

## **POLICY PAPER**

# **Deciphering Ireland’s Macroeconomic Imbalance Indicators: Statistical Considerations**

MARY CUSSEN\*

*Central Bank of Ireland, Dublin*

---

*Abstract:* The recent financial crisis has highlighted the importance of the early detection and correction of macroeconomic vulnerabilities. This has led the European Commission to develop the Macroeconomic Imbalance Procedure (MIP). Under the MIP, the potential vulnerabilities of EU countries are assessed using standard indicators relating to internal and external macroeconomic imbalances. These indicators, however, assume cross-country data are comparable, despite economic and financial structures being very heterogeneous. This is not the case. This paper finds that for countries with substantial international investment, such as Ireland, five of the eleven indicators are materially distorted by financial and non-financial multinational activities. This paper disaggregates these five affected indicators into multinational and indigenous Irish components, insofar as the existing data allows. It finds that for Ireland the MIP indicators underestimate some external imbalances, significantly overestimate private sector credit imbalances and underestimate the deleveraging of the financial sector. Adjusting the indicators to allow for country-specific factors can help diagnose the underlying imbalance, while reducing instances of the MIP highlighting false positives.

\* The views expressed are solely those of the author and do not necessarily reflect the view of the Central Bank of Ireland. The author would like to acknowledge the helpful comments of Joe McNeill, Rory McElligott, John FitzGerald, Christopher Sibley, Gabriel Quirós and an anonymous referee. An earlier version of this paper was presented at the Central Bank Conference “Macro to Micro – A New Era in Financial Statistics”.

Email: [mary.cussen@centralbank.ie](mailto:mary.cussen@centralbank.ie) or 01 224 6930.

## I INTRODUCTION

The recent financial crisis has highlighted the importance of the early detection and mitigation of macroeconomic risks. Leading indicators could be useful tools for detecting banking crises.<sup>1</sup> As part of the work of establishing an infrastructure for future surveillance, the European Commission developed the Macroeconomic Imbalance Procedure (MIP) in 2011. The aim of the MIP is to identify potential financial stability risks early on, and to prevent the emergence of harmful macroeconomic imbalances in the European Union. The first step of the MIP<sup>2</sup> is the “Alert Mechanism Report” (AMR), whereby eleven indicators are used to determine areas of EU countries’ economies where macroeconomic imbalances exist. Developing a framework to correctly identify imbalances across 28 countries, with differing economic and financial structures, is an ambitious and difficult task.

A key difficulty with the MIP framework is that, in some countries, a number of the indicators may not always accurately capture the imbalances the Commission wish to measure. Financial accounts, Balance of Payments and the International Investment Position statistics are all compiled in accordance with legally-binding, international statistical rules. These rules define the domestic sector of an economy in accordance with the entities that are resident in the economy, irrespective to the impact these entities have on the domestic economy. Therefore, in countries such as Ireland, very large, foreign-owned entities can be included in the resident sectors of the economy. Some of these entities may be located in the country for taxation purposes and may have little or no interaction with the real domestic economy. Other foreign-entities may be important in terms of domestic employment and output, but they may also conduct very large financial transactions related to the overall corporate group’s international financing. As this paper will show, in the case of Ireland, these types of MNC activities can be extremely large relative to the size of the Irish economy. They, therefore, can distort the overall economic meaning of a number of the MIP indicators.

This paper makes three contributions towards developing the MIP framework further. First, it looks at the extent to which the external imbalances and indebtedness indicators may be distorted by financial and non-financial multinational corporations (MNCs) activities in countries with relatively large investment by international companies, such as Ireland. The indicators examined here are: “the current account balance”; “the net international

<sup>1</sup> See for example research by Davis and Karim (2008), and Borio and Drehmann (2009).

<sup>2</sup> Annex 1 outlines the various steps of the MIP. See also Hickey and Kane (2014).

investment position”; “private sector debt”; “private sector credit flows”; and the “change in total financial sector liabilities”. Second, the paper explores other issues which may hamper the indicators from detecting imbalances, such as coverage issues, and aggregation issues. Third, it proposes that common measures should be developed and used at the AMR stage of the MIP procedure to assess the extent to which indicators may be distorted.

Understanding distortions to the MIP indicators and developing common methods of measuring them is important for a number of reasons. International and domestic policymakers must be able to measure and understand the true nature of imbalances in an economy, excluding distortions arising from structural factors, in order to correctly identify risks and to reduce the probability of highlighting false risks. Furthermore, international market analysts and rating agencies are often not aware of the extent to which indicators can be distorted for some countries. They, therefore, require consistent and comparable cross-country indicators. Finally, this work could be an important addition to the European Commission in-depth review of countries with AMR imbalances. Section II of the paper examines each of the five distorted indicators. Section III of the paper concludes.

## II INDICATORS

Subsections 2.1 to 2.4 describe the five indicators which are distorted by financial and non-financial MNC activities and other factors. Annex 1 provides the definitions and thresholds for all five of these indicators. The indicators are adjusted to remove the multinational influence, where possible. Unfortunately, the granular data is not available to perform similar adjustments for other Euro Area countries.

### 2.1 *The Current Account Balance*

The current account balance could be a significant indicator of potential macroeconomic vulnerability. It measures whether, on aggregate, the domestic economy is continuing to accumulate or repay external debt. The MIP measures the current account imbalance as the average of the current account to GDP over a three-year period.

Research on early warning indicators suggests the current account balance is important. Based on an extensive literature review of more than 80 papers, Frankel and Saravelos (2010) point out that the current account balance is one of the most frequent statistically significant indicators in explaining crisis incidence. Reinhart and Rogoff (2009) find that current account balances rank as the third and fourth most important indicators for detecting banking and

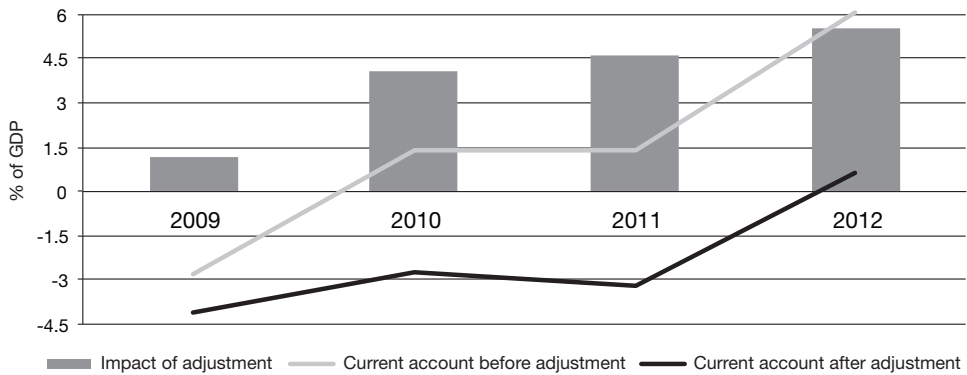
currency crises, respectively. In addition, Lane and Milesi-Ferretti (2011) have found that the excessive scale of current account deficits, in periphery Euro Area countries prior to the financial crisis contributed to the severity of the economic contraction and damaged banking systems, and sovereign creditworthiness. Furthermore, Whelan (2012) argues that the substantial private and public debt burdens in the euro area periphery countries can only be reduced over the coming years if these countries run large and persistent current account surpluses.

