ISSN: 1576-0162
DOI: http://dx.doi.org/10.33776/rem.vi63.7094

An International Empirical Study on the Fiscal Surplus from the Perspective of Sectoral Balances: Questioning the Current Fiscal Rules

Un estudio empírico internacional sobre el superávit fiscal desde la perspectiva de los equilibrios sectoriales: cuestionando las reglas fiscales vigentes

Eduardo Garzón Espinosa
eduardo.garzon.espinosa@gmail.com
Universidad Autónoma de Madrid

Bibiana Medialdea García
bibiana@ccee.ucm.es
Universidad Complutense de Madrid

Esteban Cruz Hidalgo
ecruzh@unex.es
Universidad de Extremadura

Carlos Sánchez Mato
carlsa24@ucm.es
Universidad Complutense de Madrid

Recibido: mayo 2022; aceptado: octubre 2022

Abstract

The simultaneous recording of public surplus with current account deficit in a national economy could be related to strong private leverage that usually ends in financial crisis, what would make the public surplus unsustainable. The objective of this work is to check the extent to which this claim is bolstered by empirical support. The results reveal that, in effect, the concurrence of public surpluses and current account deficits is associated with private leverage processes and financial crises. These outcomes question the design of the current fiscal rules since they don't pay attention to the current account balance.

Keywords: Sectoral balances, macroeconomic framework, public surplus, private debt, financial instability.

Resumen

El registro simultáneo de superávit público y déficit por cuenta corriente en una economía nacional podría estar relacionado con un fuerte apalancamiento privado que suele terminar en crisis financiera, lo que haría insostenible el superávit público. El objetivo de este trabajo es comprobar en qué medida esta afirmación está respaldada empíricamente. Los resultados revelan que, en efecto, la concurrencia de superávits públicos y déficits por cuenta corriente está asociada a procesos de apalancamiento privado y crisis financieras. Estos resultados cuestionan el diseño de las reglas fiscales vigentes ya que no prestan atención al saldo de la cuenta corriente.

Palabras clave: balances sectoriales, marco macroeconómico, superávit público, deuda privada, inestabilidad financiera.

JEL Classification/ Clasificación JEL: E51, E62, H62.

1. Introduction

The interpretation of sectoral balances within national economies from a post-Keynesian view as inspired by the approaches of Wynne Godley (1999) has led some authors to point out a very particular sectoral combination that tends to reveal a remarkable process of private leverage. Furthermore, it has been asserted that according to Hyman Minsky's (1977) analysis of financial instability, this process could lead to financial and economic crisis. The simultaneous recording of public surplus and current account deficit implies, by accounting identity, a private sector deficit and a consequent reduction in the private sector's net financial assets, or an even more likely increase in its net financial liabilities. This state of the private sector may suggest a credit expansion of significant magnitude and short endurance that is capable of fomenting financial crisis.

Wynne Godley himself worked on this question in the 1990s for the United States (Godley and McCarthy 1998; Godley 1999; Godley and Wray 2000). He observed that the coincidence of current account deficit and public surplus exhibited by the U.S. economy at the end of that decade may have reflected a process of high private indebtedness that would necessarily come to an end. This may have been the case because the economic expansion then taking place – driven neither by fiscal policy (which had been restrictive for several years) nor by demand for net exports (where growth had been very weak) – was made possible only through vigorous growth in credit-financed private spending, which could not continue for long without making debt-to-income ratios unsustainable. According to Godley, the moment that the credit expansion stopped, there would be a period of economic recession as well as rising unemployment unless net exports recovered strongly or fiscal policy was strongly implemented. He specifically assured that a crisis would erupt in less than five years, and indeed, 2001 saw a crisis of relative importance.

Elsewhere, Randall Wray reached the same conclusion, relying on precisely the same theoretical assumptions as Godley: 'Given the fiscal surplus and the trade deficit, the U.S. economy can continue to expand only as long as the private sector deficit increases; as soon as private expenditure stops rising relative to income, the boom will end' (Wray 1998, p. 4).

Beyond the U.S. case, economists James Juniper and William Mitchell likewise used this sectoral balance approach to investigate the Australian economy. The same sectoral combination (continuous coincidence of current

account deficit and fiscal surplus) occurred in that country for several years, followed by a financial crisis in 2008 due to enormous private leverage. The most important conclusion of their work was that the pursuit of fiscal surpluses (while running current deficits) prompted a situation atypical in Australian history, characterized by an increase in the net flow of credit to the private sector, along with growing private debt ratios related to income – a phenomenon that they predicted would necessarily collapse in the end (Juniper and Mitchell 2008), as indeed proved to be the case (Mitchell 2013).

Still other authors have reached similar conclusions. One of the most recognized is Steve Keen, although he uses a slightly different approach centered on the banking system. In his work, the same reasoning can be observed: if a State registers a public surplus without running a current account surplus, then the private sector will have to borrow. If this process is maintained over time, the increase in private debt relative to GDP will cause a financial crisis to occur at some point (Keen 2015, 2018). Other authors such as James Galbraith (2012, p. 69) and Mario Seccareccia (2005) have used a similar reasoning in regard to the U.S. and Canada, respectively. For their part, Michalis Nikiforos and Genaro Zezza, based on a detailed review of the Consistent Flow-Stock models, also indicate the link between said sectoral conditions and Hyman Minsky's hypothesis of financial instability (Nikiforos and Zezza 2017, p. 8).

All of this theoretical scaffolding has led Randall Wray, Bill Mitchell, and Martin Watts to deduce the following: 'In most advanced economies, sharp, severe economic downturns typically follow a period when fiscal surpluses are accompanied by large private sector deficits' (Mitchell, Wray, and Watts 2019, p. 86). In this paper, we argue that there are sufficient theoretical approaches of remarkable solidity which suggest that the simultaneous recording of a public surplus and a current account deficit may indicate an unsustainable debt process on the part of private agents that leads to financial crisis, and moreover that this situation may have occurred frequently in many national economies. The corroboration of this hypothesis would imply that the design of the typical fiscal rules is deficient since they urge to register specific fiscal goals -like public surplus- without paying attention to the current account balance[1]. However, none of the aforementioned authors have provided ample and solid empirical evidence to support the forcefulness of their claims.

What we intend to do with the present work is to fill this empirical gap, exploring as many years and national economies as possible to learn the extent to which the cited thesis can be empirically corroborated. We structure the paper as follows. In the next section, we study the theoretical relationship between the simultaneous recording of public surplus and current account deficit, along with the incidence of credit expansion. In the third section, we explore how many national economies have gone through this particular sectoral combination and when they did so, in order to then study whether

1 This evidence would be added to other criticisms about the design of the fiscal rules receives, such as Baldi (2015) and Agénor and Yilmaz (2011).

they suffered from intense private leverage in the years immediately preceding, and from economic crisis in the years immediately following, said combination. In the final section we offer our conclusions.

2. 2. The theoretical link between public surplus, current account deficit, and credit expansion

Based on national accounting, and grouping all economic agents into three sectors (public, private, and foreign), the following well-known accounting identity can be obtained:

$$\boldsymbol{NLprivate + Nlpublic + Nlforeign = 0} \tag{1}$$

Where NL is the net lending balance of the corresponding sector. Consequently, the balances of the three sectors are offset, and their sum is equal to 0.

Although this is simply an accounting identity, when the different elements comprising each balance are identified, and when the way in which the balances are interrelated are correctly internalized, along with their limits and the correspondence between flows and stocks, then the macroeconomic analysis is notably enhanced (Nikiforos and Zezza 2017, p. 7-8; Mitchell *et al*. 2019, p. 85-6). The implication that interests us here is that the negative balance of a sector will tend to increase its debt ratio. If we assume that in equation (1) the balance of the foreign sector is positive (which implies a current account deficit) and that the public sector is registering a surplus, then the private sector must be registering a deficit, which will lead to a decrease in its financial assets or – much more likely – an accumulation of its net financial liabilities. Furthermore, as Nikiforos and Zezza (2017, p.8) point out, if this situation were to continue over time, a process of financial speculation could conceivably take place and lead to a 'Ponzi phase' (in Minskian terms) which would predictably trigger a severe financial crisis (Minsky 1977). As can be seen, this is a point of juncture between Godley's interpretation of sectoral balances and Minsky's hypothesis of financial instability.

