Journal of Economic Dynamics & Control 000 (2018) 1–16

Contents lists available at ScienceDirect

Journal of Economic Dynamics & Control

journal homepage: www.elsevier.com/locate/jedc

Macrofinancial imbalances in historical perspective: A global crisis index

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ARTICLE INFO

Article history:
Received 15 April 2017
Revised 21 December 2017
Accepted 22 January 2018
Available online xxx

Keywords:
Macrofinancial imbalances
Global crisis episodes
International monetary system

ABSTRACT

Global crisis episodes are "rare events" that can be properly studied by adopting the long run view of macroeconomic history. In this study we explore the strength of the relationship between current account imbalances, credit growth and equity returns at global level and document new evidence of a recurring sequencing pattern ahead of global crisis periods where credit booms are preceded by growing external imbalances, and crisis episodes occur at the low end of the contraction phase of equity returns. We use this information to construct a single aggregate measure with the aim of signaling periods of increasing risk of macroeconomic and financial instability at global level. Three major crisis episodes are identified with our global crisis index: the 1929 crisis, the breakdown of the Bretton-Woods system and the recent financial crisis. Since past global crisis episodes at international level culminated with the collapse of existing international monetary systems, the ongoing debate on the reforms needed to enhance the stability of international financial markets indicates the recent global financial crisis as a major turning point in the evolution of the international financial and monetary system.

1. Introduction

The events of the first decade of the twenty first century, with equity prices collapsing and their contagion effects spreading from the financial to the real side of the economy and culminated into the so-called Great Recession, bring to mind those experienced by developed economies during the 1929 crisis and the Great Depression of the 1930s. In the search to provide a comprehensive quantitative explanation of such large-scale global events the researchers have adopted an historical perspective by using extended and refined historical data (Alumnia et al., 2010; Barro, 2009; Reinhart and Rogoff, 2009) as well as newly developed long-term cross-country dataset Schularick and Taylor (2012) and Jordá et al. (2013). For instance, Reinhart and Rogoff (2009) have examined the association among housing booms, current account deficits, and financial crises, whereas Schularick and Taylor (2012) and Jordá et al. (2013) have investigated the relationship among credit booms, external imbalances and financial crisis events.

Global crisis episodes display several distinct features as to "normal" crisis in terms of frequency, depth and diffusion. First, historically these large drops occur infrequently. Global crises are typically separated by decades, especially in developed economies, so that the cycle length of these crisis episodes "can be a half century or more long, not just 30 years"

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https://doi.org/10.1016/j.jedc.2018.01.026
0165-1889/

Please cite this article as: M. Gallegati, D. Delli Gatti, Macrofinancial imbalances in historical perspective: A global crisis index, Journal of Economic Dynamics & Control (2018), https://doi.org/10.1016/j.jedc.2018.01.026

(Reinhart and Rogoff, 2011). Second, large-scale crisis generally imply a severe contraction of the level of economic activity throughout the world whose effects can be long-lasting for the real economy. Third, their effects tend to spread internationally very quickly through fundamentals, trade and capital flows linkages, and "contagious effects". Thus, large-scale crisis can be defined as "rare or extreme events" characterized by synchronous large declines in prices of credit and equity markets across countries and regions and sharp reductions in a broad range of world aggregates which generally culminate with the reform of the existing international monetary and financial system.

Long-term macroeconomic data can provide an exhaustive historical perspective on events occurring at quite a low frequency. The recent global financial crisis has generated renewed interest in macroeconomic and financial history with a proliferation of studies, especially for developed countries (e.g. Alumnia et al., 2010; Barro, 2009; Reinhart and Rogoff, 2009; Schularick and Taylor, 2012 and Jordá et al. (2013)), resulting in a wide and growing consensus on the hypothesis that financial crises are "credit booms gone wrong (or bust)".[1] The rationale for taking a longer perspective and adopting the comparative economic history approach in the analysis of international crisis episodes is twofold. The first is that, since history tends to repeat itself, long-term historical time series provide a way to detect empirical regularities among several crisis events. The latter is that, given the low frequency of occurrence of global crisis episodes in developed countries, a long run macro-financial history approach can be preferred to standard statistical methods.

