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***Current Account Imbalances or Too Much Bank Debt as the Main Driver of Gross Capital Inflows? Spain During the Great Financial Crisis***

***Eladio Febrero,  
Ignacio Álvarez, and  
Jorge Uxó***

**Abstract:** In contrast to the widespread view which posits that large current account deficits and net international debt were at the epicenter of the crisis in the Euro Zone, with diverging competitiveness playing a central role, this article points to the huge volume of bank credit that banks refinanced in international markets.

With a focus on the Spanish economy, we ground our view in an analysis linking gross—not net—capital flows, bank credit, and gross external debt, which provides more adequate information about a country's international financing patterns and its external exposure.

The main conclusion of this article is that the principle driver of gross external debt in Spain was bank credit, with accumulated current account deficits accounting for less than 50 percent of gross external debt. Other consequences in keeping with this view are: the measures of economic policy required to sort out current account imbalances—particularly wage devaluation to improve competitiveness—may do more harm than good and they do not prevent the problem of too much bank credit from occurring again, and the residence of debt holders in the Euro Zone crisis is relevant for the understanding of the crisis as the result of a power imbalance

**Keywords:** gross capital flows, bank credit, current account imbalances, banks refinancing loans, Spain

**JEL Classification Codes:** E44, F41, F45, G15

There is a high degree of consensus amongst researchers of different strands of thought that the crisis in the Euro Zone (hereafter, EZ), from 2008 to 2013, was caused by the buildup of a large volume of cross-border debt within EZ borders, driven by current account (CA) imbalances. Although the crisis evolved into a sovereign debt crisis after the first Greek sovereign debt crisis in May 2010, and the divorce between the monetary authority and national treasuries made things more complicated, its origin is attributed to large CA imbalances over periods that were too long, making international investors unwilling to refinance.

In this article, we downgrade CA deficits and place bank credit at the epicenter of the crisis. In this view, net trade imbalances are relevant, and we should not lose sight of them.

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Rather, they are a by-product of a protracted credit boom and not so much the main cause of the crisis. We argue that the root cause of the crisis is an unsustainable private bank debt-led growth pattern. Gross external debt, which was driven by bank credit that banks refinanced abroad, aggravated the situation (it should be noted that gross external debt can increase even with a balanced current account balance) because governments in creditor countries, especially Germany and France, defending the interest of their banks, imposed highly restrictive conditions on debtor countries through EZ institutions, specifically the European Commission and the European Central Bank (ECB). As Randall Wray (2012) has aptly stated, despite existing CA imbalances, what was relevant was a power imbalance between creditors and debtors.

We pay special attention to the Spanish case, justifying this decision on the basis that Spain is the largest economy in the group of troubled countries in the EZ periphery, (in our opinion, Italy is a special case and deserves separate treatment) and, additionally, it has been taken as an illustrative case of a debt-led EZ country in crisis (unlike Greece, indebtedness in Spain was not public but private, and unlike Ireland, Spain did not become a financial hub).

More specifically, we explore the following questions. First and foremost, an analysis based on gross flows—compared to one in net terms—gives us a more complete account of the exposure to the external vulnerabilities of an economy and of its cross-border financing patterns; second, external debt, driven by bank credit and not by CA imbalances, plays a role in the second crisis wave in Spain, from 2011 to 2013, as a problem of political economy, disguised as moral hazard; and third, with regard to bank credit and gross capital inflows, the causality runs from the former to the latter, in keeping with the endogenous money view.

We have built our argument on two main empirical findings. First, as shown in Hélène Rey (2013), and Fernando Broner, Tatiana Didier, Aitor Erce, and Sergio L. Schmukler (2013), gross capital inflows and outflows usually take place simultaneously and are inversely related to uncertainty. Additionally, they are larger and more volatile than net flows and are different in nature (inflows as debt versus outflows as equity, capital flows are denominated in different currencies, are managed by different agents, etcetera). In this situation, external exposure to a sudden stop may happen even with a trade surplus, because the assets held by some residents are not available for the payment of other residents' debts. An analysis based in net flows may not inform of the accumulation of external debt because outflows and inflows cancel each other out.

And second, gross capital inflows are frequently correlated to bank credit and asset prices, with causality running from bank credit to gross capital flows (see, for instance, Stefan Avdjiev, Robert McCauley, and Patrick McGuire 2012; Yassar Al-Saffar, Wolfgang Ridinger, and Simon Whitaker 2013).<sup>1</sup> Hence, if gross external debt is driven by gross capital inflows and these are, in turn, driven by bank credit and fueled by rising asset prices, bank lending is a root cause of external debt. By and large, this second empirical finding contributes twice as much to economic instability. On the one hand, a debt-led growth pattern is unsustainable in the long run. On the other hand, growing indebtedness increases external vulnerabilities.

The reader might presume that both views (i.e., those grounded in CA imbalances and those grounded in bank credit, respectively) are compatible, because we are dealing with a simultaneous financial and external crisis, as a consequence of easy monetary conditions.

However, such a view, based on net flows, has two difficulties. First, it provides us with an incomplete picture of the situation from 2008 to 2013 because it roughly explains

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<sup>1</sup> This has some consequences for the endogenous money view, which we deal with later in this article.

less than one half of accumulated external debt. And the measures of economic policy for sorting out the crisis that are drawn from this view (wage devaluation or internal exchange rates—for more on this, see Heiner Flassbeck and Costas Lapavistas [2013], or Luiz-Carlos Bresser-Pereira and Pedro Rossi [2015]) do not deal with the high elasticity of credit which banks experienced during the boom that followed the introduction of the euro. And second, the crisis would have occurred even without CA imbalances because cross-border gross financial flows were mostly unrelated to trade (Storm 2016), a dynamic that an analysis based on net flows cannot grasp if gross capital inflows and outflows take place simultaneously. Furthermore, the crisis—caused by the burst of a real estate bubble, which dragged some banks down in its fall—could have taken place even without increasing external debt: the endogenous money view holds that banks can grant loans *ex nihilo* so that refinancing loans in international markets is not a necessary condition for bank credit that funds transactions in local currency; and, even so, a large capital outflow (a capital withdrawal) could just as easily have taken place after the real estate bubble burst and the banking crisis began, if Spanish or Irish depositors had decided to carry their savings to a safer harbor, with the government—the last guarantor of banks' solvency—lacking a lender of last resort.

The article is organized as follows. We begin providing a critical overview of the crisis in the EZ based in the CA imbalances, which is grounded on net flows. Next, we analyze the origin and the use of gross capital inflows and outflows in Spain. In the following section, we explore the connection between bank credit and gross capital flows, framing it in the endogenous money view. The section below deals with some implications of shifting the focus from CA imbalances to excessive bank credit. The last section outlines the conclusion.

### ***Current Account Imbalances and the Crisis in the Euro Zone. A Single Root Cause with Different Solutions?***

There is a high degree of consensus as to the causes of the crisis in the EZ, although there is less agreement when it comes to related solutions. A brief account of the consensus narrative for the crisis might be as follows.

After the launch of the euro and the deregulation of capital markets in the EZ, peripheral EZ countries got access to funding at the same interest rate and under similar conditions as Germany and other core EZ countries. This was a very expansive monetary policy that unleashed strong domestic spending, funded with bank debt, in GIPS countries (acronym for Greece, Ireland, Portugal, and Spain). Capital flowed from the core EZ countries to the periphery, bridging the gap between bank credit and deposits.

A debt-led consumption pattern in the EZ periphery (Greece, Ireland, and Spain) could be observed, leading to strong GDP growth and, through overheating, rising unit labor costs. These two factors gave way to growing current account deficits (mirrored by net capital inflows) whose accumulation led, in turn, to large net international debtor positions. Increasing asset prices reinforced this vicious circle, especially in the housing market in Ireland and Spain. Borrowing funded non-productive spending.

Simultaneously, there was an export-led growth pattern in core EZ countries, where there is a highly competitive manufacturing sector. Their GDP growth rate in that period of time was lower, driven mainly by exports; wages grew at the same pace as productivity, leading to rather stable unit labor costs, and there was almost no increase in resident agents' indebtedness. Their net international creditor position roughly matched the debtor position

of GIPS and they recycled their trade surplus through lending, in net terms, to peripheral countries.

This model of complementary growth patterns failed after the collapse of the subprime mortgage market in the United States in 2007 and the fall of Lehman Brothers in 2008, when capital flows dried up, leading to the Great Recession of 2008–09. As a response, EZ governments stepped in, implementing expansive fiscal policy, in the framework of the European Economic Recovery Plan, and providing generous support to banks, which at that time were funding a large part of the public spending in their jurisdictions (in 2008–09), making budget deficits and public debt soar, particularly in the EZ periphery.

The Great Recession was over in 2009 for core EZ countries, because they were able to target other markets for their exports (see, for instance, Nadia Garbellini, Enrico Marelli, and Ariel L. Wirkierman [2014]). However, peripheral EZ countries were still dependent on fiscal policy. And this expansive policy, which burdened banks' balance sheets in the periphery, came to an end with the Greek sovereign debt crisis in May 2010, which preceded the bailouts of Greece, Ireland, and Portugal (an excellent account is that of Timothy Geithner [2014, chapter 11]), and later, Spain. The private sector involvement in the write-down of Greek sovereign debt in 2011—which made it crystal clear that a government in the EZ could default—unleashed a sudden stop and a capital reversal (for details, Silvia Merler and Jean Pisani-Ferry [2012], or Stephen G. Cecchetti, Robert N. McCauley, and Patrick M. McGuire [2012]), affecting Italy and Spain in particular, through the so-called sovereign-banking doom loop. The EZ authorities reacted, forcing troubled economies to tighten fiscal policy and to adopt structural reforms in the labor market, whilst the ECB implemented an extremely easy monetary policy, providing as many reserves as needed to monetize capital flows from the periphery to the core, although this was not enough to keep sovereign risk under control. Tensions calmed down only with the announcement of the so-called Outright Monetary Transactions (OMT) by Mario Draghi in mid-2012.<sup>2</sup>

This combination of fiscal austerity and wage devaluation led to the second crisis wave from 2011 to 2013, felt in the EZ periphery, despite expansive monetary policy. Although the detonator of the crisis was sovereign debt, the root cause of the crisis was outstanding external debt, driven by large current account deficits over a long period of time, which international investors did not wish to refinance.

