capital gain	-0.6	-0.2	0.4	-0.5	-1.8	-1.3	-7.6	-3.5	4.1	0.2	1.9	1.7
Yield	0.6	4.0	3.4	0.6	4.9	4.3	0.5	4.3	3.8	0.6	3.1	2.5
Return	0.0	3.8	3.8	0.1	3.1	2.9	-7.1	0.8	7.9	0.8	5.0	4.2
	Portfolio equity											
Capital gain	0.2	1.7	1.5	-1.2	-0.5	0.7	-6.7	-36.1	-29.3	3.1	10.2	7.1
Yield	-1.1	2.2	3.3	-1.3	1.9	3.3	-0.8	2.3	3.1	-0.8	2.5	3.3
Return	-0.9	4.0	4.8	-2.6	1.4	4.0	-7.5	-33.8	-26.3	2.3	12.7	10.4
	Other investment											
Capital gain	-0.3	-0.8	-0.5	-0.3	-1.2	-0.9	0.1	-2.5	-2.6	-0.4	-0.2	0.2
Yield	0.0	2.3	2.4	0.0	3.6	3.6	-0.4	2.9	3.3	0.0	1.1	1.1
Return	-0.3	1.6	1.9	-0.3	2.4	2.7	-0.2	0.4	0.7	-0.4	0.9	1.3

Sources: ECB, Eurostat and ECB staff calculations.
Note: Differentials exceeding 0.5% are highlighted in green, those below -0.5% in red.

4 The prospects for a smooth unwinding of external stock imbalances

As shown in the previous chapters, a number of euro area countries currently record large net foreign liabilities, often coupled with other vulnerabilities embedded in the international balance sheet. Against this backdrop, this chapter examines the prospects for the unwinding of external stock imbalances in the euro area. Section 4.1 studies the baseline scenario, while Section 4.2 makes the case for a more ambitious rebalancing. Section 4.3 discusses different policy options aimed at supporting a smooth adjustment process. The forward-looking assessment is based on a simple tool for medium-term NIIP projections (**Box 5**).

Box 5

A simple tool for medium-term NIIP projections

The analysis in this chapter is based on a tool providing medium-term NIIP projections for the euro area and all euro area countries. The tool is essentially an accounting framework based on balance of payments identities, most importantly the law of motion for the NIIP:

$$\boldsymbol{niip_t = \frac{1+v_t}{1+g_t} niip_{t-1} + ca_t + e_t} \qquad (1a)$$

$$= \sum_i \boldsymbol{\frac{1+r_t^i}{1+g_t}[a_{t-1}^i - (1+\theta_t^i) l_{t-1}^i] + tb_t + oi_t + e_t} \qquad (1b)$$

Here, $niip_t$ denotes the NIIP in period t, a_t^i (l_t^i) gross external assets (liabilities) for asset i, ca_t the current account balance, tb_t the trade balance, oi_t the balance on "other income" (secondary income plus non-investment primary income) and e_t net errors/omissions (all variables relative to GDP). g_t is nominal GDP growth, v_t the aggregate capital gains rate, r_t^i the total rate of return on asset i (covering yields and capital gains) and θ_t^i the corresponding return differential between assets and liabilities.

In its simplest form (equation 1a), the tool requires only assumptions on the evolution of the current account balance and nominal GDP growth, provided that net errors/omissions and valuation effects even out over the medium term. Being entirely mechanical in nature, the tool abstracts from feedback from the NIIP to nominal GDP growth, external flows or returns. Moreover, the endogenous feedback from the NIIP to the current account balance, via investment income, is shut down as long as the current account projections are exogenous. The feedback loop is opened up in the augmented model (equation 1b). However, this increases the model size (via additional book-keeping identities) and requires projections of future returns, ideally by asset class. Such projections are non-trivial and subject to considerable uncertainty. Therefore, this paper mainly draws on the basic model, while the augmented one can be used for scenario analyses.

