Identification and characterisation of financial crises in Latin America: c.1870-2019

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Abstract

In recent years, after several episodes in emerging and advanced economies, the study of financial crises has taken centre stage in economics and economic history. From an empirical point of view, an international perspective on crises prevails and quantitative approaches are the rule (e.g.: Bordo et al.,2001; Reinhart and Rogoff, 2009; Schularick and Taylor, 2012). Among other results, this literature establishes some general patterns of crises frequencies and output losses that tend to overlook the history of particular regions such as Latin America.

Latin America has historically been a group of developing countries with a clear role as commodity exporters and capital importers, with economies based on natural resources, high levels of wealth and income inequality, financial systems heavily dependent on external funds and relatively small internal domestic markets in relation to international ones. These economic features should have played an important role to explain financial crises, considering both their frequency and consequences in terms of depth.

The general objective of this paper is to revisit the identification and characterisation of financial crises in Latin America in the long run (c. 1870-2019), taking into account the singularities of its historical development. We address the disagreement in chronologies and propose a new chronology based on previously unexploited quantitative and qualitative evidence, constructed from a country-specific point of view.

The paper has three specific objectives. First, to document the frequency, duration and cost (output loss) of the Latin American financial crises. Second, to construct a database containing a set of indicators that help to characterize the above-mentioned peculiarities of the region, such as commodities prices, terms of trade, trade and financial openness, degree of financial development, and political instability, for eight major Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay and Venezuela) between 1870 and 2019. Third, to study the relationship between financial crises and these main indicators in order to establish some hypotheses about the causes of financial crises and their consequences over the real economy, for the specific case of Latin America.

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Introduction

Since the start of the second wave of globalisation in the late twentieth century, the literature on financial crises has seen significant growth. Although this literature is often considered countercyclical (Kindleberger and Aliber, 2014), the numerous crises experienced globally since the late 1970s and early 1980s have justified a detailed examination. Notably, the debt crises of the 1980s caused a "lost decade" in the economic growth and development of several emerging economies, particularly in Latin America. The early 1990s witnessed banking and housing crises in some advanced economies, while the late 1990s and early 2000s saw another wave of banking, currency and debt crises in several emerging economies, most notably affecting the "Asian tigers", Russia, Argentina and Uruguay (Reinhart and Rogoff, 2009; Bértola and Ocampo, 2013; Marichal, 2013; Kindleberger and Aliber, 2014). The 2000s ended with the most severe global crisis since the Great Depression, originated in the United States and quickly spread to other advanced economies. These shocking and pervasive events prompted a "return of Depression Economics" (Krugman, 2009), and a renewed historical perspective on economic and financial crises to extract lessons from the past (Reinhart and Rogoff, 2009; Schularick and Taylor, 2012; Cassis, 2016). Also, the milder impact of the Global Financial Crisis started in 2008 and the Euro debt crises of the 2010s over emerging economies raised again the importance of different determinants of financial crises' causes and consequences.

A remarkable feature of much of this literature is its quantitative focus, which aims to supplement qualitative assessments of crises (Reinhart and Rogoff, 2009; Sufi and Taylor, 2022). This "quantitative turn" has led to new chronologies of crises at the national level, with Reinhart and Rogoff's (2009) work being the most prominent due to its historical perspective and broad geographical range. Other canonical works are Bordo, Eichengreen, Klingebiel and Martínez-Peria (2001) on banking and currency crises, Laeven and Valencia (2020) on banking crises from 1970s, Baron, Verner and Xiong (2021) on banking crises in the long run and Meyer, Reinhart and Trebesch (2022) on debt crises, also in a long run perspective.

Notwithstanding the importance of the aforementioned efforts, this literature often lacks a regional perspective between a global point of view and case studies, especially concerning the analysis of emerging economies in the long run. Patterns of financial crises' frequency, duration and severity are usually presented, at most, distinguishing between two large groups -emerging and developed economies- even when an historical perspective is adopted. Moreover, existing chronologies of financial crises have limitations that make them unsuitable for studying small groups of countries over extended periods.

The main objective of this paper is to revisit the key aspects financial crises in Latin America, a region historically characterized by the prominence of the primary sector in its economic structure, its role as a receiver of capital flows, its high degree of political instability and its high levels of income and wealth inequality. To achieve this, we propose a revision of the main chronologies of financial crises for eight Latin-American economies: Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay and Venezuela (LA8), which, according to the Maddison Database (Bolt and Van Zanden, 2020), represent 78% to 82% of the population of the entire region and 78% to 89% of its GDP (2011 prices) between 1870 and 2019. We take a long-run perspective (1870-2019) to outline the main patterns on the frequency, duration and severity of financial crises and their relationship with a set of variables representing economic structure, external insertion and some institutional aspects.

Following this introduction, we will discuss the definition and types of financial crises, focusing on their empirical identification, and summarise the available evidence on their main patterns. Then, we will present a first version of revised chronologies of banking, currency and debt crises for LA8, extracting their patterns of frequency, duration and severity. We end this document with a brief comment of results and the following steps of this research.

Chronologies of financial crises, classification uncertainty and common patterns

What is a financial crisis?

The definition of the term "financial crisis" is elusive (Kindleberger and Aliber, 2014; Grossman, 2016; Sufi and Taylor, 2022; Frydman and Xu, 2023), and, as Claessens and Kose (2014:12) claim, it is "strongly influenced by the theories trying to explain (them)". As a first step, we can adopt a broad definition of crises from Claessens and Kose (2014:4-5), who consider financial crises as "susbstantial changes in credit volume and asset prices; severe disruptions in financial intermediation and the supply of external financing to various actors in the economy; large scale balance sheet problems (of firms, households financial intermediaries and sovereigns); and large scale government support on the form of liquidity support and recapitalization". Additionally, some authors, like Bordo et al. (2001), highlight the existence of illiquidity and/or insolvency situations among intermediaries.

Moreover, there is no wide consensus about the types of crises included in this definition. Some authors tend to provide a narrow definition of financial crisis, assimilating them exclusively to banking crises (e.g: Schularick and Taylor, 2012; Gorton, 2018; Sufi and Taylor, 2022) or placing a central role on that type (e.g. Bordo and Meissner, 2018). Conversely, other works emphasize the multiple facets of these events (e.g. Reinhart and Rogoff, 2009; Claessens and Kose, 2014; Cassis et al., 2016). This paper adopts a middle-ground approach, considering banking, currency, and debt crises as financial crises, as well as their 2-on-2 combinations (twin crises) and triple crises, like the stance taken by Bordo and Meissner (2016).

Banking crises are broadly defined as highly disruptive events where the banking system suffers large capital losses, affecting their role of financial intermediation between agents, or when authorities intervene to prevent such issues (Bordo et al., 2001; Reinhart and Rogoff, 2009; Laeven and Valencia, 2020; Baron et al., 2021). These crises usually manifest as panics, which, in other words, are generalized bank runs (Gorton, 2018), where people demand the immediate availability of their funds and hit banks' liabilities. There are events when the aggregate capital losses of the banking system develop "quietly", including the closure or fusion of some banks (Baron et al., 2021; Metrick and Schmelzing, 2024). Moreover, the post-2008 literature highlights the importance of problems in the asset side of banks as the main feature of financial crises, particularly since 1945 (Schularick and Taylor, 2012; Sufi and Taylor, 2022).

