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The accumulation of foreign exchange by central banks: Fear of capital mobility?

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ABSTRACT

Central banks' foreign exchange holdings have increased significantly in the recent past. This article explains this development as a result of the liberalisation of international capital markets. First, central banks accumulate reserves in order to protect the economy from detrimental effects of sudden stops in capital flows and flow reversals. Second, central banks use the accumulation of reserves as a substitute for capital controls. Changes in reserves are a form to manage net capital inflows. They permit the central bank to preserve some leeway for an independent monetary and financial policy despite the classic policy trilemma. The empirical analysis of a large panel data set supports the hypothesis that the accumulation of reserves is the consequence of a "fear of capital mobility" suffered by central banks.

1. Introduction

Recent cyears have witnessed an enormous increase in central banks' foreign exchange holdings. Whereas average holdings amounted to 6.2% of GDP in 1970, they reached an unprecedented level of 22.6% of GDP in 2010 in a sample of 180 countries. This increase is a puzzle for the literature on the demand for international reserves. Since at the same time exchange rates have become more flexible and countries more integrated in the international capital market, standard theory predicts a decline in the demand for foreign exchange.

The existing literature usually explains the demand for foreign exchange as a buffer stock to defend the exchange rate. Whereas traditional approaches argue that reserves are needed to finance imbalances in the balance of payments under a fixed exchange rate system, the more recent literature, which emerged after the series of financial crises during the 1990s, focuses on the stock of reserves, which is seen as a lifejacket against financial crises.[1] Both approaches coincide in the view that there exists an adequate level of reserve holdings, which is the outcome of an optimising behaviour of the central bank.

This article extends the latter strand of the literature: It explains the accumulation of reserves as a side effect of the opening of national capital markets and, more particularly, of the integration of emerging and developing economies in the world capital market. According to this hypothesis, central banks suffer from a "fear of capital mobility". The accumulation of

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[1] See Heller (1966) and Frenkel and Jovanovic (1981) for major contributions to the traditional approach. Aizenman and Lee (2007), Cheung and Qian (2009) and Jeanne and Rancière (2011) are examples of the more recent strand of the literature focusing on crises and competitive hoarding.

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foreign exchange is a response to capital inflows. It aims at reducing the interdependence of an open economy from developments in the rest of the world.

This fear of capital mobility may manifest itself in two different forms: First, it is hypothesised that a central bank's reserves increase in the degree of capital mobility. The motive for this behaviour might be the desire to protect the economy from potentially detrimental effects of sudden stops in capital flows and flow reversals. This idea deepens the evidence provided in the literature on precautionary reserve hoardings[2]: We explicitly distinguish between effects of de jure and de facto capital mobility. We show that (1) de facto capital mobility drives the positive relationship with reserves and (2) de jure capital mobility leads to an additional albeit less robust positive effect. The second form of fear of capital mobility is demonstrated by the management of capital inflows. A central bank might accumulate reserves in order to absorb net capital flows in the absence of capital controls. The management of capital inflows allows the central bank to preserve some leeway for the conduct of an independent monetary policy despite the classic policy trilemma. Furthermore, the central bank can limit the real effects of capital inflows, which might interfere with domestic policy objectives. In contrast to precautionary hoardings where the level of reserves matters the relevant variable for capital flow management is the change in reserves. Our empirical finding that changes in reserves are linked to contemporaneous capital inflows adds a complementary aspect to the literature on reserve accumulation: Reserve accumulation may be a by-product of the desire to manage capital flows in the absence of direct controls.

In the case of precautionary reserve accumulation, the central bank supports the open capital account. According to the capital flow management hypothesis, the central bank intends to insulate domestic economic policy from the world capital market under a fixed or managed exchange rate. In either case the accumulation of reserves can be regarded as an instrument to manage capital flows.[3]

The fear of capital mobility – namely the tendency to accompany the removal of capital controls and the increasing volume of net capital flows by the accumulation of international reserves with the intention of combining an independent monetary policy with a stable exchange rate – is linked to other concerns of central banks that have been identified before: There is "fear of floating" (Calvo and Reinhart, 2002) implying that countries announce de jure floating exchange rates but de facto continue to stabilize them. Levy-Yeyati and Sturzenegger (2007) document a "fear of appreciation" in the sense that central banks intervene in the foreign exchange market to depreciate the exchange rate or postpone its appreciation. As a consequence of their desire to manage exchange rates, they fear capital mobility because it narrows their freedom of choice within the policy trilemma, and by implication, complicates exchange rate management. The accumulation of reserves may be used as an instrument to relax the restriction of the trilemma in the short run.

The major contribution of this paper is twofold: First, we develop the concept of "fear of capital mobility" and describe its relation to the recent period of reserve accumulation. Second, we empirically confirm that international reserves are used to mitigate the effects of capital mobility and, in turn, appease central banks' fear.

Before proceeding, we would like to note one limitation: Our analysis is not suited to explain the Chinese reserve hoardings. China has accumulated an enormous amount of reserves although its capital account has remained relatively closed. A high national savings rate combined with an exchange rate policy of a fixed rate may explain the Chinese story. While China's absolute amount of reserves is outstanding, the policy of reserve accumulation, however, is a global one: Between 2000 and 2010 each year 69% of the 180 countries of our sample have increased their reserves relative to GDP. This paper attempts to provide an explanation for this general phenomenon.

The article is organised as follows. Section 2 describes the hypothesis that central banks suffer from a fear of capital mobility. Section 3 presents the data, discusses different measures of capital mobility and shows statistical evidence in support of the hypotheses. Section 4 presents and discusses the empirical results. The final section concludes.

2. The hypothesis: Fear of capital mobility

The following section describes the hypothesis that central banks suffer from a fear of capital mobility. This fear of capital mobility arises in two different forms: First, central banks fear the openness of the capital account and, second, manage private capital inflows.

2.1. Capital mobility and the level of reserves: Self-insurance

Financial liberalisation and economic globalisation both allow a country to benefit from international capital flows. However, they also make countries more vulnerable to sudden stops and capital flow reversals. Therefore, a central bank might back an open capital account by precautionary measures in the form of foreign exchange hoardings.

On theoretical grounds, the effect of capital account liberalisation on the level of reserves is ambiguous. On the one hand, access to external credit sources reduces the importance of reserves in financing international transactions. Any balance of the current account can, at least theoretically, be counterbalanced by proportionate private capital flows. On the other hand,

[2] See, among others, Aizenman and Lee (2007), Ghosh et al. (2012) and Obstfeld et al. (2010).

[3] In a similar vein, Ostry et al. (2012) argue that foreign exchange market intervention is – besides monetary policy – an instrument of central bank policy, which can be used to affect the exchange rate in an inflation-targeting framework, where interest rates are set to achieve the inflation target. The management of exchange rates is especially important in economies with a currency mismatch in foreign assets and liabilities.