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Reducing large net foreign liabilities

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Abstract

In light of persistently large net foreign liability (NFL) positions in several euro area countries, we analyse 138 episodes of sizeable NFL reductions for a broad sample of advanced and emerging economies. We provide stylised facts on the channels through which NFLs were reduced and estimate factors which make episodes 'stable', i.e. sustained over the medium term. Our findings show that while GDP growth and valuation effects contribute most to NFL reductions overall, stable reduction episodes also require positive transaction effects (i.e. current account surpluses), in particular in advanced economies. Considering the different components of a country's external balance sheet, we observe that reduction episodes were almost exclusively driven by a decline in gross external liabilities in emerging economies, while in advanced economies also gross external asset accumulation contributed significantly, in particular in stable episodes. Our econometric analysis shows that NFL reductions are more likely to be sustained if a country records strong average real GDP growth during an episode and exits the episode with a larger current account surplus. Moreover, we find evidence that nominal effective exchange rate depreciation during an episode is helpful for achieving episode stability in the short run, while IMF programmes and sovereign debt restructurings also contribute to longer term stability.

Keywords: net foreign assets, external imbalances, stock imbalances, external adjustment, valuation effects

JEL Classification: F21, F32, F34.

Non-technical summary

External macroeconomic imbalances and vulnerabilities have been on the radar of policy-makers for a long time. While the literature has mainly studied current account imbalances and their reversals, fewer papers have focused on external stock imbalances and their unwinding. Given the vulnerabilities associated with external stock imbalances, the results in our paper are instructive in terms of providing lessons from past episodes of sustained reductions of large net foreign liability (NFL) positions. In the euro area, vulnerabilities from large net foreign liabilities are currently particularly pressing, even though most euro area countries with large pre-crisis current account deficits have seen a significant correction of external flows over recent years. However, external stock imbalances — as reflected in NFL positions — remain large for a number of euro area countries. Against this background the contribution of our paper is twofold: first, it provides an overview of the channels of sizable NFL reduction episodes (in excess of ten percentage points of GDP), using different accounting decompositions of a country's external balance sheet. Second, our paper analyses econometrically which macroeconomic fundamentals render episodes of NFL reductions more 'stable', i.e. sustained over the medium-term.

Across 138 reduction episodes for a broad sample of advanced and emerging economies, we find that growth and valuation effects (arising from asset price and exchange rate movements) contributed most to reductions of NFLs overall, while episodes sustained over the medium term require positive transaction effects (i.e. current account surpluses). This broad pattern is also found for advanced economies: in particular, the longer an episode is stable, the larger becomes the importance of transaction effects, while the role of valuation effects declines and GDP growth effects remain important. In the case of emerging economies stable episodes are also characterised by positive transaction effects, but these are much smaller than for advanced economies, while GDP growth effects are by far the largest contributor to both stable and non-stable episodes.

Considering the different components of a country's external balance sheet, we find that in stable NFL reduction episodes, advanced economies record an increase in external assets (in FDI, portfolio equity and debt assets), while in emerging economies reductions in debt liabilities and to a lesser extent reserve accumulation contribute to stability. Taken together, this implies that transaction effects (i.e. current account surpluses) in the case of advanced economies allow for net capital outflows (i.e the accumulation of foreign assets) in stable episodes, while for emerging economies sizeable GDP growth effects lead to a reduction in outstanding foreign liabilities, thereby contributing to episode stability.

Formal econometric analysis shows that NFL reduction episodes are more likely to be sustained for longer if a country records strong average real GDP growth during an episode and exits the episode with a larger current account surplus. Moreover, we find evidence that nominal exchange rate depreciation during the episode is helpful for achieving episode stability in the short run, while IMF programmes and sovereign debt restructuring also contribute to long-term stability.

In sum, our analysis shows that euro area countries with large NFL positions are highly likely to need a combination of both strong economic growth and sizeable current account surpluses to unwind their external stock imbalances in a sustained way. Valuation effects on the other hand are not found to be a reliable source of stable NFL reductions. This, in turn, calls for growth-enhancing economic policies and structural reforms to unwind external stock imbalances in the euro area.

1 Introduction

In the context of global financial integration over the past decades, countries have been increasingly lending and borrowing across borders. The bulk of international financial integration occurred in advanced economies whose foreign assets and liabilities, relative to GDP, increased eight-fold since the 1970s and reached more than 400% of GDP in the early 2000s (Figure 1).[1] Nevertheless, emerging market economies (EMEs) were also participating in the process of global financial integration as their total foreign assets and liabilities (relative to GDP) doubled over the same period, albeit to only a quarter of the level observed for advanced economies.[2]

According to the neo-classical growth model, increased financial integration ensures that capital is allocated across countries to its most productive usage. This implies that being a net borrower, i.e. having more external liabilities than assets can be desirable. It also brings potential benefits in terms of financial risk-taking and international risk-sharing (Obstfeld, 1994) as well as improved intertemporal consumption smoothing resulting, inter alia, in lower consumption volatility (Bekaert et al., 2006).

On the other hand, persistent and large net foreign liabilities (NFLs), resulting from growing global current account imbalances in the run-up to the crisis and reflected in higher net foreign asset dispersion (Figure 2), also entail increased external macroeconomic vulnerabilities. Indeed, large NFLs increase the risk of an external crisis (e.g. Catao and Milesi-Ferretti, 2014) and can lead to disruptive corrections and crises when capital inflows suddenly stop. In such instances, domestic economic activity tends to drop severely and defaults on external liabilities are likely.

In the euro area, vulnerabilities from large NFLs are currently particularly pressing, even though most euro area countries with large pre-crisis current account deficits have seen a significant correction of external flows over recent years. However, their external stock positions — as reflected in NFL positions — remain large (Figure 3). In fact, nine euro area countries breached the European Commission's Macroeconomic Imbalances Procedure (MIP) threshold of -35% of GDP (which the European Commission regards as an indication of possibly excessive net foreign liabilities) at the end of 2016, with Ireland, Greece, Cyprus and Portugal even recording net foreign liabilities in excess of 100% of GDP. Such levels pose risks to external sustainability even when taking into account that a substantial part reflects official funding – in the form of EU/IMF programme financing and TARGET2 liabilities – with low interest rates.

Against this background the contribution of our paper is twofold: first, it provides an overview of the channels of sizable NFL reduction episodes (in excess of ten percentage points of GDP), using different accounting decompositions of a country's external balance sheet, comprising gross external assets and liabilities. Second, our paper analyses econometrically which macroeconomic fundamentals make episodes of NFL reductions more 'stable', i.e. sustained over the medium-term.

Our paper builds on several strands of literature. First, with external imbalances and vulnerabilities having been on the radar of policy-makers for a long time, the literature has mainly studied current account imbalances and their reversals. Milesi-Ferretti and Razin (2000), Edwards (2004) and Freund (2005) identify episodes of current account reversals and investigate econometrically their macroeconomic drivers. In addition, valuation effects constitute another channel of external adjustment in light of increased financial integration (Lane and Milesi-Ferretti, 2005; Gourinchas and Rey, 2007). Second,

[1] We include advanced and emerging economies as defined in Table A.1

[2] This discrepancy can be explained by a more developed financial infrastructure, deeper and more liquid financial markets as well as a higher degree of capital account openness in advanced economies.

our paper relates to the literature on the determinants of net external positions. Long-term fundamentals such as GDP per capita, the demographic structure, public debt and country size (Lane and Milesi-Ferretti, 2002) as well as geographic factors (Schmitz, 2014) help explain why countries are persistent net creditors or net debtors. However, only one paper, to our knowledge, focuses – in a descriptive way – on the determinants of net foreign liabilities reductions (Ding et al., 2014).[3]

Our findings show that growth and valuation effects contributed most to reductions of NFLs overall, while episodes sustained over the medium term require positive transaction effects (i.e. current account surpluses). Considering the different components of a country's external balance sheet, we observe that reduction episodes were almost exclusively driven by a decline in external liabilities in emerging economies, while in advanced economies external asset accumulation also contributed significantly, in particular in stable episodes. Our econometric analysis shows that NFL reductions are more likely to be sustained if a country records strong annual real GDP growth during an episode and exits the episode with a larger current account surplus. Moreover, we find evidence that nominal effective exchange rate depreciation during an episode is helpful for achieving episode stability in the short run, while IMF programmes and sovereign debt restructurings also contribute to long-term stability.

The remainder of the paper is organized as follows: in Section 2 we define our measures of NFL reduction episodes and episode stability. We identify the different channels of NFL reductions in Section 3, while Section 4 provides an econometric analysis on the factors behind episode stability. Section 5 concludes.

2 Net foreign liability reductions: definitions and stylised facts

2.1 Definition of episodes and overview

We construct NFL reduction episodes using an updated version of the External Wealth of Nations dataset by Lane and Milesi-Ferretti (2007) which covers 211 countries over the period 1970-2013.

NFL reduction episodes are defined as a time period over which end-of-year net foreign liabilities (as % of GDP) of a given country decline continuously.[4] Put differently, as long as $\Delta NFA_t > 0$ between $t = 0$ and $t = 1$, between $t = 1$ and $t = 2$, up to $t = T$, the episode from year 0 to year T is considered as a reduction episode.[5] As we investigate large reductions in NFLs, we limit our sample to episodes with a minimum size of 10 percentage points of GDP.[6] We consider two episodes A and B (B occurring after A) as a single reduction episode if (1) they are only interrupted by a one year worsening in NFLs and if (2) the NFL position at the beginning of B has improved compared to the NFL position at the end of A.

We exclude offshore financial centres due to their large international balance sheets which lead to frequent and very sizeable changes in the international investment position, while at the same time not

[3] Ding et al. (2014) provide descriptive evidence on 23 sustainable reduction episodes, including 10 episodes in advanced economies and 13 in emerging market economies.

[4] When we use the equivalent terms net international investment position, net external position or net foreign asset position (NFA), these can take both positive or negative values. If we use the term net foreign liabilities (NFL) we refer explicitly to those cases in which the net foreign asset position is negative.

[5] Given the focus of our paper, we are only interested in episodes of improvements in the net external position for which the initial net external position is negative. As such the paper does not analyse episodes in which net creditor countries managed to increase their net foreign assets.

[6] An alternative approach would be to use a filter such as the Hodrick-Prescott (HP) filter for the identification of reduction episodes (as for example in Ding et al., 2014). Using an HP filter results however in a few very long episodes which are more difficult to relate to macroeconomic variables at business cycle frequencies.

being affected substantially by domestic economic conditions (Lane and Milesi-Ferretti, 2011).[7] Moreover, specific outlier episodes – mainly relating to EU financial centre countries with large gross asset and liability positions – are removed from the sample.[8] We identify 420 reduction episodes, of which 138 occurred in advanced and emerging market economies (see Table 1). For the remainder of the paper, we focus on the episodes in these economies, as the episodes in other countries (largely developing countries) are distinctively different. This is for instance due to the small size of these economies and very volatile business cycles. In addition, NFL reductions in these countries are often times driven by debt forgiveness in the case of highly indebted poor countries, primarily in Africa. The median length of reduction episodes is 4 to 5 years (Table 1). Given that we only consider sizable reduction episodes (above 10% GDP), it follows that the adjustment size per year is large: 5.8 percentage points of GDP for advanced economies (at the median) and 5.5 percentage points of GDP for emerging economies. Out of 138 episodes, 93 episodes begin with an initial NFL position that exceeds the European Commission's MIP threshold of 35% of GDP (Table 1). Therefore, most of our sample is comprised of episodes with large initial NFL positions, which is in line with the median reduction size being 24.5% of GDP and 28.1% of GDP for advanced and emerging economies, respectively.

A reduction of NFLs may be triggered by a crisis or lead to a crisis if it reflects a hard external adjustment. We identify 'crisis episodes' following Laeven and Valencia (2012) who record banking, currency and sovereign debt crises and consider an episode as a crisis episode if a crisis is recorded during the period spanning from two years prior up to two years after the beginning of a reduction episode. In our sample, about one third of total episodes are crisis episodes (Table 1), while this share is somewhat higher for EMEs. In line with Catao and Milesi-Ferretti (2014) large NFLs are associated with a higher incidence of a crisis, as more than 75% of 'crisis episodes' in our sample had an initial NFL in excess of the MIP threshold. Using Laeven and Valencia's (2012) database we also identify 12 episodes in which a sovereign default or debt restructuring occurred.[9] Similarly, we consider if a reduction episode coincided with an IMF programme.[10] In total, 48 episodes have been under IMF programmes according to our definition, of which 29 were also crisis episodes.

In line with the large increases in international balances sheets and the growing dispersion of net external positions over the past decades, the size of reduction episodes in our sample increased over time (see Figure 4).[11] Among advanced economies, the largest average reductions occurred in the 1990s, while the largest median reduction occurred in the 1980s.[12] For emerging market economies, the largest reduction episodes have occurred since the 2000s (both in terms of means and medians).

[7] See Appendix A.1 for the countries included in our analysis.

[8] See Appendix A.2

[9] See Appendix A.4 for an overview of all 138 episodes and their main characteristics.

[10] In line with the literature (Barro and Lee, 2005), we only take into account short-run and long-run adjustment programmes whose loans are tied with strict conditionality. We include Stand-By Arrangements (SBA), Extended Fund Facilities (EFF), Structural Adjustment Facilities (SAF) and Enhanced Structural Adjustment Facility (ESAF). We use the IMF's Monitoring of Fund Arrangements (MONA) and its archive to identify IMF programmes that occurred between 1992-2013 and Przeworski and Vreeland (2000) to identify those which started prior to 1992.

[11] An episode is considered to belong to a given decade if the largest part of the episode occurred in that decade.

