EHES WORKING PAPERS IN ECONOMIC HISTORY | NO. 48

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OCTOBER 2013

EHES Working Paper | No. 48 | October 2013

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Abstract

The objective of this paper is to study the financial crises that have occurred in Spain over the last 150 years. With this objective in mind, the paper has two main purposes. Firstly, we determine the number of crises that took place between 1850 and 2000 considering currency, banking and stock market crises and all their possible combinations and define their depth or severity using different indicators. Secondly, we consider potential factors that could explain the depth or intensity of the crises in Spain. According to our results, each financial crisis has its own particularities and it is very difficult to find common factors in the origin of the Spanish financial crises. Despite this, the current account is the variable most clearly associated with crisis intensity.

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The objective of this paper is to study the financial crises that have occurred in Spain over the last 150 years. With this objective in mind, the paper has two main purposes. Firstly, we determine the number of crises that took place between 1850 and 2000 considering currency, banking and stock market crises and all their possible combinations and define their depth or severity using different indicators. Secondly, we consider potential factors that could explain the depth or intensity of the crises in Spain. According to our results, each financial crisis has its own particularities and it is very difficult to find common factors in the origin of the Spanish financial crises. Despite this, the current account is the variable most clearly associated with crisis intensity.

1. Introduction

The current financial crisis has resulted in abundant literature about its causes. The most recent debate concentrates on the role of global imbalances and credit booms. The end of the twentieth century and the start of the twenty-first century were accompanied by growing global imbalances that could be the origin of the most recent

financial crises (the 1997 Asian crisis and the 2007-09 financial crisis[2]), but credit growth was also at the roots of the 2007-09 crisis[3]. Bernanke (2005) pointed out that the current account surpluses in several emerging countries could have helped to fuel the credit booms in the major advanced countries (the "excess saving" hypothesis). By contrast, Borio and Disyatat (2011) argue that the performance of the international banking system drove a process of excessive credit expansion[4]. As we will explain in the next section, this debate has also adopted a historical perspective. Nevertheless, the empirical evidence on the impact of current account imbalances and credit booms is not conclusive and the debate merits further research. While Bordo, Meissner and Stuckler (2010) and Bordo and Meissner (2011) give more support to the global imbalances hypothesis, other papers such as Jordá, Schularick and Taylor (2011), Taylor (2012a,b) and Schularick and Taylor (2012) consider that credit growth is the most important determinant of financial crises. In this paper we want to contribute to this general discussion by examining the experience of a country: Spain.

The main difference between our paper and the existing empirical literature is that the latter uses cross-country analysis, whereas we study a single country, namely Spain. The advantages of combining both temporal and spatial variations are clear and explain why researchers have concentrated on this type of study. However, a single country study has some advantages. Firstly, it enables us to incorporate information that is difficult to take into account in cross-country analyses. When we consider a large

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[2] In the years previous to the 2007 global financial crisis, there were large current account imbalances, in particular a growing U.S. current account deficit and large and increasing current account surpluses in emerging Asia.

[3] Many countries that suffered a banking crisis in 2007 and 2008 had particularly rapid credit growth during the 2003-2007 period. Credit growth was relatively strong in the US and in the euro zone, especially in Spain and Ireland.

[4] They consider that there has been a problem of "excess elasticity", defining elasticity as the degree to which the monetary and financial regimes constrain the credit creation process. They affirm that booms in credit and assets have been caused by an inadequate framework of regulation and supervision and not by a problem of "excess saving".

sample of countries the compilation of detailed and high-quality data is more difficult whereas a single country analysis allow us to use the best data available for a country. Secondly, a country-specific and time-series study avoids some of the cross-country study limitations, particularly their inability to control for the idiosyncratic characteristics of countries, such as: institutions, technology, factor endowments, etc. Thirdly, a long-term analysis for one country alone permits us to take into account the timing of the crises, the existence of common patterns in the various crises and to perform an in-depth analysis in order to test empirical hypotheses regarding the main determinants of financial crises. Moreover, this long-term study allows us to gain perspective from the different regulatory and monetary regimes in place (Bordo and Haubrich 2012). Finally, with single country studies we can also see whether the general conclusions obtained in cross country analysis hold for an individual country.

In addition to the above mentioned advantages of studying a single country, the Spanish case presents some particularities that could be very useful in order to compare financial crises in two globalisation periods. In the past globalisation period (1880-1913) Spain had a floating exchange rate which coincided with capital mobility. This combination contrasted with the general situation in most of the other countries which in this period had fixed exchange rates and capital mobility. As the current globalisation is characterised by floating exchange rates and capital mobility, Jordà, Schularick and Taylor (2011) consider that this combination (floating exchange rates and capital mobility) has no historical precedent. However, the Spanish experience allows us to compare two globalisation periods with common characteristics in terms of exchange rate regime and capital mobility. Moreover, these two periods (1880-1913 and 1973-2000) also share some similarities in terms of regulation. The period 1856-1920 is considered as the "liberal era", with a nature of liberalising regulation, and the post

Bretton Woods era (1975-2000) was a period of liberalisation and deregulation in contrast to the strong regulation of the Franco period (1945-1975). Therefore, the Spanish experience permits the comparison of two globalisation periods with a relative similar framework in terms of exchange regime, mobility of capital and financial regulatory trends.

The main conclusion we obtain is that, the factors behind each financial crisis are very singular and it is difficult to find a common thread running through these episodes of financial crises. According to our results the current account is the variable most clearly associated or linked to crisis intensity. The periods in which Spain suffered more intense financial crises (1850-1913 and 1973-2000) coincided with strong current account imbalances whereas in the period with lower financial crisis intensity (1914-1935) Spain had a favourable current account balance. By contrast, credit growth does not seem to be related with crisis intensity.

The paper is structured as follows. Section 2 discusses our conceptual framework and exposes the recent debate about the impact of current account imbalances and credit growth on financial crises. In this section, using economic theory and the empirical literature, we select a set of variables that may be related to crisis severity. In Section 3 we analyse Spanish financial crises, we determine the number of crises that took place between 1850 and 2000 considering currency, banking and stock market crises, as well as their possible combinations and define their depth or severity using different indicators. We also provide a historical narrative of Spanish financial crises in the two globalisation periods in order to disentangle the main factors that caused financial crises. In Section 4 we investigate the relationship between the different indicators of crisis intensity and our selected set of variables and we present the main empirical results. Section 5 summarizes the main conclusions of our paper.

2. Determinants of the severity of crises

In the absence of a comprehensive theory or model about how financial crises are caused, we revise the main explanations or theories suggested by the literature and the empirical results obtained. As Meissner and Bordo (2006) highlight: "the theory is too abstract to deal with the messy reality of historical crisis episodes". The main objective of this summary is to clarify the key factors in theory that could be involved in a financial crisis and to determine whether any patterns can be typically associated with the most important crises in a country and in the long term.

As we consider different types of crises, we expect that different forces or factors were in the roots of each sort of crisis. If this is true, an important question is whether in a long term analysis that considers all financial crises together (currency, banking, stock market and any combination thereof) it would be possible to find a common thread running through all of these episodes. In general, banking crises are more closely related to the inherent characteristics of the financial institutions[5]. In this sense, it would be expected that banking crises would be related with a wrong evaluation of risks, problems of risk concentration, credit booms or bad banking practices. By contrast, currency crises are more correlated with the exchange rate regime and current account disequilibriums. However, the third-generation models connect models of banking crises with traditional models of currency crises (Kaminsky and Reinhart 1999, Krugman 1999, Chang and Velasco 2001 or Goldstein and Razin 2012). Kaminsky and Reinhart (1999), using a wide sample of developed and non-developed countries showed a pattern of crisis transmission from banking to currency

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[5] The "inherent instability of banking" approach (Bordo 1998), mainly developed in Diamond and Dybvig (1983), link financial crises to some characteristics inherent to the financial system which made them more vulnerable than other sectors such as the fact that financial intermediaries are illiquid because they take relatively short-term deposit liabilities and give longer-term loan assets or the existence of asymmetric information between financial intermediaries and customers.

crises. Macroeconomic problems would be expected to be in the roots of not only banking crises but also in the origin of currency problems. Although banking crises precede currency crises, currency problems deepen banking difficulties and a vicious spiral between both types of crises is activated. One of the objectives of this paper is, therefore, to test if there are common explanatory factors for the banking and currency crises.

Most financial crises have been preceded by a worsening in the macroeconomic environment. Internal and external macroeconomic factors can increase volatility and, consequently, the shock undermines the viability of the financial system which increases the probability of a financial crisis happening (Gavin and Hausmann 1998). There are many possible macroeconomic shocks that can affect financial system vulnerability, such as an increase in the public deficit[6], a sharp decline in terms of trade or other possible economic disturbances (an oil shock, a productivity shock, etc….).. The list of empirical studies that incorporate macroeconomic variables into the analysis of financial crises is extensive[7]. However, the recent debate concentrates in two specific problems: a) the role of external macroeconomic instability or global imbalances and b) the influence of credit booms.

How can current account imbalances generate financial instability? Firstly, a current account deficit could reflect a problem of competitiveness in the economy. Secondly, it could show that the country is "over indebted", in the sense that consumption and investment are beyond the national savings. Thirdly, it could be the result of the country attracting foreign investment from the rest of the world. In this case, empirical analyses suggest that sudden stops or reversals in capital inflows are

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[6] Fiscal shocks destabilize the financial system by increasing interest rates. This increase in interest rates affects lending conditions, risk and consequently investment and also inflation.