This view, where current account imbalances are at the epicenter of the crisis, is widely shared by economists with different lines of thought. Nevertheless, there is some disagreement on whether current account imbalances are a root cause of the crisis per se or if, in turn, there is an underlying phenomenon that simultaneously explains both external imbalances and the crisis. The European Commission (2010), conservative economists in core EZ countries (for example, Hans W. Sinn and Timo Wollmershäuser 2012; or references listed in Spiegel 2012), New Keynesians (see contributions in Richard Baldwin and Francesco Giavazzi [2015]) and some unorthodox authors (Flassbeck and Lapavistas 2013, Bresser-Pereira and Rossi 2015) agree with the first option. Within this group, there is some disagreement on whether external imbalances were caused by private or public imbalances or whether these were due to a loss of competitiveness (for details see Engelbert Stockhammer, Collin Constantine, and Severin Reissl [2016]). In any event, for these economists, the crisis

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<sup>2</sup> At that time, Spain received external aid from the European Stability Mechanism to recapitalize some impaired banks. This also contributed to the recovery of confidence in financial markets.

is the consequence of a sudden stop after too much cross-border borrowing and lending, driven by current account imbalances, which led to very large net debtor positions.

Conversely, for many post-Keynesian authors and other heterodox researchers (amongst others, Eckhard Hein 2013, or James Galbraith 2014), current account imbalances are the result of finance-dominated capitalism and liberalism—or money manager capitalism (Randall Wray 2009)—since the early 1980s, which evolved into different forms at the regional level (debt-led, export-led, or domestic demand-led types [Hein 2013, 19]). The immediate cause of the Great Financial Crisis in the EZ since 2008 is the divorce between the central bank and national fiscal authorities following the accumulation of a large volume of debt in the EZ periphery. This self-imposed constraint makes fiscal policy pro-cyclical, whilst monetary policy is rather useless when indebted agents are deleveraging. Although current account imbalances are the outcome of financial deregulation and distributional shifts in favor of profits and high incomes, they are a relevant phenomenon which explain the crisis in the EZ (see, for instance, Jorge Uxó, Jesús Paúl, and Eladio Febrero 2011) and provide some information about what to do to prevent this mess from happening again.

With regard to economic policy recommendations, we see changes in the composition of the two groups mentioned above. The European Commission and conservative economists remain together, pointing to fiscal consolidation and structural reforms, especially in the labor market (unemployment is viewed as the consequence of ill-functioning labor markets, and recovering competitiveness is a must to rebalance the external sector), based in the Washington Consensus and the Efficient Market Hypothesis. Flassbeck and Lapavitsas (2013) and Bresser-Pereira and Rossi (2015) point to internal exchange rates (ruled by the ratio between unit labor costs in trading countries) to restore competitiveness in the periphery, implicitly assuming an interpretation of the crisis that is not far from the conservative position (Storm 2016). However, New Keynesians draw closer to post-Keynesians (perhaps the representative New Keynesian author on this point is Paul De Grauwe [2013]), suggesting some coordination between the ECB and national fiscal authorities, and also a supranational fiscal authority with the ability to issue and service its own debt (Baldwin and Giavazzi 2015, 57). Post-Keynesians also add some reflation in core EZ countries with a current account surplus (Hein 2013, 36–40). Although the underlying visions and analytical frameworks remain distant, there is some agreement that fiscal consolidation and wage devaluation are detrimental to recovery, at least in the short run (this agreement vanishes when we extend the analysis to the long term).<sup>3</sup>

In a nutshell, whether they are seen as a root cause of the crisis or merely as an outcome of long-term developments in advanced market economies since the 1980s, current account imbalances play a central role for most economists in the explanation of the current mess in the EZ. Dissent is more marked when it comes to possible solutions for the crisis.

### ***Net or Gross Capital Flows?***

The analysis that views current account imbalances as *the* cause of the current crisis in the EZ—either the immediate cause or the reflection of another deeper development—is implemented

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<sup>3</sup> Amongst post-Keynesians, Sergio Cesaratto (2013, 2015) explains fiscal austerity-cum-wage devaluation on the basis of moral hazard and on the unattainability of solutions that are common in stand-alone currency unions.

In addition, Flassbeck and Lapavitsas on the one hand, and Bresser-Pereira and Rossi on the other hand, remain skeptical of further integration in the EZ. The former suggest returning to a single-market without a shared currency whilst the latter point to internal exchange rates, ruled by differential unit labor costs.

in terms of net flows. However, do net flows suffice when it comes to understanding the crisis in the EZ? With the advent of the global financial crisis, an increasing number of authors have warned that focusing only on net flows may be misleading when one is interested in analyzing a country's external financial exposure and in global financing patterns (Bruno Bonizzi 2017; Claudio Borio and Piti Disyatat 2011, 2015; Pablo Bortz 2016, chapter 5; Broner et al. 2013; the Committee on International Economic Policy and Reform 2012; Karen Johnson 2009; Kristin Forbes and Francis Warnock 2012; Maurice Obstfeld 2012; Rey 2013; Hyun Song Shin 2012; amongst others).<sup>4</sup> Current account imbalances are still an important variable, for they contain relevant information about the build-up of some macroeconomic risks. However, net financing flows and net resource flows are different concepts. As Borio and Disyatat (2015, 25) put it, "Investors don't stop financing current accounts, they stop financing debt." And financial vulnerabilities are usually linked to outstanding gross external debt which, in turn, is related to gross capital flows.

Borio and Disyatat (2011) offer some arguments against focusing only on net flows which, for our article's purposes, we sum up into two points. Firstly, net flows do not correctly address cross-border borrowing or lending made by a national economy, or the exposure to a sudden stop, which in turn depends on outstanding gross external debt. It is useful to focus on gross capital flows. We find the exposition in Al-Saffar et al. (2013, 5) useful when presenting this argument. The following is well known:

$$I - S = CAD = \Delta D + \Delta E$$

In other words: when investment (I) outstrips savings (S), we have a current account deficit (CAD) that has to be financed by issuing either debt ( $\Delta D$ ) or equity ( $\Delta E$ ). However, it may well happen that a country is running a balanced current account balance whilst it is simultaneously borrowing abroad ( $\Delta D$ ) and ultimately purchasing equity beyond its borders ( $-\Delta E$ ). It should be noted, notwithstanding, that although both cross-border transactions,  $\Delta D$  and  $-\Delta E$ , may take place at the same time, each one is an independent transaction that involves another gross flow that leads to a zero net change in the financial account (Borio and Disyatat 2015, 7).<sup>5</sup>

In the following figure we can see, for a select group of advanced market economies, that gross capital flows are much larger than net flows (measured by the current account balance),<sup>6</sup> that inflows and outflows are correlated and that they are much more volatile than net flows.

In this situation, a country may well be increasing its exposure to a sudden stop even though its current account is balanced. This is particularly so when certain asymmetries between gross inflows and outflows take place: assets and liabilities are in different currencies

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<sup>4</sup> These authors focus on gross flows in advanced countries. Until the Great Recession, there was a widely held opinion that financial crises were a problem only for emerging market economies. We can find literature on the same issue much earlier, related to Latin America and Asia, for instance in Guillermo Calvo (1998), Guillermo Calvo, Leonardo Leiderman, and Carmen Reinhart (1996), or Graciela Kaminsky and Carmen Reinhart (1999).

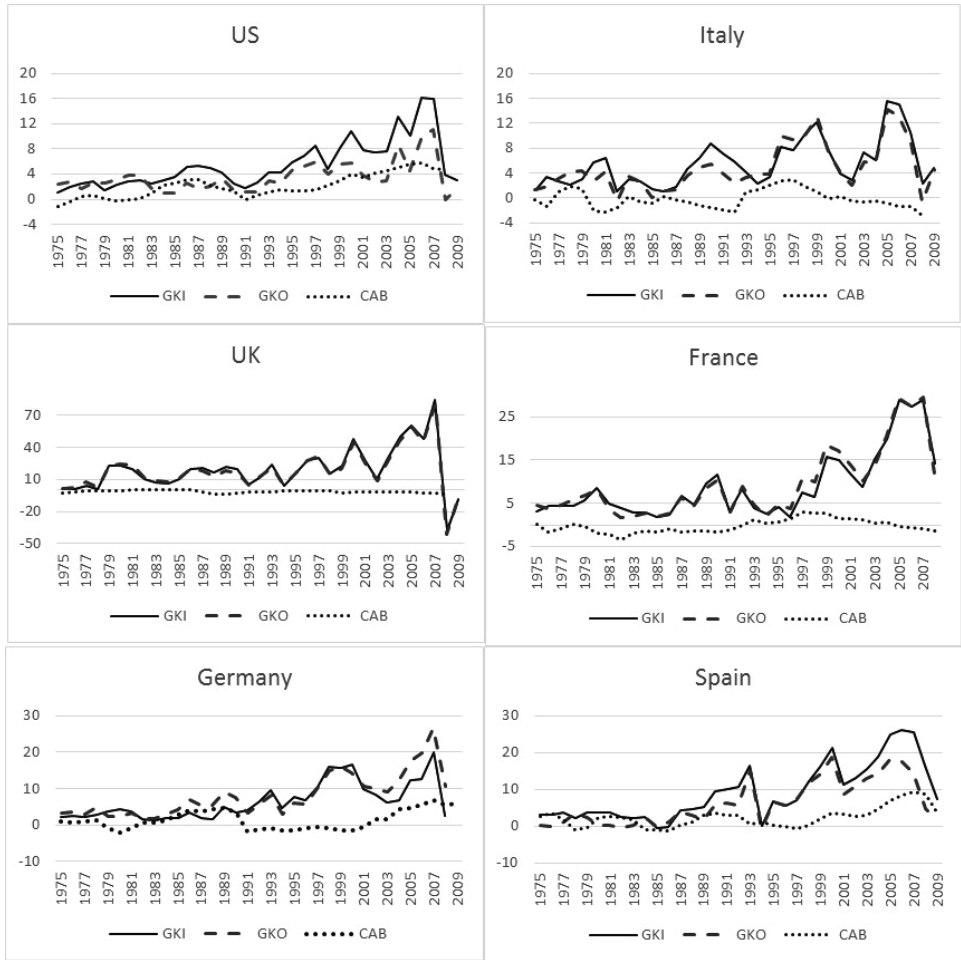
<sup>5</sup> If, for instance, a Spanish bank refinances a loan by borrowing reserves from a German bank, in the Spanish financial account we will have a liability, the loan made by the German bank, and an asset: the Banco de España acquires a claim against the Target2 system when it re-creates the reserves that are *destroyed* in Germany. Capital flows are netted to zero.

