

### III. Assessing Prudent NIIP and Current Account Positions

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*This chapter presents prudential benchmarks or reference values for the net international investment position (NIIP) in order to help assess external sustainability. The results suggest that while stock imbalances persist in some EU countries, external sustainability risks continue to abate. The empirical findings also demonstrate that the NIIP outperforms other stock indicators for assessing external sustainability. Moreover, the results suggest that low-income countries face external sustainability risks at 'less negative' NIIP levels than richer countries. An application to EU countries illustrates the resulting country-specific prudential benchmarks for the headline NIIP and its debt component, which can complement the Commission's macroeconomic surveillance toolbox.*

*In the EU, several net debtor countries still have legacy NIIPs that surpass prudential benchmarks. But the balanced current accounts in most of these countries imply that they are on track to return their NIIPs to prudent levels by the mid-2020s. In contrast, EU creditor countries do not run external sustainability risks. Yet they continue to run current account surpluses that exceed the level required to stabilise their NIIPs at current levels. <sup>(166)</sup>*

#### III.1. Introduction

**Current account imbalances have shifted since the great recession, but stock imbalances persist in Europe.** The large current account deficits recorded before 2010 have corrected in most cases. Nonetheless, net international investment positions (NIIPs) remain large and negative in a number of countries. The NIIP measures the aggregate difference between total foreign assets and liabilities held by all sectors in an economy. These wide NIIP imbalances have been an important factor in the balance-of-payments adjustments since 2007, as they reflect large private- and public-sector liabilities in debtor countries. By ca. 2015, these debtor countries had weathered their sudden stops and stabilised their stock imbalances; and balance-of-payments risks continue to abate since. The question remains, though, where these stocks will, and should evolve to. Is current account adjustment on the right track for debtor countries, or should they run higher surpluses?

**In contrast to current accounts, the academic literature provides little guidance for assessing NIIPs.** The bulk of it focuses on the extent to which a negative NIIP can be considered risky in view of sudden stops. Early warning approaches to assess external sustainability have a relatively long

tradition,<sup>(167)</sup> but only with more recent data advances have net foreign assets, and the NIIP in particular, emerged as a possible early-warning indicator. Authors such as Catão and Milesi-Ferretti (2014) suggest prudential lower-bound thresholds for NIIPs, beyond which countries may face significant external sustainability risks.<sup>(168)</sup> Via its MIP scoreboard, the Commission is among the few policy institutions that apply a quantitative 'alert threshold' for the NIIP at -35% of GDP.<sup>(169)</sup>

**This chapter proposes a methodology for estimating country-specific prudential benchmark values for indicators of external sustainability, with emphasis on the NIIP.** The prudential benchmark indicates from what level of the indicator, a closer look at external sector developments may be warranted. Although conceptually simple, the results are broadly in line with those from earlier research on the subject, and outperform more complicated risk indicators such as short-term debt liabilities. The benchmarks are made country-specific by taking into account the country's income per capita. Debt-equity composition, however, is also an important qualifier.

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<sup>(166)</sup> The section was prepared by Stefan Zeugner. This work was developed in the context of the Economic Policy Committee (EPC). The author wishes to thank Anton Jevčák, as well as EPC Members, for useful comments.

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<sup>(167)</sup> For instance, Kaminsky, G., S. Lizondo, and C. Reinhart, (1998), Leading indicators of currency crises, IMF Staff Papers, 45(1), 1-48.

<sup>(168)</sup> Catão, L.A.V., and G.M. Milesi-Ferretti (2014), "External liabilities and crises", Journal of International Economics 94(1), 18-32.

<sup>(169)</sup> The NIIP is one of 14 macroeconomic indicators in the Scoreboard for the Macroeconomic Imbalance Procedure. The alert threshold for the NIIP derives from the first quartile over a sample for EU countries 1995-2007. See also European Commission (2012): Scoreboard for the surveillance of macroeconomic imbalances, Occasional paper 92.

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**Prudential NIIP benchmarks complement the Commission's macroeconomic assessment toolbox, but do not replace tested approaches like the MIP scoreboard.** The prudential benchmarks are one among several new external benchmarks to complement the Commission's analytical and qualitative reviews of NIIP and current account balances.<sup>(170)</sup> Note that the concept of an NIIP prudential benchmark focuses on the prudential aspect of external sustainability. It is thus inherently one-sided, as it denotes an NIIP below a certain value as potentially "unsustainable" from a debtor's perspective. The Commission is currently also working on two-sided benchmarks for assessing NIIPs that can be relevant for both debtors and creditors. Together, these stock benchmarks complement the Commission's tools for external sustainability assessment, but do not replace the existing set of external indicators, most notably the ones used in the economic reading of the MIP scoreboard.

**Country-specific NIIP benchmarks directly imply the current account required to reach them.** Such a "required current account" benchmark can widen the array of macroeconomic analysis tools employed in the Commission's macroeconomic surveillance. For countries with an NIIP below the prudential benchmark, the latter can be interpreted as a target level that directly implies what current account balance is needed to converge towards it. For countries that are safely above the benchmark, external sustainability is of a lesser concern, and there is little academic research on where their NIIPs should converge to. The most common approach (as used by the Commission, and the IMF) is to compute the current account balance that would allow such countries to stabilise their NIIPs over the medium term.<sup>(171)</sup> The "required current account" illustrated in this chapter combines these two concepts, and denotes the current account required to stabilise the NIIP *above* the prudential benchmark over the medium-to-long term.

**Gauging from the data, although EU stock imbalances remain pronounced, most debtor countries are on track to reach the benchmark until the mid-2020s.** The NIIPs of several EU countries remain too negative. However, most of them now run current account surpluses that should allow them to bring their NIIPs to the more prudent levels within ten years. In contrast, most 'surplus countries' display an NIIP that is strongly positive, with their surpluses contributing to further increase their net foreign asset positions. Finally, a few core euro area countries run current account balances that are likely to keep their NIIPs at moderate levels.

