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On the relation between currency and banking crises in developing countries, 1980–2010



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ABSTRACT

This paper investigates the relationship between the occurrence of currency and banking crises using high-frequency data for a sample of 94 countries during 1980–2010. The two types of crises are proxied by continuous, multi-categorical and dummy variables based on market pressure indexes, and a dummy variable from the Laeven–Valencia banking crises database. Results suggest that a bidirectional leading relationship exists between the two types of crises. However, banking crises do not lead currency crises robustly when banking crises are proxied by dummies based on market pressure indexes. Finally, currency crises have robust state dependence, but this is not the case for banking crises.

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1. Introduction

The relationship between currency and banking crises has attracted a lot of attention since the Asian financial crisis in 1997. Currency and banking crises occur frequently and have serious consequences. Particularly, when the two crises occur at the same time (twin crises) their costs are high (Hutchison & Noy, 2005).

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A currency crisis occurs if a currency significantly depreciates (Frankel & Rose, 1996). Moreover, if the central bank tries to prevent the currency depreciation by using its own reserves and/or by increasing the interest rate, a currency crisis can also be characterized by a sudden fall of reserves, a large increase of interest rates or both (Eichengreen, Rose, & Wyplosz, 1996). Existing research applies these criteria in combination with a decision rule to construct so-called Exchange Rate Market Pressure Indexes (EMPIs) as a proxy for currency crises (Eichengreen et al., 1996; Kaminsky & Reinhart, 1999).

Different from a currency crisis, a (systemic) banking crisis has characteristics, such as bank closures, mergers, deposit freezes and government interventions, which are less easy to quantify. Laeven and Valencia (2008) define a banking crisis as an event in which a “country’s corporate and financial sectors experience a large number of defaults and financial institutions and corporations face great difficulties repaying contracts on time. This situation may be accompanied by depressed asset prices (such as equity and real estate prices) on the heels of run-ups before the crisis, sharp increases in real interest rates, and a slowdown or reversal in capital flows. In some cases, the crisis is triggered by depositor runs on banks, though in most cases it is a general realization that systemically important financial institutions are in distress.” Most scholars try to identify a banking crisis based on certain events mentioned at the beginning of this paragraph (events method). For example, Laeven and Valencia (2013) identify 147 banking crises episodes from 1970 to 2011 using this approach. Their database has been widely used in empirical research. In contrast, Von Hagen and Ho (2007) and Jing, de Haan, Jacobs, and Yang (2015) construct a Money Market Pressure Index (MPI) in combination with a decision rule to identify banking crises. The basic idea of this MPI is that in a crisis the banking sector will face difficulties, such as an increase in non-performing assets, withdrawals of deposits, and drying up of inter-bank lending, which will lead to a sharp increase in banks’ demand for central bank liquidity. The central bank will react to this increased demand in two ways. If central bank reserves are the operating target of monetary policy, the supply of reserves will be constant and the short-term interest rate will rise. Otherwise, the central bank will sustain the level of the short-term interest rate and inject additional reserves into the banking sector. Thus, a banking crisis is generally characterized by a sharp increase of short-term interest rates, the stock of central bank reserves, or both.

Previous papers on the lead–lag relation between currency and banking crises (e.g. Dungey, Jacobs, & Lestano, 2015; Falcetti & Tudela, 2008; Kaminsky & Reinhart, 1999; Rossi, 1999) typically investigate the relationship between the two crises using dummy variables as proxies for the occurrence of crises, where 1 denotes a crisis, and 0 a tranquil period. These dummies are derived from EMPIs or currency depreciation exceeding a particular threshold for currency crises and the events method for banking crises.

However, Davis and Karim (2010) argue that before the outbreak of a crisis, risk is generally being build up. Therefore, dummy variables may not fully capture the relationship between currency and banking crises, because there may also be a relationship between the two crises during the process of risk accumulation prior to the crises. Arguably, continuous variables or multi-categorical variables may better capture this relationship than dummy variables. In addition, most studies apply annual data and this low frequency makes it difficult to determine which type of crisis occurs earlier if a currency and a banking crisis occur in the same year.

The purpose of this paper is to re-investigate the relationship between currency and banking crises in 94 developing and emerging countries using quarterly data for the period 1980Q1–2010Q4. Currency and banking crises are proxied by several variables to investigate whether the use of different types of proxies yields the same conclusion on the lead–lag relationship between the two crises. First, the two crises are proxied by continuous variables, namely an Exchange Market Pressure Index (EMPI) and a Money Market Pressure Index (MMPI), and Granger causality tests in a fixed effects dynamic panel setting are employed to investigate their relationship. Then, the two continuous variables are summarized into multi-categorical data, distinguishing between very deep crises, deep crises, mild crises and tranquil periods, and fixed effects ordered logit models are employed to analyze the relationship between the two crises. Third, the two pressure indexes are converted into binary dummy variables, adopting the decision rules provided by Eichengreen et al. (1996) for currency crises and those of Eichengreen et al. (1996) for banking crises, and fixed effects logit models are employed to re-examine the relationship between the two crises. Finally, to compare

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