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Reserve accumulation and financial crises: From individual protection to systemic risk

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ABSTRACT

This paper provides a new perspective on the relationship between countries' international reserve holdings and financial crises: while the "local" view holds that reserves may prevent domestic crises, it overlooks that the accumulation of reserves relaxes the financing constraint of the reserve currency country and may cause a financial crisis in the centre, which is transmitted globally. According to this "global" view reserve accumulation might destabilize the international financial system. Since the crisis affects all countries alike, the accumulation of reserves imposes a negative externality on non-accumulating countries.

We integrate this idea in a theoretical model of the optimal amount of reserves and illustrate the gap between local and global optimality: the consideration of systemic risk lowers the demand for reserves. Moreover, if a supranational authority determines the optimal level of reserves, it internalizes the negative externality and accumulates fewer reserves. A macroprudential tax on reserve hoardings might implement the socially optimal solution. Our calibration analysis shows that these considerations are economically significant: they lower the optimal amount of reserves in the benchmark case by 45%.

1. Introduction

Central banks' hoardings of international reserves are considered as a form of self-protection against financial crises. They enable central banks to intervene in the foreign exchange market and help to cushion the economy from external shocks. This paper turns the tables and shows that the accumulation of reserves might also have a flip-side: whereas large reserve holdings may indeed protect a country from domestic crises, their accumulation increases the instability of the international financial system and might cause a global crisis emanating from the reserve currency country. In the end, central banks' attempt to insure against financial crises via the accumulation of reserves may be counterproductive. Good intensions may result in bad outcomes.

The idea is motivated by the global financial crisis that began as the US subprime crisis in 2007 and affected the rest of the world through trade and financial linkages. In this regard it has been noted that global imbalances have increased the vulnerability of the US (i.e. Aizenman, 2010; Ferguson and Schularick, 2011; IMF, 2009a; Obstfeld and Rogoff, 2010; Portes, 2009). Global imbalances, in turn, have been partly sustained by central banks' accumulation of reserves, especially in Asian emerging markets. Moreover, reserve accumulation has lowered US interest rates (see Warnock and Warnock, 2009).

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Low interest rates, in turn, were a driving force of the US housing bubble. By implication, the accumulation of reserves has contributed to developments in the US that eventually turned into a global crisis.

The recurrence of financial crises in the recent past questioned the benefits of the increasing international financial integration and challenged countries to find ways how to protect the domestic economy from the downside risks of financial openness. Many countries faced this challenge by the accumulation of foreign reserves. Since the East Asian financial crisis of 1997–1998 the worldwide level of real reserves has more than tripled. Reserves are considered as a precautionary cushion against the risks of financial openness, namely sudden stops of capital flows and contagious financial crises. Their function includes both crisis prevention and crisis management (see Aizenman and Lee, 2007; Obstfeld et al., 2010).[1]

This unprecedented increase in international reserves also reflects previous advice given to emerging and developing countries by various sources. In the aftermath of the East Asian financial crisis the IMF emphasized the importance of reserves as a means of crisis prevention and proposed new measures to evaluate their adequacy (IMF, 2000). Feldstein (1999) advised emerging markets to rely on large stocks of foreign exchange reserves as a form of self-protection and to count less on assistance by the IMF. Finally, the burdensome conditionality and unpredictability of IMF assistance may explain why many countries have preferred to self-insure (see Bird and Mandilaras, 2011).

The accumulation of reserves, however, contains costs that have been neglected so far: while reserves might effectively protect the domestic economy from external shocks, their global and continuous accumulation might create systemic risks. Since the accumulation of net reserves constitutes a capital inflow to the reserve currency country, it increases its external indebtedness. As a matter of fact, holdings of foreign reserves by global central banks are an important source of US external debt: in 2010, 36% of outstanding Treasuries and 15% of total US foreign liabilities were held by foreign official institutions. Between 1998 and 2010, despite the Fed's policy of quantitative easing, 49% of the increase in outstanding Treasuries were purchased by foreign official institutions.[2]

The rising external indebtedness may create the macroeconomic backdrop for a financial crisis. The accumulation of reserves might induce two types of crises: First, it might lead to overborrowing and overinvestment in the reserve currency country and cause a financial crisis when expectations worsen or the reserve accumulation ends. Second, by steadily worsening the net foreign asset position of the reserve currency country, it might result in a currency crisis where the reserve currency country deliberately decides to devalue its currency. Whereas the first type of crisis follows the lines of the financial crisis of 2008–2010, the second type also has its precedent, namely the breakdown of the Bretton Woods system.

A crisis in the centre country could destabilize the international financial system. Since the reserve currency country is per definition at the centre of the international financial system, a crisis originating there spreads to other countries and causes a global downturn. This crisis affects accumulating and non-accumulating countries alike. Hence, the accumulation of reserves has a negative externality.

A dilemma arises: On one hand, the recent reserve accumulation is partly due to concerns for financial stability in a financially globalized world (see Obstfeld et al., 2010). On the other, policies of reserve accumulation expose the system to additional risks and shocks. Hence, the blessing attributed to the accumulation of reserves might become a curse.[3]

The relationship between reserve accumulation and systemic risk creation has been identified only recently (see Ferguson and Schularick, 2011; Gourinchas et al., 2010; IMF, 2010; Obstfeld, 2014; Obstfeld and Rogoff, 2010; Taylor, 2013). This paper extends the preceding literature in several dimensions: First, the line of causality from reserve accumulation to a global financial crisis is traced both on empirical and theoretical grounds. Second, the paper integrates the idea of negative feedback in a model of the demand for reserves and formalizes the difference between local and global optimality. It solves for the first best policy chosen by a social planner that internalizes the externality associated with local optimality. A calibration analysis quantifies these effects.

This paper is organized as follows. The next section elaborates on the link between reserves and financial crises, both on theoretical and empirical grounds. The model and its solution are presented in Section 3. Section 4 provides a calibration analysis that quantifies the difference between local and global optimum. Section 5 discusses the policy implications of our findings. Concluding remarks are offered in Section 6.

2. Reserves and crises: the links

This section illustrates the links between central banks' international reserve holdings and the probability of financial crises. In this context it is important to distinguish between domestic and global crises. A global crisis is defined here as a crisis that originates in one country – the centre country – and spreads to a number of countries due to their real and financial linkages with the crisis country. As will be shown later, the reserve currency country could trigger such a global financial crisis.

[1] There exist other reasons why countries hoard reserves. The mercantilist approach, for example, argues that the accumulation of reserves is the by-product of an export-led growth strategy (see, among others, Dooley et al., 2003). This paper, however, focuses on the relationship between reserves and crises.

[2] Data based on Flow of Funds, Federal Reserve, Tables L.106 (lines 11 and 12) and Table L.209 (line 1) and Lane and Milesi-Ferretti (2007) and update.

[3] This is an example of the law of unintended consequences, which was popularized by Robert K. Merton: Any intervention – in our case a central bank intervention – creates unanticipated and undesired outcomes. In the end, the intended solution may aggravate the problem.