### III.2. Prudential benchmarks for the NIIP

**The purpose of this approach is to identify an NIIP level that signals external sustainability concerns.** The benchmark consists of a reference value for the NIIP signalling that external debt could be excessive. The benchmark can be constructed on the basis of the signalling approach, i.e., screening indicators for levels that can be associated with episodes of macroeconomic instability.

**The choice of the prudential benchmark is based on its signalling power.** Following similar univariate approaches (as, e.g., for the Commission's S0 indicator<sup>(172)</sup>), the benchmark for each indicator is the one that maximises its "signal power". The optimal benchmark value should signal external sustainability concerns without triggering excessive false concerns. The data sample comprises 66 advanced economies and emerging economies for the period 1980-2015.<sup>(173)</sup>

**The method can be used to validate the choices made in the MIP scoreboard.** The method identifies an unconditional benchmark for the NIIP at -25% of GDP, which is close to the indicative threshold from the MIP scoreboard.<sup>(174)</sup> Table 1 shows that the NIIP has a fairly good signal power as an external sustainability indicator,

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<sup>(170)</sup> These indicators have been developed within a workstream on stock imbalances, in the LIME Working Group of the Economic Policy Committee (EPC), and found broad support from EPC Members in 2017.

<sup>(171)</sup> For a Commission approach, see Salto and Turrini (2010), "Comparing alternative methodologies for real exchange rate assessment"; European Economy - Economic Papers 427. For a summary of the IMF approach see Phillips, S., L. Catão, L. Ricci, R. Bems, M. Das, J. Di Giovanni, D.F. Unsal, M. Castillo, J. Lee, J. Rodríguez and M. Vargas (2013), "The external balance assessment (EBA) methodology", IMF Working Paper 13/272.

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<sup>(172)</sup> Berti, K., M. Salto and M. Lequien (2012), "An early-detection index of fiscal stress for EU countries", European Economy, Economic Paper 475.

<sup>(173)</sup> External episodes are identified according to the methodology of Catão and Milesi-Ferretti (2014), which define such episodes as those with large use of IMF resources and/or a "D" rating by Standard&Poors.

<sup>(174)</sup> The estimation is based on an algorithm that guarantees the identification of a global maximum for the signal power despite a multiplicity of local maxima.

compared to the alternatives in the Table, and provides a balanced compromise between alerting to potential problems without excessively raising unjustified concerns.<sup>(175)</sup> Moreover, NIIP benchmarks appear to be fairly robust to the choice of the estimation sample, with estimates lying between -9% and -43% of GDP for a large set of possible samples.<sup>(176)</sup>

Table III.1: **Benchmarks for gauging sustainability risk**

	Benchm ark	Signal Power	% false alerts	% missed episode starts	# episodes	St.dev. Benchmark	AUROC
<b>NIIP</b>	<b>-25</b>	<b>0.34</b>	<b>0.22</b>	<b>0.45</b>	<b>46</b>	<b>8</b>	<b>0.72</b>
<b>NENDI</b>	<b>-16</b>	<b>0.39</b>	<b>0.20</b>	<b>0.41</b>	<b>46</b>	<b>4</b>	<b>0.73</b>
<b>NIIP/income</b>	<b>-83</b>	<b>0.48</b>	<b>0.18</b>	<b>0.35</b>	<b>45</b>	<b>9</b>	<b>0.77</b>
<b>NENDI/income</b>	<b>-78</b>	<b>0.55</b>	<b>0.29</b>	<b>0.16</b>	<b>45</b>	<b>4</b>	<b>0.79</b>
NIIP - FDI	12	0.11	0.28	0.61	46	7	0.49
Net Pf.+OI debt	-29	0.31	0.33	0.36	46	5	0.69
Net ST debt	-83	0.14	0.00	0.86	7	114	0.50
ST debt liab	12	0.23	0.15	0.61	13	40	0.58
Debt liab	25	0.10	0.04	0.86	46	11	0.52
Reserves	6	0.23	0.39	0.38	46	2	0.63
NIIP/VIX	-55	0.39	0.43	0.19	28	13	0.74
NIIP/imports	-131	0.41	0.33	0.26	46	26	0.77

(1) The event sample used (dependent variable) includes elevated risk episodes as defined in Catão and Milesi-Ferretti (2014), for 66 countries, 1980-2015. 'Benchmark' denotes the optimal benchmark that maximises the signal power. 'Signal power'=1-prob(false alerts)-prob(missed episodes). '% missed episodes' = share of episodes starts that have not been signalled, as a ratio of total episode starts. '% false alerts' = share of "no extreme event" observations that have been wrongly signalled as an external episode. '# episodes'= number of observations in the sample where an episode starts. This compares to 'no extreme event' observations totalling between 1750 and 1850 per indicator. The assessment of benchmark uncertainty is based on 500 random draws with each case omitting 20% of the countries in the sample. 'St.dev. benchmark' denotes the standard deviation of the benchmark over these 500 random draws, and thus illustrates the uncertainty regarding the threshold estimation for a particular indicator. 'AUROC' is a commonly-used statistic to assess an indicator's signalling quality irrespective of where the benchmark is set. The closer the AUROC is to one, the better the indicator's signalling quality.

**Source:** Author's estimates.

**An important question, though, is whether there are indicators that have more information content for alerting against external sustainability problems than the NIIP.** For this purpose, Table III.1 tests several other external stock indicators alongside the NIIP. These are (all as % of GDP):

- *Net Pf.+ OI debt:* Net portfolio investment debt (Pf.) comprises debt securities, while net other

investment (OI) mainly holds loans and deposits.

- *NIIP – FDI:* Stripping out net direct investment from the NIIP leaves "Net Pf. + OI debt", plus portfolio equity shares and mutual funds, reserves and financial derivatives.
- *NENDI:* "NIIP excluding non-defaultable instruments" is defined here as NIIP minus net direct investment and net portfolio shares. NENDI thus comprises "Net Pf. + OI debt", plus reserves, financial derivatives, and mutual funds (see below for further detail)
- *Net ST debt:* net short-term debt comprises all short-term debt components of "Net Pf. + OI debt".