However, there are two different ways of identifying the macroeconomic causality that might underlie such a juncture. On the one hand, it could be conjectured that it is precisely the pursuit of a public surplus that, due to spending cuts and increased taxes, leads to a deterioration of the private sector balance, and that this process would intensify if a fiscal surplus were reached, thus tightening the rope more and more until it breaks into financial crisis. In this case, the fiscal surplus would play an important role in explaining the crisis. This causal process is mentioned by Mario Seccareccia (2005, p. 147), Steve Keen (2015, 2018), Randall Wray (2012), and Mitchell *et al*. (2016, p. 84; 2019, p.86).

On the other hand, it could be considered that it is precisely the increase in private debt (stimulated by any factor) that would explain the improvement in public income (derived from the improvement in economic activity) and, ultimately, the appearance of a fiscal surplus, finally unleashing the crisis as a result of the financial imbalances derived from the credit boom. In this case, the credit boom is the element that plays an important role in explaining the crisis, essentially regarding the appearance of a fiscal surplus as a collateral effect. Both Mitchell (2013) and Galbraith (2012, p. 69) make explicit mention of this causal chain. It should be noted that these two visions are perfectly compatible with one another, although the scant development performed by most analysts on this subject prevents us from discovering their specific positions on the matter: that is to say, whether they propose the only first vision, only the second, or both together.

In this paper, we consider that both phenomena occur in a complementary way: the pursuit of the public surplus can push the private sector to increase its indebtedness, which intensifies when this goal has been achieved; but what allows for the appearance of a fiscal surplus (thanks to an improvement in public revenues) is ultimately private leverage and its outstanding impact on economic growth. Moreover, this private indebtedness is also the culprit causing the financial imbalances that will lead to a crisis. This view would help to better explain why the simultaneous recording of fiscal surplus and current account deficit (which implies a private sector deficit) could ostensibly precede economic crises – a result that might well be deduced from the analyses mentioned above, but which is never sufficiently clarified.

Consequently, periods in which the aforementioned sectoral combination was recorded would not only precede significant economic downturns, but would also coincide with periods of notable private indebtedness, which could have been generated over time before obtaining a fiscal surplus. Therefore, the empirical exploration to be carried out should not only focus on the outcome (crisis), but also on the prior expansion of credit.

3. Exploration of national economies that have simultaneously recorded a public surplus and a current account deficit

In order to carry out this exploration, the three sectoral balances will be attended to in proportion to GDP. The World Economic Outlook database of the International Monetary Fund covers the largest number of national economies and years, offering annual data for both the public balance over

GDP[2] and the current account balance over GDP.[3] The balance of the private sector will be obtained as a residual from the other two.

Many very small national economies have presented very abrupt fluctuations in their sectoral balances, which makes analysis notably difficult, and none of these would be regarded as advanced economy (note that Mitchell *et al*. (2019) refer to mostly advanced economies). Consequently, we can leave these out of our analysis in favor of the representativeness of the sample. The criterion we use to exclude this type of economy is the following: year-on-year variation of any of the three balances at a degree greater than 10% of GDP. Applying this criterion, we are left with the countries listed in Table 1 of the Annex II. Having excluded many economies from the total sample available in the IMF database, we obtain the countries for which analysis will be undertaken. Table 2 of the Annex II lists these in alphabetical order, along with the number of years in which data are available for the three sectoral balances.

Cases for which data is available only for a single balance have been discarded, due to the impossibility of distinguishing the other two. Thus our total number of countries is 117, and the total number of years considered amounts to 2.753, the broadest sample period being from 1980 to 2017. It must be borne in mind that some years are outside our general sweep and could be hiding other cases adjusted to our working hypothesis (especially if these occurred before 1980 or after 2017).

Of the 117 economies in the sample, 43 showed a public surplus and a current account deficit for at least one year during the time period considered. This represents about 36.8% of all economies, although the frequency with which they found themselves in our sectoral state of interest varies widely by country, as do other characteristics. Table 1 of the annex I presents the list of economies with the number of years recorded, the periods in which those years were consecutive, the total number of years with a public surplus, and the total years available.

Source: Own elaboration based on data from the World Economic Outlook of the International Monetary Fund.

While some economies (such as Costa Rica) have registered the sectoral state under study only for a single year, others (such as New Zealand, Finland, or Paraguay) have done so for more than ten years, though not necessarily

2 Defined as: 'Net lending/borrowing is calculated as revenue minus total expenditure. This is a core GFS balance that measures the extent to which general government is either putting financial resources at the disposal of other sectors in the economy as well as non-residents (net lending), or else utilizing the financial resources generated by other sectors and non-residents (net borrowing). This balance may be viewed as an indicator of general government activity on the rest of the economy and non-residents. Note: net lending/borrowing is also equal to net acquisition of financial assets minus net incurrence of liabilities' (IMF 2019).

3 Defined as: 'Current account is all transactions other than those in financial and capital items. The major classificstions are goods and services, income and current transfers. The focus of the BOP is on transactions (between an economy and the rest of the world) in goods, services and income' (IMF 2019).

continuously. Between these extremes are many combinations, but the general trend of duration ranges from 2 to 5 years.[4]

As shown in Table 1 (Annex I) above, nearly all economies exhibit a few periods extending through consecutive years. Finland takes the prize, with 12 years concentrated into a single period. There are countries in which the sectoral state of interest is not especially remarkable, mainly due to the fact that the number of years is quite low (as with Costa Rica). This finding is in line with our proposals: if the aforementioned sectoral combination appears to be reflecting a single phenomenon of private leverage, then it is to be expected that those years will be consecutive.

4. Exploration of credit expansions

Next, we investigate whether the years in which countries registered a public surplus with a current account deficit coincide with a significant period of credit expansion. To do this, we have consulted 10 empirical studies that collect a large number of credit booms[5] recorded around the world over a lengthy period of time. All of these studies are presented in Table 2 of the Annex I: the samples range from 28 to 170 economies, usually distinguishing between advanced, emerging, and developing, and comprising time intervals from 1960 or 1970 to well into the 21st century.

Most of the national economies under examination here appear several times in these studies, while others (the minority) appear less often, or not at all. Table 3 (Annex I) shows that the most repeated and studied episodes of credit expansion were experienced in the countries of Southeast Asia (especially Indonesia, Korea, Malaysia, Thailand, the Philippines, and Hong Kong) during the 1990s, as well in Mexico in the same period. Following these are: the credit bubbles experienced in the late 1980s in Northern Europe (the United Kingdom, Denmark, Sweden, Finland, and Norway); those of the peripheral European countries (Spain, Ireland, Iceland) in the first decade of the 21st century; the credit booms prior to the Great Financial Crisis of 2008 in new members of the European Union (Estonia, Latvia, Slovenia, Bulgaria, Moldova and Macedonia); and the bubbles of South Africa, Australia, and Cambodia, also prior to 2008. References are minimal in the cases of Cyprus, Serbia, Macedonia, New Zealand, the United States, Egypt, Kazakhstan, Costa Rica, Chile, and Bangladesh. There is no reference whatsoever for Kosovo, Morocco, Nicaragua, Panama, Ecuador, or Peru.

To obtain a broader panorama, we can add empirical studies of smaller scope; that is, studies that address any process of credit expansion (and not

4 It is important to note that for the country of Saint Kitts and Nevis, there are only 3 years available, which makes its analysis impossible.

5 In academia, there is no agreed definition of what a credit boom is, but all studies share similar features that fit with the definition offered by Terrones and Mendoza (2004, p. 148): 'an episode of excessive growth of private credit that is unsustainable and eventually collapses of its own accord.'

only those classified as credit booms) but with a smaller range of countries and years. These are given in Table 4 of the Annex I.