The current account, however, can be distorted by the structural features of an economy. The IMF (2013b) provide seven examples where the special features of an economy need to be taken into account when assessing the current account balance and where deeper analysis is necessary to understand the statistical distortions giving rise to the external imbalance. They state that, on average, countries with large financial centres are found to have current account balances 3.5 per cent of GDP higher than others. The Netherlands, Switzerland, Belgium, Luxembourg, and Singapore are all listed as countries with distorted current accounts. Mancini-Griffoli and Stoffels (2012) estimate that the standard measure of the current account surplus tends to overstate Switzerland's accumulation of wealth by about 2.5 per cent of GDP annually and this is taken into account in the IMF's assessment.

Recent research suggests that Ireland is one of the countries whose current account could be distorted by MNC activities. The current account balance comprises the trade balance, current account transfers, and the investment income account. The latter records income receivable from assets held abroad and income payable to foreign investors in Irish debt. Everett (2012a) finds that the increasing importance of the investment income account in recent years reflects the increasingly globalised nature of the Irish economy. As illustrated in Figure 1, FitzGerald (2013) argues that the current account is considerably distorted by redomiciled companies. The figure also highlights that the impact of the redomiciled companies on the current account is growing over time. Redomiciled companies have a legal presence in Ireland, but do not contribute to the real economy. They route their profits through Ireland resulting in a significant investment inflow. Only some of these profits leave the country again, however, as an outflow when the company pays dividends to their shareholders. These activities reflect redomiciled companies taxation minimisation strategies. Changes to UK and US taxation legislation during 2008 and 2010 made the relocation of companies head offices to Ireland more attractive in recent years (see Voget 2011). The extent to which these activities will continue in the future is unclear, as it will depend on changes to taxation legislation.

Consequently, these companies, on a net basis, artificially increase the Irish current account. Using FitzGerald's adjusted current accounts figures, Ireland's current account balance over a three-year period would have been  $-3.3$  per cent in 2011, much closer to the MIP threshold of  $-4$  per cent than the unadjusted figures would suggest. Not adjusting the current accounts of countries with large redomiciled companies investment like Ireland could, therefore, mean that countries with excessive current account imbalances may not be flagged in the MIP. This is an important consideration to be aware of when analysing this indicator, so as to ensure that imbalances are not missed.

Figure 1: *The Current Account Balance Adjusted for the Effect of Redomiciled Plcs*



Source: Fitzgerald, J. (2013).

## 2.2 Net International Investment Position

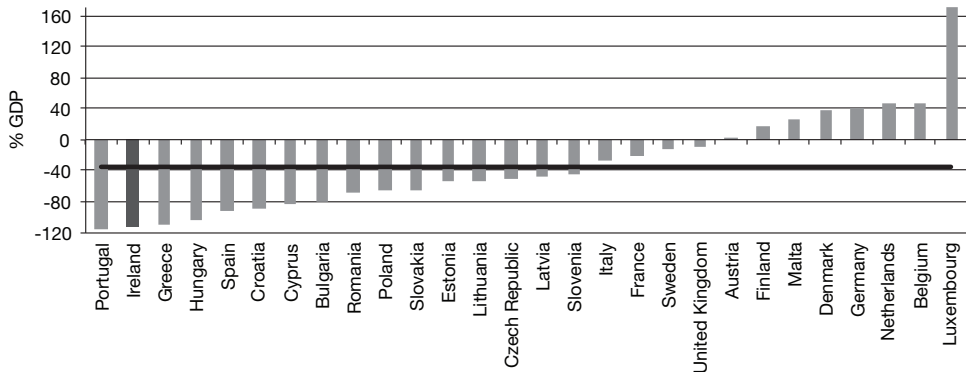
The net international investment position (NIIP) records the net financial position (assets minus liabilities) of the domestic economy with non-residents. A change in the NIIP is equal to the current and capital account balance plus valuation changes. This indicator, in conjunction with the current account imbalance, aims to measure the sustainability of an economy's position with non-residents.

The distinction between external debt and domestic debt can be significant. Issues associated with high external debt include higher rollover risks, particularly during times of instability, and currency mismatch risks. In addition, Reinhart and Rogoff (2009, 2010, 2011) argue that the thresholds for problems in growth and default during a crisis are different for these two types of debt. It is important to note, however, that most work on the risks associated with high external debt has, to date, focused on risks in developing economies. In the case of the EU, the introduction of the euro means that currency risk

between Euro Area countries has been totally removed for these countries. It may, therefore, be instructive if the NIIP indicator could be decomposed into euro and non-euro currencies, as it can be argued non-euro debt is riskier for Euro Area countries. In addition, Lane (2010) states that it is plausible that closer financial integration in the Euro Area lowered risk premiums and allowed countries to increase current account balances. Though the Commission set the NIIP threshold at 35 per cent, they find that it is "... difficult to establish a level of net external assets which can be considered as risky and the economic literature attempting to do this is rather scarce" (European Commission, 2012). In addition, no threshold is set for the auxiliary indicator of external imbalances: net external debt.

Moreover, when interpreting this indicator it is important to note that external investment and debt can be both positive and negative for an economy. Lane (2014) finds that, in terms of the Irish economy, the overall impact of international financial flows has been both good and bad in recent years. Substantial external funding enabled Irish banks to significantly increase credit to the private sector during the boom years, therefore contributing to the property bubble. However, he states that external stakes in Irish banks also meant that the losses were shared with non-residents. Furthermore, the ability of Ireland to attract foreign investment has been helpful to Ireland's recovery.