Table 4

External sustainability heat map

(percentage of GDP, percentage per annum)

	NIIP level				Assumptions (1)	
	2008	2016	2020	2025	Current account (2)	Nominal GDP growth (3)
A. Debtor countries						
(a) (Former) programme countries						
IE	-95.8	-185.3	-139.7	-93.1	4.1 (-0.8)	4.6 (6.9)
GR	-75.8	-136.5	-115.5	-96.7	0.6 (-6.0)	3.3 (1.9)
ES	-80.2	-85.7	-65.2	-43.3	2.4 (-3.0)	3.6 (4.0)
CY	-79.1	-125.4	-115.4	-103.2	-1.8 (-5.2)	3.8 (3.9)
PT	-95.1	-105.1	-92.7	-84.5	-0.3 (-5.3)	2.8 (2.9)
(b) CEE countries						
EE	-75.4	-37.4	-25.1	-23.0	0.1 (-3.4)	5.8 (8.2)
LV	-74.2	-58.2	-38.9	-21.7	1.8 (-4.7)	6.1 (8.2)
LT	-51.5	-43.3	-34.0	-27.7	0.0 (-3.1)	5.3 (6.2)
SI	-39.4	-34.5	-11.3	6.4	4.1 (0.1)	3.8 (5.4)
SK	-58.1	-58.1	-39.8	-18.3	2.5 (-2.8)	5.2 (6.4)
B. Other euro area countries						
FR	-13.8	-15.8	-14.8	-10.0	0.2 (0.5)	3.2 (2.8)
IT	-21.7	-14.9	-7.0	-2.2	1.2 (-0.3)	2.2 (2.2)
FI	-4.6	7.1	2.1	-1.9	-0.9 (2.7)	3.4 (3.2)
BE	51.8	49.5	48.3	49.7	1.6 (1.6)	3.4 (3.3)
DE	18.2	54.4	78.8	103.1	7.7 (4.6)	3.0 (2.5)
LU	16.3	23.2	34.3	47.6	4.4 (7.3)	5.0 (6.4)
MT	4.2	47.4	64.3	81.2	6.9 (0.0)	5.2 (6.2)
NL	-8.1	75.9	102.0	127.7	8.8 (5.9)	3.1 (3.3)
AT	-10.1	5.2	12.7	20.6	2.1 (1.7)	3.2 (3.3)
C. Euro area						
EA	-17.6	-5.9	6.6	19.7	3.0 (0.5)	3.1 (2.9)

(1) Average over projection horizon (2017-25), historical average (1999-2016) in parentheses.
(2) Combined current and capital account as a percentage of GDP.
(3) Nominal GDP growth, percentage per annum.
Source: ECB staff calculations.
Notes: The assumptions on the current account balance and nominal GDP growth follow the IMF's World Economic Outlook until 2022 before converging linearly to longer-term "steady state" levels until 2025. More specifically, the output gap closes gradually and inflation returns to levels below, but close to, 2%. The combined current and capital account balance remains constant at its 2022 level, except for adjustments for changes in the output gap. The colour codes indicate the risk categories, i.e. low risk (green), heightened risk (yellow) and substantial risk (red). The corresponding NIIP thresholds are -35% and -50% of GDP.

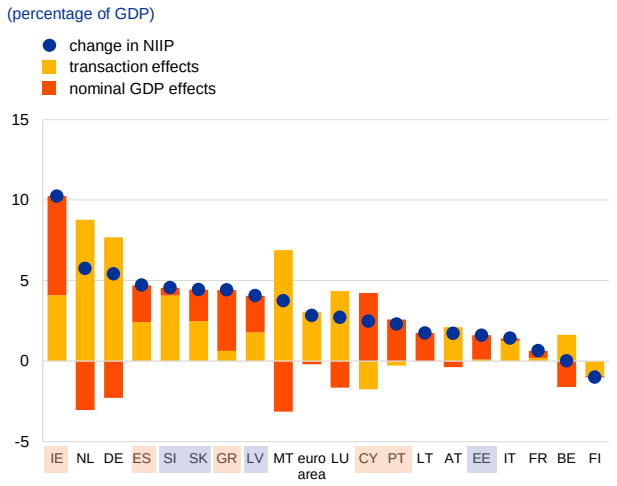
4.1 Baseline scenario

In order to obtain medium-term NIIP projections, the tool described in **Box 5** is fed with exogenous forecasts for real GDP growth, inflation and external flows for the period 2017-25. For the baseline scenario, the assumptions follow the forecasts entailed in the IMF's World Economic Outlook (WEO) of April 2017 until 2022, i.e. the last year available. Thereafter, the output gap is assumed to close gradually (sometimes starting from positive levels) and inflation returns to levels below, but

close to, 2%. The combined current and capital account balance remains constant at its 2022 level, except for adjustments for changes in the output gap.[35] Valuation effects are assumed to cancel out over the medium term, consistent with the historical evidence for euro area countries. Of course, mechanical projections extending over such a long time horizon are subject to a considerable degree of uncertainty. Nevertheless, they provide a useful yardstick, indicating what the currently foreseen mix of external flow adjustment and nominal GDP growth implies for external stock imbalances.