In this case, there are many more mentions of the countries of Central and Eastern Europe (Estonia, Latvia, Bulgaria, Serbia, and Slovenia) as well as some Latin American economies (Costa Rica, Honduras, Ecuador, Nicaragua, and Panama). That the latter group were scarcely considered in the previous sweep suggests that they may have experienced credit expansions insufficient to be considered booms, although perhaps significant enough to have contributed to the appearance of a surplus. In any case, the following economies are not referenced: Kosovo, Morocco, Canada, and Peru.

This review of empirical studies providing lists of credit expansion episodes allows us only an initial, tentative approximation; even so, it offers evidence that corroborates the idea that, in most cases, a fiscal surplus and a current account deficit have been registered along with an apparent coincidence of notable credit expansion.

To obtain a more complete and detailed view of the existence (or lack) of credit expansions in these countries, as well as their possible outcomes as financial crises, we must examine the literature that addresses these time periods in these economies. The results are presented below, with countries grouped both chronologically and geographically to facilitate reading.

a. Northern Europe in the 1980s

This credit episode began in many Northern European economies (Iceland, Finland, Sweden, Norway, Denmark, and the United Kingdom) in the midst of the liberalization and privatization measures launched in the late 1970s and early 1980s. The most intense and well-known episode was that of Finland, which ended in 1991, followed by that of Sweden (Englund and Vihriälä 2003, 2009; Kiander and Vartia 2011). The case of Norway was similar, but the crisis proved less intense thanks to the strength of its oil sector (Mehlum *et al*. 2012; Mjøset and Cappelen 2011).

In Denmark, there was also a significant credit boom, but the crisis was minor and largely banking-related in nature (Jonung 2008; Abildgren 2007). In the case of the United Kingdom, the notable expansion of credit ended with a minor bank crisis that was addressed through sizeable public aid (Ball 1994; Attanasio and Weber 1994). Finally, Iceland experienced the earliest of these episodes, between 1979 and 1984. This boom was mainly oriented toward the consumption of durable goods, and the resulting crisis was not intense, triggering only a non-systemic banking crisis which proved relatively minor and did not severely affect the real economy (Einarsson *et al*. 2016; Aliber and Zoega 2011). Less literature has been found for the cases of Iceland, Denmark, and the United Kingdom, compared to the others, perhaps reflecting the smaller impact of these credit episodes.

b. Southeast Asia in the 1990s

The Asian crisis of 1997 is widely known. The wave of liberalizing measures in the financial system (and other areas) that originated in certain European countries in the 1980s also reached this region. A common denominator runs through all these economies: their central banks were committed to maintaining a fixed exchange rate that, in the best of cases, enjoyed a narrow fluctuation band. This along with their enormous acquired dependence on foreign capital implied that financial crises would take the form of currency or exchange crises as said capital began to exit their national borders. For this reason, the trigger for the crises in these cases was more the withdrawal of capital than the bursting of real estate bubbles (which nonetheless played a prominent role in some, including Malaysia, Indonesia, and Hong Kong) (Goldstein 1998; Collyns and Senhadji 2002; Pempel 1999).

The most severe crisis of all was experienced in Indonesia (Kenward, 1999; Pincus and Ramli, 1998). The least intense was that of the Philippines – in part because the country had already suffered a deep financial crisis a few years earlier, in 1983 – where the exposure of banks to the real estate sector was much lower (Bautista 2003; Noland 2000).

c. Latin America in the 1990s

During the 1990s, several Latin American countries experienced major financial crises. The first (and most famous) crisis manifested in Mexico in 1994, and this became known as the 'Tequila crisis' or the 'Mexican peso crisis'. Many authors consider that the trigger for this crisis was the intense devaluation to which monetary authorities had succumbed following a significant loss of capital (which had entered thanks to prior liberalizing measures) (Gil-Díaz and Carstens 1996; Masson and Agénor 1996). A colossal bubble was experienced in prices of real estate assets, stocks, and government bonds, and the economic effects following the bubble's burst were very serious (Whitt 1996; Meza 2008). Elsewhere, Chile and Peru experienced notable credit booms and increases in the price of real estate assets, eventually disrupted by the international impact of the Asian crisis in 1997 and the Russian crisis in 1998 (Bergoeing *et al*. 2002; Calvo and Talvi 2005). However, the economic effects of the financial crash in these nations were not as intense as in Mexico.

d. Anglo-Saxon countries in the 1990s

The United States, Canada, and the United Kingdom all experienced to a greater or lesser extent the so-called 'dot com bubble' at the end of the 20th and beginning of the 21st centuries; this was a period of credit expansion and stock price escalation in a context of new computer and internet developments which, although originating in the United States, affected other countries collaterally. The bursting of the bubble had a very strong impact on the capital market, and while it also affected the economy overall, it did not do

so with great intensity (Schmitt 2000; Montgomerie 2006; Seccareccia 2005; MacBeth 2015). The subsequent economic recovery was not long in coming, thus giving way to another period of credit growth (or else the same period, after a slight interruption) that would extend until 2008. In fact, in the cases of the United States and the United Kingdom, it can be said that the 'dot com' crisis was merely a pause in the credit boom that began in the late 1990s and that ended in the Great Financial Crisis of 2008. However, in all three cases a fiscal surplus made its appearance at the end of the 1990s and vanished along with the 'dot com bubble' (except in Canada). This was mainly due to the expansionary policies (fiscal and monetary) that began to be applied in these countries following the World Trade Center attacks, which triggered a public deficit for several years (Hume and Sentance 2009; Vasudevan 2009).

e. Peripheral and Eastern Europe

Four countries of peripheral Europe (Spain, Iceland, Ireland, and Cyprus) began in the mid-1990s to experience extraordinary credit booms accompanied by real estate bubbles that, after a slight hiatus in 2000, all exploded together with the Great Financial Crisis of 2008. In all four cases, the financial crises that followed were dramatic and strongly focused on the banking sector. All except Iceland had as their common currency the euro, the prior adoption of which is what partially drove the remarkable liberalization of their financial systems.

As in the above case, the group of countries including Estonia, Latvia, Bulgaria, Moldova, Slovenia, Macedonia, Serbia, Montenegro, Kosovo, and Bosnia & Herzegovina experienced either a credit boom or a notable credit expansion (usually accompanied by a real estate bubble) from the late 1990s or early 2000s until a general collapse in 2008. Of all the resulting crises, those in Estonia, Latvia, and Bulgaria stood out for their severity;[6] those of Macedonia, Slovenia, and Moldova were less pronouced[7] (in the latter case because the economy had recently experienced another crisis episode, in 1998). For their part, Bosnia & Herzegovina, Serbia, Montenegro, and Kosovo did not experience a bubble in the price of real estate assets, largely due to the urban and industrial reconstructions undertaken following wars and conflicts.[8] All these countries have in common that their transition to a market economy led to strong liberalization of the financial and real estate systems. The case of

6 See, for example, Brixiova *et al*. (2010) and Lamine (2009) for the case of Estonia; Erbenova *et al*. (2011) and Romanova (2012) for the case of Latvia; and Duenwald *et al*. (2005) and Nikolaidou and Vogiazas (2014) for that of Bulgaria.

7 See, for example, Fidanoski *et al*. (2017) and Petkovski *et al*. (2016) for Macedonia; Cirman (2006) and Neck *et al*. (2011) for Slovenia; and Rabenhorst and Mihalache (2007) and Clichici and Gribincea (2015) for Moldova.

8 See, for example, Bosnjak *et al*. (2017) and Chen and Chivakul (2008) for the case of Bosnia & Herzegovina; and Petrovic (2010) and Marinkovic and Malovic (2012) for Serbia, Montenegro, and Kosovo.

