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Reserves Adequacy and Composition

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6.1 Introduction

Establishing the reserves management strategy comprises decisions on the level of reserves (reserves adequacy) and on the composition of reserves (reserves allocation). Both in literature and practice, the reserves management strategy is often the result of a fragmented, hierarchical decision making process. The objective of this chapter is to analyze the optimal reserves management strategy for a central bank that simultaneously decides about adequacy and composition.

We present a model to analyze the optimal reserves management strategy for a small country that is subject to external liquidity shocks. Long-term capital investments in this country are funded by short-term borrowing in foreign currency. In this setting the central bank aims at mitigating adjustment costs to the economy implied by the external liquidity shocks by providing foreign currency loans to the private sector. In deciding the reserves management strategy, the bank balances adjustment costs, costs of funding foreign reserves as well as investment risks and returns. While investment returns and liquidity shocks are exogenous, funding costs are endogenous and are a function of the country’s external vulnerability. In our model, decisions on reserves adequacy and diversification take policy and investment considerations simultaneously into account. This is in contrast to existing literature and reserves management practice where policy considerations dominate in the reserves adequacy discussion, while reserves composition is typically discussed against both policy and investment considerations.

6.1.1 Reserves adequacy

In the discussion of reserves adequacy, academic literature focuses on a trade-off between marginal benefits and costs of holding reserves. Starting with Heller (1966) the level of reserves is derived from optimizing behavior of decision makers. Utility arises from the potential use of reserves holdings to smooth consumption and production in times of balance of payment.
deficits while opportunity costs arise in times the reserves are held idle. Assuming that reserves are invested in foreign assets of highest liquidity, opportunity costs correspond to the differential between the return from an investment in a country’s productive resources and the return from highly liquid investments.

Despite this broad concept of reserves functions in early literature, in practice, prior to globalization, countries held reserves mainly to manage foreign exchange demand and supply arising from current account transactions. Therefore, indicators used to measure reserves adequacy related primarily to the level and variability of imports. Three to five months of imports was often cited as a rule of thumb to indicate an adequate level of reserves (e.g., De Beaufort Wijnholds and Kapteyn (2001)).

Reserves adequacy was reassessed in the aftermath of the Asian crisis of 1997. On top of the management of current account transactions, additional motives for holding reserves were introduced. In particular, self-insurance motives for holding reserves gained popularity. For example, in the context of sudden stops of capital inflows, Feldstein (1999) proposes reserves accumulation to insure the risks of currency attacks. Reserves adequacy in the context of exchange rate volatility is discussed for example by Calvo and Reinhart (2000) and Flood and Marion (2002). Aizenman and Marion (2004) focus on the stabilization of fiscal expenditures in countries with limited taxing capacity and sovereign risk. Output stabilization in general is discussed by Ben-Bassat and Gottlieb (1992), Aizenman et al., (2004) and García and Soto (2004). Jeanne and Ranciere (2006) develop a model for the optimal level of international reserves for a small open economy that is vulnerable to sudden stops.

In practical reserves management, this discussion is mirrored by the Guidotti/Greenspan rule according to which reserves should correspond to at least the level of short-term foreign debts (with maturities of up to one year). Pointing to the possibility of capital flight by residents, De Beaufort Wijnholds and Kapteyn (2001) augment the Guidotti/Greenspan rule by suggesting that the optimal level of reserves should be established taking also into account broad money, the country’s exchange rate regime and a country-specific risk factor.

In the context of massively increasing reserves holdings over the last years, the level of reserves is also discussed against additional, non-standard reserves functions such as fostering export growth and serving as a store of national wealth. Dooley, Folkerts-Landau, and Garber (2003) suggest that an important rational for reserves accumulation may be the preservation of export competitiveness. In this context Aizenman and Lee (2008) use the term monetary mercantilism.

6.1.2 Reserves composition

The composition decision comprises the allocation of reserves holdings to currencies, asset classes within a currency and individual financial