



## External statistics and national financial accounts as leading indicators for the assessment of economic vulnerabilities<sup>1, 2</sup>

António Jorge Silva\*

Banco de Portugal, Lisboa, Portugal – [anjsilva@bportugal.pt](mailto:anjsilva@bportugal.pt)

Lígia Maria Nunes

Banco de Portugal, Lisboa, Portugal – [lmunes@bportugal.pt](mailto:lmunes@bportugal.pt)

André Cardoso Dias

Banco de Portugal, Lisboa, Portugal – [acdias@bportugal.pt](mailto:acdias@bportugal.pt)

### Abstract

The Global Financial Crisis has reinforced the need and relevance of the development of early warning systems, which enable the detection, and, to the extent possible, the prevention of severe internal and external economic vulnerabilities. In this context, several initiatives at the international level have been pursued. For instance, the European Union has implemented, in December 2011, a surveillance mechanism that attempts to meet this identified need - the Macroeconomic Imbalances Procedure (MIP). *Banco de Portugal* contributes to this Procedure with the compilation and development of external statistics and national financial accounts, which are used in the MIP scoreboard. Furthermore, in 2015, *Banco de Portugal* has overhauled its Statistical Bulletin by introducing a Chapter on Main indicators, which now includes information that allows an improved assessment of the current economic conditions, and facilitates international comparisons. In this paper, we discuss the relevance of these statistics as leading indicators for economic assessment and present the results of the recent overhauling process.

**Keywords:** economic monitoring; balance of payments; sectoral accounts; main economic indicators

### 1. Introduction

The recent Global Financial Crisis (GFC) has shown the importance of the interconnections between economies but also between the resident sectors of an economy. In fact, an apparently very concrete and specific problem in the United States subprime real-estate market quickly transformed into an international banking crisis, deeply affected trade worldwide, and had a very significant economic cost in terms of GDP loss and unemployment. In Europe, the GFC has been followed by a profound sovereign debt crisis after 2010.<sup>3</sup>

Although each economic crisis has historically been associated with somewhat different immediate causes, some authors argue that the main cause for policy inaction before the materialization of a given crisis has not been the lack of warning signals of an approaching crisis, but rather a generalized *this time is different* syndrome. Reinhart & Rogoff (2009) have compiled a database covering eight centuries of economic crises, of different typologies, and have found several economic developments that were present in most of the times. In fact, in our view, one of the main conclusions of this seminal work is the importance of a systematic and objective analysis of available data – namely through the development and analysis of early warning systems and leading indicators.

---

<sup>1</sup> The analysis, opinions and findings of this paper represent the views of the authors, which are not necessarily those of the *Banco de Portugal* or of the Eurosystem.

<sup>2</sup> The authors would like to thank Filipa Lima and Luís d'Aguiar for their valuable insights and suggestions.

<sup>3</sup> This European debt crisis had its pinnacle with the financial assistance programs to Greece (May 2010 and February 2012), Ireland (November 2010), Portugal (May 2011) and Spain (June 2012).



Nevertheless, the economic community and policy makers worldwide recognized that the GFC unveiled the existence of some gaps in the availability of key information for policy making and for the timely assessment of risks in and across countries<sup>4</sup>. Particularly, the accumulation of risks and imbalances in some sectors and/or financial instruments did not seem to be easily identified. Clearly, there were some warning signals provided by available statistics, but there was also the need for more harmonization and more transparency in some instruments or economic sectors.

In this paper we will not delve on the typical idea behind “leading indicators” – *i.e.*, the use of indicators or the construction of a composite aggregate index that may anticipate (nowcast or forecast) the behaviour of “real figures”<sup>5</sup>. Rather, we focus on how the *Banco de Portugal* (hereinafter, referred to as the Bank), and the European Union (EU), are making use of available external and national financial statistics to detect, monitor and assess economic weaknesses. In this *lato sensu*, the mentioned macroeconomic statistics can be seen as powerful leading indicators of economic vulnerabilities and, therefore, deserve increased attention by policy makers and regulators. The bulk of these statistics, and their relevance, are not new *per se*, although some important improvements have been developed. What is in some ways new is the systematic fashion by which policy makers look at them and the policy consequences that may arise from this more analytical, and in some instances even legal,<sup>6</sup> approach.

The paper is organized as follows. Section 2 presents a brief review of the literature on early warning systems and leading indicators of economic crises. Section 3 highlights the results of the creation of a Chapter on Main Indicators in the *Banco de Portugal*'s Statistical Bulletin. Section 4 concludes.