Moldova is also very particular in that this is a very small economy maintained largely through remittances.

f. Oceania

Australia and New Zealand also experienced significant credit expansions between 1995 and 2008 that ended with the Great Financial Crisis. Both countries heavily liberalized their financial systems in the early 1990s (Caballero *et al*., 2005; Craigie and Munro, 2010). These episodes are less documented than others, because their outcome led not to a dramatic crisis but rather a brief recession. The existing literature points to China (a crucial and successful trading partner) as an explanatory factor in why the situation proved less dramatic (Pomfret 2009; Xiang *et al*. 2015); also credited are banking regulations that were more appropriate than those in Europe, and the application of strong fiscal impulses to counteract economic impacts (Mitchell 2013; Murphy 2011).

g. Africa and Asia

Except in Egypt, where the credit boom ended in 2001, the remaining economies under study (South Africa, Kazakhstan, Morocco, and Cambodia)[9] saw an end to credit expansion in 2008. The deepest and most well-known crisis, derived from a formidable credit and real estate boom, was that of South Africa, which had experienced another financial crisis in 1985, while the least intense was that of Egypt, the only economy that did not experience a housing bubble.

h. Latin America in the 21st century

Not many bibliographic references have been found on credit booms in these countries (Honduras, Costa Rica, Nicaragua, Panama, and Peru)[10] between the late 1990s and 2008, although the literature focused on the number of credit booms usually includes them. The episode in Honduras ended prematurely, in 2000, due to the damaging weather phenomenon known as El Niño, which may explain why there had not been time for the expansion of credit to become outstanding, or for a real estate bubble to inflate, or for the crisis to prove more serious than it did. In any case, none of the crises derived from these episodes was very intense (in Panama, the evolution of GDP did not even enter negative terrain), and this could be explained in part because these countries were responding to a financial deepening without major imbalances.

9 See, for example, Elsherif (2015) for the case of Egypt; Ashman et al. (2011) for that of South Africa; Barisitz and Lahnsteiner (2010) for that of Kazakhstan; Nsouli et al. (1995) for that of Morocco; and Hill and Menon (2011) for Cambodia.

10 See, for example, Ramsses (2007) for the case of Honduras; Vargas (2011) for that of Costa Rica; Peña (2013) for that of Nicaragua; Fisher (2015) for Panama; and Bacigalupo and Bacigalupo (2009) for Peru.

However, the credit grew well above GDP in all regions, or that asset prices did not exorbitantly rise in countries such as Panama, Costa Rica, and Honduras.

i. Exceptions

Of the 43 cases analyzed, only three did not seem to experience any type of notable credit expansion before registering public surpluses and current account deficits: Bangladesh in 1994, Morocco in 2000, and Ecuador in 2004. For the first two, we have found a convincing explanation, but for the latter we have only a slight suspicion which seems less than likely.

Bangladesh registered a fiscal surplus between 1991 and 1994 according (solely) to the World Economic Outlook database of the International Monetary Fund; according to the other databases consulted (World Bank and national organizations) as well as secondary sources in academic articles (Hossain 2013; Houqe 2006), Bangladesh continued to maintain deficits during these years. Therefore, everything seems to indicate that an error is present in the database used, and that this Asian country did not in fact achieve a public surplus and should not have been included in our analysis.

As for Morocco, the country achieved an unusual fiscal surplus between 1996 and 1999 thanks to a combination of several factors: a moderate and volatile credit expansion, the strong application of fiscal consolidation measures, and the deep privatization of its public companies (Jbili *et al*. 1997; Nsouli *et al*. 1995). Without this last factor outside the economic cycle, Morocco probably would not have registered a public surplus during that period. However, all factors played a relevant role, as the decline in economic activity in 2000 ended the fiscal surplus, even if privatizations continued.

Finally, Ecuador registered a simultaneous public surplus and current account deficit between 2001 and 2004, but without experiencing any sort of credit expansion (Hansen and Sulla 2013; Matos 2017); in this single outlying case, we cannot advance no explanation. The only conclusion that might make sense (although it seems unlikely) is that this sectoral combination resulted from a prior period of strong fiscal adjustment and significant privatizations that intensified the damages which a banking crisis had inflicted on the accounts of the private sector, and which at the same time produced an improvement in public accounts. The end of this period might be jointly explained by the end of the adjustment programs and by a significant increase in oil prices, which notably improved the current account balance until it eventually became a surplus. But this is only a suspicion and, furthermore, not a very credible one.

5. Conclusions

This exploration – which has included as many countries and years as possible – reveals that the vast majority of national economies that have experienced a simultaneous public surplus and current account deficit had also experienced a strong process of private indebtedness immediately

beforehand (and then throughout), as well as an economic crisis of relative intensity immediately afterward. The magnitudes of the two phenomena varied widely across the sample of countries, but in most cases, the credit expansion and resulting crisis were quite serious, while intensity was moderate in only a few. Exceptional were the cases of Morocco and Ecuador, where no evidence of credit expansion or recession has been found in the years adjacent to the simultaneous recording of a public surplus and a current account deficit.

These results provide an empirical foundation that seeks to corroborate the aforementioned assertion by Randall Wray, Bill Mitchell, and Martin Watts: 'In most advanced economies, sharp, severe economic downturns typically follow a period when fiscal surpluses are accompanied by large private sector deficits' (Mitchell, Wray, and Watts 2019 p. 86). The results are also consistent with, and may therefore help to consolidate, the theoretical approaches of other post-Keynesian economists (mentioned in the literature review in section 2) which link the interpretation of Godley's sectoral balances with the financial instability approach of Minsky.

Finally, the results obtained provide key lessons for the formulation of economic policy recommendations. We should bear in mind that, according to the analysis carried out, the simple verification of the coexistence of a public surplus and a current account deficit – which in principle tells us nothing about financial matters – can alert government leaders to a likely process of a significant credit expansion, which could then very probably lead to an economic crisis. Furthermore, the common recommendation that an economy obtain a certain level of public deficit, without taking into account the positions of other factors in the balance, may be seen as unfortunate in light of the analysis presented in this paper.

References

Abildgren, K. (2007). "Financial Liberalisation and Credit Dynamics in Denmark in the Post-World War II Period." Working Paper 47, Danmarks Nationalbank.

Agénor, P. R. and Yilmaz, D. (2015). "The Tyranny of Rules: Fiscal Discipline, Productive Spending, and Growth in a Perfect Foresight Model", *Journal of Economic Policy Reform,* vol. 14, no. 1: pp. 69-99.

Aliber, R. Z. and Zoega, G. (2011*). Preludes to the Icelandic Financial Crisis*. New York: Palgrave Macmillan.

Ashman, S., Fine, B., and Newman, S. (2011). "The Crisis in South Africa: Neoliberalism, Financialization and Uneven and Combined Development", *Socialist Register*, vol. 47: pp. 174-195.

Attanasio, O. P. and Weber, G. (1994). "The UK Consumption Boom of the Late 1980s: Aggregate Implications of Microeconomic Evidence", *The Economic Journal*, vol. 104, no. 427: pp. 1269-1302.

Bacigalupo, G. L. and Bacigalupo, S. L. (2009). “Existencia de un boom de crédito en el Perú. Análisis desde la perspectiva de un modelo de cambio de régimen,” *Apuntes. Revista de Ciencias Sociales*, vol. 64: pp. 31-54.

Baldi, G. (2011). “Fiscal Policy Rules, Budget Deficits, and Forecasting Biases,” *Journal of Economic Political Reform*, vol. 19, no. 2: pp. 185-194.

Bautista, C. (2003). “Stock Market Volatility in the Philippines,” *Applied Economics Letters*, vol. 10: pp. 315-18.

Ball, M. (1994). “The 1980s Property Boom,” *Environment and Planning A*, vol. 26, no. 5: pp. 671-95.

Barisitz, S. and Lahnsteiner, M. (2010). “From Stormy Expansion to Riding out the Storm: Banking Development in Kazakhstan,” *Financzmarktstabilitätsbericht*, vol. 19.

Barredo-Zuriarrain, J. (2018). “The Nature of Capitalist Money and the Financial Links Between Debt-Led and Export-Led Growth Regimes,” *New Political Economy*, vol. 24, no. 4: pp. 565-586.