[7] See, for example, Dermiguc-Kunt and Detragiache (1997), Hardly and Pazarbasioglu (1998), Eichengreen and Arteta (2000), Gavin and Haussmann (1998), Rose and Spiegel (2009), Lane and Milesi-Ferreti (2010) or Aiginger (2011).

more likely when the capital account is liberalised or a country receives large capital inflows. Bordo, Meissner, and Stuckler (2010) and Bordo and Meissner (2011), using a set of 19 countries for the first wave of globalisation (1880-1913) and 49 countries for the second wave (1973-2003), obtained that capital inflows were a robust determinant of financial crises (currency and debt crises) in both globalisation periods. In these papers they estimate the influence of foreign debt on financial crisis probability and also its impact on per capita growth. They use the lagged level of the ratio of net capital inflows to GDP measured as the negative of the change in the ratio of net international investment debt position to GDP and the ratio of hard currency government debt outstanding to total government debt or the within country average ratio of foreign currency debt to total debt issued on international markets (the so called *original sin*). The main conclusion they obtain is that both hard currency debts and capital inflows are associated with crises. These results are in line with Obstfeld (2012a,b) who considers that current account imbalances can signal macroeconomic and financial stresses.

The rival model regarding financial crisis determinants concentrates on credit booms. In periods of stable and increasing economic growth, investor behaviour changes. A stable macroeconomic environment alters risk perception and encourages speculation. Investment is debt-financed and the process continues until a general state of "over indebtedness" is reached (Bordo 1998). As shown by Kindleberger and Aliber (2005), the generation of bubbles requires an expansion in credit to feed purchases of speculative assets. The supply of credit is, then, pro-cyclical: it increases in expansive phases of the cycle and contracts during recessive phases. Jordá, Schularick, and Taylor (2011), Taylor (2012a,b) and Schularick and Taylor (2012) consider that over the long run abnormally high credit growth is a better predictor of a banking crisis than large rises in current account deficits. Using a sample of 14 countries between 1870 and

2008, they test the predictive power of credit growth (considering the growth in the ratio of credit to GDP and the real credit growth) and current account imbalances (using the ratio of current account to GDP) and obtain that domestic forces, in particular credit growth, is a more accurate determinant of financial crises probability than external factors, in this case, current account imbalances (Jordá, Schularick, and Taylor 2011).

The Jordá, Schularick, and Taylor's (2011) results are in line with other papers. Eichengreen and Mitchener (2003) studied the credit boom preceding the Great Depression and Borio and Drehman (2009), Honohan (1997), Joyce (2011) and Kaminsky and Reinhart (1999) have found that expansion in private bank credit relative to GDP is a significant predictor of banking crises. Eichengreen and Arteta (2002) and Tornell and Westerman (2005) show that domestic credit booms are strongly associated with banking crises only in emerging countries and Sachs, Tornell and Velasco (1996) also used the increase in bank lending as a determinant of financial crises in 20 emerging countries in the second half of the 1990s.

The recent paper of Meissner (2013), using a database of 28 countries, has also tested the two hypotheses (credit booms versus capital inflows) as main determinants of financial crises. The main conclusion he obtains is that credit booms do not seem to affect the likelihood of having a financial crisis whereas capital inflows (with limited evidence) were associated with a higher probability of a crisis.

Taking into account this empirical framework, the first objective of this paper is to test the influence of current account imbalances and credit growth in Spain from 1850 to 2000. But the analysis of global imbalances must involve a more general debate about the links between globalisation and financial crises. The works of Krugman (1998), Radelet and Sachs (1998), Stiglitz (2000, 2002) or Obstfeld (1998), among others, focused on how globalisation creates instability and fragility, especially in

emerging countries. DeLong, Cooper and Friedman (1999), Bordo, Eichengreen and Kim (1999), Bordo, Eichengreen, Klingebiel and Martinez-Peira (2001), Goodhart and DeLargy (1999) and more recently Joyce (2011) also analysed the relationship between globalisation and greater vulnerability of financial markets. International financial markets are imperfect and globalisation can accentuate these imperfections by means of new financial instruments and lack of international regulation, among other factors, and these risks are especially high in less developed countries (Mishkin, 2007).

The influence of globalisation is related to the mobility of financial capital and the exchange rate regime. Many papers have focused on the risks of capital liberalisation since the 1990s and the increase in financial market vulnerability it causes (Stiglitz 1994, Obstfeld 1998). However, the analysis for a long period (1870-1997) by Bordo et al (2001) showed that the frequency of crises in the two periods of globalisation (1850-1913 and 1973-2000) was different and that, consequently, globalisation did not seem to be a determinant of how frequently a crisis is suffered. In any case, they obtained that banking crises were less frequent but currency crises were more frequent in the presence of capital controls. For Spain, according to Betrán, Martín-Aceña and Pons (2011), the globalisation of capital does not seem to be a determinant of crisis frequency. If we compare the two periods with unrestricted capital mobility (1850-1913 and 1973-2000), we observe relatively high crisis frequency (11.1 and 14.8 respectively). However the two periods with capital controls (1919-1935 and 1945-1972) witnessed very different frequency rates. In fact, they registered the highest and lowest frequency, respectively. In terms of severity, however, the two globalisation periods had the higher average crisis depth (Betrán, Martín Aceña and Pons 2012).

Another interesting point is the possible relationship between the exchange rate regime and financial crises (mainly currency but also banking crises). Unfortunately,

little consensus exists in both the theoretical and empirical literature (Angkinand and Willet 2006). Eichengreen and Rose (2000) and Demac and Martínez Pería (2003) included the exchange rate among the determinants of banking crises in the last decades of the 20th century. With a more long-term view, Bordo et al (2001) also incorporate the exchange rate. For example, Eicheegreen (1996) considers that the gold standard constrained economic policies and caused the imbalances that were behind the Great Depression and its propagation. As such, countries outside the gold standard were better placed in terms of macro-contraction, a situation he referred to as "golden fetters".

If we combine the mobility of financial capital and the exchange rate regime, in the first globalisation period there was mobility of capital and fixed exchange rates. As previously mentioned, Jordá, Schularick, and Taylor (2011) consider that there is no historical precedent to the current global economic order that combines floating exchange rates with capital mobility. However, as explained above, there is a historical precedent: Spain. Spain had a floating exchange rate from 1850 to 1913, a (dirty) floating rate from 1919 to 1939 and a fixed exchange rate in the period 1945-1975, with flexible exchange rates in the last part of the period (1975-2000).

Finally, when we consider the interactions between credit growth and current account imbalances with other variables, results could change. For this reason, in our estimates we are going to consider the influence of other variables that could be related with crisis severity. The first one is the pre-crisis GDP growth. Very high rates of growth can create tensions in terms of inflation, in the current account, etc. However, very low growth can also generate financial tensions. There are at least two international crises where the links between the previous growth of the economy and the occurrence of a financial crisis have been studied: the 1929 crisis and the 1997 Asian crisis. In the years prior to the 1929 crash, especially between 1926 and 1928, there was an economic

boom in countries such as the US, Australia and Canada (Kindlerberger 1973). When analysing the 1997 Asian crisis, some authors also insist on the very fast growth experienced by most countries for a prolonged time prior to the crisis and try to find possible links between the Asian growth and the occurrence of the financial crisis (Saxena and Wong 2002). In both cases the idea is that under certain conditions rapid growth can lead to a misallocation of resources, creating tension and increasing economic vulnerability. As Aiginger (2011) mentions, pre-crisis growth in real GDP could be a proxy for the consequences of asset bubbles, so credit growth and GDP growth in the run-up period might be correlated. However, the empirical results regarding the impact of pre-crisis growth in the case of the most recent crises are not conclusive. In order to analyse the banking crises in the 1980s and 1990s, Demirgüc-Kunt and Detragiache (1998) only included the rate of growth of real GDP lagged one year and the variable was not significant. Aiginger (2009, 2011) obtained that growth during the crisis is negatively correlated to pre-crisis growth, the variable being significant at the 10% level.

In addition to the pre-crisis GDP growth, we are going to consider the influence of other variables that could be related with crisis severity and that are summarised in the Data Appendix. In particular, we consider the following. Firstly, although in this paper we have not considered the public debt crises, we have included variables related to public sector disequilibriums as determinants of financial crises. The problems of short term borrowing and external debt were very important in Spain, particularly in the nineteenth century, when Spain suffered some debt defaults (1812-1813, 1814, 1823, 1828, 1836-45, 1871, 1876) and some debt restructuring (1817, 1825, 1834, 1841, 1844, 1851, 1867, 1881, 1900) (Comín 2012). The main origin of the Spanish debt crises were large budget deficits. According to Reinhart and Rogoff (2009) public debt becomes

unsustainable when the public debt to GDP levels exceeded 90 per cent for at least five years. Secondly, we consider inflation. As Demirguc-Kunt and Detragiache (1998) indicate, inflation may be a proxy of macroeconomic mismanagement and may also have an effect on flexibility when it comes to adjusting to the crisis. Thirdly, with regard to the characteristics of the financial sector, specifically, we include several indicators of the level of development of the financial system such as a measure of monetary development (narrow money to GDP), financial sector development (the ratio of financial institution assets to GDP) and stock market liquidity (the total transacted amount on the stock market to the capital of joint-stock companies). Fourthly, with respect to the regulatory framework, we determine whether or not changes in regulatory framework would have affected the financial crises. Finally, we consider external factors, namely, whether the financial sector is susceptible to shocks and to contagion from other financial centres.

3. Spanish crises, 1850-2000

A chronology of Spanish crises

In this section we establish a chronology of Spanish financial crises and define a measure of severity or crisis intensity. We consider different types of crises, namely currency, banking and stock market crises and their possible combinations. In this section we summarise the main results obtained in Betrán, Martín-Aceña and Pons (2012), which provide a detailed explanation of definitions, data procedures and sources. We have detected nine currency crises: 1883[8], 1899, 1930[9], 1943, 1958, 1974-

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[8] A significant banking crisis occurred in 1882, but for practical purposes it will be considered a twin crisis (currency and banking crisis).
[9] As in the 1883 crisis, the crisis in 1931 will also be treated as a twin crisis (currency and banking) for practical purposes, as there was also a banking crisis that year.

75[10], 1982, 1991 and 1995. Using both quantitative and qualitative information, eight banking crises are considered to have occurred during the sample period: 1866, 1881-1882, 1890, 1913-1914, 1920-1921, 1924-1925, 1931 and 1976-1977. Finally, a total of 14 stock market crashes were identified between 1850 and 2000.