And when a Spanish bank grants a loan to a Spanish non-financial corporation to fund the purchase of equity stock in, say, France, in the Spanish financial account we will have an increase of international assets, the equity stock, and an increase of liabilities, a liability to the Target2 system, when reserves are transferred to France.

<sup>6</sup> Ireland is not in this sample, but its gross capital flows were around 200% GDP per year from 2007 to 2009, whilst net flows did not surpass 15% GDP.



Figure 1. Gross Capital Inflows (GKI) and Outflows (GKO), and Current Account Balance (CAB) %GDP 1975–2009



Source: Broner et al. 2013, AMECO and authors' elaboration. N.B. for the US and Spain, CAB has the opposite sign: a positive value indicates a deficit. Note also that for the UK, the vertical axis ranges from -50% GDP to 70% GDP.

or are held by different agents, they have a different nature (equity vs. debt) or different maturity, amongst other factors (Philip R. Lane, 2013, 7–8).

Table 1 highlights information on the nature and dimension of cross-border flows for the Spanish economy.

We can observe two periods of large capital inflows and outflows, 1998–2000 and 2003–2007, each one followed by a period of decline. Gross inflows and outflows are positively correlated, and negatively correlated with the VIX,<sup>7</sup> a measure of volatility used as a proxy for global risk and uncertainty (Forbes and Warnock 2012; Rey 2013). Gross capital outflows and inflows are larger than CADs and more volatile.

Foreign direct investment (FDI) is larger as an outflow than as an inflow, and if we add up portfolio investment outflows, the outcome is much larger than CA deficit. However,

<sup>7</sup> The VIX is a measure of the implied volatility of S&P 500 index options.



portfolio and other investments are more relevant as inflows, especially from 2003 to 2007. Also, inflows in the form of debt are larger than outflows, which are more relevant in the form of equity. This combination raises risks in the event of a sudden stop, because debt flows are more volatile than equity flows and because, paraphrasing Obstfeld (2012, 17), in the event of an episode of financial instability it is possible that my fellow citizens' assets are not available to pay off my debts.

**Table 1. Balance of Payments, Spain % GDP 1998-2013**

	98-00	01-02	03-07	08-13
CAB	-2.05	-3.25	-6.39	-2.78
Gross capital outflows	18.55	11.53	15.61	0.98
FDI	6.86	5.03	6.32	2.18
Portfolio	8.20	5.66	5.11	-2.39
Other investment	3.49	0.84	4.19	1.20
Equity	9.55	4.61	7.00	1.88
Debt	9.00	6.92	8.61	-0.90
Gross capital inflows	18.13	14.24	21.22	4.13
FDI	4.15	5.10	3.13	2.65
Portfolio	6.52	4.65	12.16	-1.46
Other investment	7.49	4.84	6.05	2.95
Equity	5.38	4.22	1.75	2.74
Debt	12.79	10.37	19.59	1.40

Source: IMF Data Warehouse and authors' calculations.

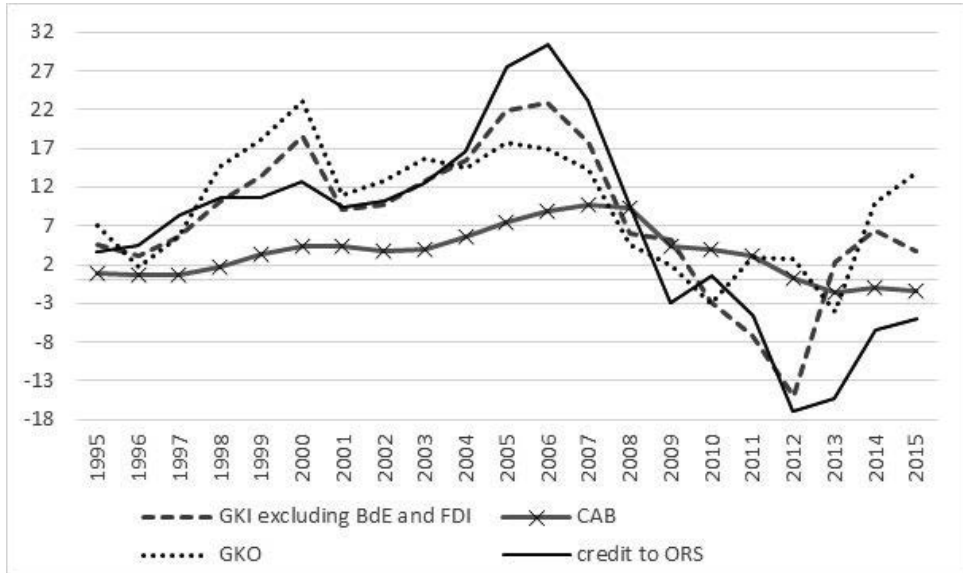
The second argument in favor of focusing on gross instead of net capital flows is that there is growing empirical evidence on a positive correlation amongst gross capital inflows, bank credit, and asset prices (Al-Saffar, Ridinger, and Withaker 2013; Avdjiev, McCauley, and McGuire 2012; Rey 2013).<sup>8</sup> When a bank refinances a loan to a resident agent in an international market, that operation involves the simultaneous acquisition of a liability and an asset, and an analysis based on net flows does not account for these transactions. Again, this increases a country's financial fragility and its external exposure for at least two reasons: first, any shock in investors' confidence may unleash a sudden stop and a capital reversal, and banks' short term cross-border indebtedness will not have an easy time monetizing these capital withdrawals if they have made long term loans and other agents' assets are not available to monetize the corresponding outflows; and second, because a debt-led growth pattern ends up being unsustainable (Fisher's debt-deflation—Irving Fisher [1933], Minsky's financial fragility—Hyman Minsky [1982], and, more recently, Koo's balance sheet recession—Richard Koo [2008]—provide a sound basis for this argument).

Figure 2 describes the Spanish economy in the last 20 years. The correlation between gross capital inflows—after subtracting foreign direct investment to Spain and gross capital flows to the Banco de España—and bank credit to households and non-financial corporations

<sup>8</sup> Lane and McQuade (2013) find a strong relationship between bank credit and net debt inflows, reporting that gross, instead of net, debt inflows do not increase explanatory power, though they do not reduce it either.

amounted to 0.96 from 2001 to 2012 (we also found Granger-causality running from bank credit to gross capital inflows: see the Appendix). As we show in more detail below, a large part of those inflows was collected by banks, in the form of debt (for details see, for instance, Banco de España [2007]). This drives us to think that Spanish banks granted loans which they then refinanced in international markets, either by borrowing or through securitization.<sup>9</sup>

**Figure 2. Gross Capital Flows, Bank Credit, and Current Account Spain: 1995–2015 % GDP**



Source: BdE and authors' calculations. N.B. CAB has the opposite change: a positive value stands for a deficit. GKI stands for gross capital inflows excluding inflows to the central bank of Spain and foreign direct investment abroad.

After raising critiques regarding net flows as the main cause of cross-border financial instability, Borio and Disyatat (2015, 26–27), reach two conclusions. First, that although current account imbalances deserve our attention since they contain precious information on long term dynamics, they are more a consequence of a debt-led consumption boom that banks refinance abroad than the main source of external problems. And second, it is not current account imbalances but high growth of bank credit—which goes hand-in-hand with gross capital inflows—that is the factor that precedes a sharp decline of GDP (see, for example, Minsky 1986, Moritz Schularick and Alan Taylor 2010, Pierre O. Gourinchas and Maurice Obstfeld 2012). Hence, the relevant factor that precedes a sudden stop, after marked external exposure, is a debt-led boom and not so much current account deficits. Consequently, the diagnosis of the crisis should shift from current account imbalances to financial instability.

