

Reserve Adequacy Assessments: Theory and Practice

42. The precautionary motive was an important reason for the buildup of reserves in a number of emerging markets in the early 2000s following the balance of payments and banking crises of the previous decade. The lessons and experiences from these crises were incorporated in analysis and assessments of reserve adequacy carried out at the IMF and in academia. At the time, much of the emphasis was on ensuring that countries had sufficient reserves to deal with potential shocks. As the decade wore on, and as reserves in many countries grew rapidly, advice by Fund staff became increasingly concerned with the financial cost of large reserve holdings, and models subsequently highlighted the trade-off between the insurance benefits of reserves and the financial costs they implied. The cost-benefit calculus was altered as a result of the global financial crisis: the precautionary benefits of reserves were perceived to have increased not only in emerging economies but also in some advanced countries, in recognition of new sources of vulnerability that were highlighted during the crisis.

43. Against this background, this chapter assesses the analytical basis for the IMF's assessment of reserve adequacy as well as the content and quality of advice given in the context of Article IV surveillance during the period covered by the evaluation. The analysis of IMF policy advice has the benefit of hindsight, taking into account country experiences during the global financial crisis. It considers the focus and soundness of the Fund's advice in relation to what turned out to have been needed in view of the vulnerabilities that were revealed.²¹

²¹Bilateral Surveillance Guidance Notes issued during the period covered by the evaluation focused primarily on standard indicators. See, for example, IMF (2005, 2009c, and 2010a). Ideas that emphasized the importance of anchoring reserve analysis in a broad assessment of micro- as well as macroeconomic factors that influence the vulnerabilities of the economy, and that stressed the need to assess reserves in relation to the asset and liability structure of the economy as a whole, were developed early in the 2000s. See IMF (2000a, 2001a, 2001b, and 2004).

44. While research on reserve adequacy by Fund staff has been on par with “best practice” in academia, one should not expect it to yield indicators or models that can substitute for judgment based on in-depth knowledge of data, institutions, and objectives at the country level. This chapter concludes that IMF reserve-adequacy assessments and advice in the context of bilateral surveillance seemed often to have been pro forma, emphasizing a few traditional indicators and insufficiently incorporating country-specific circumstances. Authorities felt that the IMF's analysis on reserves often did not add much value to their own. They called for a more inclusive approach to advice on reserves that would integrate it with advice on related policies and take into account a number of other factors they considered important but which are difficult to quantify.

A. IMF Research on Reserve Adequacy: High Quality but with Practical Limitations²²

45. Research at the IMF has contributed significantly to the analytical underpinnings of external vulnerability and reserve adequacy assessment. On international reserves, the IMF's research has contributed more than a third of the top-cited scholarly papers since 2000. A comparison with research carried out in academia concludes that IMF staff have frequently identified key developments and puzzles, prompting—with a short lag—both “in-house” and academic research. Advances in research on international reserves have often occurred as a result of extensive interaction between the IMF and the academic community.

²²This section is based on Aizenman and Genberg (2012).

46. Research influenced the analytical approaches that the Fund used in practice. For example, use of the ratio of reserves to short-term debt was endorsed in IMF policy papers in part based on evidence showing that this ratio had predictive power as an early warning signal of exchange market pressure in emerging markets.²³ More formal research-based models, such as the regression-based estimates of reserve demand presented in IMF (2003) and the optimal reserves framework of IMF (2006), were also applied in the context of bilateral surveillance. The usefulness of these models in providing advice turned out to be relatively limited, however, because it was difficult to adapt them to country-specific circumstances. But they nevertheless played a significant role in that they hinted that a change in emphasis was taking place in reserve adequacy assessment, away from pointing to the minimum prudential level of reserves and towards emphasizing explicitly the cost to the economy of excessive reserves.

47. While conceptual research has been influential in the development of frameworks for identifying vulnerabilities and assessing reserve adequacy, its limitations have also been clear. A central lesson from a large body of empirical research is that models of the demand for reserves do not capture very well the idiosyncrasies of reserve holdings across countries.²⁴ This implies that the search for a model or simple formula for reserve adequacy that would fit all countries is likely to be futile.

48. This assessment applies with equal force to the new reserve adequacy metric proposed by IMF staff in 2011 (Box 2). While this indicator is an improvement over the short-term debt indicator introduced a decade earlier, it should be applied with care in country contexts. The amount of reserves that a country ought to hold ultimately depends on its policymakers' degree of risk aversion, the manner and extent to which they choose to adjust to external shocks (e.g., the tolerance for exchange rate volatility), the availability of alternative sources of liquidity,

and the myriad of country-specific characteristics that are difficult to incorporate into models or common cross-country criteria, no matter how sophisticated.