[12] The discrepancy between the average reduction and median reduction in the 1990s for advanced economies is explained by Belgium and Norway having incurred long (15 and 14 years, respectively) and large (more than 70% of GDP) reductions and therefore driving the sample average up, while the median reduction in the 1980s for advanced economies is high due to the existence of several large reduction episodes (above 20% of GDP), namely Korea, Norway, New Zealand, Israel and Portugal.

2.2 Definition of stability

We are not only interested in the drivers of net foreign liability reduction episodes, but also want to determine whether or not episodes are 'stable', i.e. sustained over the medium term. Thus, we posit that an NFL reduction is stable for n years if n years after the end of the reduction episode, the NFA position of the country has not worsened to a level below half of the initial reduction. Denoting $t(i)$ and $t(f)$ the first (i = initial) and the last year (f = final) of a reduction episode, respectively, an episode is defined as stable for n years if in year $t(f)+n$:

$$NFA_{t(f)+n} > NFA_{t(i)} + \frac{NFA_{t(f)} - NFA_{t(i)}}{2}.$$

We consider a hypothetical 1977-1987 reduction episode for illustrative purposes in Figure 5. During this period, the NFL position shrank from 65% of GDP to 46% of GDP, a 19 percentage points of GDP improvement. The stability threshold – given by the formula above – corresponds to the initial NFA position plus half of the overall reduction size (-65% of GDP + 19% of GDP/2). An episode is considered as stable for up to n years after the end of the reduction (i.e. in year $1987+n$ in this case) if the NFA position in year n is above the stability threshold of -55.5% of GDP. For instance, if the NFL follows the path of the dashed line, we will consider the 1977-1987 episode as being stable for the rest of the period shown in Figure 5. However, if the NFL position follows the thick black line, the 1977-1987 will be considered as stable only for two years as the NFL position is below the stability threshold until 1989, but exceeds it afterwards. Note that as long as the NFL position remains below the stability threshold, regardless of the direction taken by the NFL path, the episode would be considered as stable. Therefore our definition of stability is relative (i.e. not affected by a particular absolute level of the NFL position) and episode-specific. We thus define 'stability' not by the length of the reduction episode itself, but by the developments following the end of the episode. In the remainder of the paper, we use a stability length of 7 years as the maximum length.[13]

We refine our stability definition with two additional characterisations: first, given that our sample ends in 2013, it is impossible to assess the stability length beyond 2013 for episodes that end after 2006. By default, those episodes that end in 2012 or 2013 are categorized as 'cannot say' in terms of stability, while episodes that end from 2007 to 2011 are considered as stable for 6 to 2 years if they remain stable until the end of our sample period 2013. However, an episode in this group could for instance be considered as 'stable for 4 years', while stability might in fact be achieved for more than 4 years. To address this issue, we define episodes ending after 2006 as stable for the maximum number of years (i.e. 7) if (1) its NFA position at the end of the reduction is positive, (2) it is stable until 2013 included, (3) its NFA in 2013 is still positive. This applies for instance to China (see Figure 6), which has undergone a reduction of NFL between 1996 and 2008. By the end of 2008, its NFA reached 30.6% of GDP. Given our basic definition, the episode is considered as stable up until 2013, since the NFA has not worsened to a level below half of the initial reduction. Moreover, in 2013, China's NFA is still positive at 17.8 % of GDP. In this case, as this episode fulfills all three above criteria, we assume that it is stable for the maximum number of 7 years (rather than the observable 5 years).

Second, we address the issues of our stability definition being a relative, rather than an absolute

[13] Our approach differs from Ding et al., (2014) who define the stability of an episode as "a period of 8 years or more during which a country's net foreign assets (liabilities) display a clear upward (downward) trend."

concept: an episode ending with a positive NFA could still be considered as unstable even if the NFA remains positive, whereas an episode with a negative final NFA level could be considered as stable if its NFA does not worsen to a level below half of the initial reduction.[14] We thus relax our initial stability definition, by allowing an episode to be stable as long as (1) its NFA level reached at the end of the period is above -5% of GDP, (2) and stays above -5% of GDP after the end of the reduction episode.[15]

Regarding stability, we find that around 65% of our sample episodes are stable for at least 2 years, a third for at least 5 years and a quarter for at least 7 years (see Table 2). Over different stability lengths, the share of stable episodes is similar for advanced and emerging economies. However, the longest stability length (i.e. at least 7 years) accounts for 32% of advanced economy episodes compared with 20% of episodes in EMEs, indicating that belonging to advanced economies increases the likelihood of episodes being stable for longer.

3 Channels of NFL reductions

This section provides stylised facts on the channels of NFL reductions, using various decompositions of net external assets as recorded in external statistics. This approach enables us to directly observe which components of a country's external balance sheet and external flows drove past reductions in NFLs. At the same time, such an accounting decomposition approach does not capture the underlying structural factors driving the various components.[16]

3.1 Transaction, growth and other effects

The dynamics of net external assets can be described according to an accounting framework following e.g. Lane and Milesi-Feretti (2005), based on a simple decomposition:

$$\Delta NFA_t \quad = \quad CA_t + KA_t + X_t, \tag{1}$$

where ΔNFA_t is the change in the net foreign asset position between period t and $t-1$, CA_t is the current account, KA_t is the capital account (mainly consisting of capital transfers) and

$$X_t = VAL_t + \epsilon_t \tag{2}$$

where VAL_t are valuation effects, i.e. capital gains on the existing NFA position stemming from exchange rate movements and asset price changes, while ϵ_t includes errors and omissions as well as other changes, for instance arising from innovations to methodologies or data collection processes. Given the difficulty of recovering those effects for each country, we can only observe X_t and make the assumption that the error term ϵ_t is small enough to consider X_t as a proxy for valuation effects.

[14] For instance, country A could improve its NFA from -5% to 15% and yet be considered as unstable should its NFA fall below 5% the year following the reduction. By contrast, country B improves its NFA from -30% to -10% of GDP and be considered as stable as long as its NFA stays above -20%. of GDP

[15] Our analysis shows equivalent results if we use -10% or 0% of GDP instead.

[16] As such this part of our analysis closely follows the accounting decomposition based analysis of reductions in public debt (Ali Abbas et al., 2013).

Taken relative to GDP, (1) can be written as:

$$\Delta nfa_t \quad = \quad ca_t + ka_t + x_t - f(g_t, \pi_t) nfa_{t-1} \tag{3}$$

where lower case variables are measured relative to GDP, and $f(g_t, \pi_t)$ is a correction term, given as a function of the growth in real GDP (g_t) and the inflation rate (π_t).[17]

Using (3), we can uncover:

- Transaction effects, which are equal to : $ca_t + ka_t$,
- Valuation and other effects, i.e. x_t ,
- Nominal GDP growth effects, i.e. $-f(g_t, \pi_t) nfa_{t-1}$.

Across all 138 reduction episodes, we find that GDP growth effects contributed the most to reductions in NFLs (with a median of 15.8 % of GDP), followed by valuation effects (median of 4.7% of GDP), while transaction effects had a slightly negative median contribution of -0.8% of GDP (Figure 7). Splitting between advanced and emerging economies reveals that valuation effects contributed almost as much as growth effects for advanced economies, while in emerging economies the contribution of growth effects is in both absolute and relative terms more sizeable. The finding that valuation effects do not contribute markedly to large reductions in NFLs for emerging economies is line with Bénétrix (2009), who shows that emerging economies – in contrast to advanced economies – mainly experience large negative valuation shocks. Growth effects were the dominant factor in NFL reduction episodes in all decades since the 1970s, while the role of valuation effects (and to a lesser extent also transaction effects) increased over time (Figure 8).

The picture is however markedly different when we distinguish between stable and non-stable reduction episodes (Figure 9a): non-stable episodes are characterised by sizeable positive growth and valuation effects, while transaction effects are negative. Stable episodes on the other hand – even in the case of episodes that are stable for only at least two years – feature positive transaction effects. Moreover, growth effects are almost twice the size in stable compared to non-stable episodes, while valuation effects wane in importance in stable episodes. The pattern for advanced countries (Figure 9b) is very similar with transaction effects being negative in non-stable episodes, while contributing positively in stable episodes. In particular, the longer an episode is stable, the larger the importance of transaction effects, whereas the importance of valuation effects declines. GDP growth effects on the other hand remain important for the stability of episodes – almost matching the size of transaction effects also in episodes that remain stable for a long time. The less important role of valuation effects for longer-term stability is consistent with Gourinchas and Rey (2007) who find that the valuation channel is relevant mostly in the short run, while other channels account for the bulk of external adjustment in the long run.

In the case of emerging economies a slightly different picture emerges (Figure 9c): again non-stable episodes feature negative transaction effects, while stable episodes have positive transaction effects – albeit much smaller ones than in the case of advanced economies. For emerging economies, however, GDP growth effects are by far the largest contributor to both stable and non-stable episodes, whereas valuation effects are smaller in stable compared to non-stable reduction episodes.

[17] This term corrects for the fact that the terms on the right hand side of (3) are divided by GDP_t, while the left hand side is given as; $\Delta nfa_t = NFA_t/GDP_t - NFA_{t-1}/GDP_{t-1}$. The correction term is: $f(g_t, \pi_t) = (g_t + \pi_t)/((1 + g_t)(1 + \pi_t))$

In sum, GDP growth effects overall contributed the most to reductions in NFLs, followed by valuation effects, while transaction effects (largely reflecting the current account balance) had a slightly negative median contribution. The picture is however markedly different when we distinguish between stable and non-stable reduction episodes: stable episodes feature positive transaction effects (i.e. current account surpluses), while non-stable episodes are characterised by negative transaction effects (i.e. current account deficits).

3.2 Assets vs. liabilities

Having identified the role of GDP growth, transaction and valuation effects, we now turn to the question if NFL reductions mainly occur via increased investment abroad or reductions of gross external liabilities.

By definition, the net foreign asset position is equal to the difference between gross external assets and gross external liabilities of a given country. Hence, it holds for changes in the net foreign asset position (relative to GDP) that:

$$\Delta nfa_t = \Delta assets_t - \Delta liabilities_t$$

We find that NFLs are reduced both due to an increase in gross assets and lower gross liabilities (Figure 10a). However, there are marked differences between advanced and emerging economies: considering sample medians, episodes in advanced economies are equally driven by rising foreign assets and declining foreign liabilities, while in emerging economies reduction episodes are mostly driven by liability reductions.[18] Episodes with an initial NFL in excess of the European Commission's -35% MIP threshold adjust primarily by reducing liabilities, while improving assets seem to matter more for those with an initial NFL above the MIP threshold (Figure 10b). This suggests that in light of larger stock imbalances, i.e. higher net foreign liabilities, deleveraging needs are more pressing and thus, countries are forced to reduce their liabilities, rather than accumulating foreign assets. In the same vein, decreasing liabilities matters more for crisis episodes, while improving assets also play a significant role for the non-crisis sample (Figure 10c). The same applies to episodes in which countries were under an IMF programme (Figure 10d). In this case, however, the results also reflect the fact that EMEs account for 43 out of the 48 episodes taking place under an IMF programme. Moreover, these episodes involved in 12 cases a sovereign debt restructuring, thus reducing the nominal value of some part of gross foreign liabilities.

Importantly, a further decomposition of the changes in gross foreign liabilities, reveals that their large contributions to NFL reductions, were on average not driven by reductions in the nominal value of outstanding liabilities, but by strong GDP growth effects. Even in episodes which involved sovereign debt restructurings, the positive contribution from the liability side was – for the median episode – entirely driven by GDP growth effects, while the nominal value of gross foreign liabilities increased in the course of the episode. In line with the findings in the previous subsection, this points to a form of benign deleveraging in these episodes, in which gross foreign liabilities and hence NFLs were to a significant extent reduced by positive nominal GDP growth effects.[19]

Figure 11a shows that proportional to the size of a reduction episode, the contribution of gross

[18] The role of increasing assets in advanced economies is even more pronounced when looking at sample means.

[19] In fact, nominal amounts of outstanding gross liabilities only declined in five episodes in our sample.

liabilities rises, while for assets this is less clear-cut. Considering advanced and emerging economies separately reveals again marked differences: among advanced economies an expansion in assets is the sole contributor to reductions of a very large size (in excess of 40% of GDP), while foreign liabilities contribute negatively to the reduction (i.e. increase) on average in these episodes (Figure 11b).[20] In the case of emerging economies however, large reduction periods are overwhelmingly driven by reductions in foreign liabilities (Figure 11c).

The asset-liability composition also matters for the stability of an episode. While for the whole sample stable episodes feature larger contributions from both gross assets and liabilities than non-stable episodes (Figure 12a), a more pronounced picture emerges when we compare advanced and emerging economies. While non-stable episodes look very much alike in both groups, episodes that are stable for at least two years are entirely driven by asset accumulation in the case of advanced economies (Figure 12b). For emerging economies, liabilities are the decisive contributor both for stable and non-stable episodes (Figure 12c). Thus, while non-stable episodes very much follow the same pattern in advanced and emerging economies, a key conclusion is that stable episodes in advanced economies have been achieved through foreign asset accumulation.

Connecting the findings of Sections 3.1 and 3.2, one can conclude that there is an important role for transaction effects (mostly reflecting current account surpluses) in the case of advanced economies which allow for net capital outflows (i.e the accumulation of foreign assets), in particular in stable episodes. For emerging economies, on the other hand, sizeable GDP growth effects lead to a reduction in outstanding foreign liabilities (relative to GDP), thereby contributing to the stability of an episode.