In addition to currency, banking and stock market crises, we also consider "twin 1" crises (a combination of currency and banking crises), "twin 2" crises (defined as a combination of banking and stock market crises) and "twin 3" crises (a combination of currency and stock market crises). We also define a "triple crisis" as an unfortunate event that involves the simultaneous occurrence of a currency, banking and stock market shock. The sample period has been divided into four sub-periods: 1850-1913, 1914-1936, 1940-71 and 1973-2000. Twin 2 crises only occurred in the first two periods (1850-1913 and 1913-1936). In contrast, twin 3 crises were only detected in the post 1940 period. However, with the exception of the period dating from 1940 to 1971, triple crises have occurred in the rest of the sub-periods considered.

In summary, as we can see in Table 1, Spain suffered 18 financial crises over the period 1850-2000, including one banking crisis, four currency crises, four stock market crises, four twin 2 (banking and stock market) crises, two twin 3 (currency and stock market) crises and three triple (banking, currency and stock market) crises. The analysis of crisis frequency shows that financial crises seem to have been more frequent in Spain than in the world sample studied by Bordo et al (2001) with an average duration of 2-4 years, which is a slightly longer period than the international record of 2-3 years (Betrán, Martín Aceña and Pons 2012). Banking, stock market crises and their combinations were more frequent in the first two periods (1850-1913 and 1919-1935),

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[10] Although the EMP identifies a currency crisis in 1974-75, Bordo et al (2001) and the Spanish literature consider that there was a currency crisis between 1976 and 1977 together with a banking crisis, for which reason 1976 will be considered a twin crisis.

while currency crises and their combinations were more common in the second two periods (1945-1972 and 1973-2000). Finally, in Spain the periods with the highest frequency of financial crises coincided with international distress.

The main singularity of the Spanish case took place in the post-1973 period, when crises have not only lasted longer, but have also been more severe. This result is in sharp contrast with the conclusions reached by Bordo et al (2001), for whom crises have grown more frequent but not more severe since 1973. Moreover, some of the most severe crises (1976, 1882 and 1931) were combinations of different types of crises; in fact they were triple crises and consequently, this result is in line with Kaminsky and Reinhart (1999), who maintain that when currency and banking crises have occurred jointly, their impact on economic activity has been greater than when they have taken place separately.

The severity of different types of crises

Most of the financial literature uses a function of GDP growth as a measure of crisis intensity. In general, the depth or severity of a crisis is considered as the cumulative loss of output, namely output loss, estimated by summing the differences between trend growth and output growth after the crisis until the time when annual output growth has returned to its trend. Recovery time after a crisis is defined as the number of years until GDP growth recovers its pre-crisis trend. By definition, minimum recovery time is one year.

Quantifying the length and depth of a crisis is not a simple task, as it requires defining the pre-crisis period for comparison, and this can be controversial (three, five or more years of normal growth). The IMF uses the GDP growth rate for the three years preceding a crisis, while Bordo et al (2001) computes the GDP growth rate over the five years leading up to the event. However, as considering three or five years to determine

the pre-crisis trend is an ad-hoc solution and, moreover, the years prior to a financial crisis could be characterised by an expansion or extra growth that could amplify the severity a crisis, this paper takes a different approach. The growth trend considered here derives directly from the different phases of growth defined by Prados (2003). In his paper entitled *"El progreso económico de España"* (Spain's Economic Progress in English), he estimated average growth rates for periods delimited by two peak years. This alternative was chosen because the three or five-year average growth rate for Spain was not sufficiently representative of the long-term growth trend. In this case, potential growth is better captured by the growth rate over a full phase, as defined by Prados (2003). We then use the average growth over the phase previous to the crisis as an indicator of potential growth.

Some recent papers have used other indicators to measure the severity of a crisis. While most of them are based on real GDP growth, Barro and Ursua (2008), Lane and Milesi-Ferreti (2010) and Rose and Spiegel (2011) have also used growth in consumption, which could hold a closer relationship with the level of wellbeing. In this paper we are going to use different measures of crisis intensity based on real GDP growth and consumption growth. Table 2 presents crisis severity according to the different indicators used. Section 4 provides a more detailed explanation of the different indicators of crisis severity. Using output loss as a measure of crisis intensity, the period 1973-2000 was the worst, in contrast to the results obtained by Bordo et al (2001) for a wide sample of countries. The pre-crisis growth trend took double the time to recover than in any of the other three periods and the post-1973 crises were also more severe, with a cumulative GDP loss as high as 25.97 per cent. The ranking (in brackets) of crises in terms of the largest output loss is as follows: 1866 (5), 1882 (3), 1931 (4), 1976 (1) and 1982 (2), triple crises being recorded in 1882, 1931 and 1976.

The narrative of the crises in two globalisation periods: 1880-1914 and 1973-2000

The two periods with a higher average crisis depth (in terms of cumulative GDP loss %) are the two globalisation periods, 1880-1913 and 1973-2000 with an output loss of 8.04 % and 14.33 % respectively. By contrast, the periods 1919-1935 and 1945-1972 had lower output losses of 4.12% and 5.85%, respectively (Betrán, Martín Aceña and Pons 2012). As mentioned before, the comparison of the 1850-1913 and 1973-2000 periods in the Spanish case has special interest because in both periods Spain was characterised by a floating exchange rate regime (Spain never adopted the gold standard) and the absence of capital controls. Even in terms of regulation the comparison makes sense because the period 1856-1920 is considered as the "liberal era", with a lack of regulation in the financial system whereas the post Bretton Woods era (1975-2000) was a period of liberalisation and deregulation in relation to the strong regulation of the Franco period (1945-1975)[11]. For this reason, we analyse whether in two periods with a relative similar framework in terms of exchange regime, mobility of capital and even financial regulatory trends, it is possible to find common origins of the financial crises.

1880-1913

Although the globalisation period started in the 1880s, from the 1850s Spain, as other South European countries, received a huge flow of foreign capital that was mainly channelled into the railways industry. As Prados (2010a) indicates, between 1850 and 1890, foreign capital financed one-fifth of domestic investment and these high levels of foreign net capital inflows helped to finance current account deficits and complemented domestic savings. As we will see in the narrative of the crises, these huge capital

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[11] The liberalisation trends in these two periods were responding to very different motives. The 1856-1920 liberal regulation was linked to the liberal ideology of the period but also to the need to promote the development of the Spanish financial system. By contrast, the liberalization liberalisation measures adopted from the end of the 1960s tried to increase competition in a very regulated and non-competitive financial sector.

inflows fuelled speculative booms (mainly in the railways sector), and when the situation changed (due to an external or an internal shock) a sudden stop or reversal of capital inflows took place, slowing down economic growth (Prados 2010a) and increasing the probability of a financial crisis.

In the second part of the nineteenth century and prior to the globalisation period there were two crises: 1866 and 1874. The 1866 was a "twin 2" crisis (banking and stock market) and its origin was a stock market bubble linked to the construction of the railways. These companies were promoted by banks and credit societies founded after the banking laws approved in 1856 and the bubble expanded thanks to rapid entries of foreign capital from 1857 to 1860 and from 1862 to 1863. By contrast, there was not a credit boom because real credit growth decreased sharply from 1857 to 1860, with a smooth recovery in the years 1861-1865 (see Figure 1). In 1863 there was a sudden stop due to the significant fall in railway (Prados 2010a). At the beginning of 1864, when most railway firms ran into heavy losses, there was a stock market crash and the stocks of the main railway companies plummeted in the Paris Bourse, followed by mining equity prices and government debt prices. With large portfolios of railways shares, bonds and government debt, the balance sheets of banks deteriorated sharply and many of them suffered substantial losses. In 1866 the banking crisis erupted, first in Madrid and Barcelona, and later on spreading to the rest of the country.

Finally, as shown in Figure 3, the ratio of public debt to GDP was above 60 per cent in the years previous to the crisis but it reached unsustainable levels of more than 133 per cent in the post-crisis years (1867 and 1868). To summarise, in the 1866 crisis we observe the coincidence of different explosive ingredients: current account deficits (Figure 2), an inflow of foreign capital (that fuelled the speculative bubble) followed by a sudden stop and increasing public deficits.

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The 1874 crisis was solely a stock market crisis that erupted only a year after the international crisis of 1873. This international panic was predominantly linked to three factors: huge speculative investments (especially in railroads), large trade deficits and the difficulties associated with the Franco-Prussian War (1870-1871). In Spain the crash was mainly related to the huge amount of outstanding public debt. Public debt increased enormously from 46% of GDP in 1860 to 126.2% in 1875. The international crisis increased Spain´s difficulty in obtaining credit in the foreign markets and 1874 was the first year in which Spain recorded a deficit in foreign capital inflows (Prados 2010a). Consequently, the 1874 stock market crash was mainly associated with a public debt increase and current account deterioration.

During the globalisation period there were two crises with high output losses (1882 and 1892) and two minor crises in 1899 and 1905. The 1882 crisis was a triple crisis (stock market, banking and currency) which started with a stock market crash linked to the so-called "febre d´or" (gold fever) that first erupted in Barcelona and later, in Madrid. The "febre d´or" was a market bubble that affected all stocks in the Barcelona Bourse (and later on in Madrid) and that unfolded in parallel with a construction boom in Southeastern Europe. As shown in Figure 1, this boom was fuelled not only by a domestic credit expansion (especially from 1877 to 1881) but also by foreign investment; although the net capital entries were clearly below those of the 1860s, they did reach high levels in certain years, 1876 specifically. The market bubble was also accompanied by a banking expansion -in 1881 seventeen new banks were established in Spain and only one year later, in 1882 25 more were opened.

The crash started in the Paris stock market in January 1882 but the contagion soon spread to the Barcelona and Madrid Bourse, mainly affecting railways securities, but also to a lesser extent banking, other industrial securities and finally, public debt.