- *ST debt liab:* Gross short-term (portfolio and other investment) debt liabilities, i.e. the gross equivalent corresponding to "Net Pf. + OI debt".

- *Debt liab:* Gross debt liabilities, which are the counterpart to "Net Pf. + OI debt"

In addition, III.1 comprises several interaction terms:

- *NIIP/income:* NIIP divided by relative income per capita (see below)
- *NENDI/income:* NENDI divided by relative income per capita (see below)
- *NIIP/VIX:* NIIP divided by the VIX index that proxies global financial risk aversion
- *NENDI/income/VIX:* interaction term between NENDI/income and the VIX index
- *NENDI/trade openness:* Higher trade openness entails a higher ratio of current account volatility to GDP volatility, and thus enables faster NENDI and NIIP changes.

**The NIIP can be usefully complemented by a comparable indicator focusing on net debt,** namely the NIIP excluding non-defaultable instruments (NENDI). Among the headline indicators, NENDI is the only one that slightly outperforms the signal power of the NIIP. The NENDI strips out direct investment and portfolio

<sup>(175)</sup> In contrast, the MIP threshold of -35% of GDP was not based on a signalling exercise, but merely reflects the first quartile of EU NIIPs between 1995 and 2007.

<sup>(176)</sup> This is the confidence interval determined on the basis of two times the standard deviation of all benchmarks obtained from random perturbations on the sample. The range -45 to -22 results from adding +/- two times 'St.dev. Threshold' to 'Threshold' in Table IV.1.

shares from the NIIP, and thus comprises purely arms-length debt, as well as any other component that may theoretically be subject to default, such as insurance, mutual funds, and derivatives. The NENDI benchmark is somewhat smaller than the NIIP, although they are not significantly different from each other. This implies that an NIIP beyond -35% spells an elevated risk, but this risk is stronger if NENDI is also beyond -15% of GDP.

**Country-specific benchmarks for the NIIP are better indicators of external sustainability concerns.** The one-size-fits-all benchmarks of roughly -35% for NIIP and -15% for NENDI are unlikely to be the most efficient reference values for rich and developing countries alike, since the financing capacity of an EU country is typically higher than that of an emerging economy. Graph III.1 shows that for countries with higher income per capita, external episodes occur at more negative NIIP levels than they do for poorer countries. Conversely, Graph III.1 also shows that many richer countries did not experience any sustainability concerns despite of NIIPs beyond -35% of GDP for a long period. Consequently, Table III.1 also explores the benchmarks that arise when the NIIP and NENDI are conditional on income per capita. <sup>(177)</sup> Indeed, the signal power of the such-adjusted NIIP and NENDI exceeds that of all other indicators and conceivable interaction terms.

**When conditional on income per-capita, NIIP prudential reference values vary considerably across EU countries.** For the aggregate euro area, the benchmark lies at -70% of GDP, while for the richest EU countries, it lies considerably beyond that level. For the EU countries with the lowest per-capita income, the benchmark is closer to -30% of GDP.

**The only alternative indicator with comparable signal power is income-adjusted NENDI, which mostly represents net debt.** <sup>(178)</sup> It is thus

<sup>(177)</sup> More precisely, "NIIP/income" divides the NIIP by the relative income indicator used by the IMF as in Phillips et al. (2013). This indicator is defined as GDP in PPP divided by the number of working-age (15-64) persons, normalised by the arithmetic mean of the same indicator for Germany, Japan and the US. I.e., relative income of 100% means income per capita equal to the average over those three countries. Under this measure, the relative income of the aggregate euro area is at 70%.

<sup>(178)</sup> Interestingly, the benchmarks for both are fairly close and do not differ significantly (for the euro area aggregate, they are at -70% for the income-adjusted NIIP and -66% for income-adjusted

of particular relevance whether both NIIP and NENDI exceed their reference values or not. Table III.2 shows that in the majority of external episodes, both indicators were beyond the benchmark. There have been occasions when in "normal" times both indicators exceeded their benchmarks, but these times typically preceded external sustainability concerns, arising within 5-years.

**Table III.2: Combined signal power of income-adjusted NIIP and NENDI**

	% of external episodes	% of "normal" observations
Both indicators beyond threshold	60%	14%
Only NENDI/income beyond threshold	0%	1%
Only NIIP/income beyond threshold	20%	22%
Both indicators within threshold	20%	63%

(1) Left column shows external episodes based on the definition by Catão and Milesi-Ferretti (2014), for 66 countries, 1980-2015. Right column refers to "normal" observations. For each column, percentages denote in how many cases income-adjusted NIIP and/or income-adjusted NENDI were beyond the NIIP/income benchmark from Table IV.1.

**Source:** Author's estimates.

**A number of additional robustness checks confirm that income-adjusted NIIP benchmarks perform better than most other indicators, and are relatively robust:**

- *Robustness to alternative event definitions:* In addition to external sector stress, the same indicators are also tested for fiscal stress, as well as elevated risks in banking sectors and foreign currency markets. <sup>(179)</sup> The income-adjusted NIIP benchmark shows less signal power for these alternative definitions, but still exceed the signal power of alternative balance-of-payments indicators.
- *Alternative definition of signal power:* The benchmarks for income-adjusted NIIP (and NENDI) would not change by more than 15 pp of GDP if one were to moderately alter the importance given to the 'missed events' vs. 'false alert' probabilities.

NENDI, respectively). In this respect, a single benchmark can be used for assessing both the NIIP and the NENDI.

<sup>(179)</sup> Fiscal stress refers to the data set used in Berti, K., M. Salto and M. Lequien (2012), "An early-detection index of fiscal stress for EU countries", European Economy, Economic Paper 475. Currency events stem from the dataset by Laeven L., and F. Valencia (2012), "Systemic Banking Crises Database: An Update", IMF Working Paper 12/163.



