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How central banks prepare for financial crises – An empirical analysis of the effects of crises and globalisation on international reserves

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A B S T R A C T

Central banks' international reserve holdings have increased significantly in the recent past. While traditional models fail to explain this accumulation of reserves, the more recent literature argues that reserves are used as a lifejacket against financial crises. However, research so far has neglected the question whether and how central banks change their precautionary reserve holdings after the country was affected by a financial crisis.

This paper tests the hypothesis that central banks revise their reserve policy in the aftermath of financial crises. Static and dynamic panel data models are estimated for emerging and developing countries covering the period 1970–2010. The evidence suggests that currency crises induce a permanent increase of reserves. This effect is particularly strong for recent currency crises since the Asian financial crisis of 1997–1998. With less robustness, banking crises also induce a positive shift of the reserve level.

1. Introduction

One puzzle of the international financial system is the enormous increase in central banks' international reserve holdings since the demise of the Bretton Woods system. In contrast to general wisdom, the transformation to de-jure more flexible exchange rate regimes has not been accompanied by a permanent reduction in the level of reserves. Between 1970 and 2010, worldwide official reserve

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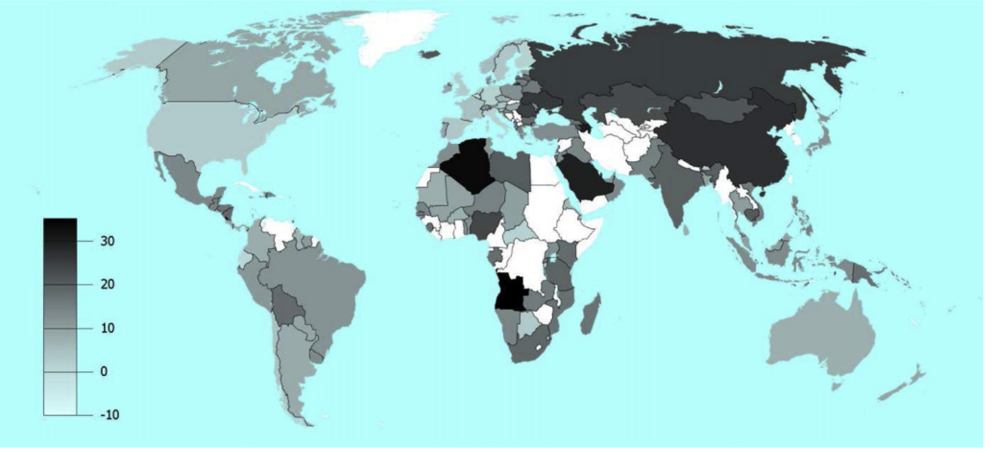

Data source: International Monetary Fund (2012)

Notes: The relative increase of reserves is calculated as the level of reserves in 2010 divided by its level in 1995. Countries with missing data are marked white. Moreover, the following outliers (very large increase) are disregarded: Cameroon and Equatorial Guinea.

Fig. 1. Relative increase of international reserves (1995–2010).

holdings grew with an average annual rate of 15%.[1] This build-up of reserves is mainly due to developing and transition economies. Their share in total worldwide reserves has risen from 22% in 1970 to 65% in 2010. Although this increase is driven by a small number of countries, e.g. China, Japan, Russia and Korea, the phenomenon of reserve accumulation is not restricted to some outliers, but rather observable in the majority of countries (see Fig. 1). The number of systematic accumulators has even increased in the recent past. Whereas from 1982 to 1996 on average 58% of all countries increased their real reserves in a given year, this share amounted to 67% over the period 1997–2010 (Fig. 2).

The increase is also observable in commonly used indicators of reserve adequacy, which consider the level of reserves in relation to a scaling variable like imports, GDP or external debt. This shows that the increase cannot be explained by simple rules of thumb: Whereas traditionally a level of reserves covering three to four months of imports was considered to be adequate, in 2010 reserves covered on average almost six months of imports. Even recent models of the optimal amount of reserves fail to explain the actual accumulation. According to Durdu et al. (2009) and Jeanne and Rancière (2011) the optimal level of reserves for a benchmark economy amounts to 10% of GDP. In 2010, however, central banks' reserves averaged 23% of GDP.

This unexpected increase in reserves gave rise to a series of papers that investigate two main research questions. The first group of papers analyses the optimality of reserve holdings given that reserves exceed traditional indicators of reserve adequacy (see Bird and Rajan, 2003; IMF, 2011; Jeanne and Rancière, 2011). The second group aims at finding rationales for this unprecedented reserve accumulation (see Aizenman and Lee, 2007; Cheung and Qian, 2009).

This paper contributes to the latter strand of the literature. It proposes a new explanation for reserve accumulation: Central banks revise their reserve policy after they have experienced a financial crisis and significantly increase their reserves in the aftermath of a crisis. Questions of the optimality and adequacy of this reserve policy are not touched in this article.[2]

[1] All data in the introduction are obtained from calculations based on the International Financial Statistics (International Monetary Fund, 2012) and World Development Indicators (World Bank, 2012).

[2] See Jeanne and Rancière (2011) and Levy-Yeyati (2008) for the cost of reserves.