## 2. Leading indicators for the assessment of economic vulnerabilities: a synthesis

One of the main focus of attention of economists has been, for a long time, not only the explanation of the origins of economic downturns, but also the development of mechanisms that enable the detection of the build-up of imbalances that lead to such downturns. While the former has been the source of controversy between several streams of economic thought, the latter, on which we focus this paper, is still widely debated in economic literature – which consistently underlines the difficulties in identifying broad lessons and stylized facts.

Indeed, there is extensive research on which indicators perform best in suggesting the build-up of imbalances that lead to economic downturns (early warning indicators), but, as Frankel & Saravelos (2012) underline, despite the multitude of different data available today and numerous testing, any such exercise is always “*fraught with difficulties*”. Moreover, each generation of models that attempt to identify such early warning indicators are particularly useful in explaining the preceding crises but have “*to be jettisoned when the next crisis comes*”.<sup>7</sup>

Nevertheless, several studies look at historical data in an attempt to find regularities. In this spirit, Babecky *et. al* (2013) assessed, for the period between 1970 and 2010, which indicators could prove to be the most useful in explaining the cost of economic crises for EU and OECD countries and concluded that the key early warning signal is the growth of domestic credit to the private sectors, while “*an increase in government debt, the current account deficit, and FDI inflow, or a fall in house prices and share prices could be considered late early warning indicators*”. Jordá *et. al* (2011) used a set covering 140 years of historical data for a sample of advanced economies and concluded that, in the run-up to normal crises, the current account deteriorates, in line with Reinhart and Reinhart (2009) who also found evidence that the current account deficits are helpful in foreseeing crises in developing countries.

<sup>4</sup> In this respect the reference is, of course, the G20 Data Gaps Initiative – see: [http://ec.europa.eu/eurostat/statistics-explained/index.php/G20\\_Data\\_Gaps\\_Initiative\\_\(DGI\)\\_%E2%80%93%93\\_background](http://ec.europa.eu/eurostat/statistics-explained/index.php/G20_Data_Gaps_Initiative_(DGI)_%E2%80%93%93_background)

<sup>5</sup> For a review on leading and coincident indicators for the Portuguese economy see, for instance, Esteves & Rua (2012) and Rua (2015) where these topics are studied in depth.

<sup>6</sup> For instance, as we mention in Section 2 of this paper, the EU's MIP has a corrective arm with legal enforcement power.

<sup>7</sup> For a good survey on the literature regarding early warning indicators please refer to Frankel and Saravelos (2012), who have conducted a review of over eighty papers from the pre-2008 early warning indicators literature.



Recently, several studies have focused on the Global Financial Crisis. For instance, Rose & Spiegel (2011) investigated possible determinants of the intensity of the GFC across countries and concluded that the countries with pre-crisis current account surpluses and/or with lower credit growth rates appeared to endure that downturn better. In the same vein, Lane & Milesi-Ferretti (2011) sought to understand if the cross-country incidence and intensity of the GFC was systemically connected to any pre-crisis macroeconomic behaviour and/or financial factor – they found that “*countries with a high share of manufacturing in GDP, large increases in private credit relative to GDP, high current account deficits, and net external liabilities – particularly in the form of debt – were among those experiencing higher output and demand declines*”.

Although several authors have duly identified a few caveats in the identification of the most powerful early warning indicators, it becomes clear that there are a set of variables which are repeatedly identified for this purpose – e.g. the growth rate of domestic credit and the current account deficits.

### **The case for the European Union’s Macroeconomic Imbalances Procedure**

Against this background, having recognized the importance of developing early warning models and the usefulness of incorporating the indicators described in the literature surveyed, the EU has embedded those principles in the setting up of its Macroeconomic Imbalances Procedure (MIP), which attempts to alert decision makers on the building up of macroeconomic vulnerabilities in EU countries (European Commission, 2012). This was done through the creation of a scoreboard which comprises a small number of relevant, practical and high quality macroeconomic, financial and social indicators to which an indicative threshold – which serves as an “alert” level – was defined. The MIP scoreboard works as a filter that aims to identify the countries for which a more in-depth analysis – and possible subsequent measures – is deemed necessary. When serious and persistent imbalances are identified, the corrective arm of the MIP requires the Member State to put in place a detailed policy plan to achieve their correction and provides means to effectively enforce it.