3.3 Asset classes

To gain further insights, we decompose a country's external balance sheet into the different financial instruments. The international investment position consists of six main asset classes: portfolio debt PD, portfolio equity PE, foreign direct investment FDI, "other" investment Oth (mainly comprising banking related items such as loans, deposits and currency), derivatives Der and reserves Res. Knowing which type of financial instrument drives liability reductions or asset improvements allows for a better understanding of the dynamics of NFL reductions. Changes in net foreign assets can thus be described as follows:

$$\Delta nfa_t = \Delta netPD_t + \Delta netPE_t + \Delta netFDI_t + \Delta netOth_t + \Delta netDer_t + \Delta Res_t, \quad (4)$$

where net refers to foreign assets minus foreign liabilities (relative to GDP). The complete breakdown shown in equation (4) is however not available for all countries and years in our sample. In particular for earlier episodes, many countries report an aggregate "debt" category rather than the breakdown into portfolio debt and other investment. In addition, data on derivatives is (if at all) merely available on a net basis, while reserves refer to the asset side only.

For both advanced and emerging economies, improvements in net debt investment (consisting of portfolio debt and other investment) are the most important component for NFL reductions (Figure 13). While in the case of emerging economies these improvements exclusively occur in the form of a reduction

[20] This is partly due to the fact that the largest NFL reduction episodes (Belgium 1986-2000 and Norway 1988-2006) were achieved by increasing assets only.

in debt liabilities, for advanced economies the asset side also plays an important role. In the sub-sample of countries for which the breakdown of debt into portfolio debt and other investment is available, we find that for emerging economies this is largely driven by other investment liabilities, while this is much less the case for advanced economies (Figure 14). On the one hand this is due to the fact that external liabilities of advanced economies feature a larger share of portfolio debt liabilities than emerging economies.[21] On the other hand, there are also sizeable contributions from the asset side for both portfolio debt and other investment in the case of advanced countries.[22] For advanced economies improvements in net FDI and net portfolio equity also play an important role in NFL reduction episodes (Figure 13). Strikingly, these largely occur in the form of increased accumulation of assets.[23] Among emerging economies, the accumulation of foreign exchange reserves is a significant contributor to NFL reductions.[24]

Further evidence (Figure 15) suggests that the increased external asset accumulation of advanced countries in stable episodes – observed in the previous subsection – features broad-based increases in FDI, portfolio equity and debt assets, while on the liability side only reductions in debt instruments contribute somewhat, albeit less than in non-stable episodes. In emerging economies, stable episodes are characterised by significant reductions of debt liabilities and – albeit to a lesser extent – rising reserve assets.

To sum up, our decomposition analysis of the channels of NFL reductions reveals that in order to achieve stable NFL reduction episodes, which are sustained over the medium term, positive transaction effects are necessary for advanced economies, while in emerging economies GDP growth effects dominate. Considering the different components of a country's external balance sheet, we find that stable reductions in advanced economies feature an increase in gross external assets (in FDI, portfolio equity and debt assets), while for emerging markets large reductions in gross debt liabilities and to a lesser extent also foreign reserve accumulation contribute to the stability of an episode. Given these findings, we now turn to a regression-based analysis to assess the macroeconomic drivers of reduction episode stability.

4 Empirical analysis: how to achieve stable NFL reductions?

4.1 Empirical set-up

In the following we employ a regression-based econometric analysis in order to identify the underlying macroeconomic factors that increase the likelihood for an episode being stable for a longer period of time. Our dependent variable indicates the number of years over which a reduction is stable. Thus, as defined in Section 2.2, it takes a value between zero (for non-stable episodes) and seven (which we set as the maximum stability length). First, we regress this variable in ordinal logistic and ordinary least squares (OLS) estimations on a set of variables using the following baseline regression:

[21] For instance, the share of portfolio debt in foreign liabilities reaches 38% for advanced economies compared with 24% in emerging markets in 2006.

[22] The most striking examples are those of Norway (1988-2006) – increasing its portfolio debt and other investment assets by 47% of GDP and 28% of GDP, respectively – and Sweden (1998-2007), with an improvement of 11% of GDP and 23% of GDP, respectively.

[23] In 15 out of the 53 advanced economy episodes, countries increased their FDI assets by more than 10% of GDP.

[24] In 13 episodes foreign exchange reserves increased by more than 10% of GDP.

$$y_i = \alpha + \beta \mathbf{X}_i^{AVG} + \gamma \mathbf{Y}_i^{INI} + \delta \mathbf{Z}_i^{FIN} + e_i \quad (5)$$

This model allows us to determine fundamental factors of an episode that affect the likelihood of an episode being stable for a longer period of time. Depending on the variable, we include these either as yearly averages recorded during an episode ($\mathbf{X}_i^{AVG}$), initial values (i.e. before the start of an episode, $\mathbf{Y}_i^{INI}$) or as final values (i.e. reached at the end of the episode, $\mathbf{Z}_i^{FIN}$). The reason why we choose yearly averages instead of total changes over an episode is that we want to investigate which gradual adjustment paths rather than large effects render episodes more stable. In addition, taking total changes would bias our results towards very large reduction episodes.

A number of factors could explain the stability of a reduction episode.[25] Specifically, we test for the following macroeconomic variables as independent variables in our benchmark estimations: we expect **real GDP growth** to have a positive impact on stability as a growing economy has more room to increase investment both at home and abroad. Moreover, strong real GDP growth contributes to a larger denominator (as net external assets are expressed in terms of GDP) and thereby makes a reversal of the observed reduction less likely. We also investigate whether **public and private deleveraging** matter for the likelihood of an episode being stable or not. To this end, we include the average annual changes in public debt and private credit (as ratios to GDP) in our estimations. Fiscal consolidation efforts during an episode may bring public debt on a sustainable trajectory and thus make sustained NFL reductions more likely. Larger outstanding credit to the private sector tends to be associated with excesses in the financial sector resulting in a more pronounced boom-bust cycle and potentially debt overhang (see for example Gourinchas and Obstfeld, 2012). A reduction in private credit, in particular, if it was partly cross-border funded could thus contribute to stability. We include average annual percentage changes in the nominal effective **exchange rate** of a country during an episode. A more depreciated currency might be associated with both larger valuation gains, in particular for advanced economies (Tille, 2008), as well as improvements in the current account balance. We include the **current account balance** (as a ratio to GDP) reached at the end of the reduction episode. Given our descriptive analysis, we would expect it to play a stability-enhancing role: if the current account balance is positive, then the NFA should be, *ceteris paribus*, less likely to decrease after the end of the episode.

In further estimations we also control for average annual **global real GDP growth** during an episode to proxy for the role of the global economic environment for episode stability. Moreover, we include as a broad-based indicator of **institutional quality** the average score of the World Bank's Worldwide Governance Indicators (WGI).[26] The effect of institutional quality on the stability of reduction episodes is ambiguous: on the one hand, it may lead to less stable episodes because foreign investors may flock in after a reduction due to more developed and efficient domestic financial markets; on the other hand, better governance and macroeconomic management by the government and thus overall macroeconomic stability may make the reversal of a reduction episode less likely. We use various measures of **openness**, namely trade openness (the ratio of the sum of exports and imports over GDP) and following Lane and Milesi Ferretti (2007) de-facto financial openness (the ratio of the sum of external assets and liabilities over GDP). More financial openness may lead to increased volatility of external assets and

[25] See Appendix A.3 for all variables included in our analysis as well as their sources.

[26] It is a composite index comprised of the following indicators: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption.

liabilities via valuation effects, thereby hindering the stability of reduction episodes. If on the other hand valuation effects are associated with improved international risk-sharing, they may have a stabilising impact on the net external position (Bénétrix et al., 2015). We also control for the role of **IMF programmes** whose effect on output and growth has been widely studied (see for instance Barro and Lee, 2005). In addition, we test for the impact of **sovereign debt restructurings**. Finally, we include a dummy for fixed **exchange rate regimes**: following Ilzetzki et al. (2010) we define an exchange rate regime as fixed if it includes pre-announced crawling pegs and bands (which are narrower or equal to +/-2%). A flexible exchange rate could serve as an important policy tool to smooth fluctuations and buffer against external shocks. It might be helpful in generating more stable reductions via the trade or valuation channel, while on the other hand it could also increase volatility of the NFA position.[27]

We opt for an ordinal logistic estimation as our benchmark specification. One of the assumptions of an OLS estimation is that the dependent variable is continuous. However, our dependent variable is discrete in nature and takes a relatively small number of integer values, i.e. between 0 and 7, which makes an ordered logistic regression an appealing choice. Moreover, OLS assumes that the outcome variable is cardinal. This implies in our case that the interval between being stable for 0 and 1 years is of the same magnitude as the interval between being stable for 6 and 7 years. As this assumption might be problematic an ordered model appears more appropriate, since only the ordering between one group and the next is taken into account with this model. Ordered logistics regressions assume that the relationship between the explanatory variables and the dependent variable is the same for all increments of the left-hand side variable. We report the coefficients as odds ratios which show how the odds of reaching a higher outcome (i.e. a longer stability length of an episode) changes when an explanatory variable increases by one unit.[28] As a robustness check we report results from OLS estimation and also run an ordinal probit model.[29]

We complement our analysis with a binary regression model as a robustness check. While the previous model identified the factors that increase the likelihood of an episode being stable for a longer period of time, the binary regression model seeks to find out what factors increase the likelihood of being stable for at least n years. Thus, we re-estimate equation (5), but using a binary logit regression model with the following dependent variable:

- $y_i = 0$ if the reduction is not stable or stable for less than n years
- $y_i = 1$ if the reduction is stable for at least n years

We run different estimations, in which we respectively set n to range from 2 years to 7 years.

[27] Endogeneity problems are alleviated in our empirical framework as the dependent variable measures stability *after* an episode, while the macroeconomic fundamentals on the left-hand-side refer to the period *before* or *during* an episode.

[28] Odds ratios are the logistic coefficients in exponentiated form. Standard errors – which we use in robust format – are also modified, but the significance of coefficients does not change with this transformation.

[29] The main difference between the logit and probit models is the assumption on the distribution of the link function, which transforms the dichotomous Y variable into a continuous Y variable. The probit model assumes that this link function follows the cumulative distribution function (c.d.f.) of the normal distribution whereas the logit model specifies that this function is the c.d.f. of a logistic distribution. In practice, both models yield similar results at the mean, but they differ in the tails of the distribution.

4.2 Empirical results

4.2.1 Ordered logistic regression model

Our baseline results (Table 3) indicate consistently that higher average annual real GDP growth during an episode significantly increases the likelihood of an episode being stable for a longer period of time. While this result is in line with the findings of the descriptive analysis presented in our paper, it is important to point out that the GDP growth effects in the descriptive analysis were *nominal* GDP growth figures (as opposed to real) cumulated over an entire episode, whereas in the regression analysis annual *real* GDP growth is employed. This variable is however not significant in a sample restricted to advanced economies (column 6) and for the sample of crisis episodes (column 9).

Secondly, we test for the role of public and private deleveraging (in column 2) and do not find any significant results, implying that average annual changes in public debt or private credit (as ratios to GDP) during an episode do not appear to affect the stability of an episode. Next, we include average annual percentage changes of nominal effective exchange rate (NEER) in the estimation (columns 3 to 9). We find evidence for the full sample and for emerging economies, that NEER depreciations are positively associated with the probability of episodes being stable for a longer period of time. The exchange rate channel might work via lasting improvements in a country's trade balance and the valuation channel.[30]

Finally, we include the end-of-episode values of the current account (as % of GDP). We find that a 1 percentage point larger final current account surplus raises the odds of an episode being stable for a longer period of time by 13% (for emerging economies, column 7) and 28% for advanced economies (column 6). This result is consistent with our expectations, as a larger current account surplus represents an important buffer against a sudden reversal in the NFA position of a country.

We provide additional evidence in Table 4 and find that real GDP growth and the final current account balance are both associated with improved stability across all specifications. In column 2, we focus only on those countries that had an initial NFL position in excess of the European Commission's MIP threshold of 35% of GDP and observe that the results are very much in line with our baseline findings (column 1), which indicates that episodes with only small initial NFL positions were not driving the results. In column 3, we include average annual global GDP growth during an episode, which is however not significant. Thus, we do not find an important role for a better global economic environment during an episodes for subsequent stability, but what matters is the domestic growth performance during an episode. Next, we include the average WGI score during an episode (column 4), which reduces the sample size by around a third, and do not find significant results for this variable. Moreover, our findings are robust to the inclusion of initial trade and financial openness of a country (columns 5 and 6) which fail to be significant.[31]

By contrast, being under an IMF programme and sovereign debt restructuring increase the odds of an episode being stable for a longer period of time (columns 7 and 9). In this context, it is important to note that out of the 15 sovereign debt restructuring episodes in our sample, 12 were undertaken while a country was under an IMF programme. However, the fact that out of 48 IMF programme episodes, 36 episodes did not feature a sovereign debt restructuring, implies that the enhanced stability for episodes with an IMF programme was to a large extent achieved by other features of these programmes rather

[30] As an alternative, we used developments in real effective exchange rates, but did not obtain significant results.
[31] Financial openness is also not significant when we use Chinn and Ito's (2006) de-jure measure.

than debt restructuring. A fixed exchanges rate does not have a significant impact on episode stability (column 8).[32]

Overall, our findings show that NFL reduction episodes are more likely to be sustained for longer if a country records strong average real GDP growth during an episode – this holds in particular among emerging economies – and exits the episode with a current account surplus. Moreover, we find evidence that a nominal exchange rate depreciation during the episode is helpful for achieving episode stability and so are IMF programmes and sovereign debt restructurings.

4.2.2 Robustness analysis: OLS, ordered probit and binary logit

As a next step, we run our baseline specification in an OLS setting (Table 5). The main results obtained in the ordered logistics regression remain significant, with the exception of NEER developments and in the non-crisis sample GDP growth. Our results are also robust to an ordinal probit estimation (Table 6).