Bergoeing, R., Kehoe, P. J., Kehoe, T. J., and Soto, R. (2002). “A Decade Lost and Found: Mexico and Chile in the 1980s,” *Review of Economic Dynamics*, vol. 5, no. 1: pp. 166-205.

Bosnjak, A., Hassan, A., and James, K. (2017). “Analysis of the Banking Sector Performance in Bosnia and Herzegovina, Montenegro and Serbia Before and After the Global Financial Crisis,” *Economics*, vol. 5, no. 2.

Brixiova, Z., Vartia, L., and Wörgötter, A. (2010). “Capital Flows and the Boom-Bust Cycle: The Case of Estonia,” *Economic Systems*, vol. 34: pp. 55-72.

Buendía, L. (2018). “A Perfect Storm in a Sunny Economy: a Political Economy Approach to the Crisis in Spain,” *Socio-Economic Review*, vol. 0, no. 0: pp. 1–20.

Caballero, R. J., Cowan, K., and Kearns, J. (2005). “Fear of Sudden Stops: Lessons From Australia and Chile 1”, *The Journal of Policy Reform*, vol. 8, no. 4: pp. 313-54.

Calvo, G. A. and Talvi, E. (2005). “Sudden Stop, Financial Factors, and Economic Collapse in Latin America: Learning from Argentina and Chile.” Working Paper 11153 NBER.

Carey, D. (2009). “Iceland: The Financial and Economic Crisis.” Working Paper 725 OECD.

Chen, K. C. and Chivakul, M. (2008). “What Drives Household Borrowing and Credit Constraints? Evidence From Bosnia and Herzegovina.” Working Paper 202 IMF.

Cirman, A. (2006). “Housing Tenure Preferences in the Post-Privatisation Period: The Case of Slovenia”, *Housing Studies*, vol. 21, no. 1: pp. 113-34.

Clerides, S. (2014). “The Collapse of the Cypriot Banking System: A Bird’s Eye View”, *Cyprus Economic Policy Review*, vol. 8, no. 2: pp. 3-35.

Clichici, D. and Gribincea, C. (2015). “Implications of the Financial Crisis: on the Soundness of the Banking System in the Republic of Moldova”, *The IEB International Journal of Finance*, vol. 10: pp. 88–109.

Collyns, C. and Senhadji, S. A. (2002). "Lending Booms, Real Estate Bubbles and the Asian Crisis." Working Paper 20 IMF.

Craigie, R. and Munro, A. (2010). "Financial Sector Amplification and Credit Cycles in New Zealand", *Reserve Bank of New Zealand Bulletin*, vol. 73, no. 2: pp. 15-34.

Danielsson, J. (2009). "The First Casualty of the Crisis: Iceland." In *The First Global Financial Crisis of the 21st Century*. Part II, ed. A. Felton and C. M. Reinhart, June - December 2008, 9-14. London: Centre for Economic Policy Research.

Dineen, D., Kennedy, J., and Palcic, D. (2017). "Ireland – From Good Example to Major Warning." In *How to Prevent the Next Crisis: Lessons from Country Experiences of the Global Financial Crisis*, ed. A. Bhushan. The North-South Institute.

Donovan, D. and Murphy, A. E. (2013). *The Fall of the Celtic Tiger: Ireland and the Euro Debt Crisis*. Oxford: MPG Printgroup.

Duenwald, C., Gueorguiev, N. and Schaechter, A. (2005). "Too Much of a Good Thing? Credit Booms in Transition Economies: The Cases of Bulgaria, Romania and Ukraine". Working Paper No. 128 IMF.

Einarsson, B. G., Gunnlaugsson, K., Ólafsson, T. T., and Pétursson, T. G. (2016). "The Long History of Financial Boom-Bust Cycles in Iceland: Part II: Financial Cycles". Working Paper 68 Central Bank of Iceland.

Elsherif, M. A. (2015). "The Determinants of Financial Development: Empirical Evidence from Egypt", *The Macrotheme Review*, vol. 43, no. 3: pp. 69-87.

Englund, P. and Vihriälä, V. (2003). "Financial Crises in Developed Economies: the Cases of Sweden and Finland". Working Papers 63 Pellervo Economic Research Institute.

Erbenova, M., Saxegaard, M., and Liu, Y. (2011). "Corporate and Household Debt Distress in Latvia: Strengthening the Incentives for a Market-Based Approach to Debt Resolution." Working Papers 85 IMF.

Fidanoski, F., Lazarov, D., Simeonovski, K., and Sergi, B. (2017). "Where Macroeconomic and Financial Instability Meets Economic Growth in Macedonia?", *Financial Services Indices, Liquidity and Economic Activity,* vol. 23.

Fisher, E. (2015). "Panamá: Un análisis económico de la coyuntura reciente", *Investigación y Pensamiento Crítico*, vol. 3, no. 1: pp. 47-66.

Galbraith, J. K. (2012). "Who Are These Economists, Anyway?" In *Contributions in Stock-flow Modeling*, ed. D. B Papadimitriou and G. Zezza, 63-75. Palgrave McMillan.

Garzón, E., Medialdea, B., and Sanabria, A. (2018). "The Spanish Financial Sector: Debt Crisis and Bailout". In *The Political Economy of Spain: From Miracle to Mirage*, ed. L. Buendía, and R. Molero, 77-97. Routledge.

Gil-Díaz, F. and Carstens, A., (1996). "One Year of Solitude: Some Pilgrim Tales about Mexico's 1994-1995 Crisis", *American Economic Review*, vol. 86, no. 2: pp. 164–69.

Godley, W. (1999). “Seven Unsustainable Processes: Medium-Term Prospects and Policies for the United States and the World.” The Jerome Levy Economics Institute of Bard College Special Report.

Godley, W. and Lavoie, M. (2007). *Monetary Economics: An Integrated Approach to Credit, Money, Income, Production and Wealth*. London.

Godley, W. and McCarthy, G. (1998). “Fiscal Policy Will Matter”, *Challenge*, vol. 41, no. 1: pp. 38- 54.

Godley, W. and Wray, L. R. (2000). “Is Goldilocks Doomed?”, *Journal of Economic Issues*, no. 34, no. 1: pp. 201-6.

Goldstein, M. (1998). *The Asian Financial Crisis: Causes, Cures, and Systemic Implications*. Washington D.C.: Institute for International Economics.

Hansen, N. H. and Sulla, O. (2013). “El crecimiento del crédito en América Latina: ¿Desarrollo financiero o boom crediticio?”, *Revista Estudios Económicos*, vol. 25: pp. 51-80.

Hill, H. and Menon, J. (2011). “Reducing Vulnerability in Transition Economies-Crises and Adjustment in Cambodia”, *Asean Economic Bulletin*, vol. 28, no. 2: pp. 134-59.

Hossain, M. I. (2013). “Economic Liberalization Reforms May Explain the Impressive GDP Growth in Bangladesh,” *Journal of Asia Pacific Studies*, vol. 32: pp. 101-13.

Houqe, M. N. and Kabir, M. R. (2006). “Financial Globalization and Vulnerabilities: Lessons for Bangladesh”, *Journal of Business and Economics*, vol. 1, no. 1: pp. 29-37.

Hume, M. and Sentance, A. (2009). “The Global Credit Boom: Challenges for Macroeconomics and Policy,” *Journal of International Money and Finance*, vol. 28: pp. 1426-61.

IMF (2019). “World Economic Outlook Database”. Available at https://www.imf.org/external/pubs/ft/weo/2019/02/weodata/index.aspx [15 May 2021, date last accessed].

Jbili, A., Enders, K., and Treichel, V. (1997). “Financial Sector Reforms in Algeria, Morocco, and Tunisia: A Preliminary Assessment.” Working Paper 81 IMF.

Jonung, L. (2008). “Lessons From Financial Liberalisation in Scandinavia”, *Comparative Economic Studies*, vol. 50: pp. 564-98.

Juniper, J. and Mitchell, W. (2008). “There Is No Financial Crisis so Deep that Cannot be Dealt with Public Spending”, Working Paper 08–10 CofFEE.