Chart 17

Contributions to the average annual NIIP changes between 2016 and 2025 under the baseline



Source: ECB staff calculations.
Notes: "Transaction effects" correspond to the change in the NIIP explained by net financial flows. The mechanical impacts of changes in the denominator of the NIIP-to-GDP ratio are captured by the "nominal GDP effects". The country codes of the (former) programme countries are highlighted in red, those of the CEE countries in blue.

According to the baseline projections, the external stock imbalances in the (former) programme countries will remain at elevated levels over the next ten years, despite a gradual unwinding (**Table 4**). Starting from an NIIP of -86% in 2016, Spain is projected to reach an NIIP of -43% in 2025, which is in the "yellow" risk category (as defined in Section 3.2). The other (former) programme countries are projected to remain in the "red" risk category, despite significant NIIP improvements. As regards the pace of adjustment, Ireland is likely to see the fastest unwinding of its stock imbalances, while the trajectory is significantly flatter in Cyprus and Portugal. The net foreign liabilities of the CEE countries are projected to return to more sustainable levels below 35% by 2025. This partly reflects their more favourable starting positions, but also significant adjustments going forward.

The NIIPs of most creditor countries are projected to increase further, reaching levels above 100% in Germany and the Netherlands. Net creditor positions at such levels are unusual in an international comparison. While not giving rise to external crisis concerns, they create signification exposure to valuation effects as well as credit and interest rate risks. Finland is the only euro area country for which the IMF projections imply an NIIP deterioration. The euro area as a whole is set to become a net external creditor soon for the first time since the inception of the euro.

In most of the debtor countries, the projected NIIP improvements between 2016 and 2025 are driven by a combination of sustained current account surpluses, i.e. "transaction effects", and nominal GDP growth (**Chart 17**). However, the relative importance of these two channels varies significantly across countries. In Ireland and Slovenia, transaction effects make a particularly important contribution to the projected NIIP improvements, reflecting sizeable external surpluses.

[35] An adjustment coefficient of around -0.4 is used, in line with the estimates described in the Appendix.

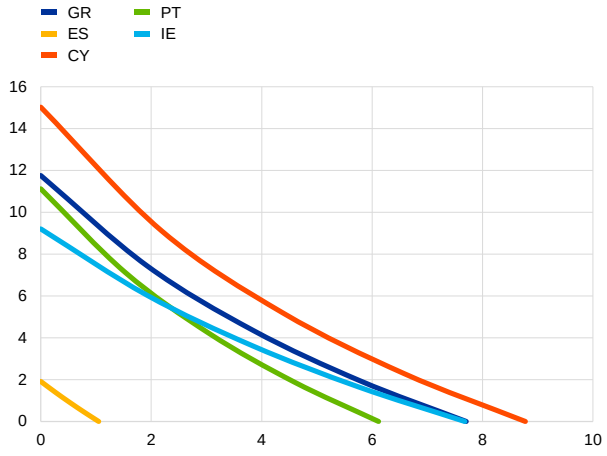
4.2 The case for more ambitious adjustment efforts

The baseline projections suggest that additional adjustment efforts – going beyond those entailed in the baseline – are needed in the (former) programme countries to bring the NIIP to more sustainable levels over the medium term.[36] Some CEE economies might also benefit from further adjustments, which would create NIIP "safety margins" and thereby increase their resilience to shocks. The concrete adjustment needs vary across countries and depend critically on the NIIP target.

Chart 18

Adjustments needed to lift the NIIP to -35% of GDP by 2025

(deviation from baseline; percentage points; x-axis: combined current and capital account; y-axis: nominal GDP growth)



Source: ECB staff calculations.
Notes: For a given country, the isoquant shows all combinations of adjustments in external flows and nominal GDP growth that are sufficient to lift the NIIP to -35% of GDP by 2025. The values refer to a permanent upward shift in the projected paths for nominal GDP growth and external flows over the entire forecast horizon.