Finally, we run a binary logit approach over different reduction stability lengths as outlined above. Our results show the highest odds ratios for average annual real GDP growth and final current account balances for the shortest length regression, i.e. stability for at least two years (Table 7, column 1). With increasing stability length, both variables remain significant, albeit with declining odds ratios. This is intuitive as the further one proceeds in time after an episodes, the less it should matter what had happened during an episode. Nevertheless, even for the likelihood of episodes being stable for at least seven years, average real GDP growth during an episodes and the final current account balance remain significant. Moreover, nominal effective exchange rate depreciations during an episode are conducive for stability for up to four years, but lose significance over longer stability horizons, indicating that NEER developments during an episodes may be helpful in generating NFL stability in the short run, but are no long-run tool to achieve lasting NFL reductions.

5 Conclusion

External macroeconomic imbalances and vulnerabilities have been on the radar of policy-makers for a long time. While a vast amount of literature has studied current account deficits and global imbalances, fewer papers have focused on external stock imbalances and their unwinding. Given the vulnerabilities associated with external stock imbalances, the results in our paper are instructive in terms of providing lessons from past episodes of sustained NFL reductions.

Across 138 reduction episodes for a broad sample of advanced and emerging economies, we find that growth and valuation effects (arising from asset price and exchange rate movements) contributed most to reductions of NFLs overall, while episodes sustained over the medium term require positive transaction effects (i.e. current account surpluses). This broad pattern is also found for advanced economies: in particular, the longer an episode is stable, the larger becomes the importance of transaction effects, while the role of valuation effects declines and GDP growth effects remain important. In the case of emerging economies stable episodes are also characterised by positive transaction effects, but

[32] In unreported estimations, we included the initial NFL position to analyse if stable episodes are more likely for countries that had more pressing reduction needs due to larger NFLs. However, this variable is not found to be significant nor does it affect the other results in our estimations.

these are much smaller than for advanced economies, while GDP growth effects are by far the largest contributor to both stable and non-stable episodes.

Considering the different components of a country's external balance sheet, we find that in stable NFL reduction episodes, advanced economies record an increase in external assets (in FDI, portfolio equity and debt assets), while in emerging economies reductions in debt liabilities and to a lesser extent reserve accumulation contribute to stability. Taken together, this implies that transaction effects (i.e. current account surpluses) in the case of advanced economies allow for net capital outflows (i.e the accumulation of foreign assets) in stable episodes, while for emerging economies sizeable GDP growth effects lead to a reduction in outstanding foreign liabilities, thereby contributing to episode stability.

Formal econometric analysis shows that longer stability is more likely to be achieved if a country records strong average real GDP growth during an episode – this holds in particular among emerging economies – and exits the episode with a larger current account surplus. Moreover, we find evidence that nominal exchange rate depreciation during the episode is helpful for achieving episode stability in the short run, while IMF programmes and sovereign debt restructuring also contribute to long-term stability.

In sum, our analysis shows that euro area countries with large NFL positions are highly likely to need a combination of both strong economic growth and sizeable current account surpluses to reduce their external stock imbalances in a sustained way. Valuation effects on the other hand are not found to be a reliable source of stable NFL reductions. This, in turn, calls for growth-enhancing economic policies and structural reforms to unwind external stock imbalances in the euro area.

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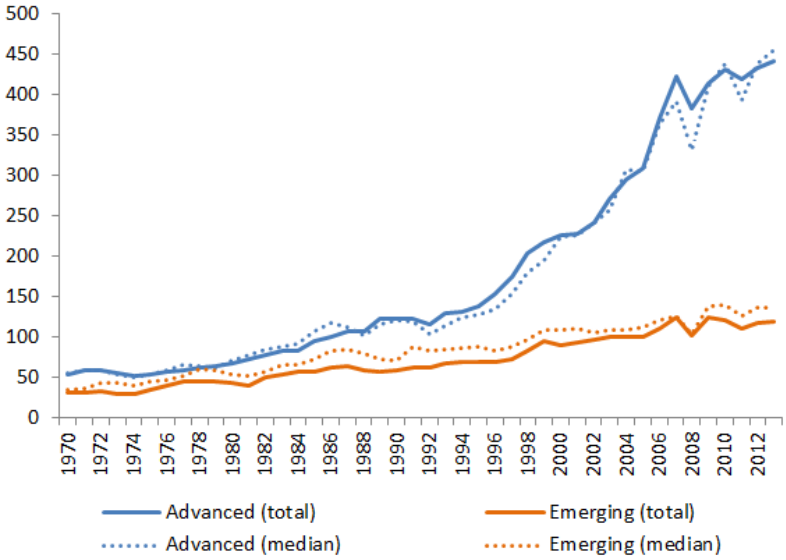
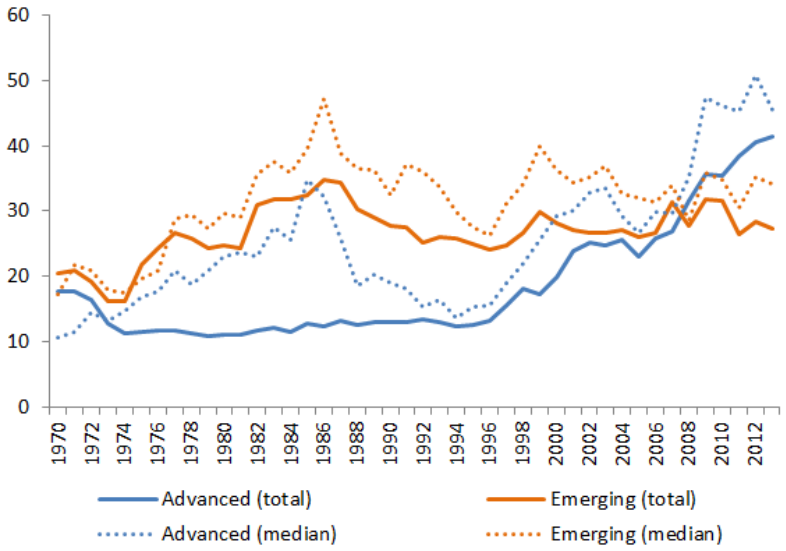
Figure 1: International financial integration



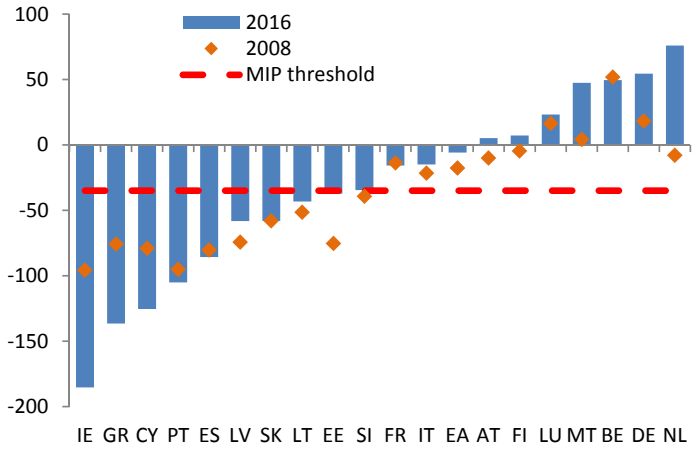
Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Sum of foreign assets and liabilities (as % of GDP). Total and median values for advanced and emerging economies.

Figure 2: Net foreign asset dispersion



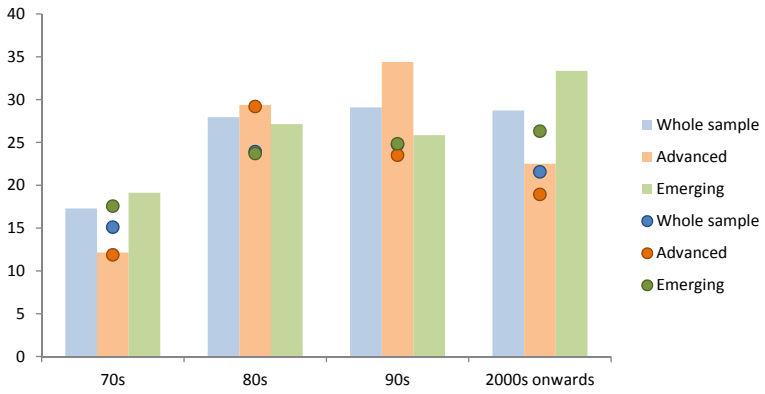
Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Absolute value of net foreign assets (as % of GDP). Total and median values for advanced and emerging economies.

Figure 3: Net foreign asset positions in the euro area



Sources: ECB.
Notes: Net foreign assets (as % of GDP). MIP threshold at -35% of GDP as applied in the European Commission's Macroeconomic Imbalance Procedure.

Figure 4: Size of NFL reduction episodes by decade



Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Episode (as % of GDP); bars and dots indicate sample means and median, respectively.

Figure 5: A graphical example of NFL reduction episode stability

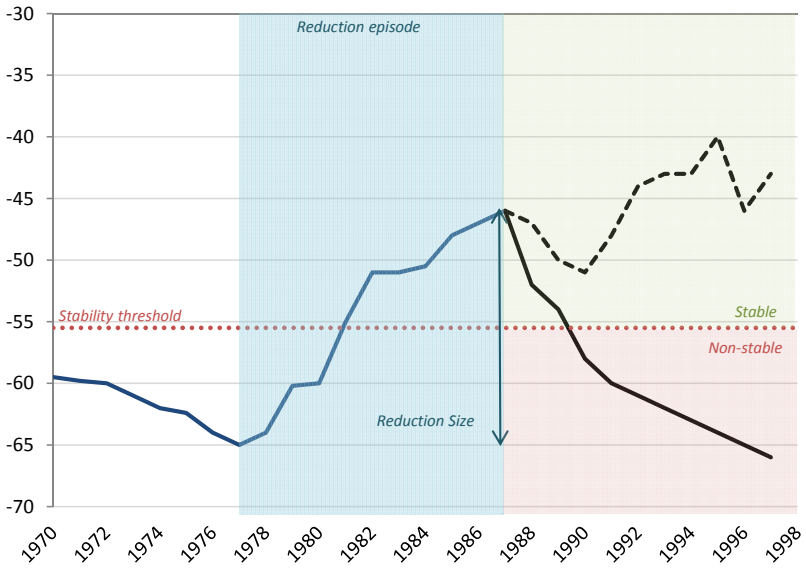
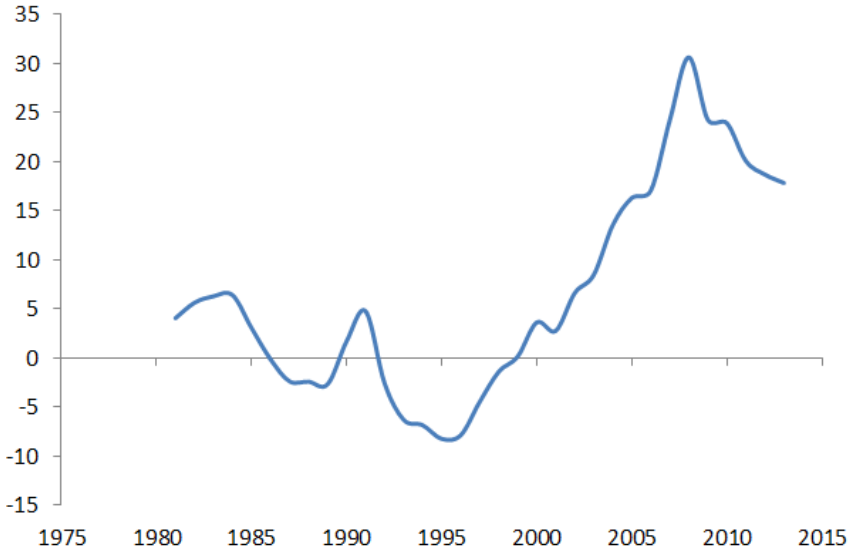
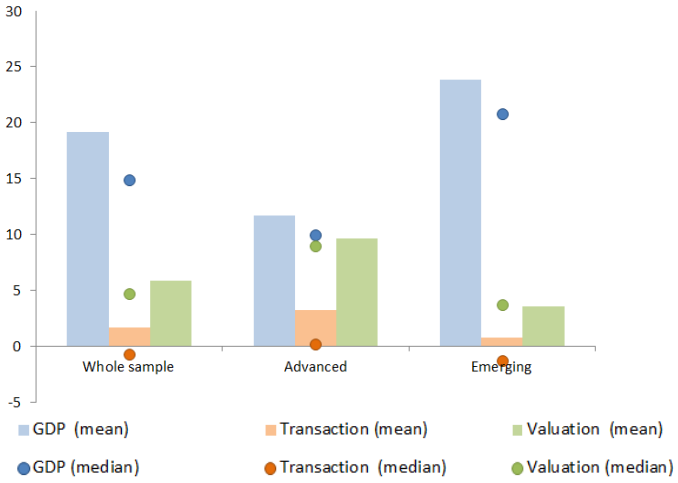


Figure 6: China's net foreign asset position (% GDP)



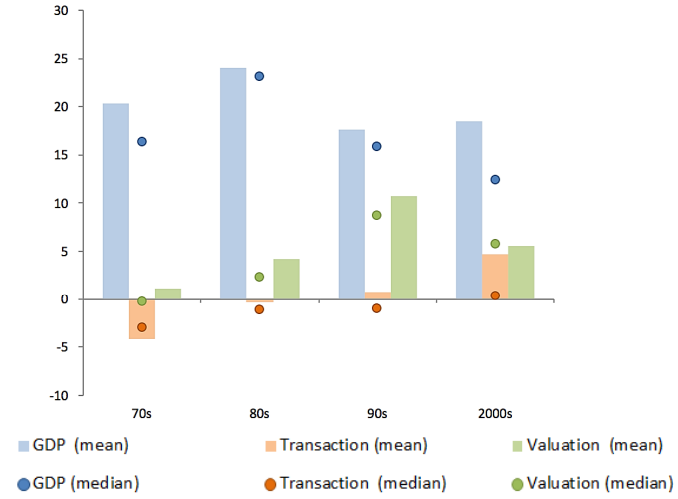
Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Last observation refers to 2013.