Figure 2: *The NIIP, by EU Country, 2012*



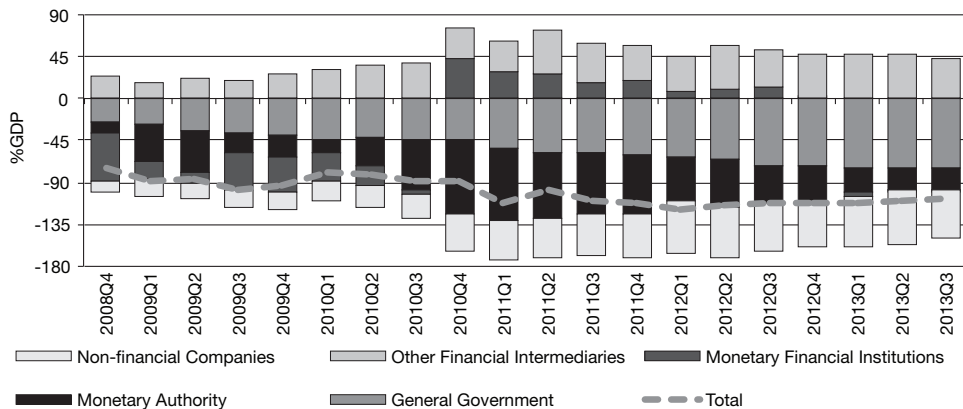
Source: Eurostat.

As at end-2012, Ireland's NIIP was the second lowest in the EU, after Portugal (Figure 2). In addition, at -112 per cent of GDP, it is much greater than the MIP's threshold of -35 per cent of GDP. There are a number of country-specific issues and coverage issues which analysts need to be aware of when examining Ireland's NIIP. First, as with the current account, the Irish

NIIP is distorted by financial and non-financial MNC activities. To account for the financial MNC activities, the Central Statistics Office (CSO) has published an NIIP series since Q4 2008, excluding the Irish Financial Services Centre (IFSC). It is currently not possible, however, to disaggregate the non-financial MNCs from the domestic non-financial corporations (NFCs). The CSO plans to publish this disaggregation by end-2014.

As shown in Figure 3, NFCs were the second largest contributor to the negative NIIP position in recent years. Between Q4 2008 and Q3 2013, the NIIP component attributable to NFCs increased significantly from 11 per cent of GDP to 55 per cent. Cussen and O’Leary (2013) argue that MNC activities significantly distort NFC debt. However, even if the NFC component of the NIIP was totally excluded, the Irish NIIP would still amount to 59 per cent of GDP. This is still considerably over the MIP threshold. The Government was the largest contributor to Ireland’s negative NIIP in recent years. Between Q4 2008 and Q3 2013, the State’s NIIP almost tripled from 25 per cent of GDP to 73 per cent. This significant increase reflected the substantial rise in Irish government debt in recent years.

Figure 3: Ireland’s NIIP (excluding the IFSC) Broken Down by Institutional Sector

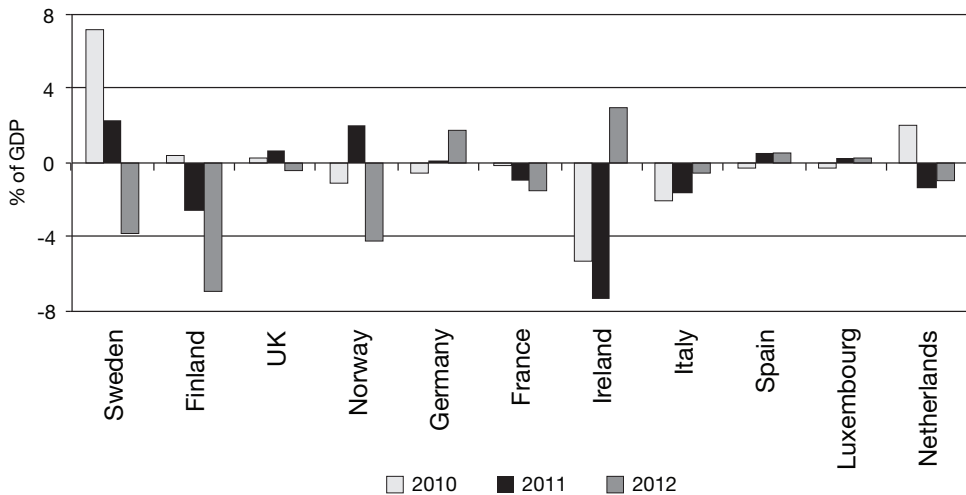


Source: Central Statistics Office.

Second, there can be both coverage or valuation issues with respect to balance of payments and the international investment positions which may distort the reliability of NIIP indicator. Figure 4 reveals that “net errors and omissions” in the balance of payments statistics were, for some years, in excess of 4 per cent of GDP for Sweden, Finland, Norway and Ireland. This suggests that there may be coverage or valuation issues in parts of the Balance of

Payments/International Investment Position framework. Statistical discrepancies, coverage, and valuation issues are recognised as an issue in the BOP and IIP statistics of most countries. It can be a problem, in particular, in countries with large external assets and liabilities relative to the size of the economy. In theory, for every debtor in the world, there should be a corresponding creditor. At the global level, however, Lane and Milesi-Ferretti (2007) have shown that liabilities tend to exceed assets. Similarly, they find that the global balance of payments indicates that more investment income is paid than received each year. Furthermore, in the case of Ireland, Lane (2012) argues that the substantial increase in Ireland's net external liability between 2008 and 2010 cannot be fully explained by transactions or valuation changes. Users of the indicators should, therefore, be aware of the extent to which they may be distorted by coverage or valuation issues.

Figure 4: *Balance of Payments Net Errors and Omissions, by Selected EU Country*



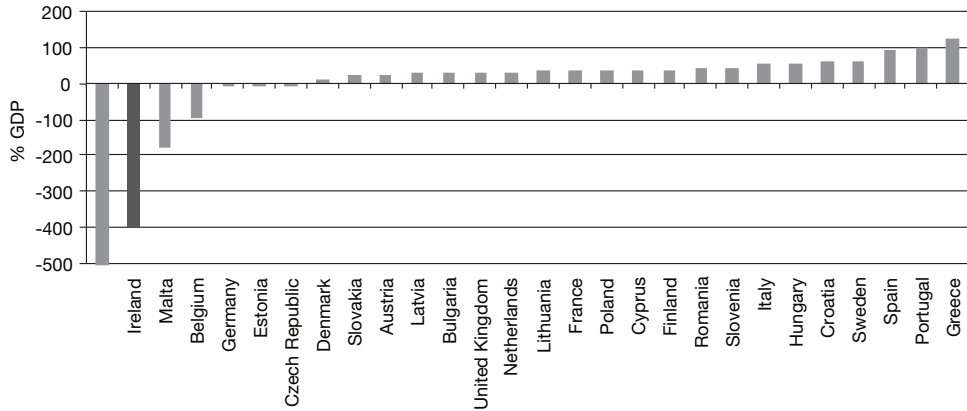
Source: Eurostat.