In this paper we use the long-term historical database from Schularick and Taylor (2012) and Jordá et al. (2013) in the search for empirical regularities that can offer useful insights for detecting large-scale crisis episodes. For this purpose we examine the relationships among several key macroeconomic and financial variables investigated in the recent literature in the field of macrofinancial history (e.g. Reinhart and Rogoff, 2009; Schularick and Taylor, 2012 and Jordá et al. (2013)). Specifically, we investigate the time-frequency dependencies among external imbalances, credit growth and equity price returns measured at global level using the exploratory analysis tools of the continuous wavelet transform. The key finding emerging from the long wave pattern of the CA/GDP ratio, the credit/GDP ratio and equity returns is that major global crisis periods are preceded and accompanied by macroeconomic imbalances in the global economy, current account deficits and credit growth respectively, with crisis episodes occurring at the low end of the contraction phase of equity returns. When this information content on the phase relationships between the long wave components of external imbalances, credit booms and equity price returns is used to construct a composite indicator with the aim of detecting periods of increasing risk of macroeconomic and financial instability at global level we are able to identify three major global crisis periods: two of them, the 1929 crisis and the breakdown of the Bretton-Woods system, correspond to historical crisis episodes at international level that ended with the collapse of existing international monetary systems. The third, the recent global financial crisis of 2008–9, has favored the emergence of a vigorous debate on the reform reforms needed to enhance the stability of international financial markets. Since past global crisis episodes at international level culminated with the collapse of existing international monetary systems, the recent global financial crisis is likely to represent a major turning point in the evolution of the international financial and monetary system. In sum, our results provide important insights for the empirical evidence and for some puzzling questions that have emerged in the macrofinancial historical literature as well as interesting implications for reforming the international financial and monetary system.

The paper is structured as follows: Section 2 provides an overview of the evidence provided in the macrofinancial historical literature on the role of credit booms, external imbalances and equity prices in past crisis episodes. Section 3 explores the time-frequency relationships among the variables of our historical dataset using wavelet-based exploratory data tools such as the wavelet coherence and the phase-difference. Section 4 explains the methods used for the extraction of long waves and provides some historical and descriptive evidence on the long wave patterns of the CA/GDP ratio, the credit/GDP ratio and equity returns along with a test of their predictive ability. Section 5 presents the composite index measuring the risk of macroeconomic and financial instability at global level. Section 6 concludes the paper.

2. Global crisis evidence from the macrofinancial historical approach

There is a large growing consensus in the literature on the role played by excessive credit growth for predicting financial crisis episodes. Borio and White (2004) and Eichengreen and Mitchener (2004) have provided empirical evidence that systemic financial crises, and in particular the Great Depression, can be interpreted as "credit booms gone wrong or bust". Similar findings have been recently reaffirmed also for the 2008 global financial crisis. The historical evidence provided by Borio and Lowe (2002b), Mendoza and Terrones (2008), Schularick and Taylor (2012), Jordá et al. (2013) and Taylor (2015) shows that systemic financial crisis are usually preceded by a lending boom and that credit boom is the best indicator of future financial instability. Moreover, the predictive ability of past credit growth values is robust to the inclusion of additional key macroeconomic variables such as global imbalances and equity prices, since these variables, although individually significant as early warning indicators, can provide only limited information about the probability of a future crisis once credit growth is taken into account Schularick and Taylor (2012) and Jordá et al. (2013). For example, although there is evidence of accelerating credit growth and external imbalance widening in the years preceding a crisis, "external imbalances do not seem to play as large a role in creating instability as credit boom" (Jordá et al., 2013, p.3). In sum, the main findings stemming from the historical macrofinancial approach on the determinants of the recent financial crisis are

[1] E.g. and Schularick and Taylor (2012).