The stock market crash provoked a banking crisis (because Spanish banks had large industrial portfolios) and between 1882 and 1884 twenty banks disappeared, most of them from Barcelona.

Even before the stock market crash of 1882, there was a fall in foreign investment with a strong sudden stop in 1880 (Prados 2010a). When the international crisis erupted, interest rates rose and foreign investment halted. The main result was a balance of payment disequilibrium. The financial difficulties in Paris interrupted the flows of capital into the Spanish economy and generated an acute current account crisis. The problems were accentuated when, in 1881, the government decreed a massive conversion of public debt (the Camacho restructuring) as a consequence of the huge level of the ratio of public debt to GDP, which achieved a maximum of 171.73% in 1879 (Figure 3). Public debt was divided into national and foreign debt, only the last of which being paid in gold in order to guarantee the payment in gold to foreign bondholders. The consequence of this measure was a massive capital flight. Gold flowed out and the Bank of Spain, which facing large reserve losses, was forced to temporarily suspend gold convertibility. However, since convertibility was never resumed, Spain remained off the gold standard and detached from the international monetary system throughout the period (Martín-Aceña 1994).

The crash of 1890-1892 was associated with the international crisis produced by the payment suspension of the Argentine Republic and its repercussions for the Baring Brother finance house, and on the London financial market. As Tedde and Anes (1974) have argued, the immediate consequences of the Baring crisis produced a fall in Spanish stock prices on the Paris Bourse. They also fell on the Madrid Stock Exchange. Particularly hard hit were the shares in railway, mining and financial companies. In the banking sector, there were not as many failures as in the previous crash (only two banks

closed) but the overall financial structure was damaged and it did not recover until the turn of the century. In the years leading up to the crisis (1880-1890) there were current account disequilibriums and the international crisis also produced a retrenchment of foreign capital from 1890 and net capital inflows were negative from 1891 to 1898. The public debt ratio, reduced as a consequence of the 1881/82 rescheduling, experienced a substantial increase from 1888 to the beginning of the twentieth century (Figure 3).

The two minor crises of 1899 and 1905 were a currency and a stock market crisis respectively. In contrast to previous crises, in the years prior to the 1899 crisis the current account experienced significant surpluses (Figure 2) but the financial crisis was linked to the high costs of the Cuba, Puerto Rico and Philippines wars and their financing problems. The over-indebtedness difficulties prompted the government take two measures. Firstly, in May 1898 it declared the *affidavit,* which implied that only foreign bondholders would be guaranteed to receive their interest payments in gold, whereas Spanish bondholders would be paid in current pesetas or would have the possibility of converting external securities into domestic debt. Later on, in 1900 it restructured the debt (the Fernández Villaverde restructuring). Finally, the 1905 stock market crisis was linked to investor euphoria in the years 1902-1903 due to the influx of capital from the America ex-colonies. Between 1899 and 1904 Spain experienced strong current account disequilibriums (Figure 2). The bubble burst in 1905 and was followed by a sudden stop in capital influx, although the global impact of this crisis was relatively limited.

As we have seen, the nineteenth century Spanish financial crises were characterised by the formation of bubbles, mainly fuelled by foreign capital entries (only the 1882 bubble was financed by domestic credit) and accompanied by debt crises.

Between 1973 and 2000 Spain suffered four financial crises but the most severe took place in 1976 (25.97%) and was followed by another crisis in 1982 (23.62%). The other two crises had lower intensities and took place in 1991 (6.25%) and 1995 (1.48%).

As Bordo et al (2001) point out recessions with crises are more severe than recessions without them. The 1976 crisis coincided with an economic recession. Between 1973 and 1975 oil prices doubled and the current account balance deteriorated, although Spain suffered continuous current account deficits from the mid-1940s that were accentuated in the 1960s. Growing oil prices and increasing labour costs caused high inflation and the industrial sector was severely hit as a consequence of an increase in costs in a context of decreasing demand. Technical obsolescence, lack of competitiveness, a low level of self-financing and a high dependability on credit put industrial companies in a complicated situation. In Spain the international crisis came later than to the rest of the world, as the new government formed following the death of Franco sought to smooth the impact of the oil shock through government intervention. This measure delayed firm adjustments and increased public spending and consequently the public deficit (that also increased as a consequence of other spending related to the crisis and a fall in tax revenues).

The 1976 crisis was a triple financial crisis, but it was mainly a banking one. The industrial crisis affected Spanish banks as a consequence of their large industrial portfolios and an increase in non-performing assets. 52 banks of 110, representing 20 per cent of banking system deposits, experienced solvency problems and due to its depth and the number of institutions affected this crisis has been included in the group of the so-called recent "Big Five Crises", identified by Caprio et al (2005) and Reinhart and Rogoff (2008).

To the stock market and the banking crises, a currency crisis was added. From 1974 to 1985 the exchange rate decreased from 58 pesetas/dollar to 160 pesetas/dollar. As the triple crisis (banking, stock market and currency) coincided with a recession, the impact in terms of output losses was very high (26%) and it was followed by a new currency crisis in 1982 which also had a significant impact (24%).

Finally, in 1991 a currency crisis linked to the European Monetary System crisis occurred. This crisis was related, in part, to the German reunification at the beginning of the 1990s. The large transfer of funds towards East Germany generated a huge amount of public spending that was not financed by taxes or cuts in other expenditure. The reaction to rising inflation in Germany was to increase interest rates and thanks to this Germany received large flows of capital in contrast to which the rest of the EMS countries suffered balance of payments difficulties.

Spain had inflation rates above those of their EMS counterparts since its entry into the monetary system and these high inflation rates (fuelled by an increase in private consumption, high public spending and an increase in wages) damaged competitiveness in an economy with serious productivity problems. The current account deficit was compensated by large entries of capital as a consequence of high interest rates and stability of its exchange rate. But the speculation against the peseta resulted in several devaluations and a significant fall in foreign reserves.

In the most recent globalisation period (1973-2000), it is difficult to find a common thread running across all crises. The 1976 crisis was a triple crisis which coincided with an economic regression, but the rest (1982, 1991 and 1995) were mainly currency crises. The 1982 crisis could be considered as a derivation of the 1976 crises, whereas the other two crises were the result of the difficulties of the European Monetary system. The only common factor seems to be current account imbalances (Figure 4).

To summarise, in the two globalisation periods, we observe that only current account imbalances seems to be present in all financial crises (Figure 2 and 4). Foreign capital entries followed by a sudden stop were also another common factor in most crises. Finally, public debt problems were a structural problem in Spain in the nineteenth century. By contrast, credit booms only accompanied the 1882 crisis and do not seem to be a determinant of crisis severity.

4. Crisis intensity and pre-crisis conditions: main correlations and estimations

In this section we estimate the basic regressions between different crisis severity measures and pre-crisis variables[12]. The main flaw in estimating the relationships between different competing factors and crisis severity is that we only have 18 crises, which is a limited number of observations.

We estimate the following equation by OLS:

$$Y_i = \emptyset \, X_i + \varepsilon_i$$

Y_i being the crisis manifestation variable, X_i the pre-crisis causes and ε_i the residual.

Our strategy, given the few observations we have, is to estimate the main correlations between each explanatory variable and the dependent variable, using the level of real GDP at the beginning of the crisis as a control. This control allows us to capture the differences in the level of development over the 150 years of crises considered. Secondly, we will perform a multivariate estimation with the significant variables obtained to ascertain their robustness and explanatory power when considered jointly.

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[12] The list of our core of macroeconomic and financial variables with definitions and sources is in the Appendix.

We have considered diverse measures of crisis severity or intensity. As explained above, the output loss measures the accumulative output loss of GDP in relation to its potential trend until the time when annual output growth recovers its trend. The growth trend considered is that obtained by the phases of growth defined by Prados (2003). We also have different crisis duration or recovery times, that is, the years until GDP growth returns to its pre-crisis trend. As output loss occurs during the years in which the crisis takes place, we are going to consider the average of each explanatory variable between the years of the duration of the crisis. Further crisis severity measures are a function of GDP whilst others are based on private consumption. They are also averages of the variables during the years of duration of the crisis. In particular, they are: output loss in period t, t being the year of the crisis, output loss in t+1, real GDP per capita growth in t and in t+1, and real private consumption growth in t and t+1. GDP per capita and consumption come from Prados (2003) and Barro and Úrsua (2008). These measures for the 18 crises are in Table 2 and the main statistic description is in the following Tables 3 and 4. As we can see, they are very different. The differences are because output loss measures the losses accumulated during the crisis in relation to per capita GDP and consumption growth, which are calculated annually. In the case of consumption, this could be affected by other offsetting factors in more recent times, such as unemployment relief or public transfers.

We can follow the results of the effects of credit growth and current account to GDP explanatory variables in Tables 5 and 6 respectively. By construction, the variable output loss measures the difference between actual growth and potential growth. Therefore, when it is positive (negative), there is positive (negative) economic growth or growth above (below) the trend. In the case of the rest of the dependent variables, they indicate an increase (decrease) in per capita GDP and consumption, as an average

during the crisis period. The credit growth variable is not significant in any of the measures of crisis severity[13]. Furthermore, we do not even obtain the expected negative sign for this variable. We would have expected that easy access to credit, for example by innovative financial instruments, would have allowed for overinvestment in some activities and hence, the creation of bubbles and also a misallocation of resources, which, when the cycle disappeared, would produce a reduction in growth or a crisis. However, the current account variable has the expected sign and although it is not significant, it is more greatly associated with crisis intensity. In Table 6 we can see that it is near to being significant in the case of GDP per capita growth (in t and t+1) as a dependent variable[14].

We are now going to see what happens when we add more explanatory variables to the current account/GDP, considering GDP per capita growth and output loss as dependent variables, as these were the best estimations obtained in previous regressions. Table 7 shows the main results. When we consider the inclusion of credit growth this variable continued to be not significant and there is a drop in the current account variable significance. We have also controlled for capital mobility, which is a dummy that takes the value 1 during the two periods of capital mobility, 1880-1913 and 1973-2000.