And these conclusions lead us to question the role of current account imbalances in the current situation in the EZ, particularly in Spain, as presented in the previous section. More specifically, if the sudden stop and the capital reversal in the EZ in 2011–12, mirrored

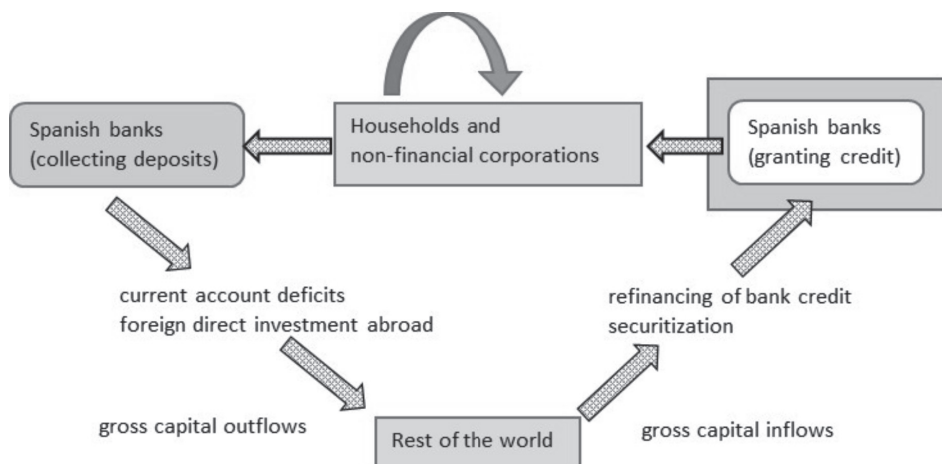
<sup>9</sup> It should be noted, also, that leaving aside 2001–02, the period corresponding to the bursting of the technological bubble, gross capital outflows ranged between 14% and 23% of GDP from 1999 to 2007, larger than net financial needs to fund current account imbalances, which amounted to 10% GDP in 2007, the year with the larger imbalance. Focusing on net flows alone, we have a rather incomplete picture of how Spain's external financial exposure took place after the launch of the euro.

by growing T2 imbalances, had its origin in bank credit that banks refinanced abroad and not so much in current account deficits, then the required preventive measures should not be wage devaluation and fiscal austerity, but rather financial regulations to prevent excessively high elasticity of bank credit (financial system elasticity in the words of Borio and Disyatat (2011, 28)). Moreover, these measures would be detrimental to economic recovery and would not prevent the same problem from happening in the not so distant future.

### ***Bank Credit and Cross-Border Flows in the Spanish Economy***

The evolution of the Spanish economy from the launch of the euro until the fall of Lehman Brothers can be described with the help of the following chart.

**Figure 3. An International Monetary Circuit with Gross Capital Flows and Bank Credit: Spain 1999-2008**



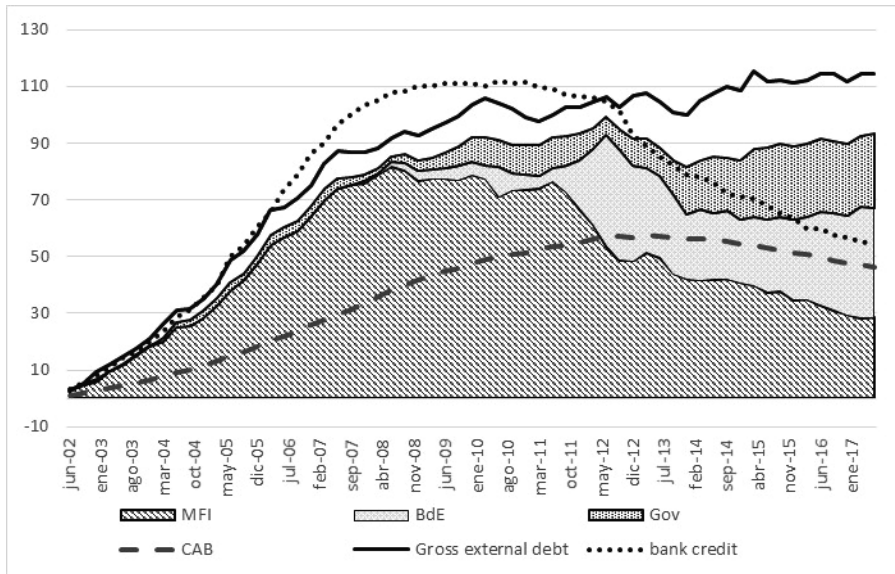
This figure aims to illustrate the following train of thought. Beginning from the upper right-hand corner, Spanish banks were able to grant a huge amount of credit (initial finance: Graziani 2003) to fund a debt-led growth pattern for a decade beginning with the introduction of the euro, with the real estate sector playing a leading role (Óscar Dejuán and Eladio Febrero 2010). According to the endogenous money view (Michael McLehay, Amar Radia, and Ryland Thomas 2014 are an excellent reference) banks created deposits when they made loans, and a portion of these deposits were then transferred to other Spanish banks as they were used as a means of payment. After granting loans (in a logical sense) Spanish banks had to refinance them in international markets, leading to a very large inflow of gross capital.<sup>10</sup> At the same time, banks with excess reserves after having collected deposits, funded current account deficits (providing final finance) as well as a large volume of Spanish FDI abroad.<sup>11</sup>

<sup>10</sup> A naïve endogenous money view mainly focuses on credit worthy demand for credit whilst banks passively accommodate such demand. However, this experience shows that the liquidity in financial markets where banks refinance credit conditions their willingness to grant loans.

<sup>11</sup> From 1995 to 2001, Latin America received most of Spanish FDI, consisting mainly of banking, telecommunications, and petrol-related activities. From 2002 to 2007, outflows doubled, and the European Monetary Union (EMU) took over, with a handful of corporations in telecommunications, banks, building of infrastructure and energy playing a leading role. In 2012, the EMU represented roughly 50% of the stock of Spanish

These operations were behind the gross capital outflows to the rest of the world. In this view, we believe banks were responsible for the large external debt of the Spanish economy, whilst current account deficits were more a consequence than a cause of the build-up of financial imbalances during the decade of prosperity from 1999 to 2008.

Figure 4. Gross Inflows: Spain 2002-2017 % GDP



Source: BdE, INE and authors' calculations. N.B. MFI is gross capital inflows to monetary and financial institutions, BdE is Banco de España, CAB is current account deficits, Gov is external debt issued by the Treasury, and bank credit is credit to households and non-financial corporations. All series are in accumulated terms starting in the first quarter of 2002 and divided by the sum of the current and three previous quarters of GDP.

In Figure 4, we can see that the accumulated bank credit granted between 2002 and mid-2008,<sup>12</sup> just before the fall of Lehman Brothers, amounted to 108.07% of GDP of 2008. In that period of time, accumulated gross external debt reached 91.82% of GDP, gross capital inflows to banks<sup>13</sup> accounted for 81.68% of GDP and accumulated current account deficits amounted to 38.04%. This means that banks refinanced abroad more than 75% of total credit granted to non-financial resident agents. Whilst current account deficits explained 41.43% of gross external debt, accumulated cross-border gross inflows to banks accounted

FDI, Latin America one third, and North America a little more than 10%. See, for instance, Sara Baliña and Ángel Berges (2014).

<sup>12</sup> The reason for choosing 2002 is that the statistics provided by the Banco de España on external debt at an institutionally disaggregated level are not available before that year. Also, the period 2002–2008 is when bank debt grew fastest (this is common to other EZ countries: Philip Lane [2013, 7]).

<sup>13</sup> This is obtained through the adding up of the following data:

- portfolio investment, debt, monetary financial institutions;
- other investment, monetary financial institutions excluding the Banco de España;
- portfolio investment, long and short-term debt, other resident sectors.

As the Banco de España states (for example, Banco de España 2007, 67), some mutual funds that work as affiliates to Spanish banks—and stand as non-monetary financial institutions—collect funds through the issue and sale of mortgage backed securities, and to a lesser extent through the securitization of consumer credit; this is accounted as portfolio inflows to other resident agents. Until 2007, Spain was the second country with the largest volume of securitization in Europe, after the UK, representing 11.8% and 15% of total securitization. See ESF 2007.

for more than twice that figure: 88.96% of gross external debt (the outcome of dividing 81.68% by 91.82%).<sup>14</sup>

In early 2010, just before the first Greek sovereign debt crisis, with accumulated external gross debt amounting to 105.84% of GDP, accumulated gross cross-border capital inflows to banks accounted for 73.25% of gross external debt and accumulated current account deficits of 46.94% of external debt, roughly 25 percentage points less (the government and the Banco de España represented less than 10% each).

Accumulated external debt by monetary financial institutions (MFI), excluding the Banco de España, reached a ceiling in mid-2008 coinciding with the bust of the credit boom, followed by a plateau until mid-2011, and since then a sharp decline that was offset by external debt accumulated by the Central Bank of Spain through the Target2 (T2)<sup>15</sup> system and—with some lag—the government. The Central Bank of Spain's external debt declined after the announcement of the Outright Monetary Transactions (OMT), when Draghi pronounced his famous words in defense of the euro in mid-2012 (Draghi 2012). With the asset purchase program implemented by the ECB since late 2014, commercial banks' external debt declined further, though the external debt of other institutional agents (government, the central bank, and non-financial corporations) more than filled the void. A substantial portion of reserves injected through the ECB asset purchase program has been used to repay banks' external debt, flowing out through the T2 system.

Outstanding bank credit to non-financial corporations and households began to fall by 2010 (more than 60 percentage points of GDP to date). The decline accelerated by mid-2012 through the transfer of non-performing loans to Sareb, a bad bank run by the Spanish Government and a group of commercial banks, and the removal of an important portion of non-performing loans from their balance sheets through a loss of capital, forced to do so by the Government.<sup>16</sup> However, despite the decrease in bank credit and banks' external debt, total external debt is still increasing.