The pioneering work of Bordo (1986), cited in Betrán, Martin-Aceña and Pons, 2012) started the literature on the empirical identification of financial crises from a quantitative point of view, taking a step forward in the history of financial crises which solely relied on narrative accounts of the events. This literature focus on the elaboration of financial crises chronologies at country-level. In this vein, as Reinhart and Rogoff (2009) underline, banking crises are defined in a qualitative fashion by the events leading to them. This raises the question, as clearly stated by Grossman (2016), of where to draw the line in determining whether an event qualifies as a crisis. While banking crises are qualitatively defined by events, some quantitative assessment is needed to classify events as systemic crises, borderline crises (Caprio and Klingebiel, 1996), or non-systemic events, in order to "find a line" defined by some indicator. The most recent works in this vein propose chronologies based on definitions that mix quantitative and qualitative assessments, where the former involve bank capital indicators and the latter the narrative of bank panics and interventions (Baron et al., 2021; Metrick and Schmelzing, 2024).

Currency crises are broadly defined as speculative attacks on currency that result in devaluation or depreciation, or the adoption of policy measures such as the management of interest rates or international reserves to maintain currency value (Bordo et al., 2001; Claessens and Kose, 2014). Reinhart and Rogoff (2009) also include debasements of the metallic content

of currency as a sub-type of these crises, which are closely related to inflationary crises. They claim that currency crises, as well as inflationary crises and *sudden stops* (both of which we do not consider as financial crises here), can be identified purely quantitively. Another quantitative way to identify currency crises relies on the Exchange Market Pressure (EMP) index proposed by Eichengreen, Rose and Wyplosz (1996) that considers not only depreciations, but also international reserves losses and interest rate raises reflecting the possibilities of speculative attacks over currency. It is worthy to note that, even we consider only devaluations or the EMP index, the definition of a threshold for determining whether an event constitutes a crisis still involves some qualitative assessment.

Sovereign debt crises occur when governments default on the amortization and/or payment of interests or negotiate changes in the debt conditions to the detriment of creditors (Reinhart and Rogoff, 2009; Claessens and Kose, 2014; Bordo and Meissner, 2016). These events are straightforwardly defined qualitatively, though some issues persist in debt crises chronologies, mostly associated with data availability on internal debt (Reinhart and Rogoff, 2009). Given this issue, most debt crises chronologies refer only to external sovereign debt.

Twin crises are defined straightforwardly as the combination of two of the single financial crisis types seen, as well as the combination of the three types define triple crises. The first question we can raise about the definition of these crises is about the windows used to relate different events. This is usually resolved with ad-hoc criteria: for example, Kaminsky and Reinhart (1999:477) consider twin crises as the "episodes in which the beginning of a banking crisis is followed by a balance-of-payments crisis within 48 months", whereas Bordo and Meissner (2016) take three-year windows to define the three types of twin crises and triples. Another issue relates to the sequence of financial crises and has deserved particular attention (see, for instance, Reinhart, 2012).

Classification uncertainty on financial crises

Once we gather information on financial crises chronologies, several questions arise: for each type of financial crisis, why do chronologies vary in their dates for a given period and country? Which is the correct chronology of crises? Are general patterns of frequency, duration and severity of crises affected by these differences?

Bordo and Meissner (2016) describe these issues as *classification uncertainty*. Even if we managed to isolate differences in patterns due to variations in samples across space and time and assume that minor differences in dates across different chronologies for the same events do not greatly affect the big picture, we will still have some disagreement among researchers. The availability and reliability of sources are candidates to blame, but a more problematic reason for classification uncertainty lies in the different definitions and criteria used to determine which events qualify as financial crises.

This classification uncertainty justifies efforts to develop more accurate chronologies, which have recently taken two main directions. One approach involves deep analysis of one or several types of crises for a single country or a small group of countries. Examples include the works of Betrán et al. (2012) on banking, currency, and stock-market crises in Spain, later updated by Betrán and Pons (2018) with debt crises, Turner (2014) on banking crises in the UK since early XIX century, and Jalil (2015) on banking crises in the USA between 1825 and 1929. Another approach focuses on the deep analysis of a particular type of crisis over the long run for a wide sample of countries, such as the studies by Baron et al. (2021) and Metrick and Schmelzing (2024) on banking crises and Meyer et al. (2022) on sovereign debt defaults.

Main patterns of financial crises since 1870

Following Bordo and Meissner (2016), the evidence on the frequency of financial crises from the last 150 years indicates that, generally speaking, the most frequent type are currency

crises, followed by banking crises, debt crises, twin crises (mainly the combination of simultaneous banking and currency crises) and, finally, triple crises. The annual probability of crises stands between 2% and 8% for banking crises, 1% and 9% for currency crises, and 0,5% and 2,5% for twin crises (banking and currency), except for the Bretton Woods period, where probabilities are negligible for banking crises. For debt crises, even though Bordo and Meissner (2016) do not provide annual frequencies, we can deduct from the absolute number of events that debt crises range between figures similar of those for banking and currency crises (see Figure 2 of Bordo and Meissner, 2016:380)[3].

According to those authors, the interwar period appears to have the highest frequency of financial crises, but data from Reinhart and Rogoff (2009)[4] points to a higher frequency starting from 1973. For currency crises, some important differences emerge: whereas Reinhart and Rogoff (2009) and Bordo et al. (2001)[5] show a slight increase in the frequency compared with other periods, Laeven and Valencia (2020)[6] data shows a much lower frequency of this type of crises during the Second Globalisation period. Finally, Bordo and Meissner (2016) point out the importance of twin crises (banking and currency) in emerging economies, as Kaminsky and Reinhart (1999) demonstrated, where problems in banking anticipate currency crises, creating a feedback loop that leads to more severe banking crises.

One of the main stylized facts of this literature, in line with the credit view, is the existence of significant credit and asset price booms preceding banking crises, especially in the post-1945 period. Greenwood, Hanson, Shleifer, and Sorensen (2022) found that the combination of rapid credit and asset price growth predicts a banking crisis within the subsequent three years with a 40% probability (compared to an unconditional 7% probability). Baron and Dieckelmann (2021) empirically study the correlation between a broad set of variables with the Baron et al. (2021) chronology of banking crises. For a sample of 47 countries between 1870 and 2016, they find that financial factors (like credit and asset booms and international financial flows) are more relevant to explain banking crises since 1970s, to the detriment of real factors (like trade and commodities shocks, natural disasters and wars), more relevant before then. Also, they argue that factors associated with international contagion (like trade and commodities shocks, exchange rate and international financial flows) have increased their importance, to the detriment of the importance of credit booms.

The size of credit and price booms also directly exacerbates the negative effects of financial crises on real activity through leverage on agents' balance sheets (Sufi and Taylor, 2022; Frydman and Xu, 2023), although Bordo et al. (2001) point out that it is not obvious that crises have grown more severe, including in their analysis the effect of currency crises. Finally, Baron et al. (2021) highlight that banking crises without panics can be found, where financial intermediation silently resents bank equity reductions, although they are less damaging than crises with panics.

Regarding debt crises, Reinhart and Rogoff (2009) point out a positive relationship between debt/GDP ratio and the risk of default. Also, emerging economies suffer a "debt intolerance" syndrome, where the debt level threshold that triggers the probability of default is lower than in advanced economies. Empirical evidence also finds a direct relationship between debt and exchange rate crises, in favour of the "original sin" hypothesis that relates, in general,

[3] Bordo and Meissner (2016) construct their results based on the chronologies of Bordo et al. (2001), Reinhart and Rogoff (2009), Laeven and Valencia (2012) and Taylor (2015). The latter only has evidence for 15 advanced economies.

[4] Results for an unbalanced panel of 70 countries between 1808 and 2008.

[5] Results for an unbalanced panel of 21 countries between 1880 and 1939 and 56 countries between 1945 and 1997.

[6] Results for an unbalanced panel of 116 countries between 1970 and 2017.

currency crises with debt crises (Eichengreen, Hausmann and Panizza, 2005), but with some differences across countries and regions (see Bordo and Meissner, 2007; Flores Zendejas, 2022); also there is evidence emphasizing the importance of banking crises as aggravating factors in this relationship (Kaminsky and Reinhart, 1999).