- **Overall, the results compare well with what has been found in recent literature.** In particular, the results corroborate the findings of Catão and Miles-Ferretti (2014), which stress the importance of relative income, as well as the debt-equity composition, in both univariate and multivariate approaches. <sup>(180)</sup>

### III.3. The required current account

**The prudential NIIP levels can be seen as target values that imply what current account is necessary to reach them.** Computing such target-derived 'required' current account benchmarks is conceptually straightforward. In general, the NIIP at the end of a year  $t$  ( $NIIP_t$ ) is given by the previous year's level ( $NIIP_{t-1}$ ), plus the current account balance ( $CA_t$ ), the capital account balance ( $KA_t$ ), and other changes. The other changes ( $OTH_t$ ) comprise valuation changes and some statistical effects, which tend to be unpredictable for most countries of the world. <sup>(181)</sup>For the computation of required current accounts, such other changes are thus disregarded and  $OTH_t$  set to zero.

$$NIIP_t = NIIP_{t-1} + CA_t + KA_t + OTH_t$$

**The capital account balance must be taken into account in the analysis of EU countries, mostly due to the structural funds.** The capital account balance is usually very close to zero for most countries, although values beyond +/- 1 pp of GDP may occasionally be recorded. There is one important exception, though: Within the EU, several Member States are important net recipients of structural funds. This concerns in particular

Member States that joined after 2003, which mostly display persistent capital account surpluses in excess of 1 pp. of GDP. This 'structural' capital account surplus therefore has to be taken into account for computing the required current account balance. Consequently, the required current account balance can be defined as the average current account to GDP ratio  $\bar{c}\bar{a}$  that will reach target NIIP to GDP ratio  $T$  years ahead  $niip_{t+T}$ , based on the current  $niip_t$ , expected average nominal growth p.a.  $g$ , a 'structural' capital account balance  $\bar{k}\bar{a}$ , and a structural valuation effect  $\bar{o}\bar{t}\bar{h}$  that is expected to be zero. Given an NIIP target value  $niip_{t+T}$ , the computation of the current account required to reach it ( $\bar{c}\bar{a}$ ) is thus straightforward.

$$\bar{c}\bar{a} = \left( niip_{t+T} - \frac{niip_t}{(1+g)^T} \right) \frac{g/(1+g)}{1-1/(1+g)^T} - \bar{k}\bar{a} - \bar{o}\bar{t}\bar{h}$$

**A remaining question is over what timeframe such an NIIP target should be reached.** Individual country characteristics determine when, and if, NIIPs should or will surpass its benchmark. For the purpose of cross-country comparisons, the objective is not to find the optimum time frame, but rather the 'typical' time period for such NIIP adjustments. The required current account to reach the benchmark within a 'typical' timeframe allows for gauging whether a country's current account reflects fast or slow adjustment. There is, however, scant literature on the evolution of NIIPs during external adjustment episodes, and no papers with a focus on the length of the adjustment timeframe. Fidora, Schmitz and Tchong (2017) identify stable NIIP adjustment episodes be relatively uniformly distributed between 2 and 7 years, with a median length of 4.3 years for advanced countries. <sup>(182)</sup> In many cases, this adjustment mostly commences near the middle of intensive external episodes, which according to the Catão and Milesi-Ferretti (2014) definition last mostly between 2 and 11 years, with a median of five years. Ding, Schule and Sun (2014) point out 16 persistent NIIP adjustments after external episodes, that commenced between 2 years prior and 3 years after the start of an external episode (with a median of 1

<sup>(180)</sup> The signal power of NENDI/income in Table is only moderately lower their more complicated approach, although one has to note that the Catão and Milesi-Ferretti (2014) approach excludes 'outliers' such as Ireland, Luxembourg, and Iceland, whereas the estimates in Table IV.1 do not. Note that the benchmarks for NIIP/income and NENDI/income do not significantly change if Ireland, Luxembourg, or Ireland are excluded from the sample. The relatively low standard deviation of these indicators over sample variations ("St.dev. threshold") illustrates this feature.

<sup>(181)</sup> Recent contributions point to predictable valuation effects for the US and countries with largely dollarised assets and/or liabilities, but not for EU countries. Cf. Gourinchas, P. O., & Rey, H. (2013). External adjustment, global imbalances and valuation effects, NBER working paper 19240. However, several corporate financial centres within the EU have displayed protracted negative valuation effects for some periods. In particular this concerns the Netherlands, where it may be related to share buybacks – see also Eggelte, J., R. Hillibrand, T. Kooiman, and G. Schotten (2014), "Getting to the bottom of the Dutch savings surplus", DNB Occasional Studies 12(6), De Nederlandsche Bank.

<sup>(182)</sup> Fidora M., M. Schmitz, and C. Tchong (2017), Reducing large net foreign liabilities, ECB working paper 2074. Note, however, that NIIP adjustments mostly start only several years after the start of an external episode. During the early periods NIIPs as % of GDP often worsen, as GDP declines, and current account deficits are slow to adjust.

Graph III.1: External vulnerability episodes, NIIP and NENDI vs relative income.



(1) Large red labels denote episodes based on the definition by Catão and Milesi-Ferretti, (2011). Small red labels denote observations four years prior to an episode. Grey labels denote "normal" observations. NENDI is defined NIIP as % of GDP, minus net FDI and portfolio equity shares. Income per capita is defined as in Phillips et al. (2013) as PPP income per working-age person, expressed as % of the arithmetic average of Germany, Japan, and the US. Data sample: available data for 66 countries 1980-2015, corresponding to 2118 observations for NIIP, and 2107 observations for NENDI.