Here, we pause to remind the reader that our central thesis is that gross capital inflows were driven by bank credit. The figure above, we believe, supports this view. The fact that banks' gross external debt declined starting in late 2011 whilst total external debt kept going up does not invalidate this argument: banks' external debt leads gross external debt when the former rises, driven by bank credit to resident agents; next, there is some ratchet effect: when banks' external debt began to fall, a large amount of that debt was replaced by other agents' indebtedness, particularly the Central Bank of Spain, acquiring liabilities to the Target2 system, and also the Spanish Government.

Now, we turn to capital outflows. If banks grant credit and they then refinance it abroad, there will be an excess reserve within the national borders unless it flows out to foreign markets. What happened in Spain? In our view, the following figure gives us a clue.

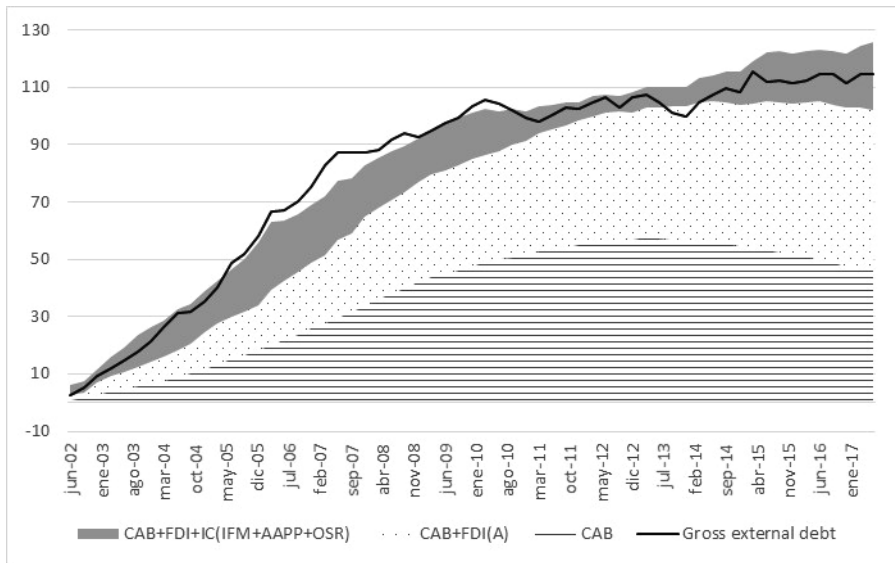
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<sup>14</sup> The largest amount of those inflows was channelled to Spain by banks in core EZ countries. BIS statistics point to banks in Germany and France (using consolidated data—see Shin 2012, 41) and the UK (if we use locational statistics—Claire Waysand, Kevin Ross, and John de Guzman (2010, 32), or Galina Hale and Maurice Obstfeld [2014, section 3]). In turn, these banks borrowed from financial centers in the UK, United States, Switzerland, etc. (Hale and Obstfeld 2014, 36). See also Arturo O'Connell [2015, 180 and 183]).

<sup>15</sup> International investors monetized their investments—mostly assets issued by banks, and to a lesser extent, the government—and next they transferred the corresponding deposits to banks in Germany. These transactions led to a fall of reserves of Spanish banks that the ECB, through the Banco de España, replenished through refinancing loans. For details, see, for instance, Eladio Febrero, Jorge Uxó, and Óscar Dejuán (2015).

<sup>16</sup> For an account of the reforms implemented by the banking industry in Spain at the onset of the crisis, before the bailout to part of the Spanish banking industry by the European Stability Mechanism, see Jaime Zurita (2014).

Figure 5. Gross Outflows: Spain 2002–2015 % GDP



Source: BdE, INE and authors' calculations. N.B. CAB + FDI (A) stands for the accumulated current account deficit plus Spanish foreign direct investment abroad. CAB+FDI+IC(IFM+AAPP+OSR) includes also portfolio investment, excluding the Central Bank of Spain.

The accumulated current account deficit plus foreign direct investment—driven by non-financial corporations—converges in gross external debt although, until mid-2011, the former outflows remained below the latter. In the figure above, we can also see that the gap between gross external debt and CAB plus FDI is mostly covered by portfolio investment outflows (with banks playing a relevant role in these decisions), excluding the central bank of Spain, but this outflow, although relevant, is lower than the other two and began to decrease in 2013.<sup>17</sup> As Baliña and Berges (2014, 18) state, a large portion of Spanish FDI until 2008 was funded with bank credit granted by Spanish banks—and also by bond issuing—to a few large Spanish corporations that joined the tide of gross international capital flows, to fund the takeover of international firms (in construction, manufacturing, telecommunications and energy) in search of certain synergies and access to new markets.

We believe that Figures 4 and 5 provide sound support for Figure 3, which sums up the international monetary circuit in which the Spanish economy has been framed since the launch of the single currency.

Until 2008, there was a combination of pull-push factors (Calvo, Leiderman, and Reinhart 1996)<sup>18</sup> and a strong domestic demand for bank loans that made possible the

<sup>17</sup> Another remarkable fact that can be seen above is that flows by FDI and CA deficits lead to more stable outstanding figures (debt and assets, respectively) than portfolios and other investments.

<sup>18</sup> Calvo, Leiderman, and Reinhart (1996) distinguish between pull and push factors when examining international capital flows. They focus on emerging market economies in Asia and Latin America, though the discussion can be shifted to peripheral EZ economies. Amongst the push factors, regarding intra-EZ capital flows, we have the fall of interest rates and the rate of growth of GDP in the originating countries. These arguments explain the lack of investment opportunities there, whilst simultaneously improving the creditworthiness of capital recipient countries, which can borrow at lower rates. Other push factors are the trend towards international diversification of investments and integration of world capital markets, and externalities. With regard to pull factors, we find better treatment offered to external creditors and the adoption of sound monetary and fiscal policies. Of course, the Stability and Growth Pact, the Maastricht criteria, and the elimination of exchange rate risks made peripheral



formation of a debt-led growth pattern in Spain. Although current account deficits are an important source of external indebtedness, we find that the gross capital inflow to banks, to refinance loans that went to monetize transactions in the real estate sector, is the main cause of gross external indebtedness and, therefore, of the exposure to a sudden stop and a capital reversal. Further, part of these inflows flowed out to fund FDI abroad, but the corresponding assets were not available to pay banks' debts once it became clear that investors did not wish to roll over their debts.

With the financial shocks of 2008 (the fall of Lehman Brothers), and 2010 and 2011 (the first and second Greek sovereign debt crises, respectively), the sudden stop and the subsequent reversal of the capital inflows could be offset by the so-called T2-RO mechanism (for an explanation see, for instance, Sergio Cesaratto [2013]). However, bond spreads with the German *bund* increased markedly until the OMT were announced in mid-2012. The Public Sector Purchase Program implemented by the ECB since March 2015 contributed to the reduction of sovereign bond risk premia as well.

The accumulation of current account deficits, although relevant, is not the main or only external imbalance: we find far more relevant the indebtedness of banks beyond national borders, driven by the loans that they made during the booming decade after the introduction of the euro.

### ***Gross Capital Inflows, Bank Credit, and the Endogenous Money View***

The connection between bank credit and gross capital inflows raises a question on the causality between these variables. Those sympathetic to the loanable funds theory would hold that resources to fund spending beyond income in a country, whether channeled through banks or markets, require gross capital inflows to take place before resources are available for lending. Bernanke's saving glut hypothesis (Bernanke 2005) fits this view. Guillermo Calvo, Leonardo Leiderman, and Carmen Reinhart (1996) who address developing countries, share the same view.

Conversely, those closer to the endogenous money view—to which we adhere—hold that banks have the ability to create means of payments *ex nihilo*. Hence, gross capital inflows, if they happen, *must* take place after banks grant credit. Jo Michell's account of a monetary circuit involving U.S. shadow banking is a nice example (Michell 2017).<sup>19</sup> Our position regarding the Spanish experience is that Spanish banks were able to create deposits when they granted credit. And gross capital inflows followed bank lending.

We ground our view in Marc Lavoie (2010). As the Canadian author explains, regarding the determination of the overnight interest rate, once a deposit—created when a loan is made—flows to another bank, the transfer is monetized when the central bank adds some reserves in the recipient banks' account at the central bank.

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countries more attractive to creditor countries. The deregulation of capital markets also contributed to making capital flows more intense.

At the same time, Spanish gross capital outflows are a consequence of push and pull factors as well. Amongst the former, the national market dimension and abundant reserves. And regarding the latter, easy access to some international markets, particularly in the UK for Spanish corporations.

<sup>19</sup> In short, Michell's argument is that U.S. commercial banks create deposits *ex nihilo* when they grant credit (often mortgage loans, that are initial financing in Graziani's terminology [Graziani, 2003]); next these deposits are invested in the money market, where European banks borrow to fund the purchase of toxic assets backed by subprime mortgage loans which, in turn, are issued by investment banks that use the proceeds (final financing) to purchase from the former banks the stream of revenue generated by the loans they granted at the beginning of the cycle. In this cycle, it should be noted, gross capital outflows and inflows offset each other and the analysis in net terms does not reveal this situation.



In systems with no compulsory reserves, as in Canada, this happens through an intra-day inexpensive loan that the central bank grants to the bank losing the deposit. In systems with compulsory reserves, that bank sees its holding of reserves—which serve as a cushion for this situation—falling, and must then replenish them before the end of a certain period of time. In any event, the bank facing a deposit withdrawal needs reserves *after* the transfer of the deposit.

Under *normal* circumstances, the bank losing deposits can find the required reserves in the interbank money market (where the deposit-recipient bank tries to lend its excess reserves, in search of a profit) at an interest rate close to the official level. Otherwise, it will have to borrow from the central bank through the marginal creditor facility, paying an interest rate higher than the official level and facing the so-called stigma effect (Bernanke 2009).