A halving of net foreign liabilities from their current levels appears to be within reach in many (former) programme countries (**Table 5**). The corresponding adjustment needs pale in comparison to the corrections already achieved since the crisis. The adjustment needs would be more sizeable in Cyprus, mainly due to the mediocre current account path currently entailed in the IMF projections. By contrast, Spain could even reach the more ambitious MIP target of -35% by 2025. This would require a permanent increase in the combined current and capital account balance by 1.0% of GDP relative to the baseline, a permanent boost to annual nominal GDP growth by 1.9 percentage points or a combination of smaller adjustments in both variables (**Chart 18**). For the other (former) programme countries, the adjustments needed to reach the MIP target by 2025 appear to be implausible in view of the historical averages, highlighting the limits to the NIIP adjustments that can realistically be expected.

Even the gradual adjustments foreseen in the baseline could turn out to be too optimistic. The baseline projections are predicated on two implicit assumptions, inherited from the underlying IMF forecasts. First, the largest part of the post-crisis current account adjustment is regarded as non-cyclical. Second, nominal GDP growth is expected to be relatively robust over the medium term. If one or both of these premises turned out to be false, the unwinding of external imbalances would be at stake and could be derailed entirely in some countries.

[36] It is also possible to calculate the current account balance that would be needed to stabilise the NIIP. However, this approach is of little relevance in this context, given the starting position of very high net foreign liabilities in many euro area countries.

Table 5

Sensitivity analysis: NIIP level in 2025 if the baseline assumptions are relaxed

(percentage of GDP)

		GR	ES	CY	PT	IE
Current account balance exceeds baseline by…	**0.0**	-97	-43	-103	-84	-93
	1.0	-89	-35	-95	-76	-86
	2.0	-81	-27	-88	-68	-78
	3.0	-73	-20	-80	-60	-70
	4.0	-65	-12	-72	-52	-63
	5.0	-57	-4	-64	-44	-55
Nominal GDP growth exceeds baseline by…	**0.0**	-97	-43	-103	-84	-93
	1.0	-88	-39	-95	-78	-84
	2.0	-81	-35	-88	-71	-76
	3.0	-74	-31	-82	-66	-68
	4.0	-68	-28	-76	-61	-61
	5.0	-62	-25	-70	-56	-55
Current account balance and nominal GDP growth exceed baseline by...	**0.0**	-97	-43	-103	-84	-93
	1.0	-81	-31	-88	-70	-77
	2.0	-66	-20	-74	-56	-62
	3.0	-52	-10	-60	-44	-48
	4.0	-40	0	-48	-33	-35
	5.0	-28	9	-37	-22	-23

Source: ECB staff calculations.
Notes: In each block, the first row reports the NIIP levels in 2025 under the baseline. The next rows show the NIIP levels prevailing if the assumptions about the current account balance (Block 1), nominal GDP growth (Block 2) or both (Block 3) are relaxed. For instance, the second row in Block 3 refers to a scenario in which both the current account balance and nominal GDP growth are boosted by 1 percentage point relative to the baseline over the entire forecast horizon. The shaded cells indicate the minimum adjustment effort needed to halve the NIIP compared with current levels.

The fragility of the projected unwinding of external stock imbalances can be illustrated by means of three adverse scenarios. As a caveat, it should be stressed that all scenarios are entirely mechanical, focusing on one adjustment channel while ignoring possible ramifications through other channels. In the *first* scenario, the current account balance gradually returns to its country-specific historical average, which amounts to a deterioration by 1-4% of GDP in the debtor countries compared with the baseline. This adverse scenario results in significantly weaker NIIP levels in all debtor countries in 2025 (**Table 6**). In the *second* adverse scenario, the projected path for annual nominal GDP growth is lowered by 1.5 percentage points over the entire forecast horizon. In this “secular stagnation” scenario, the NIIPs of the debtor countries also deteriorate notably compared with the baseline. The *third* scenario replicates the – highly stylised – counterfactual presented in Section 3.4, assuming that aggregate yields gradually return to their 2008 levels and thereby affect the investment income balance. If yields were to normalise, the unwinding of external stock imbalances could be slowed down markedly in several euro area debtor countries and derailed entirely in others. The (former) programme countries appear particularly exposed to a future normalisation in aggregate yields. Notably, this stylised scenario does not take into account that interest rates on programme loans are fixed. Moreover, the WEO forecasts underlying the baseline already incorporate

some increases in yields. Hence, the scenario is likely to overstate the impacts of a normalisation in market yields.