Regarding the external sector, Gourinchas and Obstfeld (2012) highlight the importance of real currency appreciations in both emerging and advanced economies, as well as the availability of international reserves in emerging ones, during the period from 1973 to 2007. Since the seminal work of Díaz-Alejandro (1985), the role of international capital flows has been emphasized: capital flow booms to emerging economies and their sudden stops are central to the occurrence of financial crises in the periphery (Kaminsky and Reinhart, 1999; Calvo, Izquierdo and Mejía, 2004; Bianchi and Mendoza, 2020).

A revised chronology of financial crises in LA and their stylised facts

Identification of financial crises for LA8

In this first version of the paper, the identification of crises is based on a revision of the canonical chronologies and the evidence supporting them, for the cases of Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay and Venezuela (LA8) over the period from 1870 to 2019. Crises occurring before 1870 are included in the chronologies when possible, but they are excluded from the analysis of patterns.

For banking crises, the proposed chronology is based on the dates in Metrick and Schmelzing (2024), who study official interventions during events of financial distress. We compare Metrick and Schmelzing's dates with those in the canonical works of Kaminsky and Reinhart (1999), Bordo et al. (2001), Caprio and Klingebiel (1996), Demirgüc-Kunt and Detragiache (1998), Reinhart and Rogoff (2009)[7] Bordo and Meissner (2016), and, notably, Baron et al. (2021). The latter work critically examines the previously available evidence of banking crises for 46 countries starting on 1870, including the LA8 countries except Uruguay. Baron et al. (2021) provide references to primary and secondary sources as historical evidence for each event included in their sample and construct a chronology of banking crises based on both qualitative evidence and quantitative data from bank equity returns. Therefore, we also take Baron et al. (2021) as a foundational source. The first version of our chronology of banking crises for LA8 includes 53 dates, which show the start year of each event. It should be noted that some events are consolidated in one due to their proximity in time and shared characteristics. The chronology of banking crises is detailed in Appendix A, Table A.1[8].

For currency crises, we begin with the chronology of Reinhart and Rogoff (2009), compare it with Bordo et al. (2001), which was expanded by Bordo and Meissner (2016), and with Laeven and Valencia (2020). Reinhart and Rogoff (2009) and Laeven and Valencia (2020) date currency crises based solely on nominal exchange data, while Bordo et al. (2001) use the Exchange Market Pressure indicator commented above.

Given current data availability, we adopt an identification of currency crises based solely on nominal exchange rate data, with adjustments to delimitation criteria. Reinhart and Rogoff (2009) define currency crises as years with annual devaluation or depreciation rates of 15% or

[7] We take the data uploaded in the Behavioral Finance and Financial Stability Project's website, of the Harvard Business School. Data on this source goes until 2016 and has some minor changes when compared to data published in Carmen Reinhart's website. We will refer to this source as "RR(2016)".

[8] The following step is to contrast the available information with local and regional literature, as well as the informed judgement from academic experts in the financial history of each country included.

more, maintaining this threshold unchanged over a 200-year period. Laeven and Valencia (2020) take the same approach using a threshold of 30% for annual depreciation rates and impose an additional condition of a depreciation rate at least 10 percentage points greater than the previous year. As Laeven and Valencia's (2020) sample starts in 1970 and given the higher volatility of nominal exchange rates since then, these thresholds adjustments appear reasonable, even though they significantly reduce the number of identified currency crises.

Using nominal exchange rate growth rates taken from Reinhart's website, updated from 2006 with official exchange rates (local currency units per US$, annual averages) from the World Bank Database, we propose a chronology of currency crises for LA8 using different thresholds according to historical context (see Table B.1 in Appendix B). For the First Globalisation period (1870-1913), we consider years with nominal depreciations of at least 15% and at least 5 percentual points (pp.) greater than the previous year's depreciation. For the Interwar period (1914-1945), thresholds are 20% and 5 pp., respectively. For the Bretton Woods period (1946-1972) thresholds are 25% and 10 pp., and for the Second Globalisation period (1973-2019[9]) the thresholds are 30% and 15 pp. respectively. The rule proposed by this paper lies between the restrictive rule of Laeven and Valencia (2020) and the more lenient rule of Reinhart and Rogoff (2009), as shown in Table B.2. We found 147 events of currency crises.

For debt crises, we adopt the same strategy as for banking crises, and begin with a discussion of the available chronologies. We start with the canonical works of Reinhart and Rogoff (2009) updated by Reinhart, Reinhart and Trebesch (2016) and Laeven and Valencia (2020), complemented by the recent efforts of Kaminsky and Vega-García (2016), Asonuma and Trebesch (2016) and Meyer et al. (2022). We take default and restructuring dates from these chronologies as start dates of debt crises (see Table C.1 in Appendix C) and arrive to a chronology of sovereign debt crises with 66 events of default or restructuration.

Finally, we identify twin crises as the three different 2-on-2 combinations of the three types of single crises considered: banking and currency, banking and debt, and currency and debt crises. To identify twin crises, we start with the chronology of one type of single financial crises and look for events of another type of single crises that took place one year before or after (three-year windows). Triple crises are constructed in the same way, looking for the occurrence of the three types of single financial crises events in three-year windows.

Frequency, duration and severity of financial crises in LA8: 1870-2019

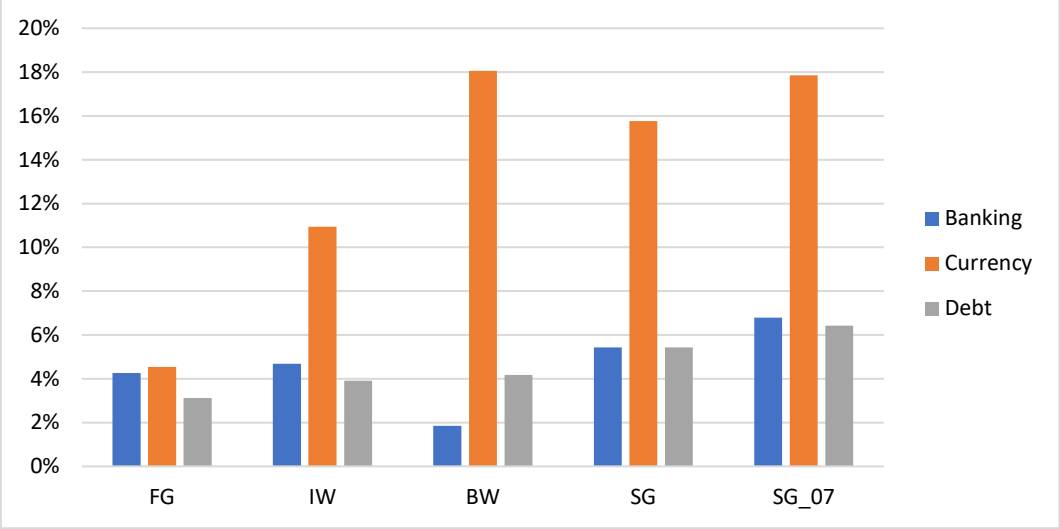
Figures 1 and 2 and Table 1 show the relative frequency of financial crises in Latin America for five periods: First Globalisation (FW), Interwar (IW), Bretton Woods (BW), Second Globalisation finishing in 2019 (SG) and Second Globalisation finishing in 2007 (SG_07). In figure 1, for banking and debt crises each event is identified by its first year, whereas for currency crises each event is defined by the rules commented before. In a first look, we can see that the frequency of financial crises seems to growth with time, similarly to the rest of the world (Bordo and Meissner, 2016), but with some differences when considering shorter periods.