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[13] We have also tested with the variables credit/GDP and credit/GDP growth with three and 5 lags and we have obtained the same result.
[14] We have also tested with other variables which could affected crisis severity, such as different measures of extra-growth, average growth for the three and five years prior to the crisis, considering that economic growth produced an internal imbalance in the economy implying a misallocation of resources in less productive activities, and also, variables related with the modernization and development of financial system, such as financial assets /GDP, narrow money /GDP and stock market transaction related to capitalization. In general these variables were not significant. The extra-growth variable is only significant when we use consumption per capita growth in t and GDP per capita growth in t.

We have not explicitly measured debt crises but we are going to consider the influence of them on crisis severity[15]. We have added public debt/GDP and inflation as explanatory variables. Both variables are significant in the regressions with growth as a dependent variable, and increase the significance of current account/GDP, converting it in significance. Debt/GDP reduces economic growth (see regression 3), however inflation, with a different sign to that expected, increases it (see regression 4). Although the results of relevance of the variables are maintained with the output loss dependent variable, they are not significant (see regressions 5-8). The variable which maintains a higher significance is the current account balance.

We are going to check the robustness of this result. We now consider growth regressions, therefore controlling for the factors which explained economic growth, hence controlling by Investment/GDP and Human capital. The estimated regressions are:

$$\text{Growth}_t = \alpha_0 + \alpha_1 \text{ Investment/GDP}_t + \alpha_2 \text{ Human Capital}_t + \alpha_3 \text{ Crisis}_t + \alpha_4 \ln \text{GDP per capita}_0 + \alpha5 \text{ } X_{it} + \varepsilon_t$$

All the variables are average of non-overlapping five-year periods, being as a period t. Growth_t is the average annual growth of real per capita GDP, Investment/GDP_t is the average of the ratio of Gross Fixed Capital Formation to GDP, Human Capital_t is the average of an index which takes value 100 in 1850, and ln GDP per capita is at the initial year of each period. Following Bordo, Meissner and Stuckler (2010) we have included the variable Crisis which is the average years of financial crisis and it is the average of the sum of dummies in which the country experienced a crisis. X_{it} are the average of the explanatory variables considered as potential determinants of crisis

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[15] If we consider that a debt crisis is when the ratio of Public Debt to GDP is over 100, we identify the following debt crises: 1850, 1868-1882 and 1896-1909. As a consequence of these there were two important public debt reconversions in 1881 and 1900, see Comín (2012).

severity, such as current account/GDP, credit growth, public debt/GDP and inflation, and ε_t is an error term for the five-year period.

The results obtained are in Table 9 (the statistic description of the variables used is in Table 8). The variables related to growth regressions are all significant and with the expected sign as we can see in regression 1. When we add current account and Crisis variables, human capital and initial GDP per capita drop their significance. However, the significance of these variables is gained when we include two dummies of capital mobility for the periods 1880-1913 and 1973-2000 (these dummies are not significant and have a positive sign). Current account balance surplus has a positive effect on growth and financial crisis decreases growth; although they are not significant, current account has a higher significance. Crisis is not significant, but the coincidence with a financial crisis would produce a reduction in economic growth of around 0.05 or 5%. This means that if the average growth of the whole period is 1.6%, it is equivalent to a loss of around 3 years of economic growth.

Credit growth again does not have any relationship with growth. Neither Public Debt/GDP nor inflation is significant. We have also tested with Foreign Public Debt/GDP instead of Public Debt/GDP, to see whether the exposure to foreign currency (hard currency debt) had a higher effect, and we have not found any relationship. Therefore, there seems to be some evidence that current account deficit has some influence or relationship with financial crisis severity.

As we do not have current account balance data for the interwar period we cannot consider the crises at that time and this causes a flaw in our estimations. In Figure 4 we can see the evolution of current account/GDP and foreign reserves on GDP during the crisis years. There seems to be a relationship between current account balances and foreign reserves on GDP, foreign reserves increase when there is a current

account balance surplus[16]. If we use foreign reserves/GDP as a predictor of current account balances during the interwar years, we obtain that the neutrality during WWI produced an increase in foreign reserves that had to coincide with a positive current account balance during the interwar period. Even the increase in foreign reserves produced a contemporaneous debate about the possibility of joining the gold standard system in 1929 (*Dictamen sobre el patrón oro*). We have added the output loss variable in Figure 4. We have presented the variable multiplied by -1, to see it as an output loss during the years of each crisis. It seems that there is a relationship between current account deficit or foreign reserves reduction and higher output loss.

Therefore, in the debate about what factors could explain crisis severity and the potential causes of financial crises explored in the literature, we have found that current account is the variable more highly associated with crisis intensity. Meanwhile, credit growth is not related to the different measures of crisis severity we have used. Moreover, when we estimate a multivariate regression, the only variable that holds a higher significance is current account. This result is maintained when controlled for factors which explain economic growth, such as physical and human capital.

5. Conclusions

The debate about the main determinants of financial crises and crises severity, between the importance of current account imbalances and credit growth, is based on cross-country analysis, and the long run is only considered in some studies in the literature. We wanted to contribute to the debate with another perspective, with the study of a single country, Spain, which has some interesting advantages, such as data

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[16] This relationship is not strong. The substitution of current account balance for foreign reserves/GDP in the regression is not significant.

quality and common characteristics: type of economy, financial system, institutions, and so on.

Financial crises were have been very different in nature in Spain during the last 150 years. We have considered banking, currency and stock market crises and their combinations and we have not found a robust relationship between the different factors that could explain crises and crises severity. The narrative of different crises shows the difficulty of finding common factors; although the variable which seems present in all of them is current account imbalances.

Our empirical research highlights this idea: there seems to be a higher association between current account deficits and crisis severity. But we found no relationship with credit growth or other variables. The lesson we can learn from the history of one country is that current account imbalances intensify crisis severity and as such it is a variable to take into account in order to reduce crises and their impact. Consequently, and as Obstfeld (2012b) points out, the current account matters and monitoring global current accounts must be an essential objective in the policymakers' agenda.

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Table 1: Spanish financial crises, 1850-2000, all types of crises:

Number	Year	Type
1	1855	Stock Market
2	1866	Twin 2 (banking+stock market)
3	1874	Stock Market
4	1882	Triple (currency+banking+stock market)
5	1892*	Twin 2 (banking+stock market)
6	1899	Currency
7	1905	Stock Market
8	1914	Twin 2 (banking+stock market)
9	1921	Twin 2 (banking+stock market)
10	1924	Banking
11	1931	Triple (currency+banking+stock market)
12	1943	Currency
13	1948	Stock Market
14	1958	Twin 3 (currency+stock market)
15	1976	Triple (currency+banking+stock market)
16	1982	Currency
17	1991	Twin 3 (currency+stock market)
18	1995	Currency

Note: Twin 1 is a combination of currency and banking crises. Twin 2 is a combination of banking and stock market crises. Twin 3 is a combination of currency and stock market crises. Triple is a combination of currency, banking and stock market crises. * 1892 stock market crisis and 1890 banking crisis.

Table 2: Measures of crisis severity considered

Num.	Crisis Year	Output Loss t	Output Loss t+1	GDP per capita Growth t	GDP per capita Growth t +1	Consumption per capita Growth t	Consumption per capita Growth t+1
1	1855	-5.62	-8.71	-0.47	-0.59	-2.28	-2.37
2	1866	-11.28	-14.55	-2.62	-2.00	-6.21	-6.21
3	1874	-10.58	1.05	-7.34	-8.27	2.24	-1.42
4	1882	-13.52	-12.97	-0.94	-1.04	-1.29	-0.94
5	1892	-11.77	-19.00	-1.21	-2.90	-3.16	-5.03
6	1899	-0.25	0.32	1.95	3.33	1.60	-0.88
7	1905	-3.24	3.19	-1.66	-1.42	4.43	4.97
8	1914	-3.46	-0.22	-1.40	-6.87	-0.10	-7.73
9	1921	1.22	2.96	2.34	-5.77	3.29	12.35
10	1924	1.57	4.79	2.46	-0.42	4.71	7.98
11	1931	-13.04	-6.92	-1.68	0.47	-0.66	-0.46
12	1943	3.02	3.94	3.78	-5.69	3.30	6.68
13	1948	-7.97	-4.68	-0.01	-1.48	0.23	2.90
14	1958	-9.57	-9.45	1.58	1.23	-0.27	-1.64
15	1976	-25.97	-28.39	0.44	0.40	0.26	-0.43
16	1982	-23.62	-18.48	1.79	0.93	1.98	1.33
17	1991	-6.25	-5.84	0.70	0.63	0.82	0.32
18	1995	-1.48	-1.16	2.31	1.68	2.16	2.02

Source: See text

Table 3: Dependent Variable statistic description

Dependent Variables:	Obs .	Mean	Std. Dev.	Min	Max
Output Loss t (%)	18	-7.878	8.078	-25.97	3.02
Output Loss t+1 (%)	18	-6.34	9.374	-28.39	4.79
GDP per capita growth t (%)	18	0.001	2.569	-7.34	3.78
GDP per capita growth t+1 (%)	18	0.614	2.761	-6.21	4.71
Consumption growth t (%)	18	-1.543	3.196	-8.27	3.33
Consumption growth t+1 (%)	18	.635	5.021	-7.73	12.35

Source: See text and data appendix

Table 4: Independent Variable statistic description

Independent Variables:	Obs.	Mean	Std. Dev.	Min	Max
Current Account/GDP (%) (3 lags)	15	-0.597	1.883	-3.5	3.43
Real Credit Growth (5 lags)	16	0.084	0.121	-0.17	0.33
Public Debt/ GDP (%) (5 lags)	17	68.678	35.251	12.46	124.73
Inflation (%) (5 lags)	18	5.244	5.747	-2.37	15.88

Source: See text and data appendix

Table 5: The effect of credit growth on crisis severity

	Output Loss t	Output Loss t+1	GDP per capita Growth t	GDP per capita Growth t +1	Consumption per capita Growth t	Consumption per capita Growth t+1
Constant	25.186 (0.84)	32.804 (0.91)	-9.529 (-2.25)	-4.369 (-0.83)	-12.870 (-2.28)	-4.949 (-0.50)
Level of GDP	-2.155 (-1.15)	-2.497 (-1.11)	1.461** (2.08)	0.7493 (0.86)	1.851* (1.98)	0.748 (0.46)
Credit growth	7.715 (0.44)	4.481 (0.21)	6.367 (1.34)	5.800 (0.98)	4.675 (0.74)	10.621 (0.95)
Adjusted R2	-0.039	-0.053	0.238	-0.010	0.156	-0.056
Num. Usable Obs.	16	16	16	16	16	16

Note: Credit growth measured as real credit growth for the five years prior to the crisis. We have also tested with a 3-year lag and the variables Credit/GDP and Credit/GDP growth with 3 and 5-year lags. Level of GDP is ln real GDP and per capita in regressions 4, 5 and 6. * at least 10% significance level, ** at least 5% significance level.