Table 6

Scenario analysis: NIIP level in 2025

(percentage of GDP)

	Memo: 2016	Baseline	Scenario 1: Flow reversal	Scenario 2: Secular stagnation	Scenario 3: Yield normalisation
A. Debtor countries					
(a) (Former) programme countries					
IE	-185.3	-93.1	-115.7	-108.5	-132.5
GR	-136.5	-96.7	-132.8	-110.8	-140.3
ES	-85.7	-43.3	-67.6	-51.0	-66.7
CY	-125.4	-103.2	-118.8	-116.5	-119.7
PT	-105.1	-84.5	-104.4	-96.1	-97.8
(b) CEE countries					
EE	-37.4	-23.0	-30.4	-25.8	-29.8
LV	-58.2	-21.7	-33.8	-25.6	-33.4
LT	-43.3	-27.7	-35.4	-31.3	-27.3
SI	-34.5	6.4	-1.7	5.0	1.8
SK	-58.1	-18.3	-41.4	-22.4	-32.5
B. Other euro area countries					
FR	-15.8	-10.0	-12.9	-11.6	-8.0
IT	-14.9	-2.2	-3.8	-3.2	-7.8
FI	7.1	-1.9	14.4	-1.6	-2.5
BE	49.5	49.7	47.8	55.4	59.3
DE	54.4	103.1	91.5	112.6	107.0
LU	23.2	47.6	56.4	51.4	48.9
MT	47.4	81.2	55.4	88.1	122.9
NL	75.9	127.7	120.0	140.0	149.1
AT	5.2	20.6	19.7	22.2	29.3
C. Euro area					
EA	-5.9	19.7	9.7	20.5	14.9

Source: ECB staff calculations.
Notes: In Scenario 1, the current account balance gradually returns to its long-term average. In Scenario 2, the projected path for nominal GDP growth is lowered by 1.5 percentage points throughout the forecast horizon. Scenario 3 assumes that aggregate yields return to their pre-crisis levels, resulting in mechanical changes to investment income and the current account. The colour codes indicate the risk categories, i.e. low risk (green), heightened risk (yellow) and substantial risk (red). The corresponding NIIP thresholds are -35% and -50% of GDP.

4.3 Policy options

Given current policies, the unwinding of external stock imbalances over the coming decade is likely to remain gradual and incomplete in several euro area debtor countries (Section 4.2). An important lesson from the recent crisis is that external imbalances, if allowed to fester for too long, are a source of vulnerabilities. Such vulnerabilities could become particularly acute if aggregate yields were to increase again towards pre-crisis levels. Against this backdrop, a timely and well-designed

policy response would provide critical support to the orderly unwinding of the remaining external stock imbalances in the euro area.

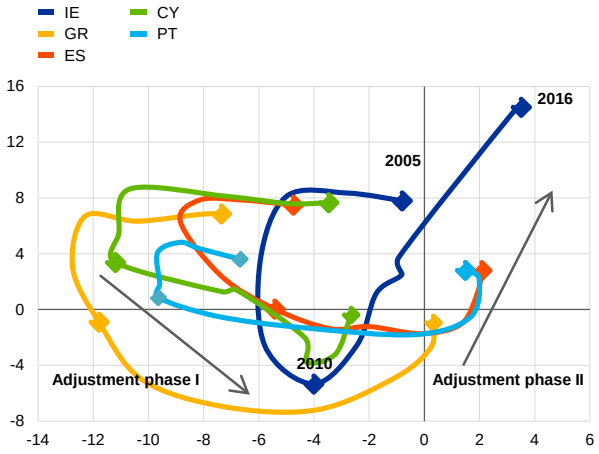
Broadly speaking, there are two levers for policy action: (i) facilitating a faster repayment of external liabilities; and (ii) helping the economy to "grow out" of the liabilities incurred in the past. The first avenue focuses on sustained current account surpluses in the euro area debtor economies, while the second links to their nominal GDP growth. Although these two levers are not under the direct control of policymakers, they can be influenced indirectly.