B. IMF Policy Advice on Reserve Adequacy: Mostly in Emerging Markets and Using Traditional Indicators²⁵

49. The topic of reserve adequacy was broached only very rarely in IMF consultations with advanced countries. In the sample of advanced countries covered by the evaluation during the pre-crisis period from 2000 to 2007, there was no discussion of reserve adequacy. Reserves were simply not high on the agenda of issues to be discussed. Most country authorities and IMF staff did not believe these countries needed to hold reserves, either because they had floating exchange rates or because they could borrow from international capital markets in case of a need for foreign exchange liquidity. But the malfunctioning of these markets during the global financial crisis was to prove otherwise, and several small advanced countries have since taken a new look at their need for reserves in relation to the international exposures of their financial systems. Reflecting this change in sentiment, since 2008 there has been more discussion of reserves in Article IV reports on advanced countries.

50. Reserve adequacy assessments were more frequent in emerging market countries, in recognition of these countries' greater historical tendency to experience balance of payments difficulties. But even here the assessments often appear to have been perfunctory, perhaps because, as was often the case, reserves were greater than what could be considered adequate using conventional indicators. A common message emanating from IMF surveillance was that reserve holdings were "comfortable" or "high." In several instances, the Fund suggested that reserve accumulation could be reduced in view of the costs of holding high reserves. The evaluation team also found cases where IMF staff refrained from discussions due to the sensitivities of the authorities, and where country officials preferred to avoid such discussions because they considered them to be an indirect way of discussing exchange rate policy.

²³See IMF (2001a).

²⁴The inapplicability of available models of precautionary demand for reserves becomes most apparent in the case of the largest reserve accumulators. These countries have typically not accumulated reserves for precautionary reasons. Rather, their fiscal, monetary, and exchange rate policies conducted in the pursuit of other objectives have resulted in heavy accumulation as a by-product. They may well be concerned about the quasi-fiscal costs of accumulating "excess" reserves, or the possibility that they might experience heavy capital losses on their reserve holdings. Yet, in practice, since the aforementioned economic policies dominate their reserve accumulation, it is doubtful that their reserve holdings can be said to be the consequence of a "demand" for reserves.

²⁵The findings referred to in this and the subsequent section are drawn from Banerji and Martinez (2012).

51. Reserve adequacy assessments were conducted mainly using traditional indicators. Discussions with emerging market economies placed special emphasis on the short-term debt indicator, reflecting the lessons from crises of the 1990s and the emphasis on the reserve coverage of short-term debt as an early warning signal of exchange market stress. Import coverage and reserves as a ratio to a monetary aggregate were also used, the former reflecting a traditional concern about the need to be able to finance current payments in the case of export shortfalls, and the latter a more recent awareness that capital flight by domestic residents could become a drain on reserves. Comparisons of reserve levels with those of peers were used in about a third of the cases. Assessments of reserves based on formal models were relatively infrequent.

C. Reserve Adequacy Assessments in Practice: Room for Improvement

52. Given the experience with the recent global financial crisis, a more thorough assessment of external vulnerabilities and reserve needs could have been beneficial. Such an assessment would have built on an analysis of the financial linkages in the economy, paying particular attention to the structure of balance sheets in the private and official sectors and to the soundness of domestic institutions.

Too complacent at times

53. In hindsight, the IMF did not pay enough attention to external liabilities and the precautionary need for reserves in several emerging market economies. In a number of cases, the crisis revealed large external exposures that took both the country authorities and the IMF by surprise, and led to actual or potential concerns about the lack of sufficient reserves. In several emerging markets, the Fund did not draw attention to the heightened vulnerability associated with a steady decline in the reserve coverage of short-term liabilities—a concern that needed to be addressed, albeit not necessarily through rebuilding reserves. The IMF could also have shown itself more cognizant of the potential risks associated with the burgeoning short-term external liabilities in the financial sector of some advanced countries, which partly reflected significant cross-border inflows of wholesale funding. Some staff who were interviewed for the evaluation believed that the

failure to assess reserve adequacy in advanced countries had been due to a “lack in imagination” on their part; they now recognize that these countries too could be subject to sudden stops of capital inflows—traditionally considered to be an emerging-market phenomenon—and that a flexible exchange rate and access to international capital markets do not obviate the need for reserve adequacy analysis.

54. There was a common view among country authorities that the IMF tended to underestimate the benefits of reserves. Thinking about the trade-off between costs and benefits of reserves, country officials often mentioned a range of benefits that they considered important but were not easily incorporated into either single indicators or formal models. In addition to precautionary self-insurance (also emphasized by the Fund), they mentioned other important advantages: reserves provide a country with reliability of access and the policy autonomy to act quickly, flexibly, and countercyclically, and, as was evident during the global crisis, they inspire confidence. Reserves have also allowed authorities to avoid the stigma associated with approaching the Fund for resources—an issue that is very much alive in a number of countries.