Table 6: The effect of current account /GDP on crisis severity

	Output Loss t	Output Loss t+1	GDP per capita Growth t	GDP per capita Growth t +1	Consumption per capita Growth t	Consumption per capita Growth t+1
Constant	5.264 (0.18)	4.422 (0.31)	-11.563 (-2.65)	-9.264 (-1.96)	-11.743 (-1.92)	-9.7555 (-1.25)
Level of GDP	-0.810 (-0.45)	-0.682 (-0.31)	1.958** (2.66)	1.658* (2.07)	1.716 (1.66)	1.561 (1.18)
Current Account /GDP	1.825 (1.57)	1.991 (1.40)	0.590 (1.71)	0.675* (1.80)	-0.021 (-0.04)	0.242 (0.39)
Adjusted R2	0.115	0.057	0.284	0.197	0.088	-0.045
Num. Usable Obs.	15	15	15	15	15	15

Note: Current account /GDP measured for the 3 years prior to the crisis. We have also tested with a 5-year lag. Level of GDP is ln real GDP and per capita in regressions 4, 5 and 6. * at least 10% significance level, ** at least 5% significance level.

Table 7: Crisis severity, multivariate estimations

Dependent variable:	(1) Growth	(2) Growth	(3) Growth	(4) Growth	(5) Output Loss	(6) Output Loss	(7) Output Loss	(8) Output Loss
Explanatory variables:								
Current account /GDP	0.500 (1.53)	0.457 (1.36)	0.629* (2.05)	0.653** (2.15)	1.543 (1.18)	1.439 (1.03)	1.003 (0.84)	1.762 (1.48)
Credit growth	4.578 (1.00)	4.791 (1.03)			0.890 (0.05)	1.383 (0.07)		
Public Debt /GDP			-0.040* (-1.89)				0.111 (1.26)	
Inflation				0.244** (2.16)				-0.357 (-0.76)
Capital Mobility		-1.142 (-0.82)				-2.261 (-0.40)		
Level of GDP	2.105** (2.94)	2.156** (2.95)	0.787 (0.92)	1.070 (1.40)	-0.683 (-0.33)	-0.678 (-0.31)	1.434 (0.56)	0.251 (0.11)
Constant	-13.268 (-3.11)	-12.747 (-2.90)	-1.897 (-0.30)	-7.551 (-1.78)	2.090 (0.06)	3.643 (0.10)	-39.72 (-0.87)	-9.770 (-0.28)
Adjusted R2	0.387	0.363	0.455	0.451	-0.067	-0.178	0.107	0.279
F	3.52 (0.062)	2.71 (0.107)	4.62 (0.028)	4.84 (0.022)	0.75 (0.550)	0.55 (0.707)	1.52 (0.268)	1.42 (0.290)
Usable Obs.	13	13	14	15	13	13	14	15

Note: Dependent variables in estimations are Growth, GDP per capita growth, are Output Loss in t. The explanatory variables, current account and credit growth, are measured as is in the other tables. Public Debt/GDP and Inflation are with 5 year lags but similar results have been obtained with 3 year lags. * at least 10% significance level, ** at least 5% significance level.

Table 8: Statistic description of variables used in growth regressions, 1850-2000

Variable	Obs.	Mean	Std. Dev.	Min	Max
GDP per capita Growth	30	0.0163	0.0262	-0.06	0.07
Ln GDP per capita	30	2.829	0.703	1.953	4.304
Investment/GDP (%)	30	12.472	6.885	4.7	23.85
Human Capital Index (100=1850)	30	126.037	22.082	100.256	182.219
Average crisis	30	0.12	0.113	0	0.4
Current Account/GDP (%)	26	-0.555	1.411	-3.215	2.253
Credit Growth	26	0.077	0.072	-0.031	0.286
Public Debt/GDP (%)	30	68.277	37.056	10.259	166.921
Foreign Public Debt/GDP (%)	30	12.283	14.590	0.233	52.502
Inflation (%)	30	4.519	5.306	-1.983	17.789

Note: The GDP per capita growth is a average five year in non-overlapping 5 year periods from 1850 to 2000. Level of GDP per capita is Ln GDP per capita in first year of the five year period. The other variables are all average in the five-year period. Average years in crisis is the average of the sum of dummies for the years in which Spain has a financial crisis (see table 1).
Source: Human capital Index (per hour) estimation by Prados de la Escosura and Rosés (2010), Investment/GDP, Gross Fixed Capital Formation/GDP (Prados de la Escosura, 2003), Current Account/GDP, Credit growth, Public Debt/ GDP and inflation have the same sources as the other estimations (see data appendix).
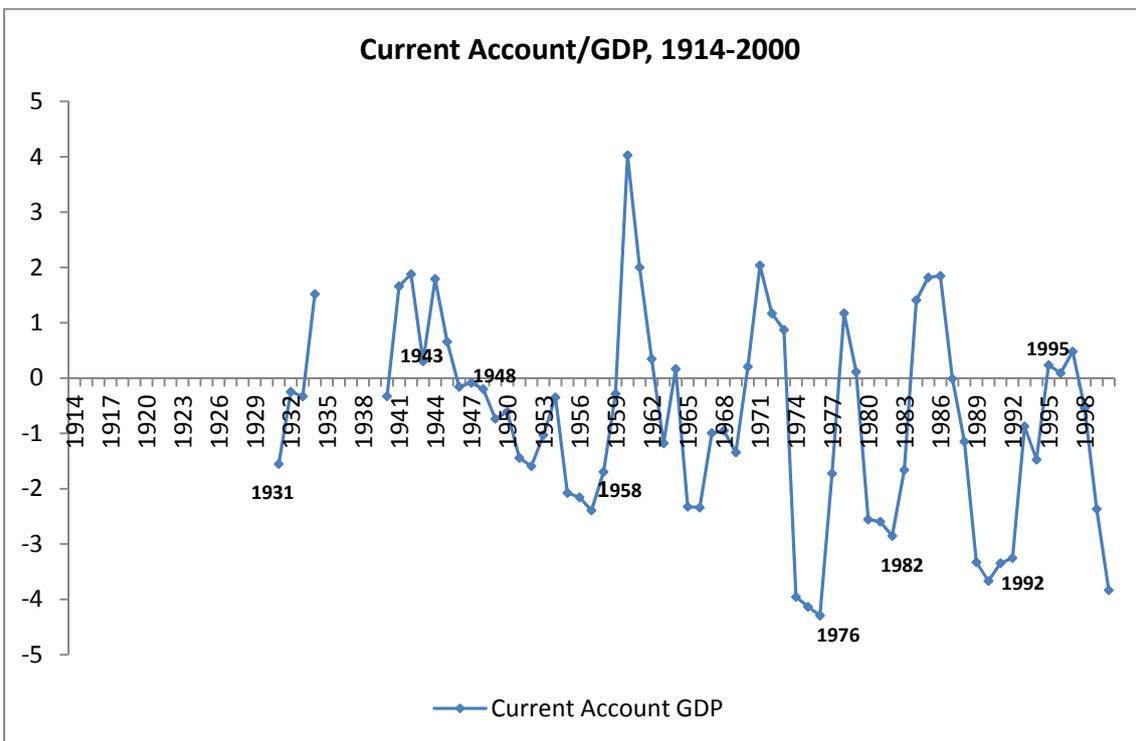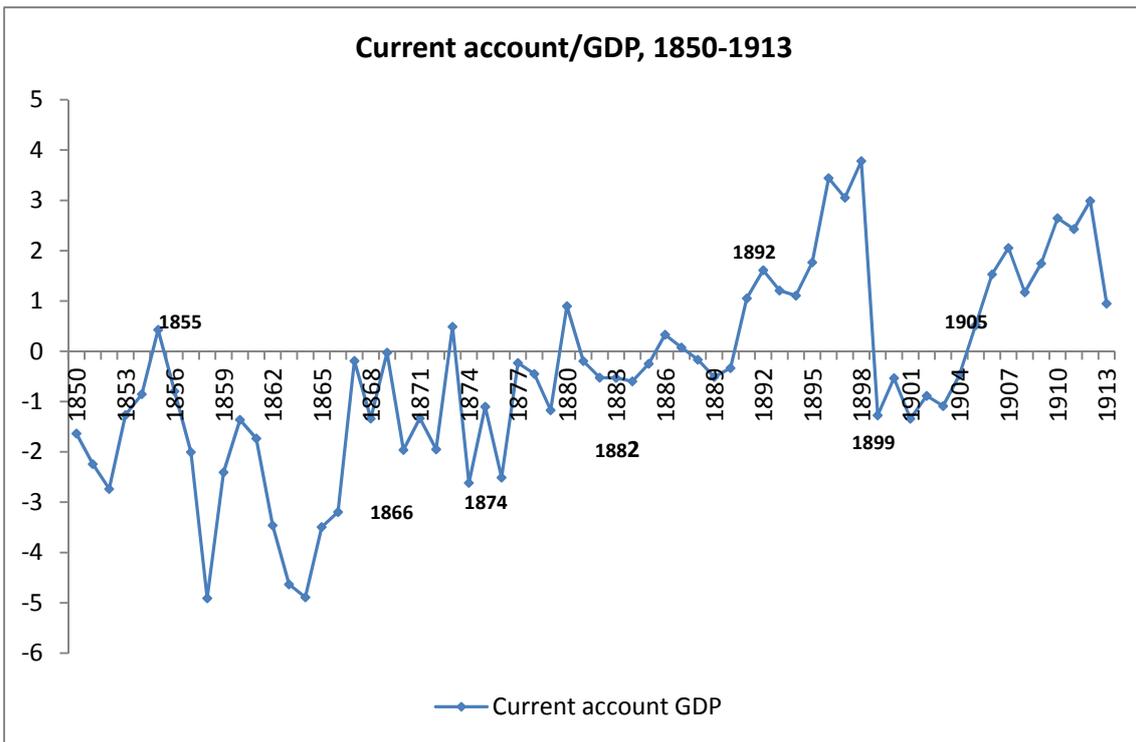
Table 9: Financial crises and Growth, 1850-2000