**Source:** Author's estimates.

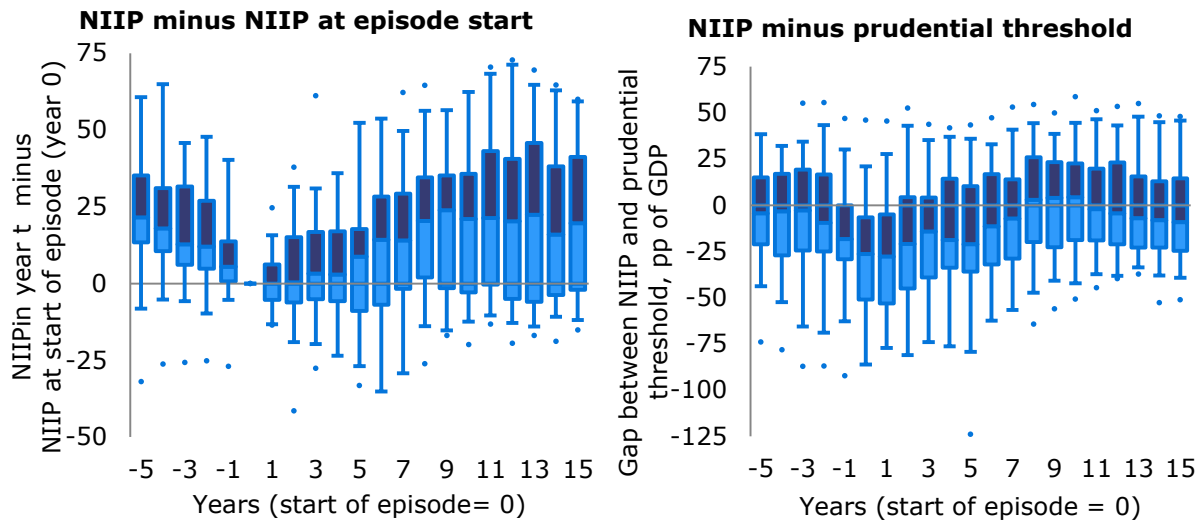
year), and lasted between 7 and 20 years (with a median of 10).

**Graph III.3 shows how NIIPs behaved in successful adjustment episodes.**<sup>(183)</sup> Nine years after an episode, the median country returns its NIIP to the same position as five years prior to the episode, both in absolute and "prudential gap" terms. While not all countries saw sustained NIIP increases after such an episode, the box plots in Graph III.2 show that they did on average. For more than ¾ of the episodes examined, the NIIP declined more than 13 pp of GDP in the five years prior to the event. At the time of the episode, 80% of the countries in the sample had NIIPs beyond the prudential benchmark. During the initial years following such an episode, most NIIPs remain stable at low levels, while after 4 years, the distribution widens. Nine years past, the median country has returned its NIIP to the event level, although there remains a quarter of cases in which the NIIP is at least as negative as during the such an episode.

**Comparing the gaps to prudential benchmarks also suggests NIIP adjustments focusing on the period between 2 and 9 years after an episode.** Graph III.2, (right panel) shows the distribution of the gap between NIIP and benchmark. Nine years after an episode, the distribution of these gaps resembles the pre-episode distribution. This suggests that NIIPs typically require roughly a decade to recover. Yet, note that a quarter of the successful adjustment countries in Graph III.2 did not display an NIIP above the prudential benchmark for years past such an event. The distributions in Graph III.2 cover episodes from advanced and emerging countries, with various exchange rate regimes. There are not enough observations from advanced economies to draw robust conclusions on adjustment time in an EU or euro area context. Overall, the 'typical' timeframe for NIIP adjustment can thus be assumed as ten years or less, although longer time periods are not unusual.

<sup>(183)</sup> The distributions in Graph IV.2 cover 40 external episodes for countries with successful adjustment. Here 'successful' denotes external episodes that were not followed by another external episode for a decade.

Graph III.2: **NIIP before and after the start of an external episode**



(1) Left and right panel depict NIIP minus reference value for the 5 years leading up to, and the 15 years following, the start of an external episode as defined as in Catão and Milesi-Ferretti (2014). Distribution only displays 40 non-repeated episodes i.e., those not followed by another one within ten years. Left panel shows NIIP minus the NIIP at the time of the event. Right panel shows NIIP minus concurrent prudential benchmark. Dots denote maximum and minimum observation in each year. Light blue box denotes the range between the second quartile and the median, dark blue box the range between the median and the third quartile. Border between boxes denotes median. 'Whiskers' represent the 5% to 95% interval.

**Source:** Author's estimates.

**In view of a roughly ten-year timeframe for NIIP adjustment, the following four "required current account" benchmarks are considered:**

*Current account required to stabilise the NIIP (rCAs):* This indicator should provide the 'structural' current account that is required to stabilise the NIIP over the medium to long term. The Commission's regularly updated "T+10" forecasts provide nominal GDP projections ten years ahead. Based on these income projections, and assuming stable capital account balances, the NIIP-stabilising current account can be computed in a straightforward manner (see equation above).<sup>(184)</sup>

*Current account required to halve prudential gap in ten years (rCAp20):* For countries with NIIPs beyond the prudential benchmark, this provides the average current account balance (as % of GDP) required to halve the distance between current

NIIP and the benchmark within ten years.<sup>(185)</sup> While the discussion above suggests a shorter time frame, an analogy with the Commission's S1 indicator for fiscal debt would suggest a time frame of 15 years to reach the benchmark. Yet the benchmark NIIP level is subject to some estimation uncertainty, thus it could be deemed appropriate if a country's NIIPs tends towards the vicinity of the benchmark within those 15 years. In view of these considerations, the rCAp20 used here is defined as the average current account balance (as % of GDP) required to halve the gap between headline and the prudential benchmark within ten years. Broadly, this corresponds to the current account required to eliminate  $\frac{3}{4}$  of the prudential 'gap' within fifteen years.

<sup>(184)</sup> Similar approaches mostly focus on stabilising NIIP a shorter timespan: For instance the Commission indicator introduced in Salto and Turrini (2010) aims to stabilise the NIIP as % of potential GDP over three years. Yet the crisis has shown that at a given point in time, even potential growth may not accurately reflect the medium- top long-term income prospects. Such short-term changes matter in particular during an external adjustment phase. In order to smoothen out such short-term swings, the approach here focuses on ten-year GDP projections.