With very liquid financial and money markets, banks ease the conditions required for borrowers, because in the (very likely) event that they lose deposits, as they are used as means of payment, they can easily obtain the required reserves. In turn, with a strong borrowing demand, banks grant a large volume of credit, raising the probability of finding reserves in the interbank money market if the corresponding deposits circulate and the central bank creates additional reserves.

Post-Keynesian authors, sympathetic to the endogenous money view, usually focus on the role of borrowing demand and the ability of banks to create deposits when they grant credit, in order to state that investment precedes saving. However, this is no obstacle to the realization that money markets are rather important in the process of bank lending. Moreover, the situation of those markets partially conditions the decision of banks to grant credit (that is, banks take the interest rate, or the maturity at which they obtain funds in money markets as a reference to determine the rate or the maturity of the loans that they grant). Nevertheless, what happens in money markets is relevant, in a logical sense, after the fact of granting credit and creating the corresponding deposit *out of nothing*.

With this account in mind, we hold that bank lending in Spain preceded gross capital inflows—in a logical sense—although we concede that there was a feed-back effect.<sup>20</sup> The fact that the demand for credit in Spain was rather strong also explains why Spanish banks with excess reserves did not lend them (to other European banks) in the interbank money market: these banks met a rising borrowing demand from resident agents to fund domestic and cross-border transactions. This argument is reinforced by the relative absence of profitable investment opportunities in highly liquid markets in the Euro Zone.

The causality running from credit to households—to fund transactions between resident agents—to total bank credit, and from bank credit to gross capital inflows, leads us to conclude that to a large extent, banks have refinanced abroad loans whose corresponding deposits have flowed to other Spanish banks (deposits funded domestic transactions, very often related to the real estate market). Next, this excess reserve in Spain decreased through two channels. As shown in Figure 4 above, roughly 50% of gross capital inflows next left Spain through the CA balance. The remaining 50% of outflows were in the form of FDI

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<sup>20</sup> Hence, we agree with Rafael Fernández and Clara García (2016, 12), that there is a close connection between gross capital inflows and bank credit, when they write that “easy access to foreign financing was at least a prerequisite, if not a reinforcing factor, for both excessive borrowing and excessive lending by financial institutions.” However, we diverge on the causality linking both variables, as these authors hold that “Spain [...] was intermediating capital drawn from the Eurozone which, in turn, attracted capital from the rest of the world” (Fernandez and Garcia 2016).

and, to a lesser degree, of portfolio investment, mainly by non-financial corporations (see footnote 11).

As the Banco de España (2007, 66–67) states, leaving aside FDI, a large portion of gross capital inflows was channeled by banks, despite the fact that a relevant volume of portfolio inflows was managed by “other resident sectors”: very often, they were financial auxiliaries (mainly mutual funds) selling mortgage-backed securities in international markets, on the behalf of Spanish banks. As we can see in Figures 2 and 4 above, the degree of correlation between bank credit and gross capital inflows to banks is rather high. Also, as we show in the Appendix, we have found some Granger-causality running from bank credit to gross capital inflows. Furthermore, we also show in the Appendix that bank credit granted to households—mostly mortgage loans—Granger-causes total credit in Spain during the boom period. These two threads show, in our view, that bank credit has driven gross external debt in Spain.

### ***The Crisis in the EZ Revisited: Two Critical Considerations***

Once we realize that gross external debt was mainly driven by domestic bank credit and that the crisis in the EZ was a problem of financial instability once investors did not wish to roll over gross external debt, the consensus view of the crisis in the EZ (Baldwin and Giavazzi 2015), that points to CA imbalances largely driven by competitiveness losses, can be critically reconsidered. Our alternative view is a challenge to the widespread view in two spheres: the economic policy recommendations to sort out the crisis from 2008 to 2013 and the role that external debt played in the unfolding of the crisis.

#### ***Wage Devaluation for Gains in Competitiveness?***

Once we take into account that gross capital inflows take place simultaneously with large gross outflows, and that the former are driven by bank credit, the view based on net flows (i.e., on CA imbalances) loses part of its explanatory strength. A direct consequence of this argument is that, if CA imbalances explain less than 50% of accumulated gross external debt, then focusing on a recovery of competitiveness through wage devaluation (Flassbeck and Lapavistas [2013] or Bresser-Pereira and Rossi [2015]) with a view to increasing net exports, is an error, as the second crisis wave from 2011 to 2013 in Spain showed, because it depressed domestic demand, and it was ill-conceived for addressing a secondary cause of external debt.<sup>21</sup>

As some post-Keynesian authors have pointed out, an expansionary economic policy increasing domestic demand and relaxing inflation targets in core EZ countries, along with a more proactive ECB would have been more helpful for the EZ as a whole than fiscal austerity-cum-wage deflation (see Hein [2013] Uxó, Paúl, and Febrero [2011] amongst others). Furthermore, we should not forget that even without CA imbalances, the crisis still would have happened (because of a debt overhang) and that we need mechanisms to limit unsustainable debt-led growth patterns (for example, macroprudential credit policies, a single resolution mechanism, and a single supervisor of the banking industry would have

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<sup>21</sup> See, for instance, Jorge Uxó, Eladio Febrero, and Fernando Bermejo (2016), or Mario Rísquez (2016). The second crisis wave from 2011 to 2013 was caused by fiscal austerity and wage devaluation, after an expansive fiscal policy from 2009 to 2010 (until May 2010, when the first Greek sovereign debt crisis erupted). It is difficult to isolate the effects of wage devaluation from fiscal austerity because some of the latter (cuts in civil servants' wages) made up part of the same measure.

been required to prevent the subsequent crisis situation: Bortz (2016, 163–6) suggests some alternative economic policies).

### *External Debt or Total Outstanding Debt?*

According to the consensus view (see contributions in Baldwin and Giavazzi [2015] especially the Gros chapter), the origin of the crisis was not so much the absolute volume of outstanding debt, but the portion held by non-residents, which was driven by CA imbalances. Despite the existence of the Target2 system and the refinancing loans provided by the ECB, the crisis in the EZ erupted as a consequence of the unwillingness of international investors to continue refinancing countries that had been running large external deficits for a decade since the launch of the euro. More specifically, the crisis began when investors decided to get rid of public debt in crisis countries because of the fear of government insolvency. Hence, the falling price of public debt (and its subsequent rising yield) made external funding more expensive, and also aggravated the situation of national banking industries, which had accumulated a large volume of national sovereign debt on their balance sheets, giving rise to the so-called doom-loop. The lack of a lender of last resort to governments made the crisis especially hard in the EZ periphery, although the origin of the crisis was in CA deficits.

The consensus authors, based on the loanable funds theory (Baldwin and Giavazzi 2015, 23), hold that the crisis in the EZ, after a sudden stop, is due to the fact that indebted countries faced serious problems when it came to repaying their external debts and could not fund further spending unless they agreed to pay an increasing interest rate. This forced troubled countries to adopt painful measures to rebalance their economies. In their view, the proof that there was a balance of payments (BoP) crisis in the EZ is that countries which had an external surplus until 2007 (regardless of the level of public debt, for example, Belgium vs. Portugal) recovered from the Financial Crisis in a relatively short period of time compared to those with an external trade deficit.

By contrast, we find two empirical facts that weaken the above view: cross-border financial flows responded to bank credit, not so much to cross-border trade, and these flows took place mostly within the EZ, where national treasuries lack a lender of last resort. As Wray (2012) has very clearly put it, from the first of these facts we know that bad bank behavior can cause an economy to derail, even without CA imbalances; from the second one, when creditors and debtors are under the jurisdiction of the same central bank,<sup>22</sup> there is no risk of a run on the debtor's currency and increasing risk of exchange rate depreciation.

As to the second empirical fact, following Wray's line of thought, the difference between the monetary systems in the United States and the EZ is that the former has Fed districts operated by Federal Reserve banks fully integrated in the Federal Reserve System, an instrument of the U.S. Government, whilst in the latter, there are national central banks that, while integrated in the European System of Central Banks, are owned by their respective national treasuries. Hence, the word "national" is important, because imbalances between central banks are, in the last instance, imbalances between member states that have to be supported by their respective governments, which in turn are deprived of support from their central banks.

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<sup>22</sup> See O'Connell (2015) and the literature cited there. The Argentinian author clarifies that financial flows were almost utterly disconnected from trade flows. Further, creditors were financial institutions in core EZ countries which, in turn, refinanced their lending in other international markets, as they were not lending their respective residents' savings.

From this, we can conclude that although the root cause of the crisis is bad bank behavior, in the EZ periphery and also in the core, ultimately, the problem is in the divorce between fiscal and monetary authorities. If national treasuries cannot have unlimited support from the ECB because of moral hazard, the EZ needs a supranational fiscal authority, with the ECB as lender of last resort, which is able to implement expansive fiscal policies and recapitalize troubled banking industries without liquidity problems (or even dismantle them in an orderly manner if needed).

Without political union, the problem in the EZ is one of power imbalances, where banks in creditor countries pressed their governments to be able to impose a heavy burden on debtors' governments—the last guarantors of their respective banks—through the European Commission and the ECB.<sup>23</sup>

We agree with the consensus view authors that the residence of debt holders is relevant, though not for the usual arguments behind a balance-of-payments crisis but rather as a political economy problem. As Cesaratto (2013) has pointed out, core EZ countries (especially Germany) did not wish to abandon their neo-Mercantilist export-led growth pattern and they rejected any possibility of debt burden sharing with their tax-payers as well. These factors led to (1) a nationalization of the *remedies* for the crisis (each country had to fight the crisis in its own way), (2) the ECB did not have an easy time adopting measures that could alleviate the burden of the crisis in peripheral EZ countries (the conditionality on OMT, or the German constitutional court claim against the OMT are examples that illustrate this issue), and (3) the process of integration (fiscal union, banking union, economic union) slowed down and, conversely, the Stability and Growth Pact was reinforced through the Two-Pack, the Six-Pack, the Fiscal compact, and the European Semester, among others.