The indicators which are currently being used for the MIP<sup>8</sup> are derived from available macroeconomic and financial statistics, such as external statistics and national accounts. The MIP scoreboard includes, among others, (a) three indicators pertaining to the external statistics’ domain: the current account balance, the net international investment position (both as a % of GDP) and the percentage change of export market shares; and also (b) three aggregates that are derived from national financial accounts: the consolidated private sector debt, the general government gross debt (both as a % of GDP) and the year-on-year changes in total financial sector liabilities. In Portugal, the Bank is responsible for the compilation of all of the MIP statistics in these domains, apart from the change of export market shares which is compiled by the National Statistical Institute.

### **3. Banco de Portugal’s Main Economic Indicators – external statistics and national financial accounts**

In 2011, the Bank began a new phase in the release of indicators for the Portuguese and international economy, through the creation of a new Chapter in the Statistical Bulletin – *Chapter A: The Main Indicators*. This new chapter reflects the concerns of the Bank in simplifying the access to indicators capable of providing an overview of recent national and international economic developments, with an emphasis on the Portuguese and euro area economies, allowing for a more systematic analysis of such data, and including several indicators useful for the detection of macroeconomic vulnerabilities. Chapter A is organized by statistical domains and uses an up-to-date user-friendly tabular and chart presentation, which covers, *inter alia*, national accounts, general government (GG) finance statistics, labour market statistics, monetary and financial statistics, as well as external statistics indicators.

<sup>8</sup> The set of indicators that composes the MIP scoreboard is routinely revised. For a complete overview of the indicators currently used please consult: [https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/macro-economic-imbalance-procedure/scoreboard\\_en](https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/macro-economic-imbalance-procedure/scoreboard_en)

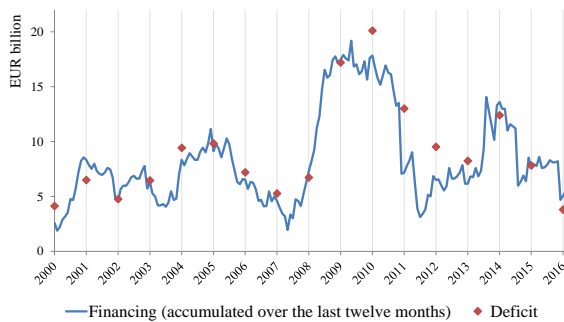


Chapter A also benefits from the publication by the Bank of several statistics with a shorter timeliness than is usually the case. This aspect further empowers the users with high quality and more timely information that effectively allows to proxy and/or forecast the behaviour of some important areas of the economy.

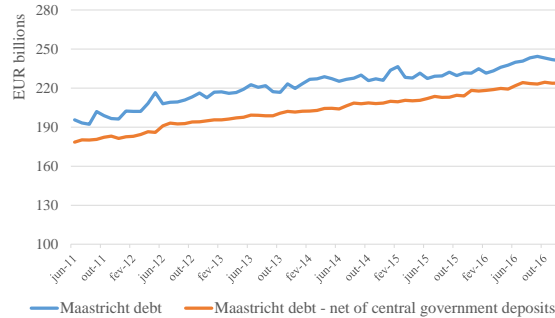
For example, the Bank compiles and publishes central government and general government financing statistics on a monthly basis, with a timeliness of t+30 and t+50, respectively. These statistics have proved to be high quality and timely proxies for the official deficit of the general government, which is available on a quarterly basis and compiled in the framework of the quarterly national financial accounts, with a t+90 timeliness (Figure 1). Similarly, although the publication of public debt statistics, according to the Maastricht criteria, is only done at the European level in a quarterly basis, which the Bank publishes with a t+90 timeliness, the Bank also publishes monthly public debts statistics, with a t+30 timeliness (Figure 2).

The more frequent and timely publication of public debt statistics, together with the monthly statistics on general government financing, allows for a closer monitoring of the general government sector and thus provide added value for analysts and decision makers. Such more frequent and timely publication of these statistics is only possible given the existence – and comprehensive exploitation – of several micro-data sources at the Bank.

**Figure 1 – General Government Financing and Deficit**



**Figure 2 – General Government Debt (monthly)**



In the same spirit, it is worth highlighting that the statistics regarding the indebtedness of the non-financial sector<sup>9</sup>, which are now available monthly, with t+30 timeliness, and included in Chapter A, can also be seen as leading indicators, in *latu senso*, for the liabilities of this sector, which are only published in quarterly national financial accounts, with t+90 timeliness. Such comparisons between these two statistics are possible given that the sectors covered are the same and the monthly indicators on the non-financial sector indebtedness include the most relevant financial instruments<sup>10</sup>. However, in this respect, analysts must adequately consider some existing methodological differences between the two statistics, namely distinct valuation methods for some instruments, and also the fact that monthly data is non-consolidated and quarterly financial accounts data is consolidated.