Each of these policy levers has its limitations and cannot successfully be employed in isolation. Reducing external stock imbalances at an adequate speed only by paying down liabilities would require very large and sustained current account surpluses (Section 4.2). It is difficult to see how a current account correction could be quickly achieved on such a scale without a severe compression of domestic demand, which would thwart the adjustment efforts. Similarly, relying on denominator effects alone would require implausibly high GDP growth. Even if such a growth spurt could be orchestrated, it would arguably boost imports and thereby counteract the initial NIIP improvements. Hence, an optimal policy mix consists of measures simultaneously fostering sustainable current account improvements and longer-term nominal GDP growth. Put differently, a policy mix ensuring internal and external (flow) equilibrium is also conducive to the unwinding of the remaining external stock imbalances in the euro area.

Chart 19

External flows and nominal GDP growth in the (former) programme countries since 2005

(x-axis: combined current and capital account balance, percentage of GDP, y-axis: nominal GDP growth, percentage per annum; three-year arithmetic averages)



Sources: IMF and ECB staff calculations.

Sustained current account surpluses can indeed be reconciled with a dynamic recovery, since the euro area debtor countries are able to build on the adjustments in relative prices achieved over recent years. At first, the current account reversals in the debtor countries were associated with a sharp slowdown in economic activity (**Chart 19**). Yet, with the concomitant adjustment in relative prices, export performance started to improve. This paved the way for a pick-up in nominal GDP growth and improved current account balances. IMF projections envisage a continuation of this trend over the coming years in most euro area debtor economies. Deepening and extending this ongoing adjustment should be a policy priority.

Targeted *structural reforms* must play a central role in supporting the smooth unwinding of external stock imbalances in the euro area. Structural policies aimed at fostering productivity growth might be particularly effective, since higher productivity simultaneously boosts an economy's growth potential and firms' international competitiveness. Reforms could also address structural rigidities inhibiting firms from exporting. The

optimal design of such reforms depends on existing country-specific frictions.[37] Such reforms could be flanked by measures tailored to vulnerabilities embedded in the international balance sheets, particularly on the liabilities side. Enhancing the framework conditions for FDI could stabilise financial flows in turbulent times and improve the debt repayment capacity. A gradual reduction of the debt bias in national regulation and taxation could help to reduce excessive debt-to-equity ratios in the NIIP. At the EU level, the planned capital markets union could enhance international risk-sharing through equity instruments. Given the lack of fiscal space in many debtor countries, *fiscal policy* can best serve external sustainability by restoring sound public finances and bolstering the public sector's debt service capacity. As regards *monetary policy*, price stability in the euro area creates a fertile ground for sustainable nominal GDP growth. Euro area inflation in line with the ECB's definition of price stability also facilitates the adjustment in relative prices within the euro area, allowing debtor economies to improve their intra-area price competitiveness without outright declines in prices and wages. Since international trade and investment are important engines of growth, a shift towards global protectionism would be detrimental to the unwinding of external stock imbalances in the euro area.

From an external sustainability perspective, the adjustment needs in the euro area creditor countries are less acute than those in the debtor countries. However, large and increasing net foreign assets expose these economies to valuation effects and credit risk. Moreover, the future return on those net foreign assets could turn out to be lower than in the past if the current environment of low aggregate yields were to persist. Against this backdrop, growth-enhancing policies would be particularly effective in stabilising the large net foreign assets and current account surpluses recorded in some euro area countries. Reforms could aim at stimulating competition and productivity in the services sector. Improved framework conditions, for instance with regard to the tax system, could strengthen private investment incentives. By stimulating investment, such policies would also boost potential output and, thus, living standards over the long run.

[37] The empirical evidence on the relationship between the NIIP and structural policies is not clear cut. While some of these policies appear to be negatively correlated with the NIIP, several measures are also associated with a more benign NIIP composition, with a shift away from debt towards FDI. See Furceri et al. (2011), Lane and Milesi-Ferretti (2008), OECD (2011) and WGEM (2012).

5 Conclusions

Since the onset of the global financial crisis, several euro area countries have achieved remarkable progress with the correction of excessive current account deficits and real exchange rate misalignments. This has helped to put the ongoing economic recovery in the euro area on a solid footing. However, there is no room for complacency, since large net foreign liabilities persist in several countries as a lasting legacy of the crisis period and the exuberant pre-crisis years.