In addition, the composition of both gross assets and liabilities can determine the overall vulnerability of the external position of a country. If the domestic sector's net liability position with non-residents consists of equity, then this is considered to be relatively less risky than debt funding, due to the rollover and interest-rate risks associated with debt. The MIP, therefore, provides an auxiliary indicator of external risk: net external debt. Figure 5 depicts that Ireland had the second highest net lending to non-residents during 2012 (i.e., Irish external debt assets exceeded external debt liabilities). This is



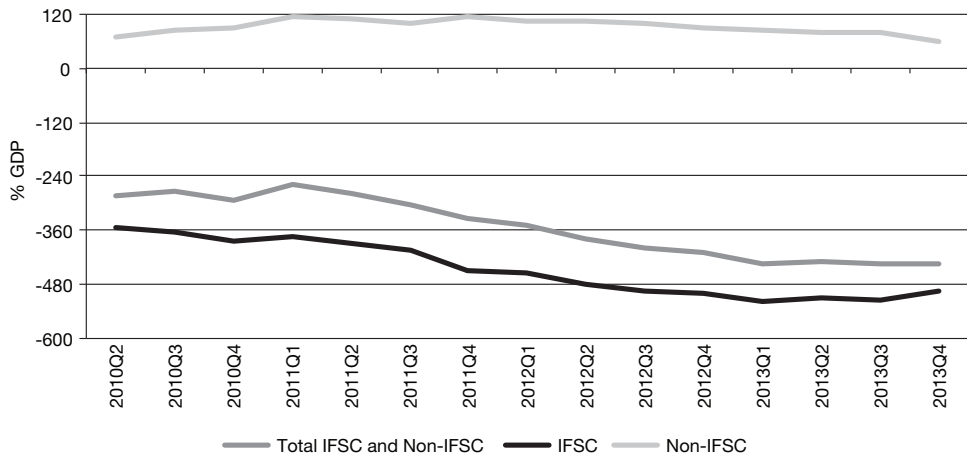
because many IFSC companies fund their activities through non-debt instruments, such as mutual funds and insurance technical reserves. Figure 6 reveals, however, that once IFSC companies are removed, Irish residents, on a net basis, borrowed from non-residents.

Figure 5: *Net External Debt, All Countries*



Source: Eurostat.

Figure 6: *Irish Net External Debt Adjusted for IFSC Companies*



Source: Central Statistics Office.

Therefore, when analysing the NIIP indicator, country-specific factors such as MNC investment and coverage issues must be taken into account. In

addition, decomposing the NIIP by instrument type is helpful. Furthermore, additional research needs to be done on understanding the level at which a negative NIIP becomes risky for developed monetary union countries. Furthermore, for small countries hosting large financial and non-financial MNCs, small measurement issues may cause a disproportionate effect to ratios including GDP.

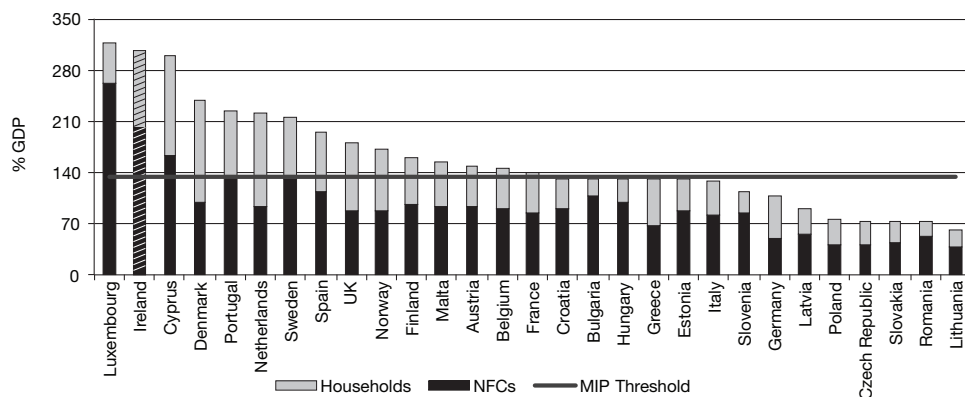
### *2.3 Private Sector Debt and Private Sector Credit Flow*

The MIP quantifies private sector debt risk using two measures: the sum of consolidated NFC and household debt to GDP; and NFC and household credit flows to GDP. The indicators aim to identify the point at which countries' private sector's stock of debt, or rate of debt accumulation, could become a risk to macroeconomic stability. Access to credit facilitates private sector investment and allows households to smooth consumption over time. Very high debt, however, can impede economic growth and can make the private sector more susceptible to distress from increasing interest rates, unexpected events, and declining incomes or profits. Moreover, if private sector debt is impaired, this can negatively impact the balance sheets of those that lend to the private sector. The financial crisis in particular has emphasised the risks which high private sector debt can pose.

As outlined in Cussen and O'Leary (2013), it is evident that the private sector debt to GDP indicator is, for some countries, significantly distorted by non-financial MNC activities. At end-2012, Ireland had the second highest private sector debt in the EU at 306 per cent of GDP (Figure 7). This was over twice as high as the MIP threshold of 133 per cent of GDP. NFC debt represented 201 per cent of GDP at end-2012. Everett (2012b) outlines the changes in UK and US legislation in recent years which encouraged increasing numbers of MNCs to locate in Ireland. Ireland was ranked fifth in the world in terms of success in attracting FDI over a three-year period from 2009 to 2011 (UN World Investment Report, 2012). Belgium and Luxembourg were the only other euro area member states to be included in the top ten FDI recipients and were ranked second and fourth, respectively.