<sup>(185)</sup> The expected benchmark is based on expected relative income ten years ahead, based on the Commission T+10 projections, IMF projections (for US and Japan), and UN population projections (for working age population). Note, however, that apart from expected real GDP for the country in question, these indicators change slowly, and thus the expected benchmark expected ten years ahead for EU countries differs little from the benchmark estimate for 2016.

Table III.3: **Stock and flow benchmarks as % of GDP, 2016**

	NIIP	NENDI	Prudential NIIP benchmark	Head- line CA	Cycl. adj. CA	Av. capital acc.bal. 2014-16	rCAs: CA to stabilize NIIP over 10Y	rCAp20: CA to halve pru. gap in 10Y	rCAp10: CA to close pru. gap in 10Y	rCA: higher of rCAs & rCAp10
<b>BE</b>	49	58	-78	1.2	1.5	-0.1	1.6			1.6
<b>BG</b>	-51	27	-34	4.2	5.5	2.5	-3.7	-2.9	-2.3	-2.3
<b>CZ</b>	-25	28	-55	0.3	1.4	1.7	-1.5			-1.5
<b>DK</b>	56	16	-81	8.1	7.7	-0.2	2.2			2.2
<b>DE</b>	54	40	-81	8.5	9.1	0.0	1.6			1.6
<b>EE</b>	-37	20	-50	2.0	3.5	1.3	-3.6			-3.6
<b>IE</b>	-185	-239	-117	4.7	8.4	-1.9	-6.9	-3.6	-0.4	-0.4
<b>EL</b>	-137	-128	-46	-0.5	-4.5	2.4	-5.5	1.2	5.9	5.9
<b>ES</b>	-86	-62	-61	1.9	1.5	0.4	-2.6	-1.4	-0.2	-0.2
<b>FR</b>	-16	-32	-74	-2.3	-2.5	0.0	-0.5			-0.5
<b>HR</b>	-71	-26	-37	2.6	2.6	0.7	-3.1	-1.4	0.1	0.1
<b>IT</b>	-15	-15	-63	2.6	2.4	0.1	-0.2			-0.2
<b>CY</b>	-125	-138	-54	-5.7	-4.6	0.3	-4.0	-0.1	3.8	3.8
<b>LV</b>	-58	-9	-43	1.9	4.2	2.6	-5.1	-5.1	-5.1	-5.1
<b>LT</b>	-43	-15	-48	-1.1	1.0	2.2	-2.3			-2.3
<b>LU</b>	23	-3536	-165	4.7	4.9	-1.5	0.8			0.8
<b>HU</b>	-59	-11	-45	5.0	6.4	3.1	-5.2	-4.5	-3.9	-3.9
<b>MT</b>	47	216	-62	7.9	13.3	1.4	1.0			1.0
<b>NL</b>	76	-17	-87	7.9	8.0	-1.8	2.3			2.3
<b>AT</b>	5	-9	-79	2.1	2.1	-0.2	0.2			0.2
<b>PL</b>	-62	-23	-44	0.4	0.9	1.8	-4.3	-4.1	-3.8	-3.8
<b>PT</b>	-105	-66	-48	0.5	0.8	1.1	-3.7	-0.6	2.7	2.7
<b>RO</b>	-50	-8	-36	-2.4	-1.8	2.0	-4.2	-4.4	-4.2	-4.2
<b>SI</b>	-35	-21	-53	7.0	7.8	0.2	-1.6			-1.6
<b>SK</b>	-58	-13	-49	0.2	0.8	1.2	-3.4	-5.2	-5.6	-3.4
<b>FI</b>	7	7	-74	-1.3	-1.9	0.1	0.1			0.1
<b>SE</b>	17	-7	-88	4.9	5.7	-0.1	0.7			0.7
<b>UK</b>	24	19	-73	-4.4	-3.8	-0.1	0.9			0.9

(1) All values for 2016, as % of 2016 country GDP.  
(2) NENDI denotes NIIP minus net FDI and net portfolio equity shares. The 'Prudential NIIP benchmark described above serves as a reference value for NIIP and NENDI alike. Headline CA denotes the 2016 current account balance as % of GDP (as reported from national account statistics). 'Cycl. Adj. CA' denotes the cyclically corrected current account balance according to the Commission methodology. 'rCAp10' denotes the CA required to reach the prudential benchmark by 2026 (only for countries where the NIIP was below the prudential benchmark in 2016), while rCAp20 displays the CA required to have the gap between NIIP and the prudential benchmark within 10 years. These rCA benchmark levels are based on the Commissions "T+10" nominal output projections, and assume the capital account balance to stay at the median level observed during 2014-16. 'rCA' denotes the maximum over rCAs and rCAp10, ie. the required current account to increase the NIIP towards the benchmark, or stabilise it above it, over the next ten years. For reference, 'av. capital acc. bal' displays each country's average capital account balance over 2014-16.

**Source:** Author's estimates.

*Current account required to reach prudential benchmark (rCAp10):* The vast majority of countries that had crossed the prudential benchmark had experienced an external episode or other external pressure within a decade. The need to reach prudential NIIP levels may therefore be more pressing than suggested by the twenty-year timeframe above. To this end, Table III.3 also displays the current

account required to reach the prudential benchmark within ten years.

*Required current account:* This is a combined indicator. For a debtor country below the benchmark, it is the current account required to reach the prudential benchmark within ten years. However, for countries with a 'safe' NIIP within the benchmark, this figure merely represents the



current account required to stabilise the NIIP. Hence, it is given by the higher of rCAs and rCAp10. <sup>(186)</sup>

#### III.4. Results for EU Member States

**Table III.3 shows the 2016 NIIPs for EU Member States and compares them with the country-specific prudential reference values.** The prudential benchmarks for the NIIP are similar to the ones for the NIIP excluding non-defaultable instruments (NENDI). Thus both NIIP and NENDI can be gauged against the single country-specific benchmark indicated in Table III.3.