Differences of views on the benefits of a flexible exchange rate

55. On occasion authorities and Fund staff tended to hold different views about the relative merits of exchange rate adjustment versus changes in reserves in response to shocks. The IMF placed greater emphasis on exchange rate flexibility as an adjustment mechanism, as conducive to the development of financial markets, and as discouraging excessive risk taking and speculative capital inflows. Country authorities were more reluctant to let the exchange rate take the full brunt of capital flow volatility. They preferred to intervene selectively in the market to limit sharp appreciations of their currencies, even if selective intervention led to reserve accumulation that could be viewed as excessive in relation to precautionary needs. They were concerned that large capital inflows could undermine competitiveness, especially in a context where major trading partners target their nominal exchange rate, in effect shifting the burden of adjustment to countries that permit more exchange rate flexibility. Some authorities thus felt that the Fund should be more receptive to the view that the tolerance for exchange rate volatility tends to vary across countries.

A need for a deeper assessment of the access to liquid foreign assets

56. Reserve adequacy indicators reported in Article IV reports were most frequently stated in terms of gross reserves, but this is not necessarily the most appropriate indicator against which to judge a country's overall needs for foreign exchange liquidity. An assessment of reserve adequacy should also consider the ease and speed with which other available sources of liquidity, including those held in sovereign wealth funds (SWFs), can be accessed. The components of these resources are likely to differ in this respect: some parts may be earmarked for particular purposes, and others may be available only with some delay or at some loss in value.²⁶

57. In this context, while country officials considered the Flexible Credit Line (FCL) as an alternative source of liquidity, they did not share the views of IMF Management that the FCL would help countries avoid the need to build up precautionary reserves.²⁷ While they thought credit lines such as the FCL could be supportive of market confidence, they emphasized that owned reserves possessed important attributes that credit lines did not. Most important of these were accessibility, speed, and reliability.

58. Bilateral swaps were thought of in similar terms: when compared to reserves, these sources of finance were considered less certain, less flexible, and not immediately available. In addition, unlike credit lines and swaps, reserves play the dual role of providing insurance and being available to smooth exchange rate volatility, if desired.

Need for greater awareness of country perspectives and practices

59. Country authorities noted that the IMF's advice on reserves often did not add much to analysis

²⁶The IMF has taken several initiatives to expand the provision of data on international liquidity and the composition of reserves (Annex 2). The majority of these initiatives have been incorporated into the Special Data Dissemination Standard (SDDS) which was developed and implemented in the 1990s. The IMF's work on reserve-related statistics, particularly the design of the reserve template, received high praise from both staff and country officials. Annex 3 describes the main features of SWFs.

²⁷On several occasions during 2010, IMF Management suggested in speeches that "if countries had access to better financial insurance, the need to build up precautionary reserves could be lessened. The IMF's Flexible Credit Line, which provides upfront financing with no subsequent conditionality, tries to meet this need" (IMF, 2010d).

already carried out in the country. They pointed to areas where the IMF's analysis, assessments, and advice could be improved, notably with respect to country specificities. They called for the Fund to adopt a more inclusive approach that would integrate advice on reserves with advice on related policies such as monetary policy, management of capital flows, and the development of foreign exchange and financial markets, and to take into account factors that may not be easily quantifiable but that they considered important—for example, the ability of the economy to absorb volatility in the exchange rate and capital flows; the uncertainty of access to bilateral swaps or multilateral facilities; the impact of the level of reserves on "market confidence," and the lingering stigma associated with having to approach the IMF for assistance. In this context these authorities expressed a desire for more comprehensive dialogue with Fund staff.

60. A particular area in which country officials thought the IMF's analysis could have been more helpful was the use of cross-country comparisons of reserves. Comparisons with peers can be informative as a guide to reserve adequacy, especially when market practitioners and rating agencies use them to assess countries' relative vulnerability or creditworthiness. The evaluation team found that the IMF's cross-country comparisons were not always informative, because they were sometimes based on countries with significant differences in economic circumstances or on information that was not comparable. Country authorities argued for a more country-specific approach and comparisons that pay more attention to country characteristics.

Consider financial stability issues also in advanced economies

61. Issues related to financial stability have come to the fore in advanced countries as a result of the financial crisis of 2008–09. A number of central banks had to step in to provide foreign exchange liquidity to internationally active commercial banks in order to limit negative repercussions on the domestic financial system. Some central banks have since incorporated international reserves along with prudential regulation into their analysis of how to deal with external financial exposures of the private sector.