The substantial impact of MNC activities on Irish NFC debt in recent years is evident from the evolution of NFC funding sources over time (Figure 8). Since 2011, over 40 per cent of NFC debt, on aggregate, has been financed by non-residents. The European headquarters of a number of extremely large US MNCs such as Apple, Facebook, Google, Ebay, Twitter and Intel are now based in Ireland. As some very large MNCs, such as Apple and Intel, do not publish separate balance sheets for their Irish activities, it is not currently possible to accurately estimate how much foreign MNCs contribute overall to Irish NFC debt, using publically available data. Preliminary work, however, carried out

Figure 7: Consolidated Private Sector Debt, by EU Country, 2012



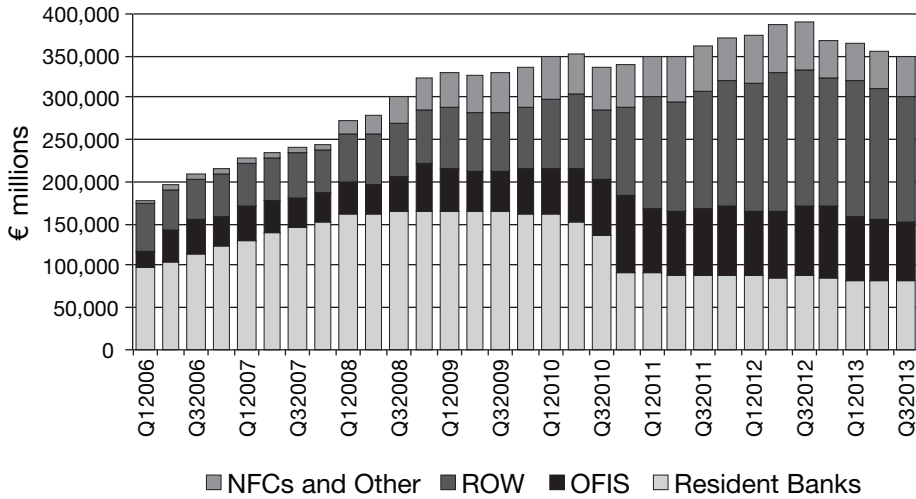
Source: Eurostat.

by the CSO using balance of payments surveys suggests that Irish NFC debt would be substantially reduced by the exclusion of foreign MNCs. The CSO aim to publish their estimates of foreign MNC debt by end-2014. Where MNC activities are large relative to the size of the economy, a small number of firms can make large contributions to total NFC debt. For instance, the Banque Centrale du Luxembourg estimates that just 15 companies contribute to 70 per cent of the debt in Luxembourg. Similarly, the CSO estimate that at end-2011, approximately 45 per cent (€162.8 billion) of the total Irish NFC debt came from the contributions of just 30 companies.

Irish NFC debt is further impacted by the classification of holding companies as NFCs under the current European System of Accounts (ESA) 95 manual. Holding companies are companies which may hold assets on behalf of subsidiaries but are not responsible for the day-to-day management of the group. In September, an update of ESA 95 will be introduced which will mean that holding companies will be classified as Other Financial Intermediaries, rather than NFCs. This will result in a material reduction in the NFC debt of a number of countries including Ireland.

Large transactions by MNCs can also distort the private sector credit flows to GDP indicator. Figure 9 below compares total NFC credit flows to NFC credit sourced from Irish banks. In particular, given that the large transaction in 2011 is at odds with both past trends and NFC credit flows vis-à-vis the banking sector, it may be reasonable to assume that it may reflect the activities of a very large company or group and not the overall NFC sector. It would be useful if countries could supply metadata to accompany the MIP indicators to confirm where the indicators may be distorted by a small number of companies.

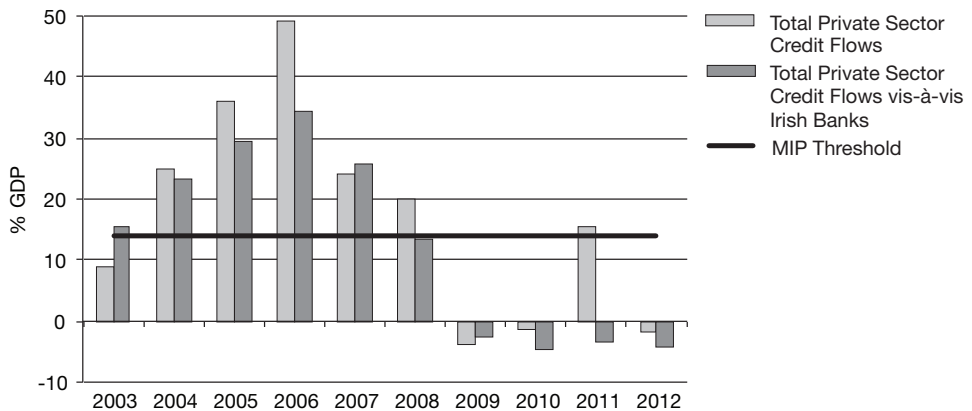
Figure 8: Irish NFC Debt by Funding Source



Sources: Central Bank of Ireland and internal sources.

Concerns about maintaining the confidentiality of individual company or group transactions may, however, hamper the extent to which countries can supply such metadata to users. Decomposing the overall stock of NFC debt and NFC credit flows into their foreign MNC and indigenous Irish components would therefore provide very useful information to users on where the overall NFC debt may be distorted by the activities of large MNCs.

Figure 9: Private Sector Credit Flows



Sources: Central Bank of Ireland and Eurostat.

In addition, it is a matter for further research about what the optimal level of debt is for any given economy. The European Commission (2012) states that there is no firm evidence on what the optimal level of debt should be. The threshold of 133 per cent of debt to GDP is based on the upper quartile of average debt between 1997 and 2005. Cecchetti *et al.* (2011) find that debt becomes a drag on households and NFCs at 85 per cent of GDP and 80 per cent of GDP, respectively.

#### 2.4 *Change in Total Financial Sector Liabilities*

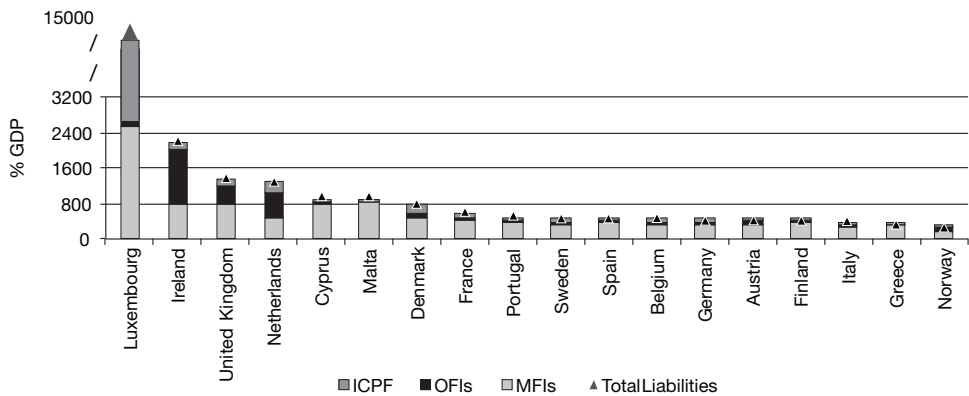
The Commission states that credit growth is monitored under the MIP by the year-on-year change in total financial sector liabilities. This indicator's aim is to capture financial-sector-related risks which could amplify shocks in the real economy. The financial crisis has clearly highlighted the manner in which risks to the banking sector can be transferred to the State. Reinhart and Rogoff (2009) point out that during a crisis, the distinction between "public" and "private" often becomes blurred in a maze of bailouts and guarantees. In the case of Ireland, the State has supported the banking sector in a myriad of ways since the financial crisis began, including capital injections amounting to 41 per cent of GDP (Cussen and Lucey, 2011). In addition, Cecchetti (2012) argues that when credit is growing faster than the available pool of funds that are usually drawn on by the bank, the bank will turn to other, "non-core" sources of funding to support its credit growth. In the case of Ireland, Whelan (2010) found that as the Irish banking sector grew rapidly, credit institutions began to rely more heavily on riskier non-core sources of financing. From less than €15 billion in 2003, international bond borrowings of the six main Irish banks rose to almost €100 billion (well over half of GDP) by 2007. This source of funding proved to be less stable than deposit funding once the property market crashed. Therefore, a reliable indicator for financial-sector-related risks is an important component of the MIP.