- **In Greece, Ireland, Cyprus, and Portugal, both NIIP and NENDI exceeded the benchmarks in 2016,** while Spain had a NENDI very close to it.<sup>(187)</sup> Moreover, Bulgaria, Latvia, Lithuania, Hungary, Romania, Poland and Slovakia display NIIPs that are close to, or up to 20 pp of GDP beyond the benchmark. However in all these cases, FDI plays an important role for external liabilities, and NENDI is thus at least 20 pp. of GDP narrower than the prudential benchmark. In the same vein, Croatia's NIIP remains more than 30 pp. beyond the benchmark, but by 2016 its NENDI had already returned to its 'safe' side.
- **NIIPs beyond the prudential benchmark are a legacy from the pre-2008 period.** Graph III.3 shows that NIIPs have actually improved in most, but not all, Member States that were close to or beyond the benchmark in 2010. The improvement was particularly strong in small and open economies. In several larger and more closed economies, the adjustment made a longer-lasting dent on nominal GDP growth, and partly therefore NIIP as % of GDP evolved less dynamically. In Greece and Cyprus, a strong GDP decline combined with more persistent current account deficits led to a worsening of the NIIP until 2014/15. Note that

almost all EU countries with financial assistance programmes during 2008-2015 had a NENDI exceeding the benchmark in 2010. <sup>(188)</sup> Several other Central and Eastern European countries also substantially adjusted their current account balances and NIIPs in the wake of the financial crisis, though without resorting to financial assistance. Most of the latter countries had NIIPs close to, or beyond the benchmark before 2010, but NENDIs within the benchmark's 'safe' range. By 2016 already, the NIIP improvement in three of these countries (Czech Republic, Estonia, Slovenia) left them with NIIPs within the benchmark.

- **All other EU Member States have NIIPs that are 40 pp or more above their prudential benchmark.** For them, the benchmark suggests limited external vulnerability over the medium term, even if they were to run strong current account deficits.

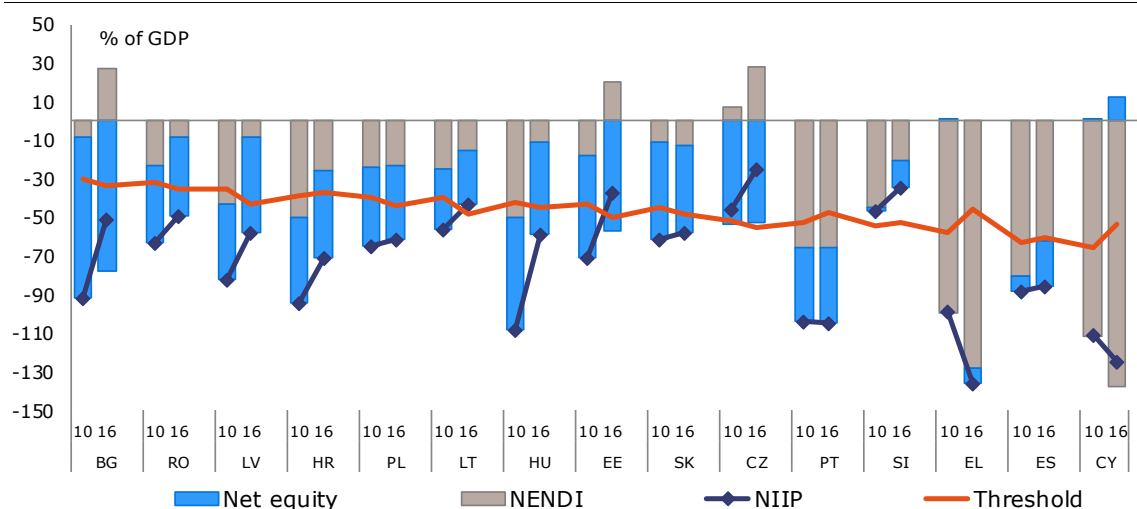
**In cyclically adjusted terms, only Greece and Cyprus run current accounts significantly below the level that would return the NIIP to the prudential target within ten years.** Based on current output projections, Greece and Cyprus would remain beyond the prudential benchmark for more than two decades. Note, however, that i) the extent of the Greek output gap amplifies any methodological uncertainties regarding the cyclical adjustment of the Greek current account, and ii) Cyprus hosts a significant offshore sector that affects the NIIP, and its current account. Apart from Greece and Cyprus, only Portugal runs a current account that would return the NIIP to its prudential reference value between ten years and fifteen years. The current accounts of all other net debtor Member States, if kept stable, would suffice to reach the prudential benchmark in less than a decade.

<sup>(186)</sup> Note that current account balances are not directly under the control of the policy maker. The purpose of the required current account is to be a reference value to assess external sustainability, not a direct policy target.

<sup>(187)</sup> Note that the Cypriot and Irish NIIP are subject to some statistical effects stemming from the offshoring of aircraft and ships in these countries. Adjusting their NIIPs and NENDIs with estimates of such effects renders these indicators closer to the benchmark for both countries, but does not suggest that both countries are yet safely above it.

<sup>(188)</sup> During 2008-2015, the following Member States received financial assistance involving EU facilities: Hungary, Romania, Latvia, Greece, Ireland, Portugal, Cyprus, as well as Spain (which was not subject to an IMF-funded programme). Among these countries, only Romania's NENDI had never crossed the benchmark before 2008.

Graph III.3: NIIP change 2010-16, for Member States close to or below the benchmark



**Source:** For NIIP, NENDI, and Net equity: Eurostat IIP. Net equity is defined as net direct investment plus net portfolio investment shares. NIIP excluding non-defaultable instruments (NENDI) is defined as NIIP minus Net equity. The benchmark is the income-adjusted country-specific NIIP benchmark from Table IV.3. Note that this graph excludes Ireland, whose NENDI change 2010-16 considerably exceeds the scale.

