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Article

Making explosive cocktails: Recipes and costs of 20 Argentine crises from 1865 to 2004

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ABSTRACT

The objective of this paper is twofold. Firstly, we investigate what were the "recipes" of the 20 Argentine currency crises from 1865 to 2004 using regression tree analysis, which is a non-parametric data classification technique. Secondly, we evaluate the costs of Argentina's crises in terms of output losses and recovery time.

We obtained three "recipes" that constitute an early warning system. The most costly and frequent mix has two "ingredients": high Public Expenditures (% of GDP) and Current Account Deficit (% of GDP). The less frequent and less costly mix consists of moderate Public Expenditures, Real Exchange Rate Overvaluation, and high International Interest Rates. Finally, the mix with intermediate costs and medium frequency is made up of five ingredients: moderate Public Expenditures, Real Exchange Rate Overvaluation, moderate International Interest Rates, strong decline in Bank Deposits, and high ratio of Monetary Aggregate M2 to International Reserves.

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Haciendo cocktails explosivos: recetas y costos de 20 crisis argentinas desde 1865 hasta 2004

RESUMEN

Este trabajo tiene un doble objetivo. Primero investiga cuales son las "recetas" de las 20 crisis Argentinas en el periodo 1865–2004 mediante Classification Tree Analysis, una técnica de clasificación de datos no paramétrica. En segundo lugar, evalúa los costos de las crisis en términos del PBI perdido y del tiempo de recuperación.

Obtenemos tres "recetas" que constituyen un sistema de alerta temprana. La mezcla más costosa y frecuente tiene dos "ingredientes": elevado gasto público (% del PBI) y déficit de cuenta corriente (% del PBI). La mezcla menos frecuente y menos costosa se hace con Gasto público moderado, sobrevaluación del tipo de cambio real y elevadas tasas de interés internacional. Por último, la mezcla con costos y frecuencia intermedia tiene cinco ingredientes: Gasto público moderado, sobrevaluación del tipo de cambio real y tasas de interés internacionales moderadas, fuerte caída en los depósitos bancarios y elevado ratio del agregado monetario M2 a reservas internacionales.

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1. Introduction

Major economic phenomena usually revive the interest of scholars in studying similar events in the past. The Eurozone crisis has not been the exception. Its deleterious effects on output and employment have spurred a myriad of papers that dig into the history for lessons to understand the present. Some researchers have

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focused their attention on specific crisis such as the Great Depression, while others have concentrated on particular sets of crises covering countries from several geographic regions and different historical periods. In this paper, we propose a different approach. We look into the past of a single country, covering most of its history in an attempt to embed our findings within a broader empirical and theoretical debate regarding crises "ingredients" around the globe.

Is there any country with such a useful past that deserves special attention? We claim that Argentina is one the most interesting cases to study. Its record includes 24 crises from 1823 to 2002 (Cerro and Meloni, 2003, 2013), which implies 50 crisis years when counting long-lasting episodes. That is, one crisis every seven and a half years and one crisis year every three and a half years, more than any other country in the world (Eichengreen and Bordo, 2002). How does Argentina come to have such a large number of crises and crisis years? Do crises have a common "recipe" or are there a variety of potential mixtures? If so, what are the ingredients of such "explosive mixes"? Are they made with import components, such as increases in international interest rates, changes in the international capital market conditions, or declining prices on exports? Or are they also obtained with national "condiments" such as fiscal deficit, high indebtedness and real exchange rate overvaluation? How many ingredients are needed to make an explosive cocktail? Furthermore, which is the most expensive mix?

To answer these questions, we investigated the "recipes" of the 20 currency crises suffered by Argentina from 1865 to 2004 by means of a Classification Tree Analysis (CTA), a non-parametric data classification technique widely used in several disciplines for early detection of distress events. The application of a Classification Tree Analysis to the economics of the crises field was pioneered by Kaminsky (2006) who identified six varieties of crises from a sample of twenty countries for a large period starting in the 1970s. This technique arose as an alternative to parametric approaches, including logit and VAR models, and also non-parametric, such as the leading indicators methodology. Our inputs were the 20 financial crises identified by Cerro and Meloni (2003, 2013) and fourteen financial and macroeconomic variables suggested by the theoretical and empirical literature (Frankel and Wei, 2004; Kaminsky, 2006). We looked for an early warning system that would help to anticipate crises. Economic historians have studied extensively the case of Argentina, focusing on specific crisis or sets of crises in particular historical periods (Cortés Conde, 1989; Choueiri and Kaminsky, 1999; della Paolera and Taylor, 1999, 2000; Bordo and Vegh, 2002). Our approach was to aim at complementing their findings.