Keen, S. (2015). “Austerity, Budget Surpluses and ‘Sound Finance’”. Speech, available in https://www.youtube.com/watch?v=WOIaF7sjb3Mandt=3s [15 May 2021, date last accessed].

Keen, S. (2018). *Can We Avoid Another Financial Crisis?* New York: Polity Press.

Kenward, L. R. (1999). “Assessing Vulnerability to Financial Crisis: Evidence from Indonesia”, *Bulletin of Indonesian Economic Studies*, vol. 35, no. 3: pp. 71-95.

Kiander, J. and Vartia, P. (2011). “Lessons from the Crisis in Finland and Sweden in the 1990s,” *Empirica*, vol. 38: pp. 53-69.

Lamine, B. (2009). "Estonia: Analysis of a Housing Boom", *ECOFIN Country Focus*, vol. 6, no. 7: pp. 1-7.

MacBeth, H. (2015). *When the Bubble Bursts: Surviving the Canadian Real State Crash*. Dundurn.

Marinkovic, S. and Malovic, M. (2012). "Serbian Credit Market After the Turmoil". In *Managing Structural Changes - Trends and Requirements*, ed. J. Andrade, N. Simoes, I. Stosic, D. Eric and H. Hanic, 278-302 Institute of Economic Sciences.

Masson, P. R. and Agénor, P.-R. (1996). "The Mexican Peso Crisis: Overview and Analysis of Credibility Factors". Working Papers 6 IMF.

Matos, P. R. F. (2017). "On the Latin American Credit Drivers", *Emerging Markets Finance and Trade*, vol. 53, no. 2: pp. 306-20.

Mehlum, H., Moene, K., and Torvik, R. (2012). "Mineral Rents and Social Development in Norway". In *Mineral Rents and the Financing of Social Policy. Social Policy in a Development Context*, ed. K. Hujo, pp- 155-84. London: Palgrave Macmillan.

Mercille, J. (2015). *The Political Economy and Media Coverage of the European Economic Crisis: The Case of Ireland*. New York: Routledge.

Meza, F. (2008). "Financial Crisis, Fiscal Policy, and the 1995 GDP Contraction in Mexico". *Journal of Money, Credit and Banking*, vol. 40, no.6: pp. 1239-61.

Michaelides, A. (2014). "Cyprus: From Boom to Bail-in", *Economic Policy*, vol. 29, no. 80: pp. 639- 89.

Miles, W. (2018). "Home Prices and Global Imbalances: Which Drives Which?", *International Review for Social Sciences (Kyklos)*, vol. 72, no. 1: pp. 55-75.

Minsky, H. P. (1977). "The Financial Instability Hypothesis: An Interpretation of Keynes and an Alternative to 'Standard' Theory", *Challenge*, vol. 20, no. 1: pp. 20-27.

Mitchell, W. (2013). "The Fantasy Budget 2013-14". Bill Mitchell-Modern Monetary Theory Blog, available at http://bilbo.economicoutlook.net/blog/?p=23752 [15 May 2021, date last accessed].

Mitchell, W., Wray, L. R., and Watts, J. M. (2019). *Macroeconomics.* New York: Red Globe Press.

Mjøset, L. and Cappelen, A. (2011). "The Integration of the Norwegian Oil Economy into the World Economy". In *The Nordic Varieties of Capitalism Comparative Social Research*, ed. L. Mjøset, pp. 167-263. Bingley: Emerald Group Publishing Limited.

Montgomerie, J. (2006). "Giving Credit where it's Due: Public Policy and Household Debt in the United States, the United Kingdom and Canada", *Policy and Society*, vol. 25, no. 3: pp. 109-41.

Murphy, L. (2011). "The Global Financial Crisis and the Australian and New Zealand Housing Markets", *Journal of Housing and the Built Environment*, vol. 26, no. 3, pp. 335-351.

Neck, R., Blueschke, D., and Weyerstrass, K. (2011). "Optimal Macroeconomic Policies in a Financial and Economic Crisis: A Case Study for Slovenia", *Empirica*, no. 38: pp. 435-59.

Nikiforos, M. and Zezza, G. (2017). "Stock-Flow Consistent Macroeconomic Models: A Survey", *Journal of Economic Surveys*, vol. 0, no. 0: pp. 1-36.

Nikolaidou, E. and Vogiazas, S. D. (2014). "Credit Risk Determinants for the Bulgarian Banking System", *International Advances in Economic Research*, vol. 20: pp. 87–102.

Noland, M. (2000). "The Philippines in the Asian Financial Crisis: How the Sick Man Avoided Pneumonia", *Asian Survey*, vol. 40, no. 3: pp. 401-12.

Nsouli, S., Eken, S., Enders, K., Thai, V., Decressin, J. and Cartaglia, F. (1995). "Resilience and Growth through Structural Adjustment", IMF Occasional Paper 117.

Pempel, T. J. (1999). *The Politics of the Asian Economic Crisis*. Ithaca: Cornell University Press.

Peña, L. A., (2013). "Matrices de Transición del Crédito en Nicaragua", Banco Central de Nicaragua Documentos de Trabajo No. 31.

Petkovski, M., Naumovska, E., Jovanovski, K., and Trenovski, B. (2016). "Determinants of Bank Credit Growth in Macedonia", Faculty of Economics of Ss. Cyril and Methodius University in Skopje.

Petrovic, P. (2010). "Economic Crisis in Serbia: Impacts and Responses". In *South Eastern Europe after the Economic Crisis: a New Dawn or Back to Business as Usual?*, ed. Barlett and Monastiriotis, W. LSE Reprogaphics Department.

Pincus, J. and Ramli, R. (1998). "Indonesia: From Showcase to Basket Case", *Cambridge Journal of Economics*, vol. 22, no. 6: pp. 723-34.

Pomfret, R. (2009). "The Post-2007 Financial Crisis and Policy Challenges facing Australia", Economic Papers: A journal of applied economics and policy vol. 28, no. 3: pp. 255-63.

Rabenhorst, C. and Mihalache, N. (2007). "Moldova: Guiding Mortgage Market Development Through Legal Reform", *Housing Finance International*, vol. 21 no. 3: pp. 26- 32.

Ramsses, M. (2007). "Competencia y regulación en la banca: el caso de Honduras", *CEPAL Estudios y perspectivas* no. 91.

Remeur, C. (2018). "Listing of Tax Havens by the EU", European Parliamentary Research.

Romanova, I. (2012). "Bank Lending and Crisis: Case of Latvia", *Journal of Business Management*, vol. 5 (Special Edition): pp. 87-97.

Schmitt, E. D. (2000). "Does Rising Consumer Debt Signal Future Recessions? Testing the Causal Relationship between Consumer Debt and the Economy", *Atlantic Economic Journal*, vol. 28, no. 3: pp. 333-45.

Seccareccia, M. (2005). "Growing Household Indebtedness and the Plummeting Saving Rate in Canada: An Explanatory Note", *The Economic and Labour Relations Review*, vol. 16, no. 1: pp. 133-51.

Terrones, M. and Mendoza, E. (2004). "Are Credit Booms in Emerging Markets a Concern?" Chapter 4: pp. 147-166.

Vargas, L. P. (2011). "Costa Rica: Tercera fase de la estrategia neoliberal. Contradicciones y desafíos (2005-2010)", *Revista Rupturas*, vol. 1, no. 1: pp. 84-107.

Vasudevan, R. (2009). "The Credit Crisis: Is the International Role of the Dollar at Stake?", *Monthly Review*, vol. 60, no. 11: pp. 24-35.

Whitt, J. A. (1996). "The Mexican Peso Crisis", *Economic Review*, vol. 81, no. 1.

Wray, L. R. (1998). "Goldilocks and the Three Bears", The Levy Economic Institute Policy Note No. 7.

Wray, L. R. (2012). *Modern Money Theory: A Primer on Macroeconomics for Sovereign Monetary Systems.* New York: Palgrave Macmillan.