**France, Finland, and the UK run cyclically adjusted current account deficits that undershoot the NIIP-stabilising current account by 2 pp.** Still, the NIIPs of these three countries are fairly close to balance, and thus remain considerably above prudential levels. Even if current accounts persist at their cyclically adjusted deficits for France and Finland, both countries are not likely to bring their NIIPs in the vicinity of the prudential benchmark over the medium term. The UK's deficit falls short of the required current account by more than 3 pp. But its gross IIP is characterised by large foreign currency assets, combined with a flexible exchange rate regime. This is exemplified by the 2015-16 British NIIP improvement in the wake of a currency depreciation.

**All other Member States run current accounts that are significantly above what any benchmark suggests.** By 2016, most Central and Eastern European Member States ran current account surpluses that exceeded either benchmark by 4 pp or more. Most of these Member States may even afford to run current account deficits in order to reach their prudential targets, as they are net recipients of EU funds, and thus benefit from a positive capital account balance. Among these countries, several countries with moderately negative NIIPs emerged from external adjustment episodes by running particularly high surpluses. In Bulgaria, Estonia, Latvia, Hungary, and Slovenia, cyclically adjusted surpluses exceed the rCA by

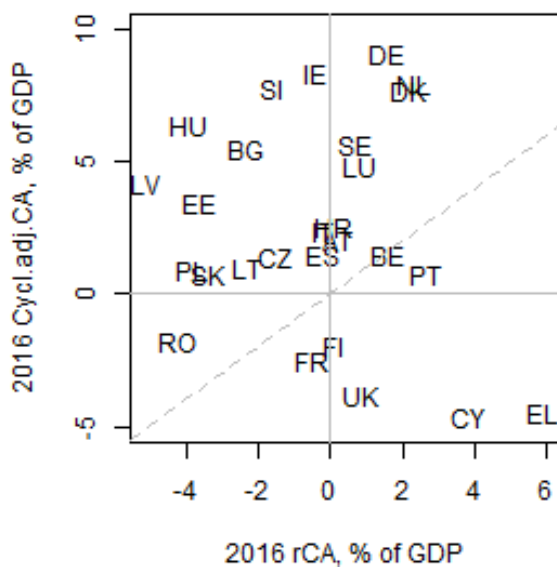
seven to ten pp. of GDP. Graph III.4 shows that these are among the EU countries whose cyclically adjusted current account balances were the farthest above the required current account in 2016. The more moderate surpluses of the Czech Republic, Croatia, Lithuania, Romania, and Slovakia range between two and five pp. above their rCA.

**Moreover, there are the familiar creditor countries, whose NIIPs are strongly positive:** Belgium, Denmark, Germany, Netherlands, and to some extent Sweden. Of these, Belgium's current account is roughly at its rCA, whereas in the four other creditor countries, the cyclically adjusted current account exceeds the rCA by 5 pp of GDP or more.

**Spain, Italy, and Austria run current accounts that are between one and three pp. above their rCA.** Both the Italian and the Austrian cyclically adjusted current account are somewhat above their NIIP-stabilising levels, while the Spanish current account is slightly above the level that would allow its NIIP to reach the prudential benchmark within ten years. Finally, the NIIPs and current accounts of Malta, Ireland, and Luxembourg are particularly affected by the presence of large corporate, transport and financial sectors – something that also extends to the Netherlands and Cyprus to some degree. In these cases, comparing the headline NIIP to the prudential reference value might not be appropriate. Several of these countries publish estimates that adjust current

accounts and NIIPs for these globalisation effects. It might be more suitable to compare such-adjusted current accounts to an rCA based on such-adjusted NIIP estimates. Note that while using these adjusted estimates would affect the magnitude of the gaps visible in Table III.3, they do not lead to different conclusions whether their current account balances are below, close to, or above the rCA.

Graph III.4: **Cyclically adjusted vs. required current accounts, 2016**



**Source:** Commission services calculations, as in table IV.3. Readings above the 45-degree line indicate cyclically adjusted current account balances that are above the required current account benchmark (vice versa for observations below). The distance from the 45-degree indicates the extent of the gap between the cyclically adjusted and the required current account.

### III.5. Conclusion

This chapter introduces country-specific prudential benchmarks for the NIIP and NENDI, a comparable indicator focusing on net debt. Compared to one-size-fits-all benchmarks such as in the MIP scoreboard, the country-specific benchmark allows for a finer level of detail, although it is also subject to certain statistical caveats in the case of offshore financial centres. The NIIP benchmark, and the "required current account" derived from it, can complement the Commission's toolbox for assessing external flows and stocks. They provide additional insight for the assessment of external sustainability, and

are meant to be read in conjunction with existing tools.

**The prudential benchmark for the NIIP implies a country-specific 'required current account' benchmark,** that would allow a country to reach the prudential benchmark within ten years, or stabilise its NIIP above it. The prudential NIIP benchmark and required current account complement do not replace the Commission's toolbox for external sustainability assessment. They are one among several new benchmarks that the Commission is applying in macroeconomic surveillance.

**The benchmarks allow for some general conclusions about EU Member States:** 15 Member States currently have NIIPs that are close to, or beyond, prudential reference values. Yet if they manage to keep current account balances close to their current levels, most of them are on track to reach their respective prudential levels within a decade or less.

There are several Member States that run persistent high surpluses beyond their current account benchmarks. Germany, the Netherlands, Denmark and Malta (the latter with some caveats), have high NIIPs, but run cyclically adjusted current account surpluses that are at least 5 pp. of GDP above the level required to stabilise them. In the wake of external adjustment, several smaller Member States continue to improve their negative NIIPs at fast speed. Their cyclically adjusted current account surpluses are either more than 5 pp. above the NIIP-stabilising benchmark (Estonia and Slovenia), or more than 5 pp. above the level required to reach the prudential benchmark within ten years (Bulgaria, Latvia, Hungary). In all of these Member States, the NIIP has been predominantly composed by equity as of 2016. Their NENDI, which reflects the NIIP excluding equity, is already well within prudential levels.