Finally, it is also relevant mentioning that, in April 2017, Chapter A was extended to include a set of statistics on financial stability, which encompass, *inter alia*, a composite index of financial stress in Portugal – which Braga *et al* (2014) show is a good predictor of financial stress episodes that, after a certain threshold, negatively affect economic activity –, and a selection of specific indicators related with the banking sector. Among others, these specific indicators are used by the Bank for financial stability analysis and enable the assessment of systemic issues, such as the evolution of credit gaps.<sup>11</sup>

<sup>9</sup> For a broader scope on the usefulness and methodological issues underlying these statistics, please consult Lima *et. al* (2014).

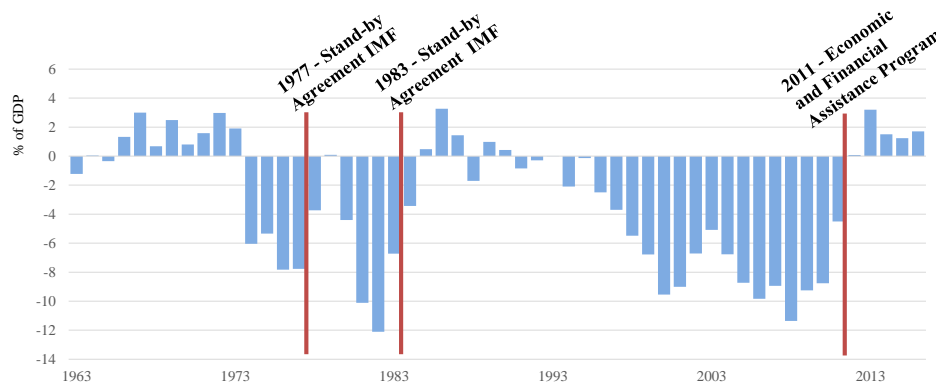
<sup>10</sup> In this monthly statistics, debt includes: loans, debt securities (nominal value) and trade credits.

<sup>11</sup> For an illustration of how these indicators are used, please consult the *Banco de Portugal's* Financial Stability Report at: <https://www.bportugal.pt/en/publications/banco-de-portugal/all/120>



We present in figures 3, 4 and 5 an additional set of the statistics compiled by the Bank and published in chapter A. As figures 3 and 4 appear to suggest, the GFC exposed the underlying weaknesses and imbalances of the Portuguese economy – for instance, in the run-up to the crisis, the Portuguese economy was characterised by large and persistent current account deficits. In fact, according to the literature surveyed, persistent current account deficits are one of the most important early warning signals that a crisis is imminent. Indeed, considering Figure 3, one can verify that the three foreign financial assistance programmes that have occurred in Portugal – in 1977, 1983 and 2011– have all been preceded by some years of large accumulation of external imbalances – in the 70’s, beginning of the 80’s, and from the mid-90’s to the early 10’s<sup>12</sup>.

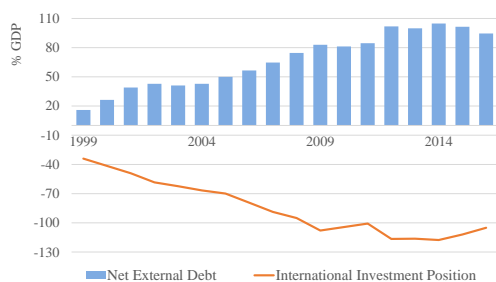
**Figure 3 – Current and Capital Account and financial assistance programs**



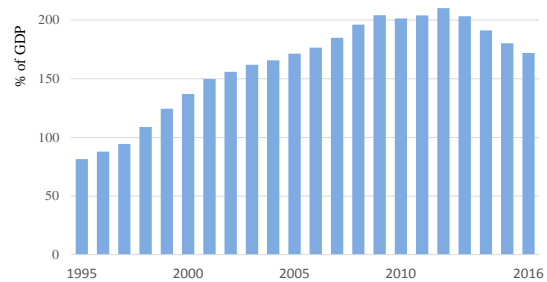
However, since 2010, Portugal has achieved a significant turnaround of its current and capital account deficit: from a deficit of 8.7% of GDP in 2010 to a surplus of 1.7% in 2016 (Figure 3). These results were much supported by the consistent increase in the gross exports of both goods and services. Notwithstanding, the financial external exposure of Portugal is, still, a matter of concern, as indicated both by a large negative International Investment Position and a high gross external debt (Figure 4).