Dependent variable: average five year GDP per capita growth Explanatory variables:	(1)	(2)	(3)	(4)	(5)	(6)
Investment/GDP	0.005** (3.44)	0.004** (2.59)	0.005** (2.85)	0.006** (2.98)	0.006** (2.75)	0.005** (2.64)
Human capital	0.002* (1.79)	0.004 (0.96)	0.001 (1.35)	0.002 (1.36)	0.001 (1.19)	0.001 (1.30)
Average years in crisis		-0.066 (-1.62)	-0.052 (-1.27)	-0.066 (-1.47)	-0.050 (-1.19)	-0.053 (-1.24)
Current account /GDP		0.004 (1.28)	0.005 (1.60)	0.004 (1.21)	0.005 (1.62)	0.005 (1.56)
Credit growth				0.049 (0.69)		
Public Debt /GDP					0.0001 (0.55)	
Inflation						0.0001 (0.13)
Capital Mobility dummies			Yes	Yes	Yes	Yes
Level of GDP	-0.091** (-2.48)	-0.053 (-1.45)	-0.095** (-2.06)	-0.097* (-1.93)	-0.094* (-2.00)	-0.096* (-2.00)
Constant	-0.016 (--0.37)	0.007 (0.17)	0.038 (0.76)	0.004 (0.06)	0.036 (0.70)	0.037 (0.70)
Adjusted R2	0.305	0.293	0.307	0.334	0.279	0.266
F	5.25 (0.006)	3.07 (0.032)	2.58 (0.050)	2.38 (0.07)	2.21 (0.08)	2.14 (0.090)
Usable Obs.	30	26	26	23	26	26