The power imbalances view finds additional support in the fact that, even if banks had not refinanced abroad the credit that they were granting to resident agents, i.e., in the absence of a large volume of external debt, we would still have faced a massive transfer of deposits (in this case, held by resident agents) from troubled economies towards safer harbors after the bubble burst, and resident investors would have tried to get rid of their holding of sovereign debt as well, if national treasuries had no lender of last resort providing them with support.<sup>24</sup> In other words, the same symptoms of sudden and significant capital outflows would have been observed even with a balanced external sector. In such a hypothetical situation, creditors would have been resident agents in the troubled countries. We concede, nevertheless, that the large gross capital inflows linked to bank credit made the creation of the credit bubble and its subsequent burst happen much more easily.

### **Concluding Remarks**

This article offers an alternative to the dominant view on the crisis in the EZ, which places CA imbalances at center stage. In our proposal, although CA imbalances are still relevant,

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<sup>23</sup> Instead of these deflationary measures, national governments could have opted for fragmenting troubled banks into pieces, rescuing the potentially profitable divisions, particularly units granting credit that put in motion real resources, guaranteeing deposits to small savers and allowing a default of what remains of those impaired banks. Support from the ECB would be needed. This would have meant shifting the burden of adjustment to creditors. Nevertheless, the so-called Grexit made it clear that creditor countries would reject this solution.

<sup>24</sup> Without implicating him, we acknowledge Roberto Ciccone's suggestions on this argument. And as Cecchetti, McCauley, and McGuire (2012, section 5), state, part of the capital reversal that the Spanish economy experienced in 2011–12 was explained by the massive transfer that UK banks were ordering towards foreign owned banks based in Germany, with a view to reducing the redenomination risk (i.e., the possibility of returning to old currencies after a euro breakup). This argument is relevant, in our view, provided that the UK did not have a CA creditor position over Spain.

they are downgraded as the focus is shifted towards the bank credit that banks refinanced in international markets. We base our view on gross capital flows with special attention paid to the Spanish experience.

Spanish banks were able to provide initial financing to private households and non-financial corporations which they then refinanced abroad: bank credit was the main driver of external debt during the booming decade from 1997 to 2007 and gross capital inflows were disconnected from external trade. Meanwhile, the corresponding deposits created by Spanish banks were ultimately used to fund CA deficits and strong FDI abroad. A view based on net flows cannot account for these issues.

Gross capital flows provide more information than net flows because external vulnerabilities may arise even with a balanced CA balance, if gross capital inflows and outflows take place simultaneously. And an analysis based on net flows does not give us a proper account of the nature of a country's cross-border financing activity.

The first crisis wave over 2008–10 was caused by a high elasticity of bank credit, whilst the second wave, over 2011–13 had its root cause in an erroneous response to external debt, caused by bank credit, which Spanish banks had refinanced by borrowing from—and also selling securities to—big banks in Germany and France: wage devaluation and fiscal consolidation were the outcome of a power imbalance between creditors—banks in the core EZ—and debtors—governments in the periphery, aiming to become the last guarantors of debtor banks in their respective jurisdictions. However, those economic policies failed because they depressed domestic demand once households became highly indebted, leading to a fall in GDP and income for settling debts, and they will not prevent the problem from happening again in the future.

One aspect that we have found to be relevant is the causality between gross capital inflows and bank credit. Whilst those sympathetic to the endogenous money view hold that banks need not borrow first in order to grant credit, the truth of the matter is that there was a strong correlation—and Granger causality—between bank credit and gross capital inflows. We provide an explanation for this fact, still holding to the endogenous money view, where banks make deposits when they grant credit, though with an eye on the state of the interbank money market, or other financial markets, where they can refinance the loans that they grant. With the launch of the euro, peripheral EZ economies had very easy access to financial markets at low rates, and this contributed to, but did not cause, a high elasticity of credit to fund debt-led growth patterns in these countries.

Although pointing to bank credit as a root cause of the crisis in Spain is nothing new, we believe that isolating bank credit from CA imbalances and connecting it to gross capital flows is a relevant contribution for a better understanding of the crisis. If this is correct, further research on the correlation between gross capital inflows and outflows, a closer inspection of the links between bank credit and capital inflows, how to limit bank credit growth to prevent rocketing indebtedness, and what to do once credit bubbles burst appear to be promising ways in which to provide our advanced economies with more stability.

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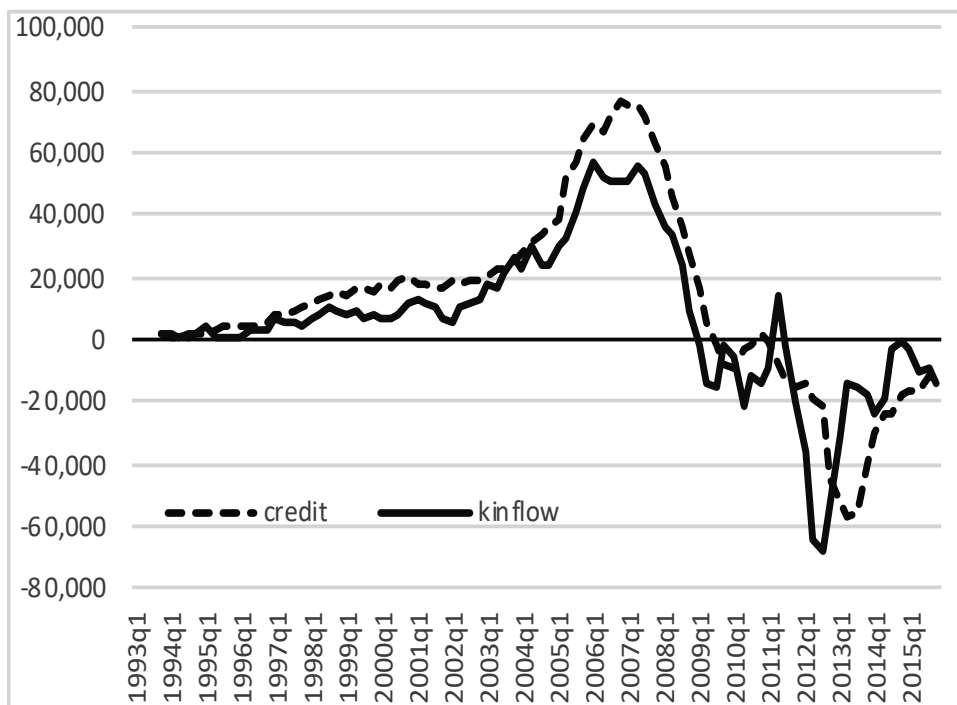
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## Appendix

### ***Estimating Granger Causality for Gross Capital Inflow, Credit for Private Sector, and Credit for Real Estate Activities***

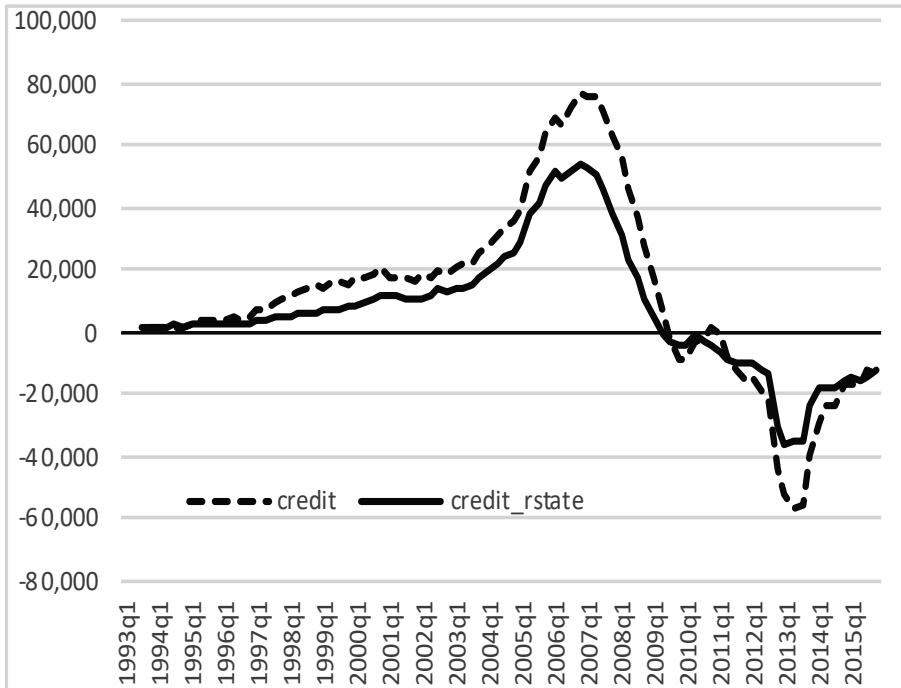
We are interested in analyzing two statistical relationships. First, the association between Gross capital inflow to Banks and Credit for non-financial private sectors. And, second, we are interested in checking the link between this last variable and credit for real estate activities. We have studied the relationship among these variables for the period of 1996–2012. In Figures A1 and A2 we can see the evolution of these variables in quarterly flows.