In terms of public finances, although the fiscal deficits have been gradually declining, the current size of public debt is still a significant vulnerability of the Portuguese economy, as at the end of 2016 the public debt stood at €241.1 billion (130.4% of GDP). Likewise, the non-financial private sector also keeps featuring very high levels of indebtedness, although there has been a significant and ongoing deleveraging among households and non-financial corporations over the last few years (Figure 5). Despite this important deleveraging and a seemingly recent stabilization, the (consolidated) private sector debt is still alarmingly high (172% of GDP at the end of 2016) and, in light of the literature surveyed of the early warning importance of this variable, demands a close monitoring by policy makers.

**Figure 4 – International Investment Position and Net External Debt**



**Figure 5 – Private Sector Debt (consolidated)**



<sup>12</sup> For a broader discussion on the sustainability of the Portuguese current account and its implications, please consult Silva & Silveira (2016).



#### 4. Conclusions

In this paper, we discussed the relevance of external statistics and financial accounts as leading indicators for the assessment of economic vulnerabilities. Having acknowledged that such aggregate statistics provide a good view of the build-up of imbalances and vulnerabilities, *Banco de Portugal* created a new Chapter in its monthly Statistical Bulletin – *Chapter A: The Main Indicators* –, which aims at simplifying the access of users to indicators capable of providing an overview of recent national and international economic developments, with an emphasis on the Portuguese and euro area economies, and, for some indicators, with higher frequency and shorter timeliness than demanded by international organizations. Furthermore, several of the indicators published can be viewed as interesting proxies to important macroeconomic variables, and, as such, provide a way to a more timely assessment of economic developments.

#### References

- Babecky, J., Havraniek, T., Mateju, J., Rusnak, M., Smidkovo, K., Vasicek, B. (2013). Leading Indicators of crisis incidence: Evidence from developed countries, *Journal of International Money and Finance* 35, 1–19.
- Braga, J. P., Pereira, I., Reis, T. B. (2014). Indicador Compósito de Stress Financeiro para Portugal. Artigos de estabilidade Financeira. Banco de Portugal
- Cadete de Matos, J. (2015). Using financial accounts to better understand sectoral financial interlinkages. Banco de Portugal.
- Esteves, P. S., Rua, A. (2012). Short-term forecasting for the Portuguese economy: a methodological overview. *Economic Bulletin Autumn 2012*. Banco de Portugal.
- European Commission (2012). Scoreboard for the surveillance of macroeconomic imbalances. Occasional paper No. 92.
- Frankel, J. A., Saravelos, G. (2012). Can leading indicators assess country vulnerability? Evidence from the 2008–09 global financial crisis. *Journal of International Economics* 87, 216–231.
- Jordà, O., Schularick, M., Taylor, A.M., (2011). Financial crises, credit booms, and external imbalances: 140 years of lessons. *IMF Economic Review* 59 (2), 340–378.
- Lane, P., Milesi-Ferretti, G.M., (2011). The cross-country incidence of the global crisis. *IMF Economic Review* 59, 77 – 110.
- Lima, F., Correia, I., Batista, R., (2014). Non-financial sector indebtedness. *Jornadas de Classificação e Análise de Dados (JOCLAD)*, Lisbon
- Reinhart, C.M., Reinhart, V.R., (2009). Capital flow bonanzas: an encompassing view of the past and present. In: Frankel, J.A., Pissarides, C. (Eds.), *International Seminar on Macroeconomics 2008*. University of Chicago Press, Chicago.
- Reinhart, C. & Rogoff, K. (2009). *This Time Is Different: Eight Centuries of Financial Folly*. Princeton University Press.
- Rose, A., Spiegel, M. (2011). Cross-country Causes and Consequences of the Crisis: An Update. Special Issue: *Advances in International Macroeconomics: Lessons from the Crisis*. *European Economic Review* 55, 309 – 324.
- Rua, A. (2015). Revisiting the monthly coincident indicators of Banco de Portugal. Banco de Portugal.
- Silva, J. & Silveira, V., (2016). Portuguese economy: Statistical analysis on the current account reversal's sustainability. 8th IFC Conference: “Statistical Implications of the new financial landscape”.