We have also evaluated Argentina's crises' costs in terms of output losses and recovery time. We carried out a variant of the International Monetary Fund (IMF, 1998) methodology that entails the computation of cumulative output loss relative to trend.

This paper is organized in four sections. In the following section we summarize the methodology to identify crises for a time span of 139 years and highlight some features of the main crises. In Section 3 we identify the ingredients of "explosive mixes" by means of the CTA Method, and in Section 4 we evaluate the costs of currency crisis in terms of output losses and recovery time. Section VI carries our concluding remarks.

2. Argentine crises

The literature on the Argentine economic history shows considerable agreement about the identification of the most significant Argentine crises. The episodes of 1826–1827, 1838–1840, 1845–1848, 1890, 1929/1930, 1976, the turbulent 1980s, and the latest 2001/2002 are unanimously rated as crises by the majority of scholars. Similarly, other events, such as the ones in 1876, 1884

1914, 1948–1949, 1959, 1964, and 1971, also have great consensus about their qualification as crises. However, for a long time this agreement was rather loose, lacking a precise definition of crisis and hence about the variables to look at when describing a crisis. A standard way to identify currency crises is through the Market Turbulent Index (MTI) defined as the sum of three components: the rates of change of international reserves, exchange rate, and interest rate, weighted by the inverse of the respective standard deviation to avoid having the most variable component dominate the index movements.[1] In this framework, currency crises are defined as situations in which speculative attacks on the exchange value of the currency result in a devaluation (or sharp depreciation) of the currency, a rapid decrease in international reserves, an abrupt increase in interest rates, or some combination of these.[2]

This is the approach followed by Cerro and Meloni (2003, 2013) to identify crises in Argentina from 1823 to 2003.[3] They constructed an MTI for six sub-periods: 1825–1861 (from the President Rivadavia administration to the National Organization, President Mitre administration); 1862–1913 (from the Mitre administration to World War I); 1914–1945 (from World War I to World War II); 1946–1975 (from the first to the third President Perón administrations); 1976–1991 (from the first to the second hyperinflation); and 1992–2002 (convertibility years). Depending on how large the deviation was from the MTI mean, Cerro and Meloni classified crises as very deep (or crashes), deep, or mild. Their emphasis was on crises. But since we stress "crisis year" instead of "crisis," using their data set, we recomputed MTI and redefined crises and crisis year to capture minor turbulences that usually precede a crisis because we are interested in constructing an early warning system. If the actual MTI was greater than half of the standard deviation (computed for each sub-period) for three consecutive months, we classified that year as a crisis year.

Table 1, Panels A and B, shows the behavior of the MTI and its components for each crisis year for the periods of 1865–1913 (calculated from annual data) and of 1914–2002 (calculated from monthly data). Computations from annual data might have resulted in an underestimation of the number of crisis years since episodes within a given year cannot be detected by the index duration. Due to data availability, the MTI only includes the variable exchange rate from 1865 to 1874.

2.1. Major crises in the 19th century

Before the National Organization period (starting in 1862), most of the crises were associated with international conflicts that resulted in blockades to the port of Buenos Aires and hence in dramatic falls in the revenues from import tariffs, the main source of financing the public budget, which in turn was high and growing due to military spending. The country suffered three blockades: the first one, in 1826, during the war against Brazil (1825–1827); and then two more: in 1838–1840, performed by the French; and in 1845–1848, carried out by the combined French and British forces.

On the other hand, the three episodes dated in the last quarter of the century, the crises of 1876, 1885 and 1889/1891, were good examples of inconsistency between monetary and fiscal policies (see Fig. 1). During the Sarmiento administration (1868–1874), expenditures had grown considerably not only because the war

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