Currency crises are much more frequent than banking and debt crises, although we should recall that we defined banking and debt crises only by its first year and not consolidated near currency crises (Figure 1). The range of currency crises frequency goes from 4% in the First Globalisation to 18% in Bretton Woods and Second Globalisation (until 2007) periods, being the frequency in the Interwar period in the middle of the two extremes (11%). This pattern shows a close relation with the global pattern of currency crises available in Bordo and Meissner (2016),

[9] It can be argued that the Global Financial Crisis of 2007-2008 ended with the period of Second Globalisation. Here, we simplify terms and use this name to refer to years starting on 1973.

who compares the results of Bordo et al. (2001) with Reinhart and Rogoff (2009). But, despite this similarity in the evolution of the frequency, currency crises seem to be, in general, more frequent in Latin America than in the whole world: the ranges in Bordo and Meissner (2016) go from 1% (First Globalisation) to 8% (Bretton Woods and Second Globalisation)[10].

Figure 1: frequency of banking, currency and debt crises in LA8, 1870-2019



Source: own elaboration. See text.

Banking and debt crises show similar frequency ranges for Latin America: from 2% to 7% for banking crises and from 3% to 6% for debt crises (Fig. 1). For those types, the highest frequencies are seen in the Second Globalisation period (both until 2019 and until 2007), followed by the Interwar years (5%) and First Globalisation period (4%) for banking crises, and Bretton Woods period and Interwar years for debt crises (4%). Interestingly, Bretton Woods years show the lowest probability of banking crises, but, unlike the evidence at a global level, these figures seem not negligible. Another interesting comparation is that banking crises seem to be less frequent than in advanced economies until 1945, as Bordo and Meissner (2016) show: the range of those economies goes from 4% in the Second Globalisation to roughly 8% in the Interwar years.[11]

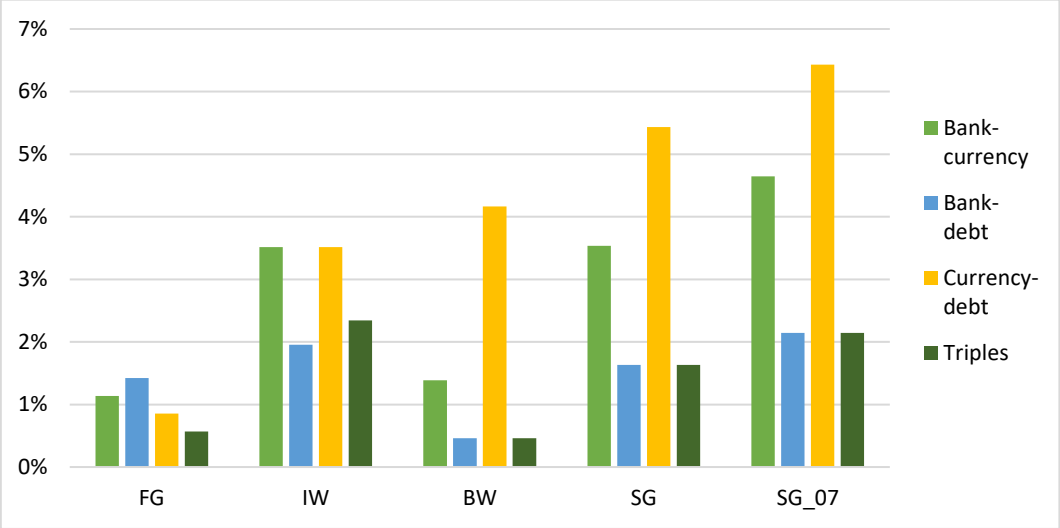
In the case of sovereign debt crises, the world pattern shown by Reinhart and Rogoff (2009) shows three cycles of debt after 1870: the first cycle comprehends the decades of 1870, 1880 and 1890; the second, the years of the Great Depression until early 1950s, and the last one, the debt crises of the 1980s and 1990s. We should add the debt crises of the Euro zone of the 2010s. Data for Latin America debt crises seems to replicate those cycles, except for the last one (only Argentina and Venezuela showed defaults, see Table C.1 in Appendix C).

Figure 2 shows the frequency of twin and triple crises [12]. Again, we can see that the frequency of financial crises has grown almost steadily since 1870, particularly when we see twin crises linked with currency crises. Anyway, the cases of twin crises with banking crises and the triple crises make an exception in this pattern of growth: Bretton Woods has been a period

[10] The differences in frequencies are probably milder than this rough comparation, since Bordo and Meissner (2016) subtract twin and triple crises from the figures of single crises.
[11] The same comment as for currency crises applies here.
[12] It should be noticed that, unlike Bordo and Meissner (2016), we do not subtract twin and triple crises from the frequencies of single types of financial crises.

of relative calm for banking crises and their combinations, but, again, these values are not negligible, unlike the world-level pattern.

Figure 2: twin and triple crises in LA8, 1870-2019



Source: own elaboration. See text.

In Table 1 we show the relative frequency of banking, currency, and debt crises for each country of our sample, taking the same periods of Figures 1 and 2. Here, we take as our numerator years with at least one type of the three mentioned, and the denominator is the sum of years of each period considered. The aggregate results for LA8 confirms our first observation: financial crises have grown more frequent in Latin America, even though the years after 2007 see a considerable reduction that is reflected in the difference between SG and SG_07 frequencies.

Table 1: relative frequency of banking, currency and debt crises. LA8, 1870-2019

	ARG	BRA	CHL	COL	MEX	PER	URU	VEN	LA8
FG	0.11	0.16	0.18	0.11	0.11	0.07	0.05	0.05	0.11
IW	0.22	0.22	0.22	0.09	0.22	0.13	0.19	0.00	0.16
BW	0.26	0.26	0.48	0.15	0.07	0.19	0.26	0.07	0.22
SG	0.33	0.30	0.15	0.07	0.11	0.24	0.17	0.35	0.21
SG_07	0.34	0.37	0.20	0.06	0.14	0.31	0.23	0.31	0.25

Source: own elaboration. See text.

Is worth noting the differences in relative frequencies across countries. First, we can see that financial crises tend to occur more frequently in some countries: Argentina, Brazil and Chile take the lead in this sense, whereas Colombia and Mexico show significantly lower counts of crises (Peru, Uruguay and Venezuela stand at the middle of this two situations). Some countries have experienced important reductions in their frequencies along the Second Globalisation, especially Chile and Colombia and to a lesser extent, Mexico and Uruguay, while others, especially Argentina, Brazil and Peru have monotonously increased their frequencies over time. The most homogeneous periods across countries[13] seem to be the First Globalisation and the

[13] Data from Venezuela before 1945 could be reflecting some issues in the sources considered up to this moment, so we exclude it from this observation.

Interwar periods, whereas the most different situations between countries are seen in the Bretton Woods period. Differences at the intra-region level could be the result of plenty of internal and external factors, some of which we mention in the preliminary conclusions section.

Similarly to Bordo et al. (2001), we define duration of financial crises as the number of years before real GDP returns to its previous trend[14]. By definition, the duration of crises is at least 1 year, and, following Laeven and Valencia (2020). Trends were calculated using the Hodrick-Prescott filter with λ=100, as suggested for annual data. Appendix D shows the sources of each real GDP series. To estimate more accurate cycles, we prioritized the most recent estimation of historical GDPs for each country in detriment of the Maddison database estimations, which are more suitable when intercountry differences are important[15]. Finally, for the sake of simplicity, we calculated duration and severity of financial crises for all types of financial crises consolidated (singles, twins and triples).