Indeed, the findings of this paper suggest that external stock imbalances remain a source of vulnerabilities in the (former) programme countries and, to a lesser extent, the CEE countries. The net foreign liabilities in these economies continue to stand at levels that are typically associated with an increased susceptibility to external crises. Mechanical projections indicate that the net foreign liabilities of the (former) programme countries will also remain at elevated levels over the next decade despite some gradual adjustments, while those of the CEE countries could return to more sustainable levels more quickly. There are also vulnerabilities related to the NIIP composition, most notably the unfavourable debt-equity mix in the (former) programme countries. However, the long maturity of public external debt – which is often owed to official creditors – and, in the CEE countries, the prevalence of stable foreign direct investment should mitigate external sustainability risks. Furthermore, the net payments associated with the external positions of the euro area debtor countries are relatively low at the current juncture, although the burden could increase markedly if euro area interest rates were to normalise.

A timely and well-designed policy response would provide critical support to the orderly unwinding of the remaining external stock imbalances in the euro area. An optimal policy mix would consist of measures simultaneously fostering GDP growth and sustainable current account improvements in the debtor economies. Only a combination of these two adjustment channels is likely to achieve sufficiently large NIIP improvements over the medium term. Against this backdrop, it is imperative that reform momentum in the euro area debtor countries be maintained. Reforms aimed at fostering productivity growth and export performance should take centre stage, flanked by measures to enhance the framework conditions for FDI. In the creditor countries, growth-enhancing policies – such as the opening-up of services markets and improved investment incentives – would not only help to stabilise the external positions of these economies but could also facilitate the adjustment in the debtor economies. At the global level, it is essential to preserve the open exchange of products and ideas, one of the most powerful drivers of long-term prosperity. Taken together, such a policy agenda would help ensure that the legacy of external stock imbalances gradually disappears, allowing the euro area economy to emerge from the crisis years with stronger and more resilient foundations.

Appendix
An empirical current account model

This Appendix describes the empirical current account model used in **Box 1**. In the vein of the IMF's External Balance Approach (EBA), the model relates the current account balance, expressed as a percentage of GDP, to a broad set of determinants.[38] The model is estimated in a panel covering 55 advanced and emerging economies over the period 1985-2015 at annual frequency, using the Prais-Winsten methodology.[39] The results are consistent with theoretical priors and the IMF estimates (Table A):

Cyclical variables:

- Output gap: A positive output gap, relative to the rest of the world, is typically associated with higher investment, lower saving and therefore a more negative current account balance.
- Oil price fluctuations: Oil importers tend to record larger current account deficits if the oil price is unusually high. Therefore, the regression controls for deviations of the oil price from its (HP-filtered) trend (and an economy's status as an oil importer or exporter, as discussed below).

Fundamental variables:

- Productivity/level of development: Economies with a higher level of productivity and income tend to witness higher capital outflows.
- Expected GDP growth five years ahead: Higher medium-term growth potential goes hand in hand with a less positive current account balance, in particular due to higher domestic investment.
- Demographic factors: The model captures several demographic variables that were found to be statistically significant, in particular the old-age dependency ratio, population growth and two demographic interaction terms capturing the impact of aging speed (defined as in the IMF's EBA approach). Rapidly aging economies tend to register a more positive current account balance. The opposite holds for countries with fast population growth and a high old-age dependency ratio (due to dissaving).
- NIIP: Larger net foreign liabilities give rise to larger income payments to the rest of the world and a more negative current account balance. The effect is reversed at some point, possibly due to sustainability concerns.

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38 For a detailed description of the approach, see Phillips et al. (2013). For a similar framework using Bayesian Model Averaging, see European Commission (2012).

39 Hence, the standard errors take into account heteroscedastic and auto-correlated disturbances.

- Oil exporter status: Economies with (exhaustible) oil endowments often register current account surpluses for the sake of consumption smoothing.
- Reserve currency status: Economies whose currency accounts for a significant share of world reserves are able to finance larger current account deficits ("exorbitant privilege").
- Financial centre: Small economies acting as financial centres often record current account surpluses, for reasons that are still not fully understood.
- Global risk aversion: If global risk aversion, as measured by the VIX/VXO, increases, this goes hand in hand with more positive current account balances (capital outflows) in countries with open capital accounts. In reserve currency countries, this effect is offset by flight-to-safety inflows.
- Domestic capital market conditions: In euro area programme countries, a measure of sovereign credit risk is positively associated with the current account balance during the sovereign debt crisis, arguably reflecting capital flight in the event of a deterioration in investors' risk assessment. While this variable is not included in the IMF EBA regression, it helps explain recent current account dynamics in the euro area.