There are three key problems with this indicator as a measure of financial credit risk. First, this indicator is distorted by financial MNC activities in a number of countries. Second, the indicator aims to measure credit risk for the total financial sector – monetary financial institutions (MFIs); other financial intermediaries (OFIs); and insurance corporations and pension funds (ICPFs). These different subsectors, however, have very different funding structures, so aggregating all three can be misleading. Finally, this indicator fails to take account of funding-maturity mismatches or currency mismatches.

Figure 10 reveals that, despite the deleveraging which has occurred since the crisis began, Ireland continues to have the highest total financial sector liabilities in the EU after Luxembourg. The figure reveals that high OFI liabilities in a number of countries – particularly Luxembourg, Ireland and the

Netherlands – contributed towards an extremely high overall financial sector balance sheet for each of these countries in 2012. Irish OFIs largely consist of investment funds (55 per cent), financial vehicle corporations (20 per cent) and financial leasing companies. Most Irish investment funds have little interaction with the domestic economy and only 6.8 per cent of investment fund shares issued in Ireland are held by Irish residents. A low tax regime and a highly educated workforce were reasons that have made Ireland an attractive environment for both investment funds (see Godfrey, McNeill and Menton, 2010) and FVCs (see Godfrey and Jackson, 2011).

Figure 10: *Total Financial Sector Liability, by EU Country, 2012*

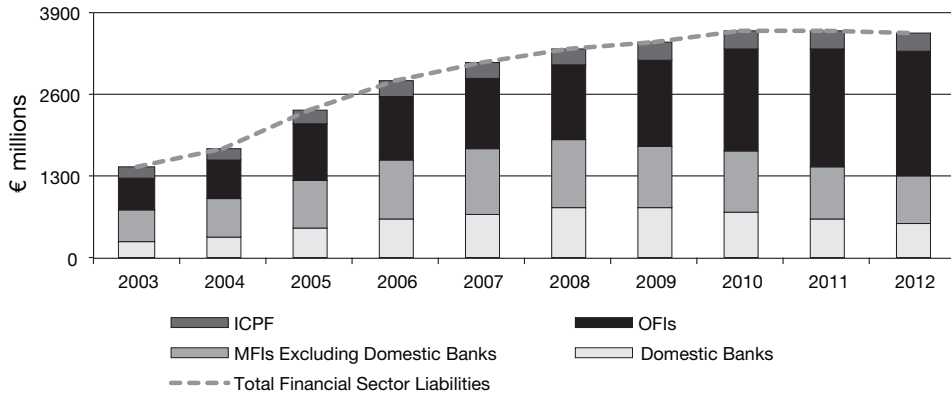


Source: Eurostat.

The extent to which Irish financial sector deleveraging is distorted by OFIs and ICPF is highlighted in Figure 11. Overall total Irish financial sector liabilities have increased by 7.8 per cent from end-2008 to 2012. The liabilities of domestic banks,<sup>3</sup> however, have declined by 23 per cent over this period. In contrast, the liabilities of OFIs and ICPFs have increased by 58 per cent and 21 per cent, respectively. Therefore, the inclusion of OFIs and ICPFs in this indicator masks the underlying trends in the domestic banking sector.

The MIP's auxiliary measure of risk relating to the financial sector is the ratio of debt to equity. A difficulty with this indicator is that financial subsectors fund themselves in very different ways. Credit institutions predominantly use

<sup>3</sup> Domestic banks are defined as Institutions whose ultimate parent entity is resident in Ireland, or which have a significant (>20 per cent) level of business with Irish households and non-financial corporations in terms of their overall resident business activity. Though NAMA is an OFI, it is included in this category for this calculation as its assets are all loans and were transferred from Irish banks.

Figure 11: *Decomposition of Total Irish Financial Sector Liabilities*

Sources: Central Bank of Ireland and Central Statistics Office.

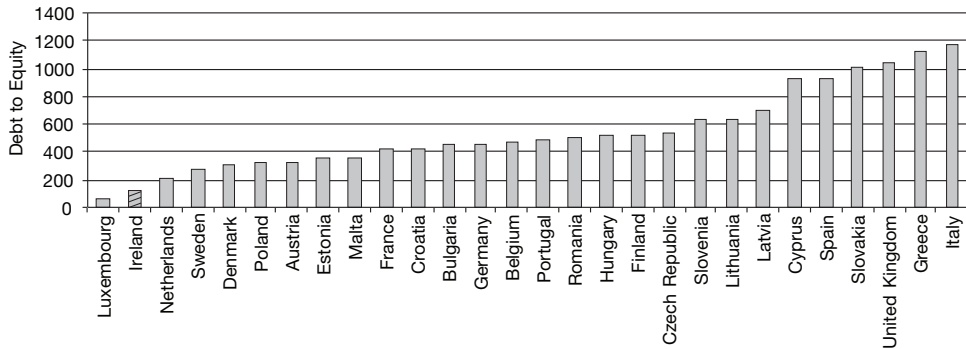
interbank deposits, private sector deposits, and securities to fund most of their activities. These are all classified as debt instruments. FVCs fund themselves predominately through securities issued, which are classified as debt. In contrast, money market funds and investment funds, fund themselves through mutual funds issued, which is classified as equity. ICPFs finance their activities largely through the issue of net equity held by households in pension fund reserves and life insurance reserves. Consequently, calculating debt to equity on aggregate for the entire financial sector can lead to very different results depending on the structure of a country's financial sector. Luxembourg, Ireland and the Netherlands have the lowest debt to equity indicators in the EU (Figure 12). This is because these countries have very large investment fund and money market fund sectors relative to the size of their banking sectors. Furthermore, as equity in financial accounts is measured at market values, the overall ratio could be very sensitive to stock market movements.