Note: Dependent variable is average five year GDP per capita growth in non-overlapping 5 year periods from 1850 to 2000. Level of GDP per capita is Ln GDP per capita in first year of the five year period.. The other explanatory variables are all average in the five-year period. Average years in crisis is the average of the sum of dummies for the years in which Spain has a financial crisis, Current Account/GDP, Credit growth, Public Debt/GDP (we have also tested with Foreign Public Debt and the coefficient is positive and significant) and inflation are the same variables as the other estimations, dummy Glob 1 Glob 2 and takes the value 1 when it is a period of capital globalisation, 1880-1913 and 1973-2000. * at least 10% significance level, ** at least 5% significance level.
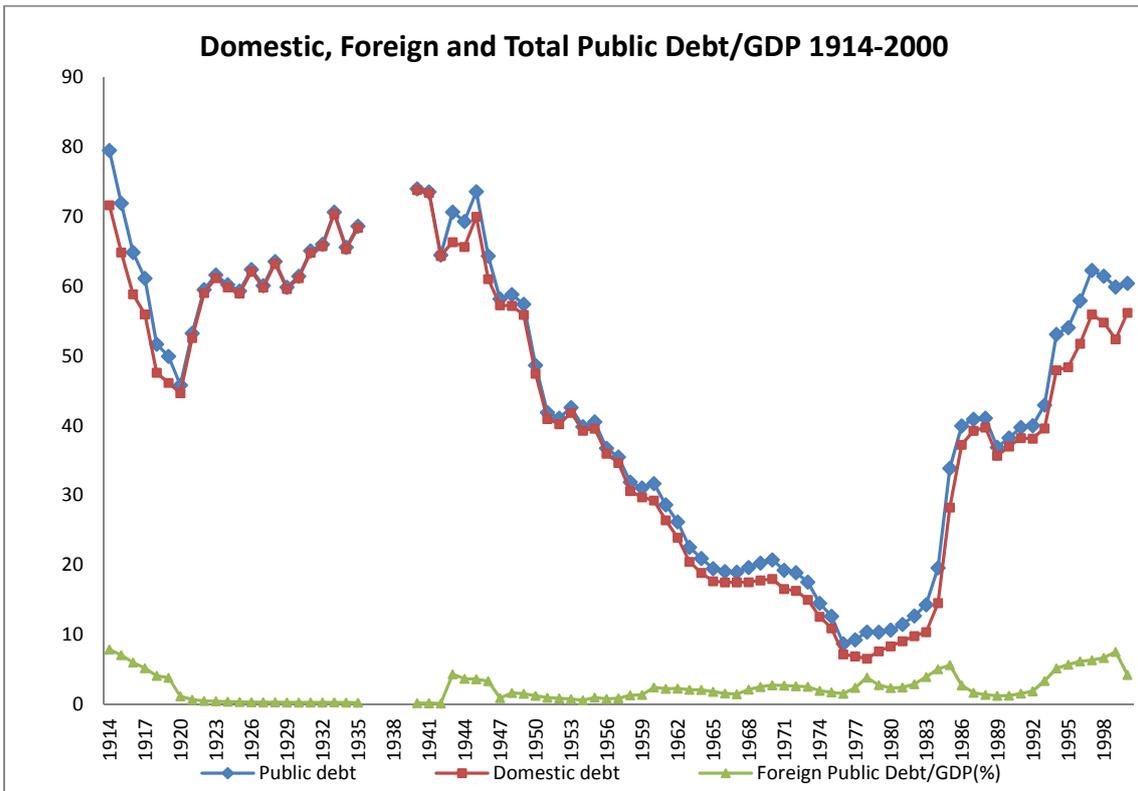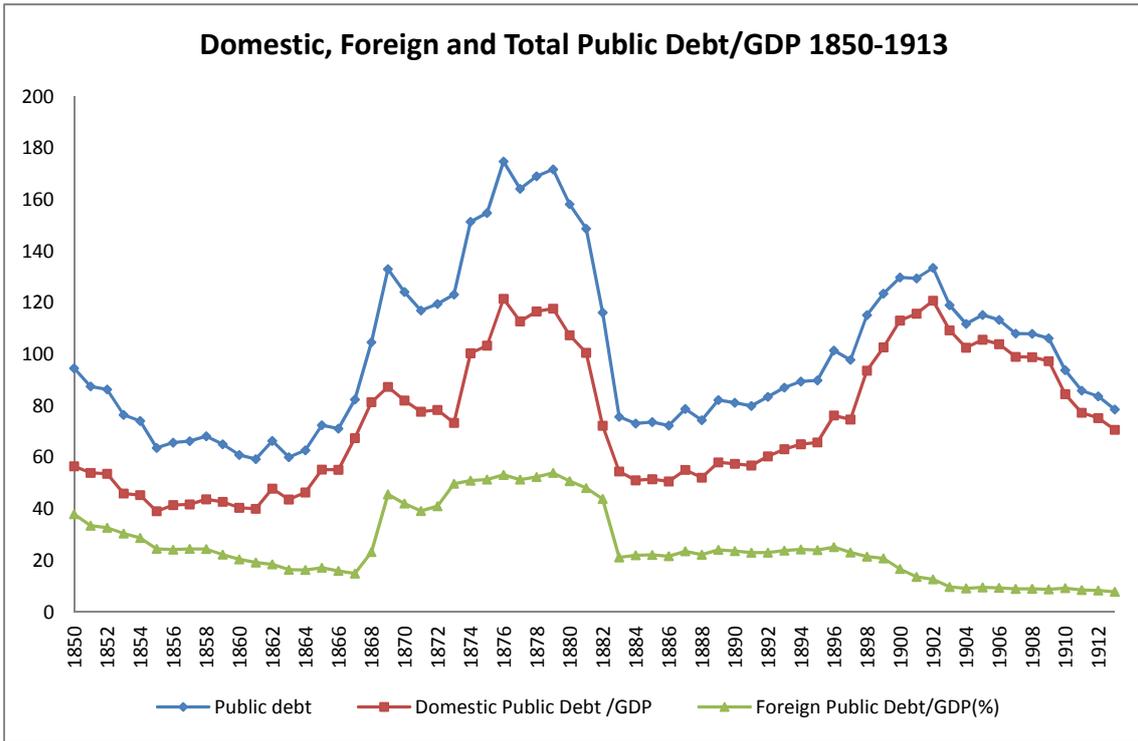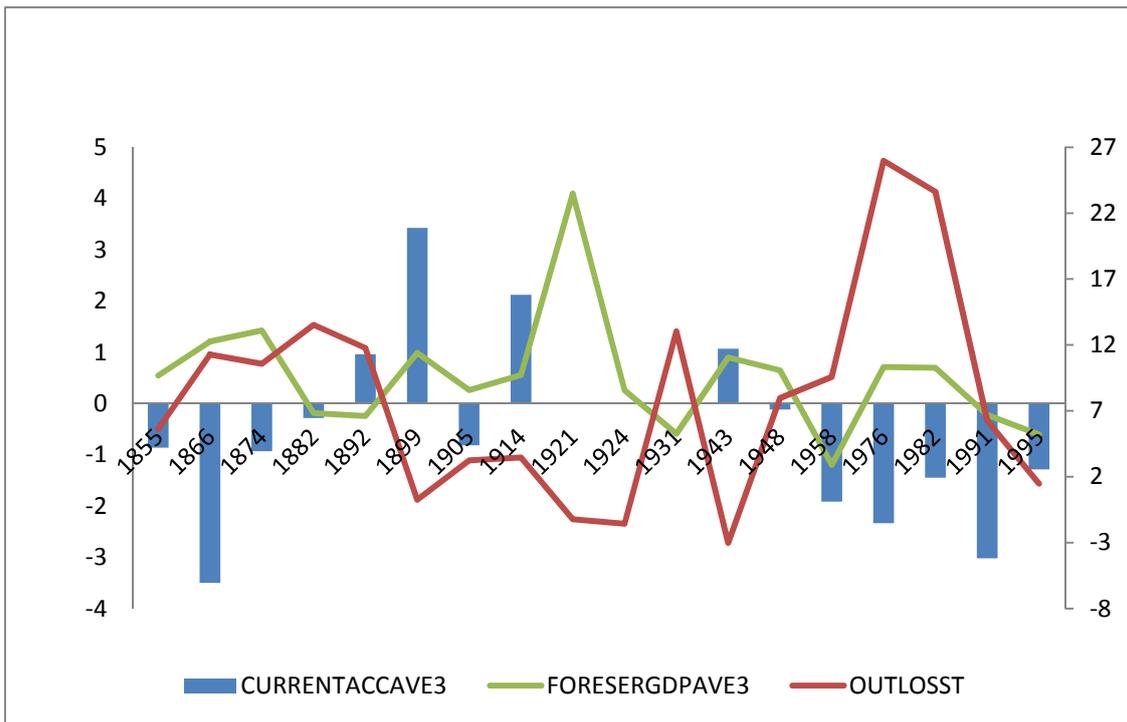
Figure 1: Credit growth and crises
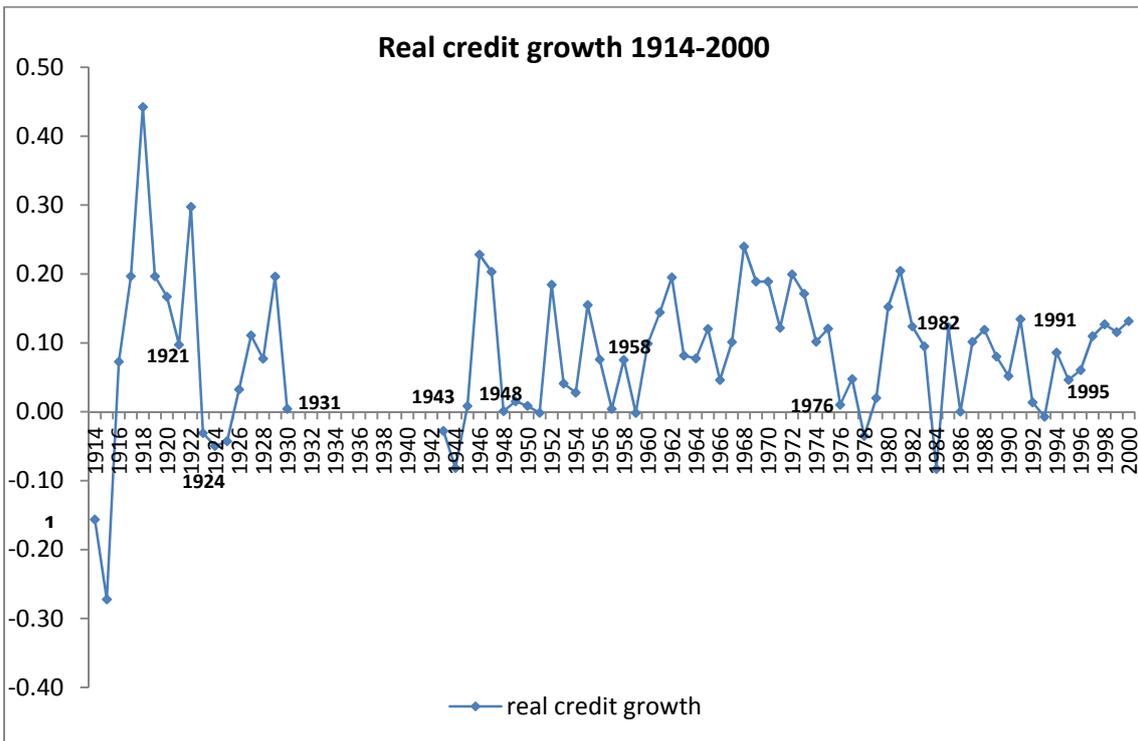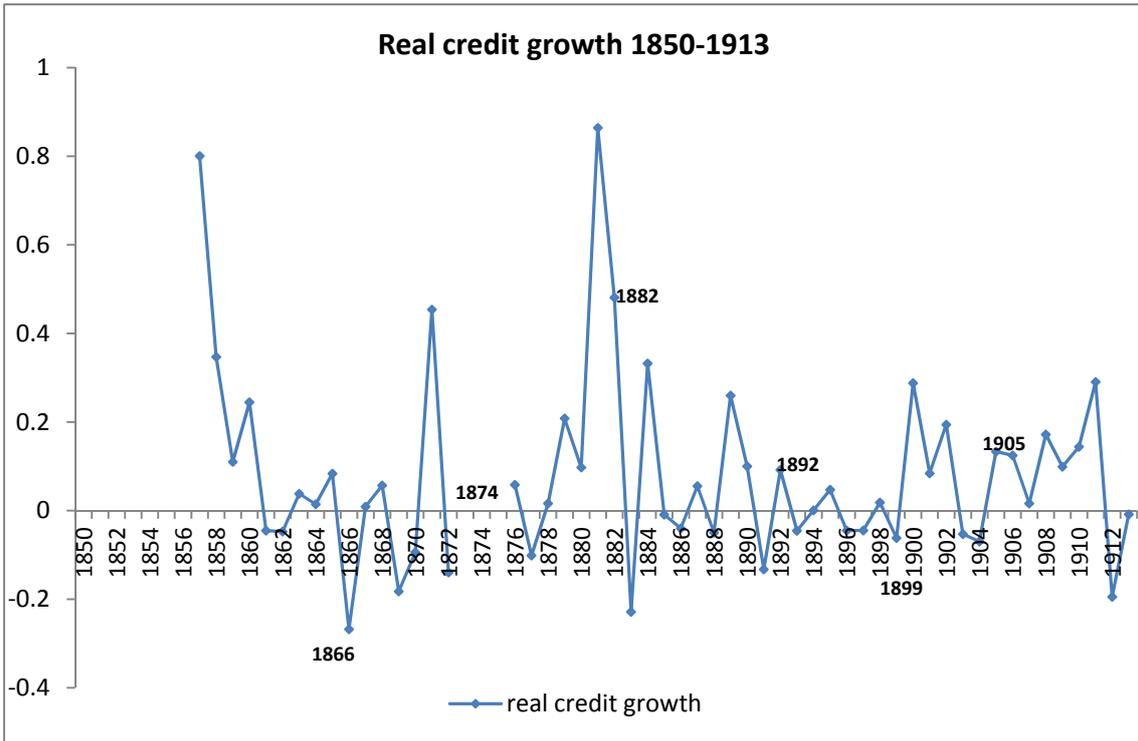
Figure 2: Current Account Balance and crises

Current account/GDP, 1850-1913

Current Account/GDP, 1914-2000

Figure 3: Public Debt/GDP and crises

Domestic, Foreign and Total Public Debt/GDP 1850-1913

Legend: Public debt — Domestic Public Debt /GDP — Foreign Public Debt/GDP(%)

Domestic, Foreign and Total Public Debt/GDP 1914-2000

Legend: Public debt — Domestic debt — Foreign Public Debt/GDP(%)

Figure 4: Crisis Severity and Current Account/GDP

DATA APPENDIX: Definition of Variables and Sources

Variable name	Definition	Source
Extra growth	Average growth rate of real GDP over the five years prior to the crisis	Prados (2003)
GDP and GDP per capita		Prados (2003)
Credit growth	Real credit growth over the five years prior to the crisis	1856-1873 and 1900-2000 EHE (2001), 1974-1900 own estimates from Tedde and Tortella (1974)
Narrow money/GDP	Money supply in relation to GDP over the five years prior to the crisis	EHE (2001)
Financial Assets/GDP	Total financial assets of the Bank of Spain, private banks and saving institutions in relation to GDP over the three years prior to the crisis	Bank of Spain: 1856-1915 Tedde and Tortella (1974), 1942-1976 Balances Banco de España. Private Banks: 1856-1872 EHE (201), 1873-1914 Tedde and Tortella (1974), 1915-2000 EHE (2001). Saving banks: 1850-2000 EHE (2001)
Stock market transaction /capitalization	Total transacted amount on the stock market over the capital of the limited corporations (from 1875-1901 this only includes public issues) over the five years prior to the crisis	Total stock market transactions in the Madrid Stock market; 1850-1988 EHE (2001), 1988-2000, INE. Capital of limited corporations: EHE (2001)
Current Account/ GDP	Ratio of the current account to GDP over the three years prior to the crisis	1850-1913, Prados (2010a), 1931-2000 EHE (2001)
Public Debt/GDP	Ratio of Public Debt to GDP over the five years prior to the crisis	1850-2000, EHE (2001)
Public Budget/GDP	Ratio of the Public Budget to GDP over the five years prior to the crisis	1850-2000, EHE (2001)
Inflation	GDP deflactor over the five years prior to the crisis	Prados (2003)
Human Capital Index	Human Capital per hour (estimation à la Mincer), 1850=100	Prados and Rosés (2010b)
Investment/GDP	Gross Fixed Capital Formation/GDP	Prados (2003)

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