Figure 7: Breakdown of reductions by effect



Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Episodes (as % of GDP); blue, orange and green refer to GDP, transaction and valuation contribution to NFL reduction, respectively; bars and dots indicate sample means and median, respectively.

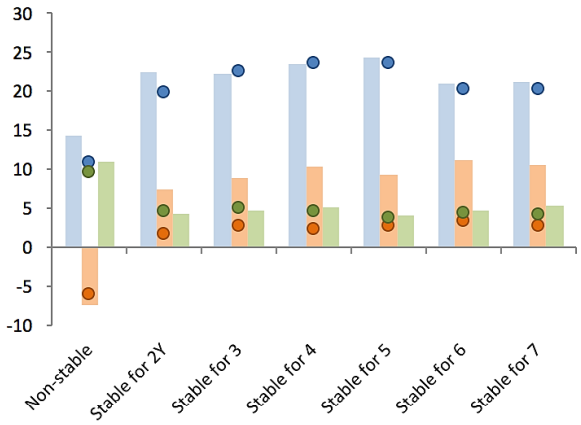
Figure 8: Breakdown of reductions by effect across time



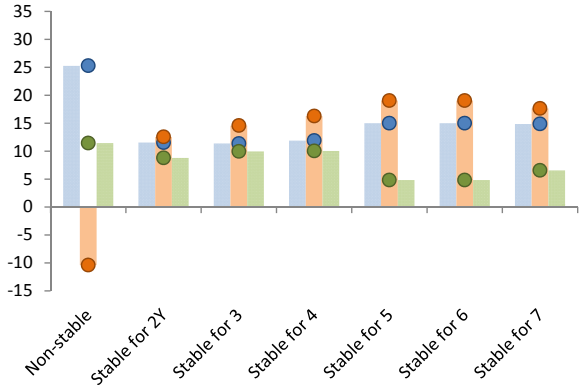
Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Episodes (as % of GDP); blue, orange and green refer to GDP, transaction and valuation contribution to NFL reduction, respectively; bars and dots indicate sample means and median, respectively.

Figure 9: Breakdown of reductions by effect across stability length

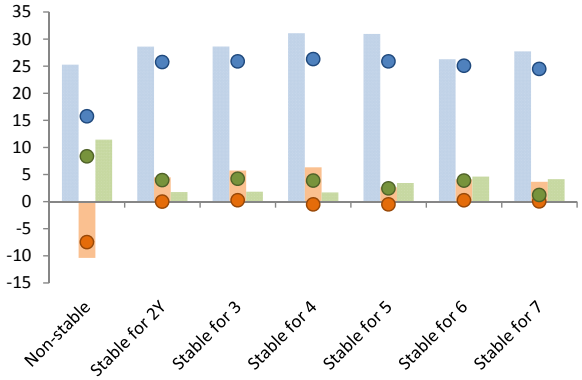
(a) Whole sample

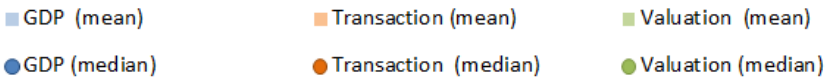


(b) Advanced economies



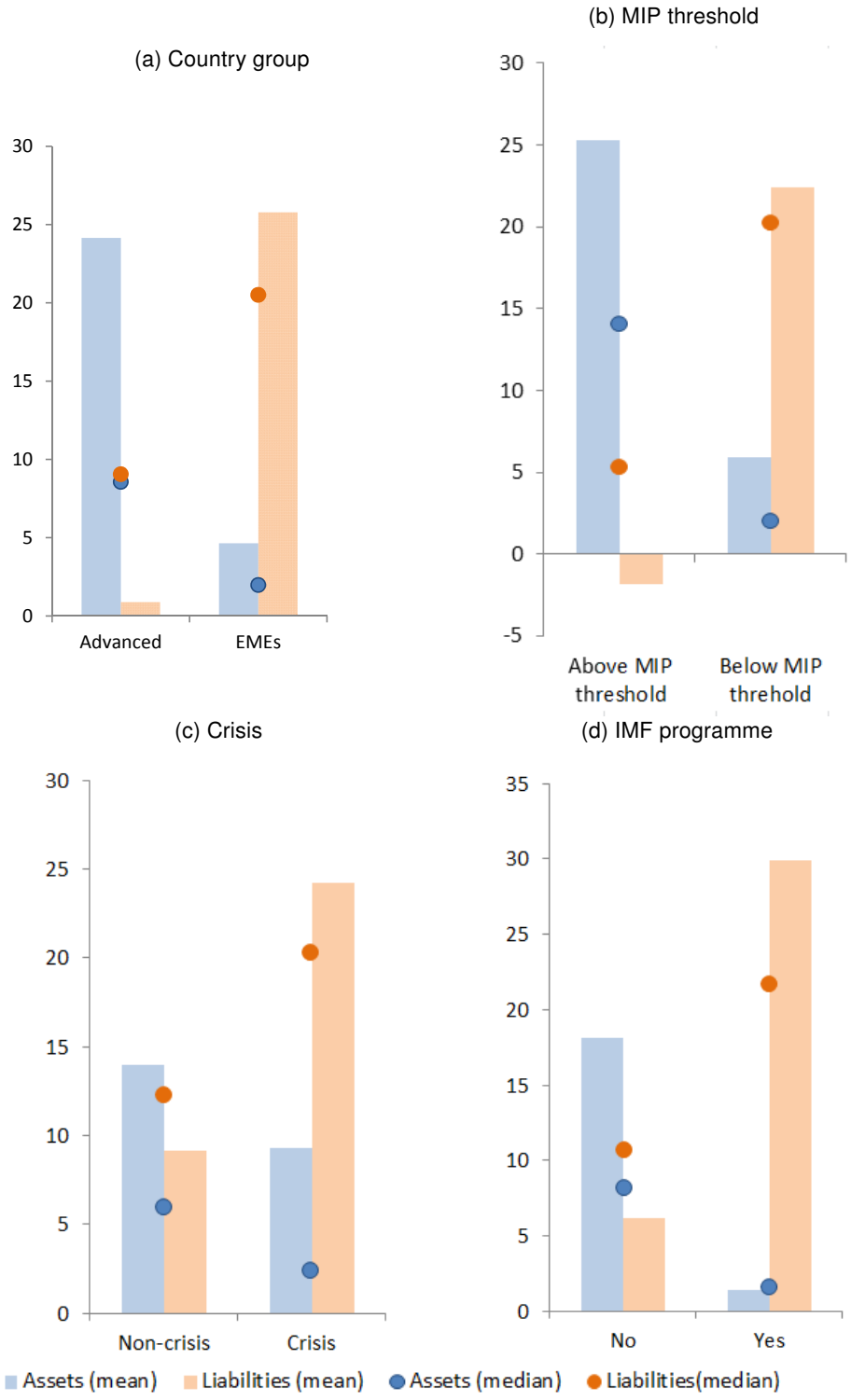
(c) Emerging markets





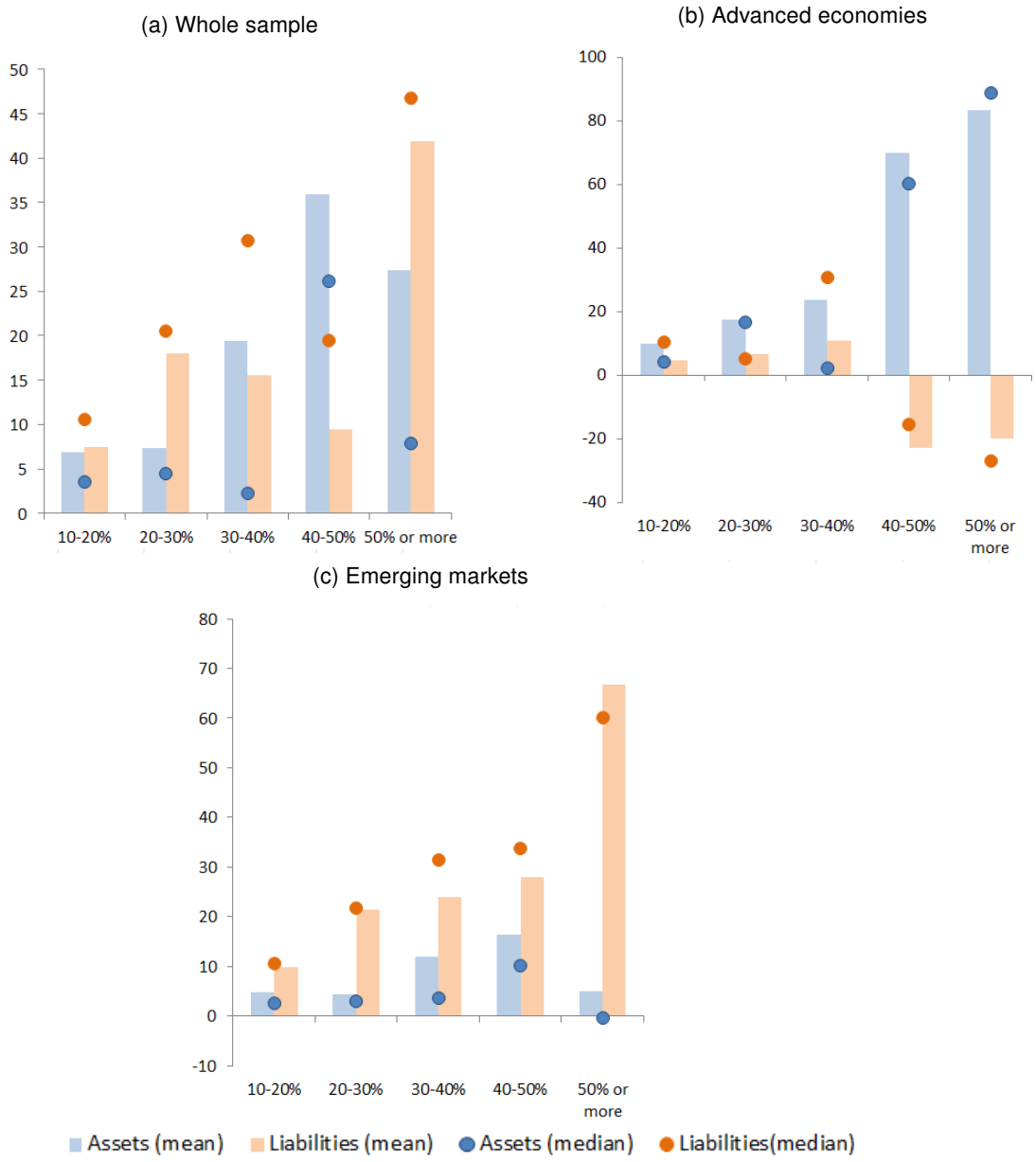
Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Episodes (as % of GDP); blue, orange and green refer to GDP, transaction and valuation contribution to NFL reduction, respectively; bars and dots indicate sample means and median, respectively.

Figure 10: Contributions of assets and liabilities to NFL reductions



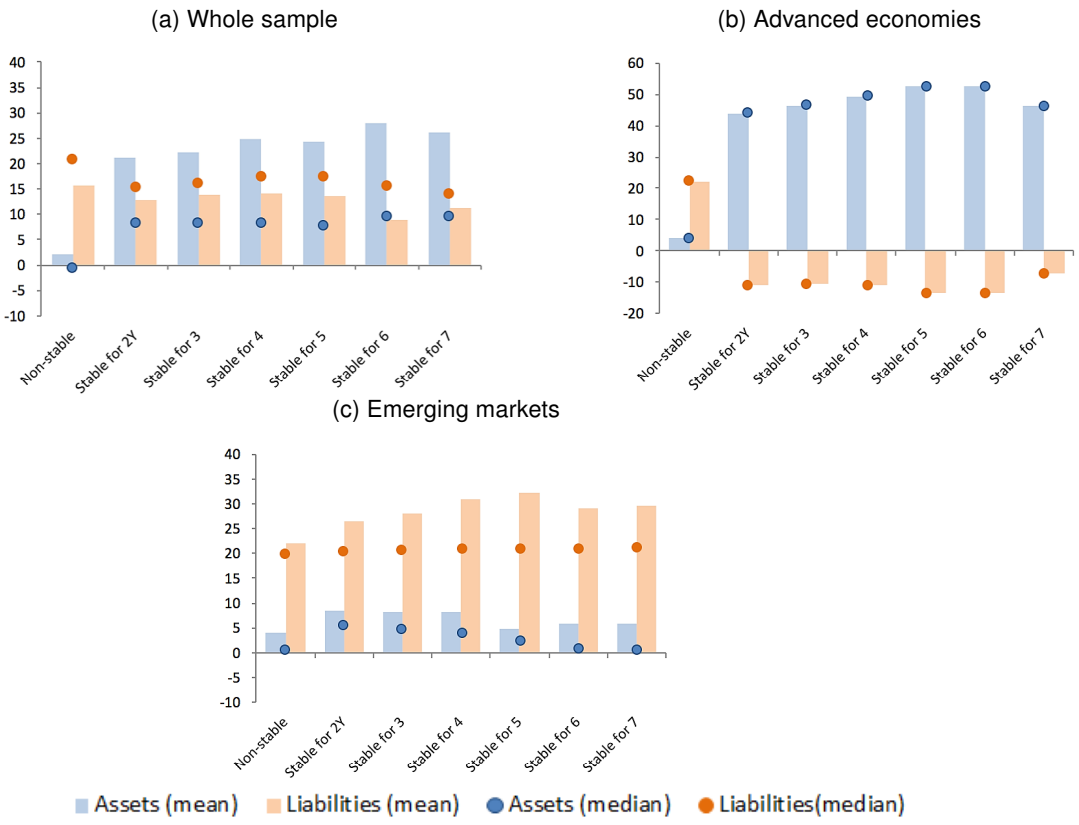
Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Episodes (as % of GDP); blue and orange refer to assets' and liabilities' contribution, respectively; bars and dots indicate sample means and median, respectively.