Finally, the MIP indicators do not take any account of maturity or currency mismatches between the assets and liabilities sides of the financial sector. Research has shown that many financial crises have been characterised by major maturity or funding mismatches (see, for example, Laeven and Valencia, 2008). Country data supplied to the ECB and the BIS on banks' balance sheets would allow the Commission to calculate indicators detecting currency and funding mismatches.

Given the drawbacks of the MIP indicators related to the financial sector listed above, it is unlikely that these indicators will be able to effectively identify potential risks to the financial sector, or to provide reliable cross country comparisons. More appropriate indicators would aim to measure funding

maturity mismatches and currency mismatches. In addition, disaggregating the financial sector into the components relating to credit institutions, FVCs, investment funds and ICPFs is important given the very different funding structures of each of these types of financial entities.

Figure 12: *Debt to Equity, by EU Country, 2012*



Source: Eurostat.

### III CONCLUSION

The importance of accurately identifying and monitoring macroeconomic imbalances has been clearly highlighted by the financial crisis. The MIP is therefore a very useful initiative. However, forming a consistent framework to measure imbalances across countries with very different structures is very difficult. This paper suggests a number of possible enhancements to the distorted indicators, in order to increase the likelihood that imbalances are correctly identified and clearly communicated to policymakers and analysts.

First, developing common measures for assessing the extent to which indicators may be distorted by international centres is important. In the case of countries with relatively large international investment, such as Ireland, at least five of the eleven indicators are clearly distorted by financial and non-financial MNC activities. Data for all five of these distorted indicators are sourced for the EU from Eurostat. The European Council has already invited Eurostat to "... take all necessary initiatives to assure a reliable procedure for the compilation of these statistics as well as a continuous improvement of the underlying statistical information". Therefore, Eurostat could investigate with NSIs and NCBs the extent to which the underlying statistics are materially distorted by financial centres and how these distortions can be consistently measured. Furthermore, metadata could be supplied in addition to the



indicators, outlining instances where indicators may be distorted significantly by the activities of financial and non-financial MNCs.

Second, the indicators use very high level data to measure macro imbalances. In a number of cases however, this means that the aggregate data can mask the underlying risks and imbalances. In the case of the indicator on financial sector risk, the indicator does not disaggregate the total financial sector into its subsector components. This means that rapid balance sheet expansion in one subsector can be masked by offsetting balance sheet reductions in other subsectors. In addition, banks, OFIs, and ICPFs all have very different funding structures. Therefore, analysing debt to equity for the entire sector on aggregate could produce results which are not likely to be meaningful.

It is important to recognise that the function of the indicators is to highlight imbalances that should be explored in greater detail during in-depth country reviews. Country-specific factors, such as financial centres, and decompositions of aggregate indicators are included in these reviews. Adjusting the indicators to allow for country-specific factors, would increase the probability that imbalances are accurately recognised and reduce the probability that false positives are highlighted.

## REFERENCES

- BORIO, C. and M. DREHMANN, 2009. "Assessing the Risk of Banking Crises – Revisited", *BIS Quarterly Review*, March.
- CECCHETTI, S. G. and E. KHARROUBI, 2012. "Reassessing the impact of finance on growth", BIS Working Papers, No 381.
- CECCHETTI, S. G., M. S. MOHANTY and F. ZAMPOLLI, 2011. "The Real Effects of Debt", BIS Working Papers, No 352.
- CUSSEN, M. and M. LUCEY, 2011. "Treatment of Special Bank Interventions in Irish Government Statistics", Dublin: Central Bank of Ireland, *Quarterly Bulletin*, No. 3.
- CUSSEN, M. and B. O'LEARY, 2013. "Why are Irish Non-Financial Corporations so Indebted?", Dublin: Central Bank of Ireland, *Quarterly Bulletin*, No. 3.
- DAVIS, E. P. and D. KARIM, 2008. "Comparing Early Warning Systems for Banking Crises", *Journal of Financial Stability*, Vol. 4, June, pp. 89-120.
- EUROPEAN COMMISSION, 2012. "Scoreboard for the Surveillance of Macroeconomic Imbalances", Occasional Paper 92/2012, February.
- EVERETT, M., 2012a. "Box 2: The Increasing Financial Nature of the Current Account", Dublin: Central Bank of Ireland, *Quarterly Bulletin*, No. 3.
- EVERETT, M., 2012b. "Box 3: The Statistical Implications of Multinational Companies Corporate Structures", *Quarterly Bulletin*, No. 2, Dublin: Central Bank of Ireland.
- FITZGERALD, J., 2013. "The Effect of Redomiciled Plcs on GNP and the Irish Balance of Payments", *QEC Research Notes 2013/1/2*, Dublin: The Economic and Social Research Institute.