As Table 2 shows, the average duration of financial crises for the LA8 average ranges between 1.8 and 3.1 years. Crises seem to be somewhat longer in Colombia (3.7 years on the 1870-2019 average), followed by Perú, Uruguay and Argentina (2.8, 2.8 and 2.6, respectively) and shorter in México, Chile, Venezuela and Brazil. Interestingly, the Interwar years are the period with longer crises (3.1 years on average), closely followed by the Second Globalisation period (2.8 years)[16]. Then, the other three periods specified show similar average duration of crises (1.8 to 2.2 years). These figures are comparable with the ones in Bordo et al. (2001), which range duration between 1.8 and 2.6 years. Latin American crises show near the same duration as the global average for the Second Globalisation period (2.8 vs. 2.6 years)[17], in the Bretton Woods years (2.1 vs 1.8 years) and in the First Globalisation (2.2 vs. 2.4 years) and larger in the Interwar years (3.1 vs. 2.4 years).

Table 2: average duration of financial crises in years. LA8, 1870-2019

	ARG	BRA	CHL	COL	MEX	PER	URU	VEN	LA8
FG	2.0	2.0	1.7	2.7	1.0	2.5	3.0	3.0	**2.2**
IW	5.0	2.3	2.4	4.5	2.8	3.0	3.5	0.0	**3.1**
BW	2.0	2.6	2.1	2.8	1.5	1.7	1.4	2.5	**2.1**
SG	2.3	1.7	3.0	6.5	2.8	3.4	3.4	2.3	**2.8**
PostSG	2.0	3.0	0.0	0.0	0.0	0.0	0.0	1.0	**1.8**
1870-2019	2.6	2.1	2.2	3.7	2.4	2.8	2.8	2.3	**2.5**

Source: own elaboration. See text.[18]

We estimate severity of financial crises as the total or cumulative output loss between the first year of each episode and its final year, as calculated for duration of crises. In other words, total output loss is estimated as the sum of the annual difference between the real GDP trend and the real GDP observed, i.e., output gap. We end the crises in the first year after crises when output gap is positive. It is important to notice that, given the availability of GDP series

[14] Bordo et al. (2001) work with growth rates.
[15] Estimated cycles are presented as trend deviations, which makes them standardised estimations.
[16] Here, we take as Second Globalisation the years 1973-2007 and Post-Second Globalisation (PostSG) the years 2008-2019.
[17] This period ends in 1997 in Bordo et al. (2001).
[18] Average durations of 0.0 years mean that no financial crises were registered in that country for the indicated period. It should be remembered that the minimum duration for a financial crisis is defined as 1 year, and financial crises with positive output gaps are treated with a duration of 1 year.

(see Appendix D), the estimations of the First Globalisation period and the Post Second Globalisation period could be lacking some events in terms of the averages constructed for durations and severity. This could be the case for Colombia and Mexico in the First Globalisation and Colombia, Peru and Venezuela for the post 2007 period.

Table 3: average output loss of financial crises as percentage of real GDP trend. LA8, 1870-2019[19]

	ARG	BRA	CHL	COL	MEX	PER	URU	VEN	LA8
FG	-8.0%	-7.1%	-3.3%	-7.7%	0.0%	-12.8%	-19.6%	-9.0%	**-7.4%**
IW	-27.5%	-7.5%	-26.3%	-20.2%	-13.5%	-18.1%	-10.1%	n/a	**-15.6%**
BW	-5.7%	-8.5%	-5.9%	-3.4%	-3.9%	-5.1%	-2.8%	-3.7%	**-5.1%**
SG	-13.4%	-4.0%	-13.4%	-17.1%	-9.3%	-8.6%	-11.8%	-9.1%	**-9.8%**
PostSG	-4.6%	-18.1%	n/a	n/a	n/a	n/a	n/a	-3.0%	**-6.7%**

Source: own elaboration. See text.

Table 3 shows the average cumulative output loss of financial crises for each country and for LA8, as a percentage of trend GDP. The period with the most severe crises is the Interwar period (15.6% of output loss on average), while the mildest crises happened in the Bretton Woods years (-5.1% of output loss on average). This matches the evidence at global level showed by Bordo et al. (2001) for all types of crises, although crises seemed to be slightly more severe, on average, in Latin America in the Interwar years (15.6% vs. 13.4% in the global average).

Table 4: estimated average output gap in all recessions, recessions with financial crises and recessions without financial crises. LA8, 1870-2019[20]

	ARG	BRA	CHL	COL	MEX	PER	URU	VEN	LA8
All recessions									
FG	-6.5%	-2.9%	-3.7%	-2.3%	-3.2%	-7.8%	-6.1%	-3.0%	**-4.4%**
IW	-5.0%	-3.7%	-9.9%	-4.0%	-4.7%	-4.6%	-5.5%	-7.6%	**-5.5%**
BW	-3.0%	-3.7%	-2.7%	-1.1%	-2.3%	-3.2%	-2.3%	-1.4%	**-2.4%**
SG	-5.8%	-3.3%	-4.6%	-2.1%	-2.5%	-4.6%	-4.5%	-4.9%	**-4.0%**
postSG	-2.4%	-4.8%	-2.2%	-0.6%	-1.7%	-1.1%	-2.8%	-2.4%	**-2.5%**
Recessions with financial crises									
FG	-6.0%	-4.5%	-3.3%	-3.9%	-6.9%	-6.4%	-6.5%	-5.4%	**-5.0%**
IW	-5.5%	-4.1%	-10.9%	-4.5%	-5.5%	-7.7%	-5.8%	n/a	**-6.2%**
BW	-3.4%	-3.9%	-2.7%	-1.2%	-2.6%	-3.5%	-2.1%	-1.9%	**-2.7%**
SG	-6.2%	-4.0%	-6.7%	-2.6%	-3.7%	-5.7%	-5.2%	-6.6%	**-5.1%**
postSG	-2.3%	-6.0%	n/a	n/a	n/a	n/a	n/a	-3.1%	**-3.7%**
Recessions without financial crises									
FG	-6.7%	-2.0%	-3.9%	-1.0%	-2.7%	-8.3%	-5.9%	-2.5%	**-4.2%**
IW	-2.6%	-3.0%	-3.4%	-3.2%	-1.5%	-2.5%	-4.9%	-7.6%	**-4.4%**
BW	-0.9%	-2.7%	n/a	-0.6%	-2.2%	-2.8%	-2.7%	-1.2%	**-1.8%**
SG	-1.4%	-2.2%	-2.0%	-0.8%	-0.9%	-2.4%	-0.9%	-1.8%	**-1.6%**
postSG	-2.9%	-1.1%	-2.2%	-0.6%	-1.7%	-1.1%	-2.8%	-1.0%	**-1.7%**

Source: own elaboration. See text.

Then, an interesting difference is seen on the severity of financial crises in the two periods of globalisation: whereas the severity measured by Bordo et al. (2001) at global level

[19] n/a indicates no output loss due to the lack of financial crises.
[20] n/a indicates that there are not recessions that meet the criteria.

was larger in the First Globalisation (9.8%) than in the last decades of 20th century (8.3%), the opposite is seen for LA8 (7.4% vs. 9.8%). Table E.1 in Appendix E shows the results with the exclusion of 56 events with no output loss, out of a total of 147.

Finally, Table 4 shows the incidence of financial crises over the average output gap in recession years (i.e. years with negative output gap) as an approximation to a possible aggravating effect of financial crises over normal recessions. For the LA8 aggregate, financial crises make recessions worse in all the periods studied. This effect seems to be particularly strong since 1973: whereas the average output loss in a recession year without financial crises has been 1.6% for the LA8 aggregate between 1973 and 2019, it was 5.1% on average in a year with financial crisis[21]. In the other side, the narrower difference is seen in the Bretton Woods period, with values of 2.7% and 1.8% respectively. Even though this evidence is not strictly comparative to the evidence presented by Bordo et al. (2001) about the same aspect of crises and considering that there could be other factors affecting this relationship, this evidence is a first hint to the inquiry of the role of financial crises over the real cycle in Latin America.