Policy variables:

- Fiscal policy (instrumented): Loose fiscal policy, as measured by the cyclically adjusted fiscal balance, goes hand in hand with a more negative current account balance (refuting Ricardian equivalence). Notably, the coefficient measures the effect for a given output gap. Fiscal policy is instrumented to mitigate endogeneity issues.
- Social policies: Higher levels of public health care spending tend to diminish private saving and thereby the current account balance.
- Structural policies: Structural rigidities, proxied by the natural unemployment rate, are found to be negatively correlated with the current account balance (for a given output gap). This could reflect their adverse impact on firms' investment decisions and export performance.
- Foreign exchange interventions (instrumented): FX interventions, as proxied by the change in international reserves, are positively associated with the current account balance. The effect depends on the degree of capital account openness. The FX policy variable is instrumented to account for endogeneity issues.
- Financial policies: Loose financial policies, as proxied by the credit-to-GDP ratio (demeaned), are associated with a more negative current account.
- Capital account policies: The degree of a country's capital account openness, measured by the Chinn-Ito index, enters the regression in the form of several interaction terms.

The model can in principle also be used for the calculation of current account benchmarks, i.e. the current account balance that would be justified by fundamentals and desired policies. However, this avenue is not explored in this paper.

Table A

Current account model: Regression results

Dependent variable: CA/GDP		
Output gap	-0.452	***
L. Oil trade balance* Oil price (cyclical gap)	0.474	***
L. Relative output per worker	0.031	*
L. Relative output per worker* Capital account openness	0.054	**
GDP growth, 5-year-ahead forecast	-0.427	***
Oldage dependency ratio	-0.169	***
Population growth	-0.672	*
Relative old-age dependency ratio x Aging speed	0.062	*
Relative aging speed x Old-age dependency ratio	0.115	**
L. NIIP/GDP	0.021	***
L. NIIP/GDP* (Dummy if NIIP/GDP < -60%)	-0.030	**
Oil trade balance (5-yr mean)* Oil exporter dummy	0.150	*
Currency's share in world reserves	-0.061	***
Financial centre dummy	0.023	**
Credit risk rating* Dummy EA programme country	0.005	***
Cyclically-adjusted fiscal balance, instrumented	0.485	***
(Δ Reserves)/GDP* Capital account openness, instrumented	0.426	***
Structural rigidities	-0.147	***
Private credit/GDP, demeaned	-0.033	***
L. Public health care spending/GDP	-0.394	**
L. demeaned VXO* Capital account openness	0.015	
L. demeaned VXO* Capital account openness* Currency's share in world reserves	-0.005	
Constant	-0.009	***
Observations	1,282	
Number of countries	55	
R-squared	0.41	

Source: ECB staff estimations.
Notes: (*) significant at 10%, (**) significant at 5%, (***) significant at the 1% level based on heteroscedasticity-corrected z-values. Most variables are constructed relative to the rest of the world. "L" is the first lag. Estimated using the Prais-Winsten methodology.

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Abbreviations

Countries

BE	Belgium	**CY**	Cyprus	**SI**	Slovenia
DE	Germany	**LV**	Latvia	**SK**	Slovakia
EE	Estonia	**LT**	Lithuania	**FI**	Finland
IE	Ireland	**LU**	Luxembourg	**JP**	Japan
GR	Greece	**MT**	Malta	**UK**	United Kingdom
ES	Spain	**NL**	Netherlands	**US**	United States
FR	France	**AT**	Austria		
IT	Italy	**PT**	Portugal		

In accordance with EU practice, the EU Member States are listed in this report using the alphabetical order of the country names in the national languages.

Others

CEE	central and eastern European
EBA	External Balance Approach
ECB	European Central Bank
EMU	Economic and Monetary Union
ESM	European Stability Mechanism
EU	European Union
EUR	euro
FDI	foreign direct investment
FX	foreign exchange
GDP	gross domestic product
IEBC	intertemporal external budget constraint
IMF	International Monetary Fund
MFI	monetary financial institution
MIP	macroeconomic imbalance procedure
NIIP	net international investment position
OECD	Organisation for Economic Co-operation and Development
TARGET2	second generation of the Trans-European Automated Real-time Gross settlement Express Transfer system
USD	US dollar
VIX	Chicago Board Options Exchange's Volatility Index
VXO	Chicago Board Options Exchange's S&P 100 Volatility Index
WEO	World Economic Outlook

Conventions used in the tables

"-" data do not exist/data are not applicable
"." data are not yet available

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