- FRANKEL, J. A. and G. SARAVELLOS, 2010. "Are Leading Indicators of Financial Crises Useful for Assessing Country Vulnerability? Evidence from the 2008-09 Global Crisis", NBER Working Paper No. 16047.
- GODFREY, B. and C. JACKSON, 2011. "Meeting the Statistical Challenges of Financial Innovation: Introducing New Data on Securitisation", Dublin: Central Bank of Ireland, *Quarterly Bulletin*, No. 3.
- GODFREY, B., J. MCNEILL and A. MENTON, 2010. "The Investment Funds Industry in Ireland – A Statistical Overview", Dublin: Central Bank of Ireland, *Quarterly Bulletin*, No. 1.
- HICKEY, R. and L. KANE, 2014, "The Macroeconomic Imbalance Procedure and Ireland"
- INTERNATIONAL MONETARY FUND, 2013a. "Multilateral Policy Issues Report: 2013 Pilot External Sector Report", August.
- INTERNATIONAL MONETARY FUND, 2013b. "External Balance Assessment (EBA) Methodology: Technical Background" Prepared by Staff of the IMF's Research Department, June 25.
- LAEVEN, L. and F. VALENCIA, 2008. "Systemic Banking Crises: A New Database", IMF Working Paper No. 08/224, September 2008.
- LANE, P., 2010. "International Financial Integration and the External Positions of Euro Area Countries", OECD Economics Department Working Papers, No. 830, OECD publishing, doi: 10.1787/5km33sqg0m9s-en
- LANE, P., 2012. "The Dynamics of Ireland's Net External Position", *Journal of the Statistical and Social Inquiry Society of Ireland*, Vol. XLI.
- LANE, P., 2014. "International Financial Flows and the Irish Crisis", IIIS Discussion Paper No. 444, Trinity College Dublin.
- LANE, P. and G. M. MILESI-FERRETTI, 2007. "The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970-2004", *Journal of International Economics*, Vol. 73, No. 2, pp. 223-250.
- LANE, P. and G. M. MILESI-FERRETTI, 2011. "External Adjustment and the Global Crisis", IMF Working Paper, WP/11/197.
- MANCINI-GRIFFOLI, T. and N. STOFFELS, 2012. "Adjusting the Current Account to Better Capture Wealth Accumulation", Swiss National Bank mimeo.
- REINHART, C. M. and K. S. ROGOFF, 2009. *This Time is Different: Eight Centuries of Financial Folly*, Princeton University Press, December.
- REINHART, C. M. and K. S. ROGOFF, 2010. "Growth in a Time of Debt", *American Economic Review*, Vol. 100, No. 2, pp. 573-578.
- REINHART, C. M. and K. S. ROGOFF, 2011. "From Financial Crash to Debt Crisis", *American Economic Review*, Vol. 101, No. 5, pp. 1676-1706.
- UN WORLD INVESTMENT REPORT, 2012. *World Investment Report: Towards a New Generation in Investment Policies*.
- VOGET, J., 2011. "Relocation of Headquarters and International Taxation", *Journal of Public Economics*, Vol. 95, No. 9, pp. 1067-1081.
- WHELAN, K., 2010, "Policy Lessons from Ireland's Latest Depression", *The Economic and Social Review*, Vol. 41, No. 2, pp. 225-254.
- WHELAN, K., 2012. "Macroeconomic Imbalances in the Euro Area", Briefing Papers for the European Parliament's Committee on Economic and Monetary Affairs, April.

ANNEX 1

*Stages of Macroeconomic Imbalance Procedure*

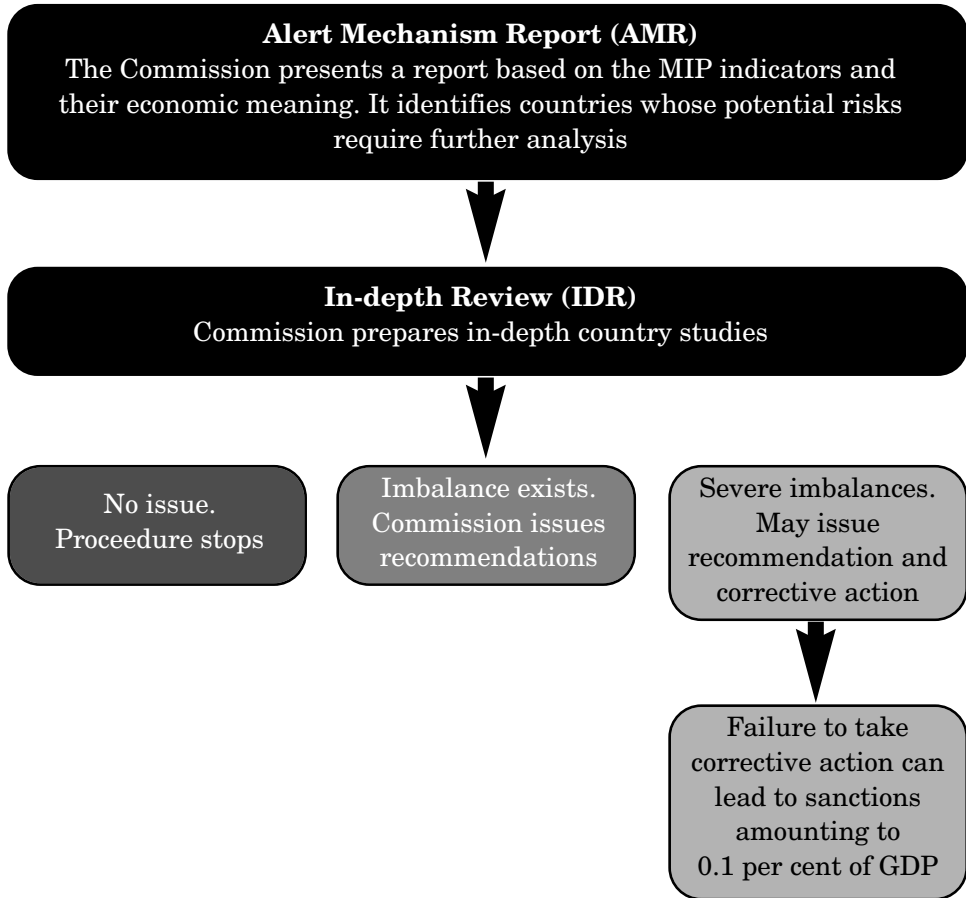


Table A1: *Indicators and Definitions*

<i>Indicator</i>	<i>Definition</i>	<i>Threshold</i>	<i>What it Should Measure</i>
Current Account Balance	Three year average of current account balance as a percentage of GDP.	-4 per cent or +6 per cent	Sustainability of external debt.
Net International Investment Position (NIIP)	NIIP as a percentage of GDP.	-35 per cent	Sustainability of external debt.
Private Sector Debt – consolidated	Household and Non-Financial Corporate debt positions as a proportion of GDP.	160 per cent	Private sector credit risk.
Private Credit Flow –	Household and Non-Financial Corporate debt transactions as a proportion of GDP.	15 per cent	Private sector credit risk
Change in total financial sector	Annual percentage change of the total financial sector	16.5 per cent	Financial sector credit risk

---



---

*Accounting Concepts*

---



---

*External Imbalance Concepts*

---

Net International Investment Position = Domestic Sectors Financial Assets with Non-Residents – Domestic Sectors Liabilities with Non-Residents  
= Current Account + Capital Account + Valuation Changes

Current Account = Trade Balance + Income

Income = Compensation of Employees + Investment Income

*Private Sector Debt Concepts*

---

Debt = Securities Issued + Loans Liabilities

Private Sector Debt = Household + NFC Debt  
= Private Sector Credit Flow + Valuation Changes + Reclassifications

*Financial Sector Concepts*

---

Financial Sector = Monetary Financial Institutions + OFIs + ICPFs

Monetary Financial Intermediaries = Central Bank + Credit Institutions + Credit Unions + Money Market Funds

Financial Sector Liabilities = Deposits from all sectors + Securities Issued + Loans Liabilities + Shares and Other Equity + Insurance Technical Reserves + Other Accounts Payable Receivable

---



---