Figure 11: Contributions of assets and liabilities across NFL reduction size



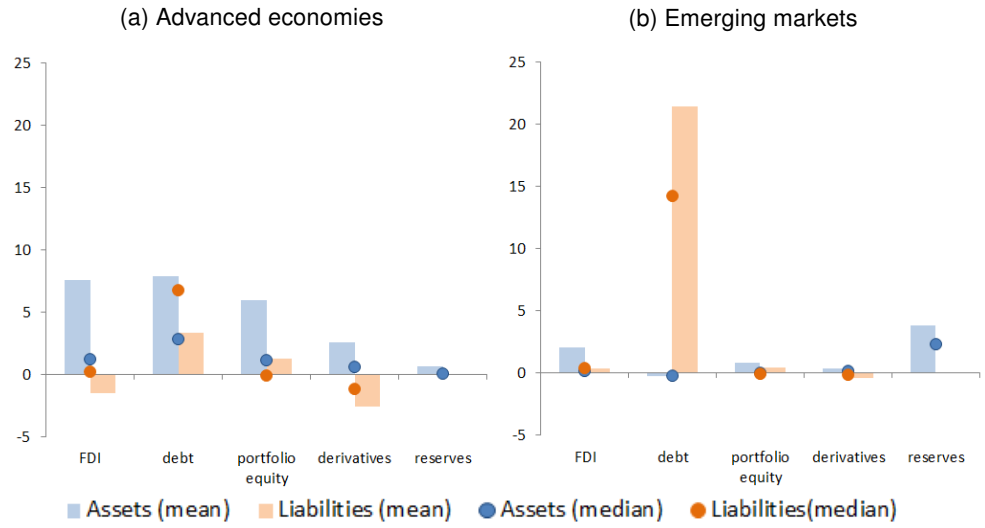
Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Episodes (as % of GDP); blue and orange refer to assets' and liabilities' contribution, respectively; bars and dots indicate sample means and median, respectively.

Figure 12: Contributions of assets and liabilities by stability length



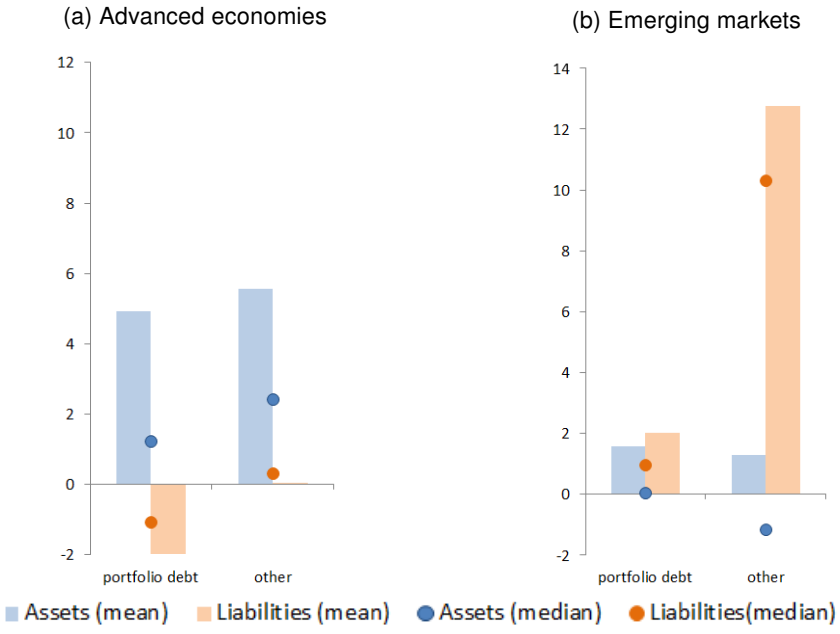
Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Episodes (as % of GDP); blue and orange refer to assets' and liabilities' contribution, respectively; bars and dots indicate sample means and median, respectively.

Figure 13: Contributions of different asset classes



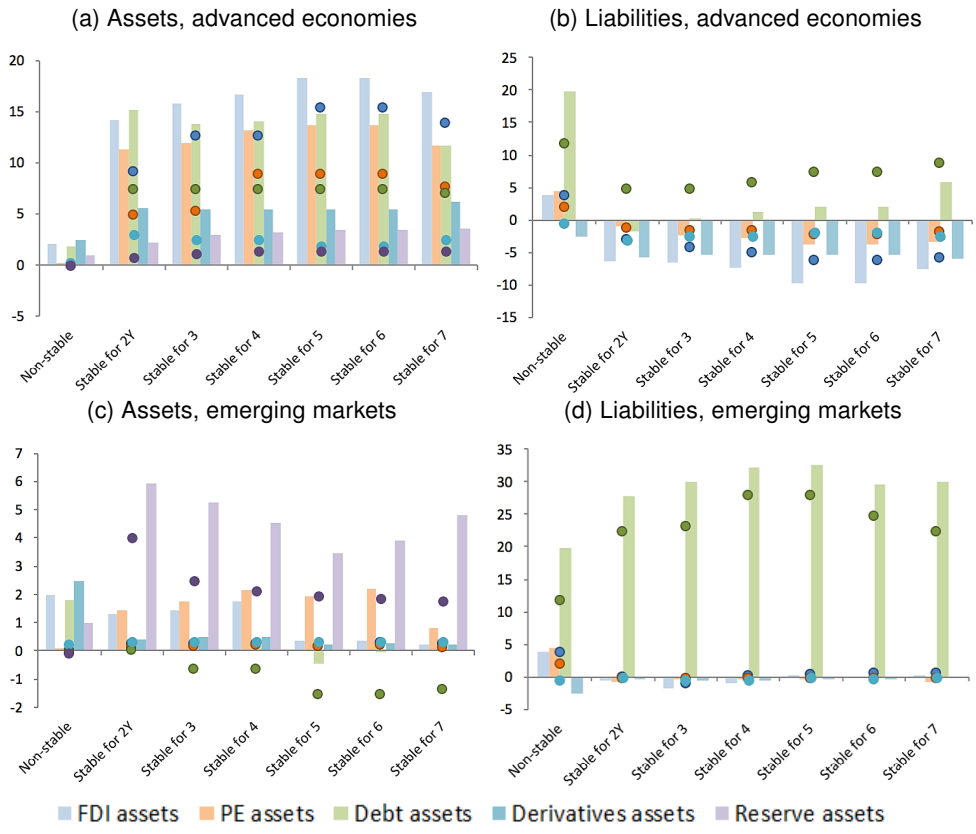
Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Episodes (as % of GDP); blue and orange refer to assets' and liabilities' contribution, respectively; bars and dots indicate sample means and median, respectively.

Figure 14: Decomposition of the contributions of debt instruments



Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Episodes (as % of GDP); blue and orange refer to assets' and liabilities' contribution, respectively; bars and dots indicate sample means and median, respectively.

Figure 15: Contributions of different asset classes by stability length



Sources: Authors' calculations based on Lane and Milesi-Ferretti (2007).
Notes: Episodes (as % of GDP); bars and dots indicate sample means and median, respectively.

Table 1: A broad overview of reduction episodes

Country Group	No. episodes	No. MIP episodes	No. crisis episodes	Reduction size	Length (year)	Adjust./year
Advanced economies	53	30	12	24.5	4.3	5.8
Emerging countries	85	63	36	28.1	5.1	5.5
Other	282	237	86	55.7	4.2	13.2

Notes: Excluded from above: offshore financial centers, episodes with initial NFA>0, episodes with NFL reduction <10% of GDP. "MIP episodes" refer to reduction episodes with an initial NFA below -35% of GDP (which corresponds to the European Commission's Macroeconomic Imbalance Procedure (MIP) threshold). The reduction size and adjustment size per year are expressed in % GDP. Medians are reported for the reduction size, length and and adjustment size per year.

Table 2: Number of episodes by country group and stability length

			Stability						
Country Group	**Episodes**	**Non-Stable**	**Stable 1Y**	**Stable 2Y**	**Stable 3Y**	**Stable 4Y**	**Stable 5Y**	**Stable 6Y**	**Stable 7Y**
Advanced	53	15	33	26	22	20	18	18	17
EMEs	85	21	57	46	38	30	26	20	17
Total	138	36	90	72	60	50	44	38	34

Notes: "Stable nY" refer to the number of episodes that are stable for at least n years.

Table 3: Baseline regression: ordinal logit

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	All	All	All	All	All	Adv	EMEs	NoCrisis	Crisis
Avg. real GDP growth	1.177***	1.180***	1.191***	1.223***	1.205***	1.188	1.241***	1.184*	1.060
	(0.057)	(0.062)	(0.064)	(0.068)	(0.065)	(0.143)	(0.084)	(0.119)	(0.112)
Avg. change in private credit (ratio to GDP)		0.966	0.966	0.976		0.922	1.002	0.924	1.089
		(0.044)	(0.038)	(0.031)		(0.106)	(0.047)	(0.055)	(0.071)
Avg. change in public debt (ratio to GDP)		0.998	1.002	1.007		0.939	1.001	1.011	0.956
		(0.017)	(0.021)	(0.022)		(0.106)	(0.022)	(0.021)	(0.060)
Avg. NEER appreciation			0.987	0.977**	0.981*	0.952	0.978*	1.044	1.011
			(0.014)	(0.011)	(0.010)	(0.073)	(0.013)	(0.041)	(0.020)
Final current account balance (ratio to GDP)				1.187***	1.182***	1.278***	1.125**	1.272***	1.053
				(0.049)	(0.048)	(0.069)	(0.052)	(0.055)	(0.067)
Observations	125	120	118	118	123	45	73	77	41
Pseudo R2	0.0237	0.0256	0.0271	0.0879	0.0825	0.179	0.0636	0.129	0.0463

Notes: The dependent variable is stability length; "Avg." refers to yearly change/growth averaged over the episode. Robust standard errors in brackets. Odds ratios are shown. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 4: Further estimations: ordinal logit

VARIABLES	(1) All	(2) below MIP	(3) All	(4) All	(5) All	(6) All	(7) All	(8) All	(9) All
Avg. real GDP growth	1.223***	1.330***	1.256***	1.238**	1.233***	1.266***	1.169***	1.204***	1.218***
	(0.068)	(0.099)	(0.070)	(0.113)	(0.073)	(0.076)	(0.063)	(0.069)	(0.067)
Avg. change in private credit (ratio to GDP)	0.976	0.942	0.982	0.962	0.978	0.970	0.983	0.986	0.975
	(0.031)	(0.041)	(0.030)	(0.058)	(0.032)	(0.033)	(0.030)	(0.033)	(0.031)
Avg. change in public debt (ratio to GDP)	1.007	0.995	1.007	0.938	1.008	1.008	1.018	1.004	1.027
	(0.022)	(0.028)	(0.021)	(0.096)	(0.022)	(0.021)	(0.021)	(0.021)	(0.021)
Avg. NEER appreciation	0.977**	0.994	0.974**	0.970	0.976**	0.971**	0.986	0.977**	0.976**
	(0.011)	(0.019)	(0.011)	(0.049)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)
Final current account balance (ratio to GDP)	1.187***	1.182***	1.192***	1.186***	1.181***	1.176***	1.213***	1.188***	1.199***
	(0.049)	(0.074)	(0.049)	(0.068)	(0.050)	(0.049)	(0.053)	(0.051)	(0.045)
Avg. global real GDP growth			0.674						
			(0.163)						
Avg. WGI score				1.042					
				(0.053)					
Initial trade openness					1.004				
					(0.006)				
Initial financial openness (IFI)						1.002			
						(0.002)			
IMF programme							3.015***		
							(1.149)		
Exchange rate peg								1.783	
								(0.637)	
Debt restructuring									4.920**
									(3.389)
Observations	118	78	118	73	116	118	118	118	118
Pseudo R2	0.0879	0.107	0.0940	0.121	0.0900	0.0929	0.106	0.0938	0.105

Notes: The dependent variable is stability length; "Avg." refers to yearly change/growth averaged over the episode. Robust standard errors in brackets. Odds ratios are shown. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 5: Baseline regression: OLS

VARIABLES	(1) All	(2) All	(3) All	(4) All	(5) All	(6) Adv	(7) EMEs	(8) NoCrisis	(9) Crisis
Avg. real GDP growth	0.199***	0.197***	0.216***	0.204***	0.193***	0.020	0.254***	0.094	0.056
	(0.057)	(0.060)	(0.069)	(0.064)	(0.062)	(0.186)	(0.082)	(0.081)	(0.134)
Avg. change in private credit (ratio to GDP)		-0.033	-0.043	-0.024		-0.102	0.038	-0.110**	0.124
		(0.063)	(0.051)	(0.041)		(0.074)	(0.052)	(0.043)	(0.077)
Avg. change in public debt (ratio to GDP)		-0.003	0.001	0.005		-0.055	-0.016	0.014	-0.080
		(0.021)	(0.025)	(0.021)		(0.109)	(0.026)	(0.015)	(0.060)
Avg. NEER appreciation			-0.017	-0.021	-0.017	-0.065	-0.021	0.081**	0.019
			(0.017)	(0.014)	(0.014)	(0.098)	(0.015)	(0.033)	(0.026)
Final current account balance (ratio to GDP)				0.210***	0.210***	0.258***	0.155***	0.245***	0.091
				(0.037)	(0.036)	(0.040)	(0.049)	(0.046)	(0.062)
Observations	125	120	118	118	123	45	73	77	41
Adjusted R2	0.0510	0.0386	0.0360	0.203	0.204	0.317	0.138	0.273	0.0727