Xiang, D., Shamsuddin, A., and Worthington, A. C. (2015). "The Differing Efficiency Experiences of Banks Leading up to the Global Financial Crisis: A Comparative Empirical Analysis from Australia, Canada and the UK", *Journal of Economics and Finance*, vol. 39: 327-46.

Annex I

Table 1. List of economies with public surplus and current account deficit

	Economy	Total years	Years in sectorial combination	Periods with consecutive years	Period in sectoral combination
1	New Zealand	33	16	3	1994-1997; 2000-2008; 2015-2017
2	Macedonia	21	5	3	1999-2000; 2004-2005; 2007
3	Malaysia	27	5	1	1993-1997
4	Morocco	27	5	2	1996-1999; 2008
5	Panama	23	4	2	1996; 2006-2008
6	Bosnia and Herzeg.	19	4	1	2005-2007
7	S. Kitts and Nevis	3	3	1	2014-2016
8	Australia	29	10	3	1988-1989; 1999-2000; 2002-2007
9	Kosovo	17	6	2	2001-2003; 2006-2007
10	Honduras	26	5	1	1996-2000
11	United Kingdom	38	5	2	1988-1989; 1999-2001
12	Bangladesh	37	4	1	1991-1994
13	Moldova	22	4	2	2003-2005; 2007
14	Nicaragua	17	4	2	2006-2007; 2010-2011
15	Cyprus	22	3	1	2007-2008
16	Spain	37	3	1	2005-2007
17	United States	22	3	1	1998-2000
18	Cambodia	21	2	1	2007-2008
19	Egypt	19	2	1	1999-2000
20	Latvia	23	3	2	2007;2012
21	Mexico	27	2	1	1992-1993
22	South Africa	17	2	1	2006-2007
23	Costa Rica	27	1	1	2007
24	Iceland	37	9	4	1980-1982; 1984; 1999-2000; 2005-2007
25	Chile	27	13	3	1990-1998; 2008; 2011-2012
26	Bulgaria	19	7	2	2003-2008
27	Peru	18	5	2	1996-1997; 2008; 2010-2013
28	Estonia	22	9	2	1997-1998; 2001-2007
29	Slovenia	23	2	2	1995; 2007
30	Serbia	17	2	1	2004-2005
31	Finland	37	12	1	1980-1991
32	Ecuador	22	4	1	2001-2004
33	Indonesia	24	3	1	1994-1996
34	Philippines	28	3	2	1993; 1996-1997
35	Kazakhstan	15	5	2	2002-2003;2005-2007
36	Ireland	22	4	1	2004-2007
37	Thailand	23	4	3	1995-1996; 2005; 2013
38	Canada	37	3	1	1997-1998; 2014

	Economy	Total years	Years in sectorial combination	Periods with consecutive years	Period in sectoral combination
39	Denmark	37	3	1	1986-1988
40	Sweden	37	4	1	1988-1991
41	Norway	37	5	2	1986-1989; 1998
42	Hong Kong	36	4	3	1981; 1994; 1996-1997

Source: Own elaboration.

Table 2. Empirical studies on credit booms

	Study	Sample of economies	Period
1	Elekdag and Wu (2013)	43 emerging economies	1960–2010
2	Elekdag and Wu (2011)	21 developed and 43 emerging economies	1960-2007
3	Mendoza and Terrones (2012)	21 developed and 40 emerging economies	1960-2010
4	Gourinchas et al (2010)	91 developed, emerging and developing economies	1960-1996
5	Meng and González (2017)	29 developed, 24 emerging y 107 developing economies	1960–2013
6	Saldarriaga (2018)	115 developed, emerging and developing economies	1960-2014
7	Arena et al (2015)	135 developing economies	1960–2011
8	Dell'Ariccia et al (2016)	170 developed, emerging adn developing economies	1970-2010
9	Hume Sentance (2009)	33 developed and emerging economies	1970-2006
10	IMF (2004)	28 emerging economies	1970-2002

Source: Own elaboration.

Table 3. Economies included in empirical studies on credit booms

Study	1	2	3	4	5	6	7	8	9	10	
Period	1960–2010	1960-2007	1960-2010	1960-1996	1960–2013	1960-2014	1960–2011	1970-2010	1970-2006	1970-2002	
United Kingdom		X	X	X	X			X	X		6
Denmark		X	X	X	X			X	X		6
Norway		X	X		X	X		X	X		6
Sweden		X	X		X	X		X	X		6
Finland		X	X	X	X	X		X	X		7
Estonia		X	X		X			X			4
Bulgaria			X					X			2
Latvia			X					X			2
Lithuania			X					X			2
Serbia								X			1
Slovenia		X	X					X			3
Moldova					X			X			2
Macedo-nia					X			X			2
Bosnia								X			1
Kosovo											0
Ireland		X	X		X	X		X	X		6
Spain		X	X		X	X		X	X		6
Iceland					X	X		X			3

Study	1	2	3	4	5	6	7	8	9	10	
Period	1960–2010	1960-2007	1960-2010	1960-1996	1960–2013	1960-2014	1960–2011	1970-2010	1970-2006	1970-2002	
Cyprus								X			1
Australia		X			X				X		3
N. Zelanda									X		1
EEUU		X									1
Egypt								X			1
Morocco											0
Canada											
South Africa		X	X		X		X		X		5
Kazakhs-tan					X						1
Costa Rica					X						1
Mexico	X	X	X	X	X	X	X	X		X	9
Honduras					X		X	X			3
Nicaragua											0
Panama											0
Ecuador											0
Chile									X		1
Peru											
Indonesia	X	X	X	X	X	X	X	X		X	9
Korea	X	X	X		X			X	X	X	7
Malaysia	X	X	X		X	X	X	X	X	X	9
Thailand	X	X	X	X	X	X	X	X	X	X	10
Philippi-nes		X	X	X	X	X	X	X		X	8
Hong Kong		X	X		X		X				4
Cambodia					X		X				2
Bangla-desh								X			1

Source: Own elaboration.

Table 4. Empirical studies on credit expansions

	Study	Sample	Period
1	Guo Stepanyan (2011)	38 emerging economies	2001-2010
2	Aisen and Franken (2010)	80 developed, emerging and developing economies	2002-2009
3	Stepanyan and Guo (2011)	38 emerging economies	2002-2008
4	Hoffmann (2016)	10 new members of the European Union	2000-2014
5	Everaert *et al.* (2015)	20 Central and Eastern European economies	2001-2011
6	Matos (2017)	14 Latinoamerican economies	2002-2011
7	Cotarelli *et al.* (2003)	15 Central and Eastern European economies	1998-2002
8	Hansen and Sulla (2013)	18 Latinoamerican economies	2000-2011
9	Sopanha (2006)	27 emerging economies	2002-2005
10	Couder and Pouvelle (2008)	7 Central and Southern European economies	1997-2007
11	Collyns and Senhadji (2002)	8 Southern Asian economies	1985-2001

Source: Own elaboration.

Table 5. Economies included in empirical studies on credit expansions

Study	1	2	3	4	5	6	7	8	9	10	11	
Period	2002q1-2008q3	2002m1-2009m5	2000-2011	2000-2014	2000-2014	2002-2011	1994-2002	2000-2011	2002-2005	1997-2007	1994-1998	
United Kingdom												0
Denmark												0
Norway												0
Sweden												0
Finland												0
Estonia		X	X	X			X		X	X		6
Bulgaria	X	X	X	X			X			X		6
Latvia	X	X	X	X	X		X		X	X		8
Lithuania	X	X	X	X	X		X		X	X		8
Serbia	X	X					X			X		4
Slovenia				X			X			X		3
Moldova		X										1
Macedonia										X		1
Bosnia							X					1
Kosovo												0
Ireland		X										1
Spain		X										1
Iceland												0
Cyprus												0
Australia												0
N. Zelanda												0
EEUU												0
Egypt												0
Morocco												0
Canada												0
South Africa	X	X	X									3

Study	1	2	3	4	5	6	7	8	9	10	11	
Period	2002q1-2008q3	2002m1-2009m5	2000-2011	2000-2014	2000-2014	2002-2011	1994-2002	2000-2011	2002-2005	1997-2007	1994-1998	
Kazakhstan		X										1
Costa Rica	X	X				X		X				4
Mexico												0
Honduras		X				X		X				3
Nicaragua		X						X				2
Panama		X				X						2
Ecuador		X				X			X			3
Chile												0
Peru												0
Indonesia											X	1
Korea											X	1
Malaysia											X	1
Thailand											X	1
Philippines											X	1
Hong Kong											X	1
Cambodia												0
Bangladesh												0

Source: Own elaboration.