Preliminary conclusions and next steps

As preliminary conclusions, we can state that financial crises seem to share some patterns with the global picture, especially their greater incidence in the Interwar years, their milder incidence (but not negligible) in the Bretton Woods years, and their aggravating effect over normal recessions. But there are some important differences when we see in detail the frequency of banking and currency crises in the two periods of globalisation, and particularly the behaviour of banking crises before 1945. Also, the general picture seems to sketch a stronger severity of financial crises in Latin America when compared to the evidence at global level, especially in the period of the Second Globalisation (until 2007).

The immediate step to take is the estimation of duration and severity results by type of crisis. Also, some robustness checks are needed to the estimation of output gaps, as well as an informed assessment of the financial crises' chronologies of each country by experts. Another avenue of enquiry are the intraregional differences observed, of which we could not extract a clear pattern yet.

We will explore possible determinants of the characteristics of financial crises in Latin America, looking at the behaviour of various internal and external macroeconomic variables. Particularly, we will study the incidence of the relatively lower development of the banking systems and their relationship with public finances in the pre-1945 years, the role of the different monetary regimes together with the degree of capital mobility, and the incidence of commodities' prices cycles over financial crises in the region, as well as other ways of international contagion. In particular, we will analyse the role of systemic or global financial crises, many of which have appeared near several financial crises in the region (see Table E.2 in Appendix E for a possible chronology of global financial crises).

Finally, we will also look at the variation within the region, given the important differences of economic structures, institutional settings and, more generally, development processes, that the 150 years of our sample show, taking as a starting point the typology of countries proposed by Bértola and Ocampo (2013) to capture this source of variation.

[21] Taking Venezuela out of the sample could relativize this conclusion and make the Interwar period more relevant in this aspect.

References

Asonuma, T., & Trebesch, C. (2016). Sovereign debt restructurings: preemptive or post-default. *Journal of the European Economic Association*, *14*(1), 175-214.

Baron, M., & Dieckelmann, D. (2021). Beyond Boom and Bust: Causes of Banking Crises, 1870-2016. *Unpublished manuscript*.

Baron, M., Verner, E., & Xiong, W. (2021). Banking crises without panics. *The Quarterly Journal of Economics*, *136*(1), 51-113.

Bértola, L., & Ocampo, J. A. (2013). *El desarrollo económico de América Latina desde la independencia*. Fondo de Cultura Económica.

Betrán, C., & Pons, M. A. (2018). Understanding Spanish financial crises severity, 1850–2015. *European Review of Economic History, 23*(2), 175-192.

Betrán, C., Martín-Aceña, P., & Pons, M. A. (2012). Financial crises in Spain: lessons from the last 150 years. *Revista de Historia Económica-Journal of Iberian and Latin American Economic History*, *30*(3), 417-446.

Bianchi, J., & Mendoza, E. G. (2020). A fisherian approach to financial crises: Lessons from the sudden stops literature. *Review of Economic Dynamics*, *37*, S254-S283.

Bolt, J. & van Zanden, J.L. (2020). Maddison style estimates of the evolution of the world economy. A new 2020 update. Maddison-Project Working Paper. WP-15.

Bordo, M. (1986). Financial Crises, Banking Crises, Stock Market Crashes and the Money Supply: Some International Evidence, 1870-1933. In Capie, F. and Wood, G.E. (1986, eds.). *Financial Crises and the World Banking System*. London: Macmillan.

Bordo, M. & Meissner, C.M. (2007). Financial Crises, 1880-1913. The Role of Foreign Currency Debt. In Edwards, S., Esquivel, G. and Márquez. G. (2007, eds.). *The Decline of Latin America Economies: Growth, Institutions, and Crises*. University of Chicago Press.

Bordo, M., & Meissner, C. M. (2016). Fiscal and financial crises. In *Handbook of Macroeconomics* (Vol. 2, pp. 355–412). Elsevier.

Bordo, M., Eichengreen, B., Klingebiel, D., & Martinez-Peria, M. S. (2001). Is the crisis problem growing more severe? *Economic Policy*, *16*(32), 52-82.

Calvo, G. A., Izquierdo, A., & Mejia, L. F. (2004). *On the empirics of sudden stops: the relevance of balance-sheet effects* (No. w10520). National Bureau of Economic Research.

Caprio, G., & Klingebiel, D. (1996). *Bank insolvencies cross-country experience*. World Bank Publications.

Cassis, Y. (2016). *Financial History and History*. In Cassis, Y.; Grossman, R. S.; and Schenk C. R. (2016, eds.). *The Oxford Handbook of Banking and Financial History.* Oxford University Press.

Cassis, Y.; Grossman, R. S.; and Schenk C. R. (2016). *General Introduction*. In Cassis, Y.; Grossman, R. S.; and Schenk C. R. (2016, eds.). *The Oxford Handbook of Banking and Financial History.* Oxford University Press.

Claessens, S. & Kose, A. (2014). Financial Crises: Explanations, Types and Implications. In Claessens, S., Kose, A., Laeven, L., & Valencia, F. (2014). *Financial crises: Causes, consequences, and policy responses*. International Monetary Fund.

De Corso, G. B. (2018). PIB y población desde el periodo tardo colonial hasta 2014: el caso venezolano. *Tiempo y Economía, 5*(1), 9-39.

De Corso, G. B. (2019). Crecimiento económico colombiano de 1888 a 2013: una nueva serie del Producto Interno Bruto. *Revista de Economía Institucional*, *21*(40), 259-289.

Demirgüç-Kunt, A., & Detragiache, E. (1998). The determinants of banking crises in developing and developed countries. *Staff Papers*, *45*(1), 81-109.

Díaz-Alejandro, C. (1985). Good-bye financial repression, hello financial crash. *Journal of Development Economics, 19*(1-2), 1-24.

Díaz, J., Luders & Wagner, G. (2007). Economía Chilena 1810-2000. Producto Total y Sectorial. Una nueva mirada. Documento de Trabajo N°315. Pontificia Universidad Católica de Chile. Instituto de Economía.

Eichengreen, B., Rose, A. K., & Wyplosz, C. (1996). Contagious currency crises. NBER WP5681.

Eichengreen, B., Hausmann, R., & Panizza, U. (2005). The pain of original sin. In Eichengreen, B., Hausmann, R. (eds.) *Other people's money: Debt denomination and financial instability in emerging market economies*, 13-47.

Ferreres, O. J. (2005). *Dos siglos de economía argentina, 1810-2004: Historia argentina en cifras*. Fundación Norte y Sur.

Flores Zendejas, J. (2022). Crisis monetarias y crisis de deuda en América Latina, 1870-1957. *Odeon, 23*, 147-177.

Frydman, C., & Xu, C. (2023). Banking Crises in Historical Perspective. *Annual Review of Financial Economics, 15*:265-90

Gorton, G. (2018). Financial crises. *Annual Review of Financial Economics*, *10*:43-58.

Gourinchas, P. O., & Obstfeld, M. (2012). Stories of the twentieth century for the twenty-first. *American Economic Journal: Macroeconomics*, *4*(1), 226-265.

Greenwood, R., Hanson, S. G., Shleifer, A., & Sørensen, J. A. (2020). Predictable financial crises. *The Journal of Finance, 77*:2.

Grossman, R. S. (2016). *Banking Crises*. In Cassis, Y.; Grossman, R. S.; and Schenk C. R. (2016, eds.). *The Oxford Handbook of Banking and Financial History.* Oxford University Press.

Jalil, A.J. (2015). A new history of banking panics in the United States, 1825–1929: construction and implications. *American Economic Journal: Macroeconomics*, *7*(3), 295-330.

Kaminsky, G. L., & Reinhart, C. M. (1999). The twin crises: the causes of banking and balance-of-payments problems. *American Economic Review*, *89*(3), 473-500.

Kaminsky, G. L., & Vega-Garcia, P. (2016). Systemic and idiosyncratic sovereign debt crises. *Journal of the European Economic Association*, *14*(1), 80-114.