**Figure A1. Gross Capital Inflow to Banks and Credit for Non-Financial Private Sectors (Spain, Flows, Million Euros, Average of the Last 4 Quarters)**



Source: Bank of Spain

Figure A2. Credit for Non-Financial Private Sectors and Credit for Real Estate Activities (Spain, Flows, Million Euros, Average of the Last 4 Quarters)



Source: Bank of Spain

It is clear that there is a strong statistical relationship among these three variables. In fact, as we can see in the correlation matrix in Table A1, the correlation coefficient between credit for non-financial private sectors (“credit”) and gross capital inflow (“kinflow”) is very high and significant. Such is also the case with the correlation coefficient between Credit for non-financial private sectors and Credit for real estate activities (“credit\_rstate”).

Table A1. Matrix of Correlations (Gross Capital Inflow to Banks, Credit for Non-Financial Private Sectors, and Credit for Real Estate Activities)

	credit	kinflow	credit_rstate
credit	1.0000		
kinflow	0.8881	1.0000	
credit_rstate	0.9907	0.8887	1.0000

It is known that the existence of a strong correlation between two variables does not imply causality. However, when we work with time series, and since we have organized our data over time, we can perform a causality test to analyze in greater depth the relationships between these variables.

In particular, the Granger Test assumes that the future cannot affect the past, but in contrast it can happen the other way round: the past can affect the future. That is, a variable  $X$  is said to Granger-cause a variable  $Y$  if, given the past values of  $Y$ , past values of  $X$  are useful for predicting  $Y$ . Therefore, we can regress variable  $Y$  on its own lagged values and also on the lagged values of  $X$  to test for Granger causality. The null hypothesis is that the independent variables do not Granger-cause the dependent variable. Failure to reject the null hypothesis means failing to reject the hypothesis that  $X$  does not Granger-cause  $Y$ .

However, we must take some precaution, since Granger causality cannot be interpreted as clear-cut causality. Granger causality just measures if statistically “ $X$  happens before  $Y$ ,” rather than “ $X$  is the cause of  $Y$ .”

In any case, we can state the opposite: if there is no correlation between the lagged values of one variable and the future values of another, then the lagged variable does not cause the other. Granger causality is a necessary but not sufficient condition for the existence of real causality.

In order to perform the Granger Test, and since the three time series we use (kinflow, credit and credit\_rstate) are stationary and have unit roots, we take the first difference in all cases. Once differentiated, the Dickey-Fuller test shows that we already have non-stationary series, as we can see in Figures A3 and A4. These new series represent quarter-to-quarter change in capital inflow, total and real estate credit.

**Figure A3. Quarter-to-Quarter Change in Gross Capital Inflow to Banks and Credit to Non-Financial Private Sectors (Million Euros)**

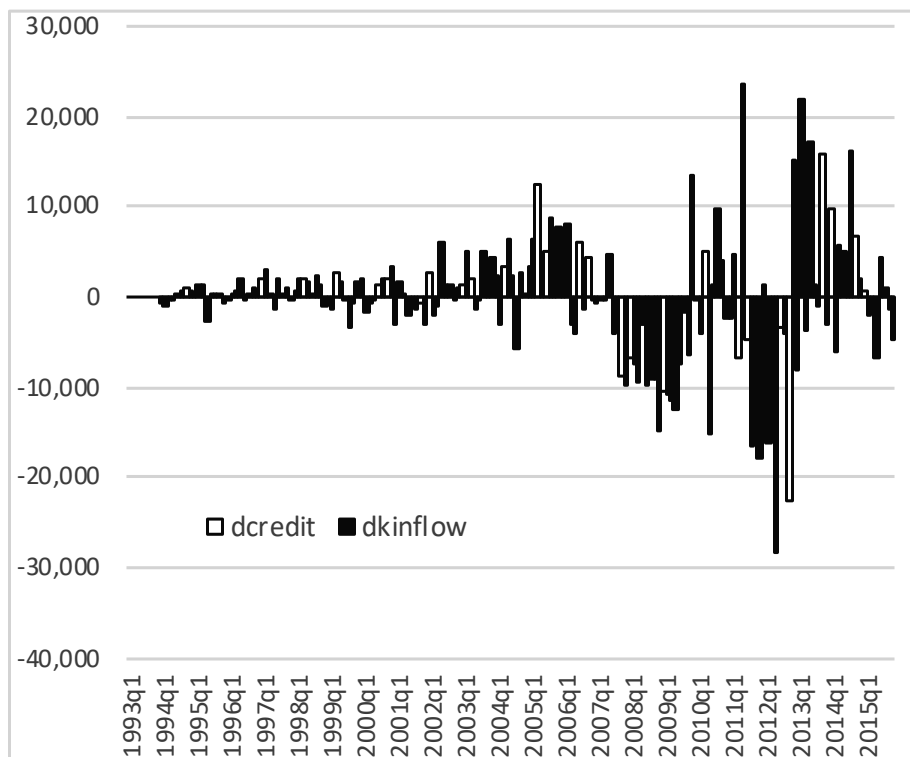
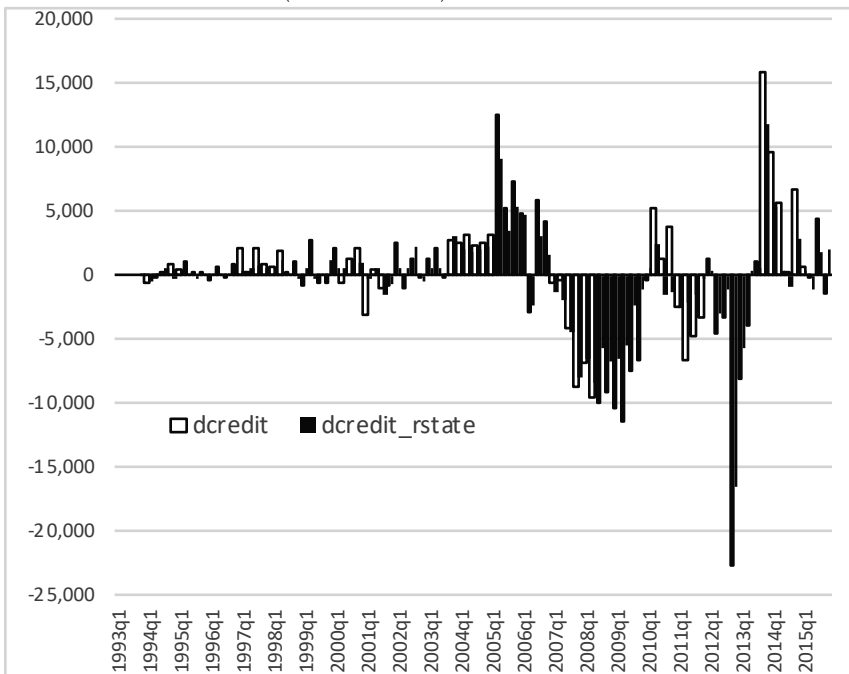


Figure A4. Quarter-to-Quarter Change in Credit to Non-Financial Private Sectors and Credit to Real Estate Activities (Million Euros)



Source: Bank of Spain

On these differentiated series we apply the Granger Test.<sup>25</sup> We observe the results of the test in Table A2. We can observe that the direction of causality between changes in Credit for non-financial private sectors and the change in Gross capital inflow to Banks runs from the first to the second variable. In the first Wald Test the null hypothesis that “dcredit” does not Granger-cause “dkinflow” must be rejected, since its probability is lower than 5% (0.5%). Changes in Credit to non-financial private sectors cause (precede) changes in capital inflow.

On the contrary, on the second Wald Test, the null hypothesis that “dkinflow” does not Granger-cause “dcredit” cannot be rejected (probability is 19.5%), and therefore we cannot say that changes in capital inflow affect changes in Credit for non-financial private sectors during the 1996–2012 period.

Table A2. Granger Causality Wald Tests between Gross Capital Inflow to Banks and Credit for Non-Financial Private Sectors

Equation	Excluded	chi2	df	Prob > chi2
dkinflow	dcredit	8.0283	1	0.005
dkinflow	ALL	8.0283	1	0.005
dcredit	dkinflow	1.6778	1	0.195
dcredit	ALL	1.6778	1	0.195

<sup>25</sup> Selection of lags for the tests relies on the Akaike information criterion. We try to keep the model as simple and clear as possible, using just the first lag.

In Table A3 we see the results of applying a Granger Test on Credit for Non-Financial Private Sectors and Credit for Real Estate Activities. We observe that “dcredit” does not Granger-cause “dcredit\_rstate,” but the opposite operation does: changes in Credit for Real Estate Activities explain changes in Credit for Non-Financial Private Sectors.

**Table A3. Granger Causality Wald Tests between Credit for Non-Financial Private Sectors and Credit for Real Estate Activities**

Equation	Excluded	chi2	df	Prob > chi2
dcredit	dcredit_rstate	4.8143	1	0.028
dcredit	ALL	4.8143	1	0.028
dcredit_rstate	dcredit	.435	1	0.510
dcredit_rstate	ALL	.435	1	0.510

The following table contains information on the meaning and statistical sources of the variables used in the econometric analysis.

**Table A4. Variables, Data Definitions and Sources**

Abbreviation	Full variable name	Units and description	Source	Bank of Spain code
credit	Credit for non-financial private sectors	Million euros, average of the last 4 quarters	Bank of Spain	BE_4_13.1 (2333577)
				BE_17_13.4 (2387082)
kinflow	Gross capital inflow to banks	Million euros, average of the last 4 quarters	Bank of Spain	BE_17_15.10 (2387105)
				BE_17_14.9 (2387094)
				BE_17_14.10 (2387095)
credit_rstate	Credit for real estate activities	Million euros, average of the last 4 quarters	Bank of Spain	BE_4_13.4 (2333580)
				BE_4_23.12 (2333605)
				BE_4_18.10 (2333611)