Notes: The dependent variable is stability length; "Avg." refers to yearly change/growth averaged over the episode. Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 6: Baseline regression: ordinal probit

VARIABLES	(1) All	(2) All	(3) All	(4) All	(5) All	(6) Adv	(7) EMEs	(8) NoCrisis	(9) Crisis
Avg. real GDP growth	0.100***	0.099***	0.105***	0.121***	0.112***	0.099	0.131***	0.096*	0.037
	(0.029)	(0.031)	(0.033)	(0.034)	(0.033)	(0.074)	(0.044)	(0.056)	(0.063)
Avg. change in private credit (ratio to GDP)		-0.015	-0.020	-0.015		-0.032	0.007	-0.048	0.055
		(0.025)	(0.021)	(0.019)		(0.048)	(0.029)	(0.032)	(0.037)
Avg. change in public debt (ratio to GDP)		-0.000	0.002	0.004		-0.022	-0.002	0.008	-0.027
		(0.010)	(0.012)	(0.013)		(0.059)	(0.013)	(0.013)	(0.029)
Avg. NEER appreciation			-0.008	-0.013*	-0.011	-0.040	-0.012	0.026	0.007
			(0.008)	(0.007)	(0.007)	(0.040)	(0.009)	(0.022)	(0.012)
Final current account balance (ratio to GDP)				0.101***	0.099***	0.155***	0.070***	0.148***	0.032
				(0.022)	(0.022)	(0.031)	(0.025)	(0.026)	(0.032)
Observations	125	120	118	118	123	45	73	77	41
Pseudo R2	0.0237	0.0244	0.0263	0.0875	0.0825	0.180	0.0631	0.131	0.0540

Notes: The dependent variable is stability length; "Avg." refers to yearly change/growth averaged over the episode. Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 7: Binary logit: different stability length definitions

VARIABLES	(1) 2 yrs	(2) 3 yrs	(3) 4 yrs	(4) 5 yrs	(5) 6 yrs	(6) 7 yrs
Avg. real GDP growth	1.313***	1.246***	1.216***	1.143**	1.147**	1.115*
	(0.109)	(0.086)	(0.078)	(0.069)	(0.078)	(0.073)
Avg. change in private credit (ratio to GDP)	0.960	0.957	0.979	0.995	1.014	0.993
	(0.035)	(0.039)	(0.034)	(0.037)	(0.037)	(0.039)
Avg. change in public debt (ratio to GDP)	0.996	0.995	0.997	0.993	0.987	1.008
	(0.020)	(0.019)	(0.018)	(0.017)	(0.018)	(0.028)
Avg. NEER appreciation	0.970**	0.976*	0.974**	0.990	0.992	0.988
	(0.014)	(0.014)	(0.012)	(0.013)	(0.014)	(0.014)
Final current account balance (ratio to GDP)	1.294***	1.228***	1.216***	1.153***	1.183***	1.117**
	(0.069)	(0.055)	(0.056)	(0.052)	(0.060)	(0.052)
Observations	118	118	118	118	118	118
Pseudo R2	0.242	0.187	0.170	0.108	0.134	0.0738

Notes: The dependent variable refers to at least n years of stability; "Avg." refers to yearly change/growth averaged over the episode. Robust standard errors in brackets. Odds ratios are shown. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Appendix

Table A.1: Country groups definition

Country groups	Definition
Advanced economies	Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovak Republic, Slovenia, Spain, Denmark, Sweden, United Kingdom, Australia, Canada, Iceland, Israel, Japan, New Zealand, Norway, Switzerland, Taiwan, United States
Emerging markets	Brazil, Chile, PR of China, Colombia, Egypt, India, Indonesia, Malaysia, Mexico, Peru, Philippines, Russia, South Africa, Thailand, Turkey, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Albania, Argentina, Bangladesh, Ecuador, Kazakhstan, Kuwait, Moldova, Oman, Pakistan, Serbia, Sri Lanka, Tunisia, Ukraine, Uruguay, Vietnam

Table A.2: Outlier episode list

Country	Reduction period	Country Group
Cyprus	1989	Advanced
Cyprus	2000-2002	Advanced
Finland	2000-2004	Advanced
Finland	2008-2010	Advanced
Iceland	2010-2013	Advanced
Ireland	1985-1989	Advanced
Ireland	1994	Advanced
Ireland	1996-1999	Advanced
Ireland	2005-2006	Advanced
Ireland	2010	Advanced
Ireland	2013	Advanced
Luxembourg	2000-2003	Advanced
Luxembourg	2006	Advanced
Luxembourg	2008	Advanced
Luxembourg	2010-2011	Advanced
Luxembourg	2013	Advanced
Malta	1971-1978	Advanced
United Kingdom	2007-2008	Advanced
United Kingdom	2011-2013	Advanced

Table A.3: List of variables and source

Variable	Source
International investment positions variables	EWN (Lane and Milesi-Ferretti)
Current and capital account	EWN (Lane and Milesi-Ferretti), IMF WEO
GDP	EWN (Lane and Milesi-Ferretti), IMF WEO, WDI
Public debt	IMF WEO, IMF Historical Public Debt Database
GDP per capita, private credit, exports and imports	WDI
Quality of institutions	World Governance Indicator (composite), World Bank
Nominal Effective Exchange Rate	IMF, ECB
Capital account openness	Chinn and Ito 2006
Exchange rate peg (strict and wider definitions)	Ilzetzki et al. (2010)
Crisis, sovereign debt restructuring	Laeven and Valencia

Table A.4: Episode list & characteristics

Episode	Crisis	IMF programme	Debt restructuring	Stability	Ini.NFA	Fin.NFA	△ NFA	△ Assets	△ Liab.	Trans.*	Val.*	GDP*
Albania-1994-1996	Yes	Yes	Yes	stable for 7Y	-41.0	-2.4	38.6	1.3	-37.4	0.1	16.3	22.3
Argentina-1971-1974	No	No	No	non-stable	-16.7	-4.2	12.6	-1.8	-14.3	0.1	-0.3	12.7
Argentina-1986-1992	Yes	Yes	No	stable for 4Y	-28.9	-6.4	22.4	1.8	-20.6	-3.6	8.3	17.8
Argentina-2003-2009	Yes	Yes	Yes	stable for 7Y	-58.6	8.1	66.7	-45.6	-112.3	13.1	13.2	40.4
Australia-1971-1974	No	No	No	stable for 3Y	-23.6	-8.5	15.1	-2.5	-17.6	-3.0	5.3	12.8
Australia-1995-1997	No	No	No	non-stable	-54.6	-43.6	11.0	7.3	-3.7	-10.8	12.4	9.4
Australia-2008-2008	No	No	No	non-stable	-59.4	-46.3	13.1	-29.1	-42.2	-4.9	12.0	6.0
Australia-2010-2013	No	No	No	cannot say	-68.5	-49.6	18.9	-0.3	-19.3	-13.8	9.6	23.1
Austria-1982-1983	No	No	No	stable for 1Y	-16.7	-1.0	15.7	1.8	-13.9	1.4	14.1	0.2
Austria-2007-2013	Yes	No	No	stable for 7Y	-23.3	0.2	23.5	10.6	-13.0	18.3	0.1	5.1
Bangladesh-1991-1998	No	Yes	No	stable for 3Y	-40.4	-27.8	12.6	1.4	-11.3	-6.7	6.4	12.9
Bangladesh-2001-2006	No	No	No	non-stable	-32.4	2.6	35.0	6.0	-29.0	3.5	22.5	9.0
Bangladesh-2012-2013	No	No	No	cannot say	-19.6	-9.0	10.5	8.4	-2.1	2.7	4.1	3.8
Belgium-1986-2000	No	No	No	stable for 7Y	-12.9	60.0	73.0	147.4	74.5	59.0	5.6	8.3
Brazil-1985-1985	Yes	Yes	No	stable for 7Y	-49.8	-31.2	18.6	-7.2	-25.8	-0.1	0.3	18.4
Brazil-1987-1989	Yes	Yes	No	stable for 7Y	-32.2	-19.7	12.5	-3.1	-15.6	0.8	-1.2	12.9
Brazil-2002-2008	No	Yes	No	non-stable	-45.0	-15.8	29.2	3.9	-25.3	0.5	-1.2	29.9
Bulgaria-1994-1995	No	Yes	Yes	non-stable	-64.2	-36.2	28.0	-4.0	-32.0	3.9	11.7	12.4
Bulgaria-1997-2001	Yes	Yes	No	stable for 3Y	-50.4	-29.5	20.9	11.7	-9.1	2.9	4.4	13.6
Bulgaria-2010-2013	No	No	No	cannot say	-109.2	-82.9	26.3	11.1	-15.2	6.3	11.0	9.0
Canada-1994-2000	No	No	No	stable for 7Y	-49.1	-5.8	43.2	61.0	17.7	-2.2	34.5	10.9
Canada-2004-2006	No	No	No	non-stable	-17.7	-2.9	14.8	13.6	-1.2	4.7	4.3	5.7
Canada-2011-2013	No	No	No	stable for 7Y	-17.3	1.4	18.7	15.1	-3.6	-9.5	26.2	2.0
Chile-1971-1972	No	No	No	non-stable	-54.5	-42.3	12.2	-5.2	-17.4	-5.3	0.1	17.4
Chile-1976-1980	Yes	Yes	No	stable for 2Y	-96.8	-43.5	53.3	-1.0	-54.4	-16.2	-1.9	71.5
Chile-1986-1992	No	Yes	Yes	stable for 7Y	-97.5	-36.1	61.4	-4.7	-66.0	-9.5	9.7	61.2
Chile-2002-2007	No	No	No	stable for 6Y	-45.3	0.4	45.7	26.2	-19.5	10.1	9.0	26.6
China,P.R.: Mainland-1996-2008	Yes	No	No	stable for 7Y	-8.2	30.6	38.9	43.8	4.9	31.5	0.5	6.9
Colombia-1972-1979	No	No	No	stable for 2Y	-24.5	0.3	24.8	15.9	-8.9	1.4	7.1	16.3
Colombia-1988-1992	No	No	No	stable for 3Y	-24.0	-9.0	15.0	8.3	-6.7	4.9	3.8	6.3
Croatia-2008-2008	No	No	No	non-stable	-99.8	-72.0	27.7	-7.5	-35.2	-8.9	22.0	14.6
Denmark-1986-1996	No	No	No	stable for 7Y	-52.2	-23.1	29.2	30.1	1.0	5.7	-11.5	34.9
Denmark-1999-1999	No	No	No	stable for 7Y	-28.0	-12.8	15.2	19.4	4.2	2.7	12.5	0.0
Denmark-2003-2005	No	No	No	stable for 1Y	-18.7	3.3	22.0	15.7	-6.3	11.3	4.6	6.1
Denmark-2008-2013	Yes	No	No	stable for 7Y	-6.8	39.8	46.5	59.8	13.2	30.9	15.3	0.4
Ecuador-1972-1974	No	No	No	non-stable	-28.4	-17.3	11.1	0.8	-10.3	-0.7	-4.4	16.1
Ecuador-1991-1997	No	No	Yes	stable for 1Y	-82.0	-53.8	28.1	-4.1	-32.2	-5.5	-11.2	44.8
Ecuador-2000-2013	Yes	Yes	Yes	cannot say	-90.8	-12.5	78.3	0.3	-78.0	6.1	0.7	71.5
Egypt-1972-1974	No	No	No	non-stable	-18.8	-1.5	17.3	11.2	-6.1	-20.3	32.1	5.5
Egypt-1982-1983	Yes	Yes	No	stable for 7Y	-74.4	-62.2	12.3	5.7	-6.6	-10.1	-0.6	23.0
Egypt-1986-1997	Yes	No	Yes	stable for 7Y	-63.1	-5.9	57.2	28.8	-28.4	13.8	18.9	24.5
Egypt-2003-2006	No	No	No	stable for 1Y	-20.1	-3.2	17.0	23.5	6.5	9.3	3.7	4.0
Estonia-2005-2008	No	No	No	non-stable	-93.6	-72.4	21.1	17.5	-3.7	-34.4	9.1	46.4
Estonia-2010-2013	No	No	No	cannot say	-83.9	-50.0	33.8	9.3	-24.5	12.9	4.1	16.8
Finland-1971-1974	No	No	No	stable for 2Y	-25.6	-14.8	10.8	-4.6	-15.4	-8.3	5.2	13.9
Finland-1995-1997	Yes	No	No	non-stable	-55.6	-40.3	15.2	6.1	-9.2	13.8	-8.5	10.0
France-1994-1997	No	No	No	stable for 7Y	-7.9	8.9	16.8	35.1	18.3	6.0	10.1	0.7
France-2000-2000	No	No	No	stable for 7Y	-1.2	16.1	17.4	24.1	6.7	2.7	14.8	-0.1
Greece-1988-1990	No	No	No	stable for 7Y	-37.7	-18.9	18.8	6.3	-12.5	-7.7	14.0	12.5
Greece-1994-1996	No	No	No	non-stable	-23.0	-6.4	16.6	16.6	0.0	-6.1	16.6	6.1
Greece-2008-2008	No	No	No	non-stable	-104.3	-73.6	30.6	-0.1	-30.7	-13.2	32.5	11.3
Greece-2011-2011	No	Yes	No	non-stable	-101.2	-81.2	20.0	-5.3	-25.3	-8.7	30.3	-1.6
Hungary-1988-1992	Yes	Yes	No	stable for 1Y	-54.6	-42.5	12.1	7.6	-4.5	-0.1	-4.2	16.3
Hungary-2007-2008	No	No	No	non-stable	-107.5	-96.6	10.8	67.9	57.0	-12.0	-6.2	29.0
Hungary-2010-2013	Yes	Yes	No	cannot say	-128.3	-88.2	40.2	-10.3	-50.4	17.2	17.5	5.4