Kindleberger, C. P., & Aliber, R. Z. (2015). *Manias, panics, and crashes: A history of financial crises* (p. 256). Basingstoke: Palgrave Macmillan.

Krugman, P. (2009). How did economists get it so wrong? *New York Times*, *2*(9), 2009.

Laeven, L. & Valencia, F. (2020). Systemic banking crises database: an update. IMF working paper no.12/163.

Laeven, L. & Valencia, F. (2020). Systemic banking crises database II. *IMF Economic Review*, 1-55.

Marichal, C. (2013). *Nueva historia de las grandes crisis financieras: una perspectiva global, 1873-2008*. Debate.

Metrick, A., & Schmelzing, P. (2024). *Banking-Crisis Interventions Across Time and Space*. Working Paper.

Meyer, J., Reinhart, C. M., & Trebesch, C. (2022). Sovereign bonds since Waterloo. *The Quarterly Journal of Economics*, *137*(3), 1615-1680.

Reinhart, C.M. (2012). A Series of Unfortunate Events: Common Sequencing Patterns in Financial Crises. NBER WP 17941.

Reinhart, C. M., & Rogoff, K. S. (2009). *This time is different: eight centuries of financial folly*. Princeton University Press.

Reinhart, C. M., Reinhart, V., & Trebesch, C. (2016). Global cycles: Capital flows, commodities, and sovereign defaults, 1815-2015. *American Economic Review*, *106*(5), 574-80.

Román, C., & Willebald, H. (2021). Structural change in a small natural resource intensive economy. Switching between diversification and re-primarization. *Economic History of Developing Regions, 36:1*

Schularick, M., & Taylor, A. M. (2012). Credit booms gone bust: Monetary policy, leverage cycles, and financial crises, 1870-2008. *American Economic Review*, *102*(2), 1029-61.

Seminario, B. (2016). *El desarrollo de la economía peruana en la era moderna: precios, población, demanda y producción desde 1700*. Universidad del Pacífico.

Sufi, A., & Taylor, A. M. (2022). Financial crises: A survey. In *Handbook of International Economics*, *6*, 291-340.

Taylor, A.M. (2015). Credit, stability and the macroeconomy. *Annual Review of Economics, 7*(1), 309-339.

Turner, J. D. (2014). *Banking in crisis: the rise and fall of British banking stability, 1800 to the present*. Cambridge University Press.

Appendix A: a chronology of banking crises in LA8

Table A.1: Banking crises dates

	CK (1996,2003)		DK-D (1998,2005)		KR (1999)		BEKM (2001) BM (2016)		RR (2016)		LV (2020)		BVX (2021)	MS (2024)	**BANKING**
	Start	End	Start	End	Start	Peak	Start	End	Start	End	Start	End	**Start**	Start	**Start**
Argentina														05/1876	**1876**
														01/1885	
							1890	1891	1890	1891			1891	03/1890	**1890**
							1914	1914	1914	1914			1914	08/1914	**1914**
							1929	1929	1931	1931			1930	04/1931	**1931**
							1934	1934	1934	1934			1934	09/1934	**1934**
														01/1949	
	1980	1982	1980	1982	03/1980	07/1982	1980	1982	1980	1982	1980	1982	1980	04/1980	**1980**
													1985	1985	
	1989	1990	1989	1990	05/1985	06/1989	1989	1990	1989	1990	1989	1991	1989	1989	**1989**
	1995	1995	1995	1995	12/1994	03/1995	1995	1996	1995	1996	*1995*	*1995*	1995	01/1995	**1995**
	2001	2003	2001	2002					2001	2003	2001	2003	2000	04/2001	**2001**
														2008	
Brazil														03/1821	**1821**
														09/1864	**1864**
														1866	**1866**
														05/1875	**1875**
							1889	1889	1890	1891			1890	01/1890	**1890**
							1898	1898	1897	1897				1897	
							1900	1901	1900	1901			1900	09/1900	**1900**
							1914	1914	1914	1914			1914	08/1914	**1914**
							1923	1923	1923	1923				1923	
									1926	1926				1926	
									1929	1929			1929	10/1930	**1930**
														05/1955	
							1962	1962	1963	1963				1963	**1963**
					11/1985	11/1985			1985	1986			1985	1985	**1985**
	1990	1990	1990	1990			1990	1990	1990	1991	*1990*	*1994*	1990	03/1990	**1990**
	1994	1999	1994	1999	07/1994	03/1996	1994	1996	1994	1997	1994	1998	1994	12/1994	**1994**
														1998	
														10/2008	
														11/2015	
Chile														08/1862	
														1865	**1865**
														07/1875	
													1878	07/1878	**1878**
									1890	1890					
														02/1895	
							1898	1898	1899	1899			1898	08/1898	**1898**
							1907	1907	1907	1908			1907	12/1907	**1907**
							1914	1914	1914	1914			1914	1915	**1915**
							1925	1925	1926	1926			1925	1926	**1926**
													1931	1931	**1931**
														1970-72	
	1976	1976					1975	1975	1976	1977	1976	1976	1976	01/1976	**1976**
	1981	1986	1981	1987	09/1981	03/1983	1981	1983	1981	1984	1981	1985	1982	11/1981	**1981**
Colombia														07/1923	
													1931	12/1929	**1929**
	1982	1987	1982	1985	07/1982	06/1985	1982	1987	1982	1987	1982	1982	1982	06/1982	**1982**
			1999	2000	03/1998				1998	2000	1998	2000	1998	10/1998	**1998**
														2008	

(continues on next page)

	CK (1996,2003)		DK-D (1998, 2005)		KR (1999)		BEKM (2001) BM (2016)		RR (2016)		LV (2020)		BVX (2021)	MS (2024)	**BANKING**
	Start	End	Start	End	Start	Peak	Start	End	Start	End	Start	End	**Start**	Start	**Start**
Mexico							1884	1884	1884	1885			1883	03/1883	1883
									1893	1893			1893	1893	1893
							1907	1907	1908	1908				1907-08	1907
									1913	1913			1913	09/1913	1913
									1920	1921			1921	01/1921	1921
														1924	
									1929	1931			1928	1928	
														07/1931	1931
	1981	1991	1982	1982	09/1982	06/1984	1981	1982	1981	1982	1981	1985	1981	09/1982	1982
														07/1990	
	1994	1997	1994	1997	10/1992	03/1996	1994	1994	1993	1997	1994	1996	1994	12/1992	
														09/1994	1994
														10/2008	
Peru									1872	1876			1876	1872-76	1875
													1914	08/1914	
													1931	1931	1931
	1983	1990	1983	1990	03/1983	04/1983	1983	1990	1983	1990	1983	1983	1981	01/1982	1982
														10/1987	
									1999	1999			1998	12/1998	1998
Uruguay														06/1866	1866
														11/1875	1875
									1893	1893				1893	1891
									1898	1898				1898	
							1913	1913							
														04/1965	1965
					03/1971	12/1971			1971	1971				04/1971	1971
	1981	1984	1981	1985	03/1981	06/1985	1981	1984	1981	1985	1981	1985		1980-83	1981
														1985-87	
	2002	2003	2002	2002					2002	2005	2002	2005		07/2002	2002
Venezuela														1960	1960
	1978	1986					1978	1986	1978	1986			1981	1978	1978
														1985	
														1988	
	1994	1995	1993	1997	10/1993	08/1994	1994	1994	1993	1996	1994	1998	1992	1994	1994
														1998	
									2009	2010			2008	2008	2008

Source: own elaboration based on Kaminsky and Reinhart (1999), Bordo et al. (2001), Caprio and Klingebiel (1996), Demirgüc-Kunt and Detragiache (1998), Reinhart and Rogoff (2009), Bordo and Meissner (2016), Laeven and Valencia (2020), Baron et al. (2021) and Metrick and Schmelzing (2024)

Note: dates in italics refer to borderline events, as they are stated in the original source.