Annex II

Table 1. List of economies that meet the selection criteria and their world weight in GDP expressed in purchasing power parity

	Economy	World GDP Weight 2017 (%)
1	Saudi Arabia	1,390
2	Iraq	0,515
3	Algeria	0,492
4	Venezuela	0,291
5	Qatar	0,265
6	Kuwait	0,230
7	Angola	0,155
8	Oman	0,150
9	Belarus	0,140
10	Sudan	0,139
11	Azerbaijan	0,136
12	Tanzania	0,128
13	Turkmenistan	0,081
14	Ivory Coast	0,076
15	Jordan	0,070
16	Cameroon	0,070
17	Lebanon	0,068
18	Democratic Republic of Congo	0,057
19	Bahrain	0,056
20	Macau	0,056
21	Afghanistan	0,054
22	Libya	0,048
23	Senegal	0,043
24	Laos	0,039
25	Trinidad and Tobago	0,034
26	Mali	0,032
27	Botswana	0,031
28	Georgia	0,031
29	Mongolia	0,031
30	Zimbabwe	0,031
31	Gabon	0,029
32	Mozambique	0,029
33	Burkina Faso	0,028
34	Benin	0,027
35	Brunei	0,026
36	Papua New Guinea	0,025
37	Equatorial Guinea	0,024
38	Chad	0,023
39	Republic of Congo	0,023
40	Guinea	0,022
41	Mauritania	0,022
42	Tajikistan	0,022

	Economy	World GDP Weight 2017 (%)
43	Niger	0,020
44	Rwanda	0,019
45	Kyrgyzstan	0,018
46	Togo	0,010
47	Montenegro	0,009
48	Sierra Leone	0,009
49	Fiji	0,008
50	Surinam	0,007
51	Bhutan	0,006
52	Maldives	0,006
53	Burundi	0,006
54	Lesotho	0,005
55	Liberia	0,005
56	East Timor	0,005
57	Barbados	0,004
58	Djibouti	0,004
59	Eritrea	0,004
60	Gambia	0,004
61	Central African Republic	0,003
62	Cape Verde	0,003
63	Belize	0,002
64	Comoros	0,002
65	Guinea-Bisau	0,002
66	Seychelles	0,002
67	Samoa	0,001
68	Sao Tome and Prīncipe	0,001
69	Solomon Islands	0,001
70	Kiribati	no data
71	Marshall Islands	no data
72	Micronesia	no data
73	Nauru	no data
74	Palau	no data
75	Tuvalu	no data
	Total	5,405

Source: Own elaboration based on data from the World Economic Outlook of the International Monetary Fund.
Note: Shaded economies are included in the European Parliament's list of tax havens (Remeur, 2018).

Tabla 2. Complete list of economies to analyze

	Economy	Available sample period	Available years
1	Albania	1997-2016	20
2	Germany	1991-2017	27
3	Antigua and Barbuda	2014-2016	3
4	Argentina	1993-2017	25
5	Armenia	2005-2016	12
6	Australia	1988-2016	29
7	Austria	1988-2016	29
8	Bangladesh	1980-2016	37
9	Belgium	1980-2016	37
10	Bolivia	1981-2016	36
11	Bosnia and Herzegovina	1998-2016	19
12	Brasil	1996-2017	22
13	Bulgaria	1998-2016	19
14	Cambodia	1996-2016	21
15	Canada	1980-2016	37
16	Chile	1990-2016	27
17	China	1997-2017	21
18	Cyprus	1995-2016	22
19	Colombia	1982-2017	36
20	Korea	1995-2017	23
21	Costa Rica	1990-2016	27
22	Croatia	1992-2016	25
23	Denmark	1980-2016	37
24	Dominica	2014-2015	2
25	Ecuador	1995-2016	22
26	Egypt	1999-2017	19
27	El Salvador	1990-2016	27
28	Arab Emirates	1991-2016	26
29	Slovakia	1995-2017	23
30	Slovenia	1995-2017	23
31	Spain	1980-2016	37
32	United States	2001-2016	16
33	Estonia	1995-2016	22
34	Ethiopia	1980-2016	37
35	Philippines	1989-2016	28
36	Finland	1980-2016	37
37	France	1980-2016	37
38	Ghana	1980-2016	37
39	Granada	1014-2016	3
40	Greece	1980-2016	37
41	Guatemala	1995-2016	22
42	Guyana	1997-2016	20
43	Haiti	1997-2017	21
44	Honduras	1990-2015	26
45	Hong Kong	1981-2016	36

	Economy	Available sample period	Available years
46	Hungary	1995-2016	22
47	India	1988-2017	30
48	Indonesia	1993-2016	24
49	Iran	1990-2017	28
50	Ireland	1995-2016	22
51	Iceland	1980-2016	37
52	Israel	2000-2017	18
53	Italy	1988-2016	29
54	Jamaica	1990-2016	27
55	Japan	1980-2016	37
56	Kazakhstan	2002-2016	15
57	Kenya	1982-2016	35
58	Kosovo	2000-2016	17
59	Latvia	1998-2017	20
60	Lithuania	1995-2016	22
61	Luxembourg	1995-2016	22
62	Macedonia	1997-2017	21
63	Madagascar	1980-2015	36
64	Malaysia	1990-2016	27
65	Malawi	2002-2011	10
66	Malta	2000-2016	17
67	Morocco	1990-2016	27
68	Mauricio	2000-2016	17
69	Mexico	1990-2016	27
70	Moldova	1995-2016	22
71	Myanmar	1998-2017	20
72	Namibia	1990-2015	26
73	Nepal	2000-2016	17
74	Nicaragua	2000-2016	17
75	Nigeria	1990-2016	27
76	Norway	1980-2016	37
77	New Zealand	1985-2017	33
78	Netherlands	1980-2016	37
79	Pakistan	1993-2016	24
80	Panama	1994-2016	23
81	Paraguay	1980-2016	37
82	Peru	2000-2017	18
83	Poland	1995-2016	22
84	Portugal	1986-2016	31
85	Puerto Rico	-	0
86	United Kingdom	1980-2017	38
87	Czech republic	1995-2016	22
88	Dominican Republic	1997-2016	20
89	Romania	1990-2016	27
90	Russia	1998-2017	20
91	S. Kitts and Nevis	2014-2016	3
92	San Marino	-	0

	Economy	Available sample period	Available years
93	St. Vincent and the Granadines	2014-2016	3
94	St. Lucía	2014-2016	3
95	Serbia	2000-2016	17
96	Singapur	1990-2017	28
97	Syria	1990-2009	20
98	Somalia	-	0
99	Sri Lanka	1990-2016	27
100	Swaziland	1980-2015	36
101	South Africa	2000-2016	17
102	South Sudan	2011-2016	6
103	Sweden	1980-2016	37
104	Switzerland	1983-2016	34
105	Thailand	1995-2017	23
106	Taiwan	1984-2016	33
107	Tonga	1999-2016	18
108	Tunisia	1991-2016	26
109	Turkey	2000-2016	17
110	Ukraine	1995-2016	22
111	Uganda	1997-2016	20
112	Uruguay	2012-2016	5
113	Uzbekistan	1992-2016	25
114	Vanuatu	1991-2015	25
115	Vietnam	1998-2015	18
116	Yemen	1990-2008	19
117	Zambia	2000-2016	17
		1980-2017	2.753

Source: Own elaboration based on data from the World Economic Outlook of the International Monetary Fund.