*effects contribution to reduction. Continued on next page

Table A.4 – continued from previous page

Episode	Crisis	IMF programme	Debt restructuring	Stability	Ini.NFA	Fin.NFA	△ NFA	△ Assets	△ Liab.	Trans.*	Val.*	GDP*
Iceland-1976-1980	Yes	No	No	stable for 1Y	-39.0	-26.4	12.7	4.5	-8.2	-4.4	-7.0	24.0
Iceland-1986-1988	No	No	No	stable for 2Y	-54.2	-42.8	11.4	-4.9	-16.4	-6.0	-10.3	27.7
Iceland-2003-2003	No	No	No	stable for 1Y	-98.4	-70.7	27.7	51.6	23.9	-5.1	14.4	18.4
India-1992-2004	Yes	No	No	stable for 2Y	-30.2	-11.7	18.5	18.2	-0.3	-2.0	1.8	18.7
India-2008-2008	No	No	No	non-stable	-26.1	-16.1	10.0	0.4	-9.6	-2.3	12.6	-0.3
Indonesia-1973-1974	No	No	No	stable for 7Y	-47.2	-28.8	18.4	0.4	-17.9	0.4	-7.9	25.8
Indonesia-1976-1980	Yes	No	No	stable for 2Y	-35.2	-16.8	18.3	8.3	-10.1	1.7	-4.6	21.2
Indonesia-1999-2008	Yes	Yes	Yes	stable for 5Y	-160.3	-29.4	131.0	-23.3	-154.2	12.0	-11.4	130.3
Israel-1986-1991	Yes	No	No	stable for 7Y	-63.3	-26.2	37.1	-22.0	-59.1	2.9	-3.6	37.8
Israel-2000-2013	No	No	No	stable for 7Y	-43.0	21.2	64.2	55.1	-9.1	21.7	16.5	26.0
Kazakhstan-2001-2005	Yes	Yes	No	stable for 7Y	-63.5	-37.3	26.2	32.4	6.2	-6.5	-10.4	43.2
Kazakhstan-2008-2013	Yes	No	No	cannot say	-44.0	-17.1	27.0	1.0	-26.0	10.7	-6.8	23.1
Korea-1984-1992	No	Yes	No	stable for 7Y	-44.5	-6.8	37.7	3.8	-33.9	3.7	0.8	33.2
Korea-2000-2000	Yes	Yes	No	stable for 4Y	-19.9	-8.0	11.9	-0.2	-12.1	2.0	7.3	2.7
Latvia-2010-2013	Yes	Yes	No	cannot say	-87.0	-68.4	18.7	0.0	-18.6	2.5	2.0	14.2
Lithuania-2008-2008	No	No	No	non-stable	-60.2	-49.9	10.2	-10.6	-20.8	-11.7	11.5	10.3
Lithuania-2010-2013	No	No	No	cannot say	-61.7	-46.9	14.8	-6.9	-21.7	5.1	-3.8	13.5
Malaysia-1987-1990	No	No	No	stable for 3Y	-69.6	-16.1	53.5	8.2	-45.3	8.5	20.0	24.9
Malaysia-1995-2009	Yes	No	No	stable for 4Y	-46.2	14.6	60.8	71.6	10.7	99.9	-68.2	29.2
Mexico-1987-1994	No	Yes	Yes	non-stable	-52.9	-29.9	23.0	-11.2	-34.2	-19.6	5.2	37.4
Mexico-1996-2002	Yes	Yes	No	stable for 6Y	-47.9	-25.8	22.0	1.8	-20.2	-12.3	8.7	25.7
Moldova-2000-2005	Yes	Yes	Yes	stable for 7Y	-115.3	-56.4	58.9	-10.5	-69.3	-21.2	10.1	70.1
Netherlands-1995-1995	No	No	No	stable for 2Y	-11.2	12.3	23.5	25.7	2.2	5.9	15.8	1.8
Netherlands-2001-2004	No	No	No	stable for 2Y	-17.4	2.3	19.7	105.2	85.6	14.2	-0.9	6.4
Netherlands-2006-2013	Yes	No	No	stable for 7Y	-4.3	44.2	48.5	119.7	71.2	62.0	-14.4	0.9
New Zealand-1971-1973	No	No	No	stable for 1Y	-26.4	-14.5	11.9	4.1	-7.8	0.2	-0.9	12.6
New Zealand-1987-1988	No	No	No	non-stable	-64.4	-41.5	22.9	-7.2	-30.1	-3.7	1.0	25.6
New Zealand-1997-2001	No	No	No	stable for 4Y	-115.2	-63.6	51.6	42.7	-8.9	-19.6	106.3	-35.1
New Zealand-2007-2008	No	No	No	non-stable	-93.3	-73.7	19.6	-14.9	-34.5	-14.6	17.3	17.0
New Zealand-2010-2013	No	No	No	cannot say	-100.4	-70.1	30.3	-5.2	-35.5	-3.1	-0.9	34.4
Norway-1979-1985	No	No	No	stable for 7Y	-51.1	-15.6	35.5	24.0	-11.5	18.1	2.8	14.5
Norway-1988-2006	Yes	No	No	stable for 7Y	-21.8	61.1	82.9	189.2	106.3	85.6	-18.6	15.9
Oman-1987-1990	No	No	No	stable for 3Y	-8.6	19.9	28.5	14.4	-14.1	17.1	8.9	2.5
Oman-1999-2012	No	No	No	stable for 7Y	-31.5	46.9	78.4	57.4	-21.0	62.8	-10.4	25.9
Pakistan-1973-1975	Yes	Yes	No	stable for 7Y	-49.9	-34.6	15.4	0.1	-15.3	-13.6	4.7	24.3
Pakistan-2000-2005	No	Yes	No	stable for 1Y	-42.3	-24.5	17.8	6.8	-11.0	7.8	-4.4	14.4
Pakistan-2009-2011	No	Yes	No	stable for 2Y	-41.7	-29.4	12.3	2.0	-10.4	-5.7	9.7	8.3
Peru-1971-1974	No	No	No	stable for 1Y	-57.0	-42.3	14.7	4.0	-10.7	-8.2	-3.6	26.4
Peru-1979-1980	Yes	Yes	No	stable for 4Y	-83.4	-34.2	49.2	10.2	-39.1	-1.6	16.5	34.3
Peru-1986-1987	No	Yes	No	non-stable	-69.0	-41.5	27.6	-17.0	-44.6	-7.7	-5.9	41.2
Peru-1989-1989	Yes	No	No	non-stable	-55.5	-45.1	10.4	0.4	-10.0	-0.6	0.5	10.5
Peru-1994-1997	No	Yes	Yes	stable for 7Y	-69.5	-43.1	26.5	8.4	-18.1	-25.2	23.1	28.5
Peru-2000-2008	No	Yes	No	stable for 5Y	-54.8	-25.8	29.0	9.9	-19.1	-4.3	0.8	32.6
Philippines-1971-1974	No	No	No	stable for 1Y	-27.5	-7.6	19.9	10.5	-9.4	1.6	3.8	14.4
Philippines-1987-1992	No	Yes	No	stable for 5Y	-71.6	-43.4	28.2	5.1	-23.1	-12.0	8.9	31.2
Philippines-2002-2011	No	No	No	stable for 2Y	-57.2	-14.0	43.2	7.4	-35.8	18.2	-12.7	37.7
Poland-1982-1984	Yes	No	No	non-stable	-54.3	-37.8	16.6	1.3	-15.2	-6.1	6.9	15.7
Poland-1988-1997	Yes	No	Yes	stable for 5Y	-61.6	-20.1	41.5	7.9	-33.7	-1.0	5.9	36.6
Poland-2008-2008	No	No	No	non-stable	-57.4	-46.4	11.0	-10.9	-21.9	-5.6	5.3	11.2
Poland-2011-2011	No	No	No	non-stable	-67.6	-56.6	11.0	-1.3	-12.3	-3.4	8.4	6.0
Portugal-1985-1992	Yes	Yes	No	stable for 7Y	-65.3	-9.5	55.8	7.6	-48.2	0.0	6.2	49.6
Portugal-2010-2011	Yes	No	No	non-stable	-120.7	-106.1	14.6	-30.7	-45.3	-14.0	26.9	1.7
Russia-1994-1997	No	No	No	stable for 1Y	-14.7	2.9	17.6	-6.0	-23.6	6.5	3.0	8.0
Russia-2000-2000	Yes	Yes	No	stable for 6Y	-6.6	21.4	27.9	-11.8	-39.7	22.3	4.1	1.6
Russia-2006-2008	No	No	No	stable for 7Y	-4.8	14.5	19.3	-6.9	-26.2	15.5	1.2	2.6
Serbia-2000-2004	Yes	No	No	stable for 3Y	-74.0	-48.7	25.3	-3.1	-28.4	-22.7	8.3	39.8
Serbia-2011-2011	No	Yes	No	non-stable	-91.7	-79.8	11.8	-6.5	-18.4	-9.1	6.1	14.9

*effects contribution to reduction. Continued on next page

Table A.4 – continued from previous page

Episode	Crisis	IMF programme	Debt restructuring	Stability	Ini.NFA	Fin.NFA	△ NFA	△ Assets	△ Liab.	Trans.*	Val.*	GDP*
Slovak Republic-2010-2011	No	No	No	stable for 1Y	-72.5	-62.2	10.3	-1.1	-11.4	-6.8	10.6	6.4
Slovenia-2001-2002	No	No	No	non-stable	-11.8	-1.0	10.8	23.3	12.6	0.2	9.0	1.6
South Africa-1977-1981	No	Yes	No	stable for 3Y	-48.3	-28.6	19.7	-2.0	-21.7	2.9	-10.7	27.4
South Africa-1983-1991	Yes	Yes	No	stable for 7Y	-35.7	-10.8	25.0	4.5	-20.5	12.2	-0.4	13.2
South Africa-2008-2008	No	No	No	non-stable	-34.2	-9.3	24.9	-6.1	-31.0	-5.8	32.2	-1.5
South Africa-2011-2013	No	No	No	cannot say	-28.0	-5.9	22.1	26.1	3.9	-14.2	37.5	-1.2
Spain-1971-1973	No	No	No	stable for 1Y	-10.4	-0.1	10.3	8.6	-1.7	2.6	2.6	5.0
Spain-2010-2011	Yes	No	No	non-stable	-98.0	-86.2	11.8	-8.9	-20.7	-6.0	18.0	-0.2
Sri Lanka-1989-1997	Yes	Yes	No	stable for 1Y	-61.1	-36.2	24.9	10.0	-14.9	-37.2	29.1	33.0
Sri Lanka-2003-2005	No	Yes	No	stable for 5Y	-58.2	-45.2	13.0	5.4	-7.6	-3.8	-0.6	17.4
Sweden-1998-2007	No	No	No	stable for 6Y	-38.8	-2.5	36.4	157.6	121.2	43.1	-24.3	17.6
Thailand-1986-1990	No	Yes	No	stable for 1Y	-42.4	-31.0	11.4	9.6	-1.8	-13.5	1.8	23.1
Thailand-1999-2009	Yes	Yes	No	stable for 4Y	-81.3	-2.9	78.4	40.1	-38.3	26.9	4.7	46.8
Tunisia-1971-1975	No	No	No	stable for 1Y	-53.1	-35.3	17.8	5.8	-12.1	-4.0	-10.1	31.9
Tunisia-1987-1992	Yes	Yes	No	non-stable	-114.5	-89.8	24.8	3.0	-21.7	-17.6	-5.6	48.0
Tunisia-1995-1999	No	No	No	non-stable	-106.1	-80.4	25.7	0.8	-24.9	-11.8	10.3	27.3
Tunisia-2003-2005	No	No	No	stable for 5Y	-109.1	-89.3	19.7	3.1	-16.7	-4.7	-6.5	30.9
Turkey-2002-2004	Yes	Yes	No	stable for 1Y	-43.5	-32.8	10.7	-4.9	-15.6	-5.7	-5.3	21.7
Turkey-2008-2008	No	Yes	No	non-stable	-48.7	-27.7	21.0	-1.0	-22.0	-5.4	20.8	5.6
Ukraine-2000-2005	Yes	Yes	Yes	stable for 3Y	-43.8	-16.9	26.9	20.4	-6.4	21.3	-22.1	27.7
United Kingdom-2000-2000	No	No	No	stable for 3Y	-20.2	-9.9	10.3	37.3	27.0	-2.2	12.8	-0.3
United States-2003-2007	No	No	No	non-stable	-22.8	-10.3	12.4	78.0	65.5	-23.6	30.5	5.5
Uruguay-1976-1978	No	Yes	No	stable for 2Y	-19.5	-7.0	12.5	8.0	-4.5	-6.5	13.1	5.9
Uruguay-1984-1993	Yes	Yes	Yes	stable for 7Y	-43.1	-12.7	30.5	-3.5	-34.0	-1.7	3.6	28.5
Vietnam-1999-2006	Yes	Yes	Yes	stable for 2Y	-83.2	-37.8	45.4	17.1	-28.3	-2.9	-0.8	49.1
Vietnam-2011-2012	No	No	No	cannot say	-73.8	-62.5	11.3	4.5	-6.8	6.1	-15.1	20.3

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