Appendix B: a chronology of currency crises in LA8

Table B.1: Currency crises dates

Argentina	Brazil	Chile	Colombia	Mexico	Peru	Uruguay	Venezuela
1885	1815	1879	1906	1891	1892	1919	1964
1889	1827	1885	1909	1914	1921	1930	1984
1890	1829	1891	1920	1915	1930	1931	1987
1920	1837	1893	1932	1932	1932	1938	1989
1930	1842	1908	1951	1939	1950	1939	1994
1931	1868	1919	1957	1948	1953	1949	1996
1933	1885	1921	1962	1954	1958	1958	2002
1941	1890	1932	1966	1977	1968	1963	2011
1948	1893	1943	2015	1982	1976	1965	2013
1951	1897	1946		1986	1978	1968	2016
1954	1914	1949		1995	1981	1972	
1958	1920	1952			1982	1975	
1962	1923	1953			1983	1983	
1967	1931	1955			1985	1985	
1975	1934	1957			1988	1990	
1981	1952	1958			1989	2002	
1982	1953	1962			1990		
1984	1957	1964					
1985	1958	1972					
1987	1961	1973					
1988	1964	1974					
1989	1979	1982					
2002	1980	1983					
2014	1982	1985					
2016	1983						
2018	1985						
	1987						
	1988						
	1989						
	1990						
	1992						
	1993						
	1999						
	2015						

Source: own elaboration

Table B.2: Count of currency crises under different thresholds, 1901-2019

Country	R1	R2	R3	R4
Argentina	39	33	19	22
Brazil	50	37	19	23
Chile	38	30	22	23
Colombia	29	14	5	9
Mexico	22	15	9	11
Peru	27	22	15	15
Uruguay	42	33	18	18
Venezuela	13	10	6	6
Grand Total	**260**	**194**	**113**	**127**

Source: own elaboration.

Note: R1 counts currency crises under the Reinhart and Rogoff (2009) rule: 15% of annual depreciation, whereas R2 counts currency crises under a more restrictive threshold of 25%. R3 counts currency crises under the Laeven and Valencia (2020) rule: 30% of annual depreciation and 10 pp. greater than the previous year. R4 counts currency crises under the mixed rule proposed in this paper.

Appendix C: a chronology of debt crises in LA8

Table C.1: debt crises dates

	MRT (2022)	RR16-RRT (2016)	KVG (2016)	LV (2020)	**DEBT**
Argentina	1827	1828	1828		**1828**
	1890	1890	1891		**1891**
	1951	1951			**1951**
		1956			**1956**
		1982		1982	**1982**
				1989	**1989**
		2001		2001	**2001**
		2014		2014	**2014**
Brazil			1828		**1828**
	1898	1898	1898		**1898**
	1914	1914	1914		**1914**
	1931	1931	1931		**1931**
	1937	1937			**1937**
	1961	1961			**1961**
		1983		1983	**1983**
Chile	1826	1826	1827		**1827**
	1880	1880	1879		**1879**
	1931	1931	1931		**1931**
	1961	1961			**1961**
	1963	1963			**1963**
	1965	1965			**1965**
	1972	1972			**1972**
		1983		1983	**1983**
Colombia			1821		**1821**
	1826	1826	1826		**1826**
	1850	1850	1848		**1848**
	1873	1873	1873		**1873**
	1880	1880	1879		**1879**
	1900	1900	1900		**1900**
	1932	1932	1932		**1932**

	MRT (2022)	RR16-RRT (2016)	KVG (2016)	LV (2020)	
Mexico	1827	1827	1827		**1827**
	1833	1833			**1833**
	1844	1844			**1844**
	1854	1854	1854		**1854**
	1866	1866			**1866**
	1914	1914	1914		**1914**
	1928	1928	1928		**1928**
		1982		1982	**1982**
Peru	1826	1826	1826		**1826**
	1875	1876	1876		**1876**
	1931	1931	1931		**1931**
	1968	1969			**1969**
	1976	1976			**1976**
	1978	1978		1978	**1978**
	1980	1980			**1980**
		1983			**1983**
Uruguay	1876	1876	1875		**1875**
	1891	1891	1891		**1891**
	1915	1915	1915		**1915**
	1932	1933	1931		**1931**
	1965	1965			**1965**
		1983		1983	**1983**
		1987			**1987**
		1990			**1990**
		2003		2002	**2003**
Venezuela		1826	1821		**1821**
	1848	1848	1848		**1848**
	1861				**1860**
	1865	1865	1865		**1865**
	1892	1892	1890		**1890**
	1898	1898	1898		**1898**
		1983		1983	**1983**
		1990			**1990**
		1995			**1995**
		2004			**2004**
				2017	**2017**

Source: own elaboration based on Reinhart and Rogoff (2009), Reinhart et al. (2016), Kaminsky and Vega-García (2016), Laeven and Valencia (2020) and Meyer et al. (2022).

Appendix D: real GDP series sources, by country

Argentina

Data on real GDP in national currency from Ferrares (2005), updated to 2018, available here.

Availability: 1810-2018

Brazil

Data on real GDP in Geary-Khamis USD from Maddison Database (Bolt and Van Zanden, 2020).

Availability: 1850-2018

Chile

Data on real GDP in national currency from Díaz, Luders and Wagner (2007) updated with variations taken from series in Banco Central de Chile website ("Gasto del PIB volume a precios del año anterior encadenado, referencia 2018, información histórica (miles de millones de pesos encadenados)").

Availability: 1810-2019

Colombia

Data on real GDP in national currency from De Corso (2019).

Availability: 1888-2013

Mexico

Data on real GDP in Geary-Khamis USD from Maddison Database (Bolt and Van Zanden, 2020).

Availability: 1895-2018

Peru

Data on real GDP in national currency from Seminario (2015).

Availability: 1810-2012

Uruguay

Data on real GDP in national currency from Román and Willebald (2021).

Availability: 1870-2019

Venezuela

Data on real GDP in national currency from De Corso (2018).

Availability: 1810-2014

Appendix E

Table E.1: average output loss of financial crises as percentage of real GDP trend, excluding events without output loss. LA8, 1870-2019

	ARG	BRA	CHL	COL	MEX	PER	URU	VEN	LA8
FG	-23.9%	-8.8%	-5.2%	-23.2%	0.0%	-25.7%	-19.6%	-26.9%	**-13.4%**
IW	-27.5%	-15.0%	-26.3%	-20.2%	-22.5%	-18.1%	-20.2%	n/a	**-22.0%**
BW	-8.6%	-14.2%	-7.0%	-3.4%	-3.9%	-15.4%	-4.1%	-7.5%	**-7.2%**
SG	-16.1%	-12.0%	-33.6%	-17.1%	-12.4%	-19.4%	-20.6%	-24.4%	**-18.8%**
postSG	-4.6%	-18.1%	n/a	n/a	n/a	n/a	n/a	-6.1%	**-8.4%**

Source: own elaboration. See text and Table 3.

n/a indicates no output loss due to the lack of financial crises.

Table E.2: systemic or global financial crises

Event	***Type***	***Most affected financial centre***	***Most affected regions***
1825-1826	*Global*	*UK*	*Europe and LA*
Panic of 1907	*Global*	*USA*	*Europe, Asia and LA*
Great Depression, 1929-1938	*Global*	*USA, France*	*All the regions*
1980s' debt crises	*Multinational*	*USA*	*Emerging markets, especially in Africa and LA*
Asian crisis of 1997-1998	*Multinational*	*Japan*	*Asia, Europe and LA*
Great Recession, 2008-?	*Global*	*USA, UK*	*All the regions*

Source: adapted from Reinhart and Rogoff (2009)