

**Comment** Anella Munro<sup>1</sup>

This paper examines empirically countries' use of reserves in adjusting to the global financial crisis (GFC), and asks how the use of reserves relates to the country's trilemma choices. The main conclusion is that the regime is not terribly important: reserves were used actively by fixed exchange rate regimes, but also by intermediate, and even floating exchange rate regimes to deter currency market pressures. The paper takes on an interesting, if challenging, set of issues.

In these comments, I would like to focus on two issues: the role of exposures in driving countries' responses to the GFC; and three problems with measures of official reserves. As a second discussant, I won't summarise the paper.

What factors drove countries' reserves, exchange rate adjustment and capital control responses to the crisis? One candidate is their trilemma choices. The results in Dominguez' paper suggest that, in extreme conditions, countries may rely on a broader set of instruments than their trilemma choice would suggest. One explanation is that, in normal times, the costs of optimising over three objectives and multiple instruments are high relative to the benefits, so it makes sense to choose two objectives, for example openness and a floating exchange rate, and so inflation targeting, to simplify the optimisation problem. Another explanation is that we need to look elsewhere to understand the responses.

Another candidate is ex-ante exposures on the country's balance sheet. More specifically, do gross assets and liabilities, and who holds the associated foreign currency risk, create exposures that affect countries' use of reserves. Exposures may be endogenous to the trilemma choice, but they are also a function of economic structure.

Let me give two examples. First, as we are in Wellington, let's consider New Zealand. New Zealand's trilemma choice is defined by its financial openness, floating exchange rate, and inflation targeting. New Zealand also has a large external net debt that is largely New Zealand dollar (NZD) denominated, either directly, or through hedging. As a result, non-residents hold the exchange rate revaluation risk. During periods of uncertainty, investors tend to withdraw from risky assets. Since non-residents don't typically have NZD liabilities, their NZD-denominated assets are risky, in that returns are more uncertain relative to their foreign currency liabilities. Consistent with that exchange rate exposure, during periods of uncertainty, residents everywhere tend to repatriate funds (see Cifuentes and Jara (2012)). With a large net external liability, more funds tend to be withdrawn from New Zealand by nonresidents than are repatriated by residents, so adjustment typically involves an exchange rate depreciation (reinforcing risk from a non-resident perspective). The depreciation supports net exports and is relatively painless for residents in terms of valuation effects because the material FX exposure is foreign currency assets that increase in value. Moreover, there is

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little need for foreign currency liquidity because borrowers need to rollover local currency funding and, in times of stress, domestic currency liquidity support can be provided by New Zealand's central bank. In an extreme situation, should markets become dysfunctional, reserves might need to be sold to ensure orderly FX market adjustment. But in general, there is little reason to expect reserves sales.

Now consider a country with the same trilemma choice (financially open, floating exchange rate), but a large external asset position. If savings exceed investment, then local investors purchase assets abroad. In doing so they tend to acquire asset-side foreign currency exposure. During a crisis, assuming that residents everywhere withdraw from risky assets, the surplus country is likely to experience a capital inflow and exchange rate appreciation. Japan, an important creditor for New Zealand), is an example. The exchange rate appreciation erodes competitiveness, and may lead to losses on foreign assets. Exposure on foreign currency assets can be hedged by swapping local currency into foreign currency to purchase foreign assets, but that may transform it into foreign currency liquidity risk. Foreign equity holdings typically have an uncertain duration, so hedging may be short relative to the holding period. Hedging of foreign assets prevents valuation losses but the need to rollover hedges (to prevent booking losses) creates a need for foreign currency liquidity. That foreign currency liquidity exposure became a problem for a number of countries with large external asset positions during the USD shortage that followed the Lehman failure. So, ironically, a surplus country may have a considerable need for reserves (or access to a Fed swap line) to provide foreign currency liquidity to the local financial system because of asset-side foreign currency exposures. Moreover, in an extreme situation, the asset surplus country may want to purchase reserves to resist exchange rate appreciation as residents repatriate funds or the country received safe-haven flows.

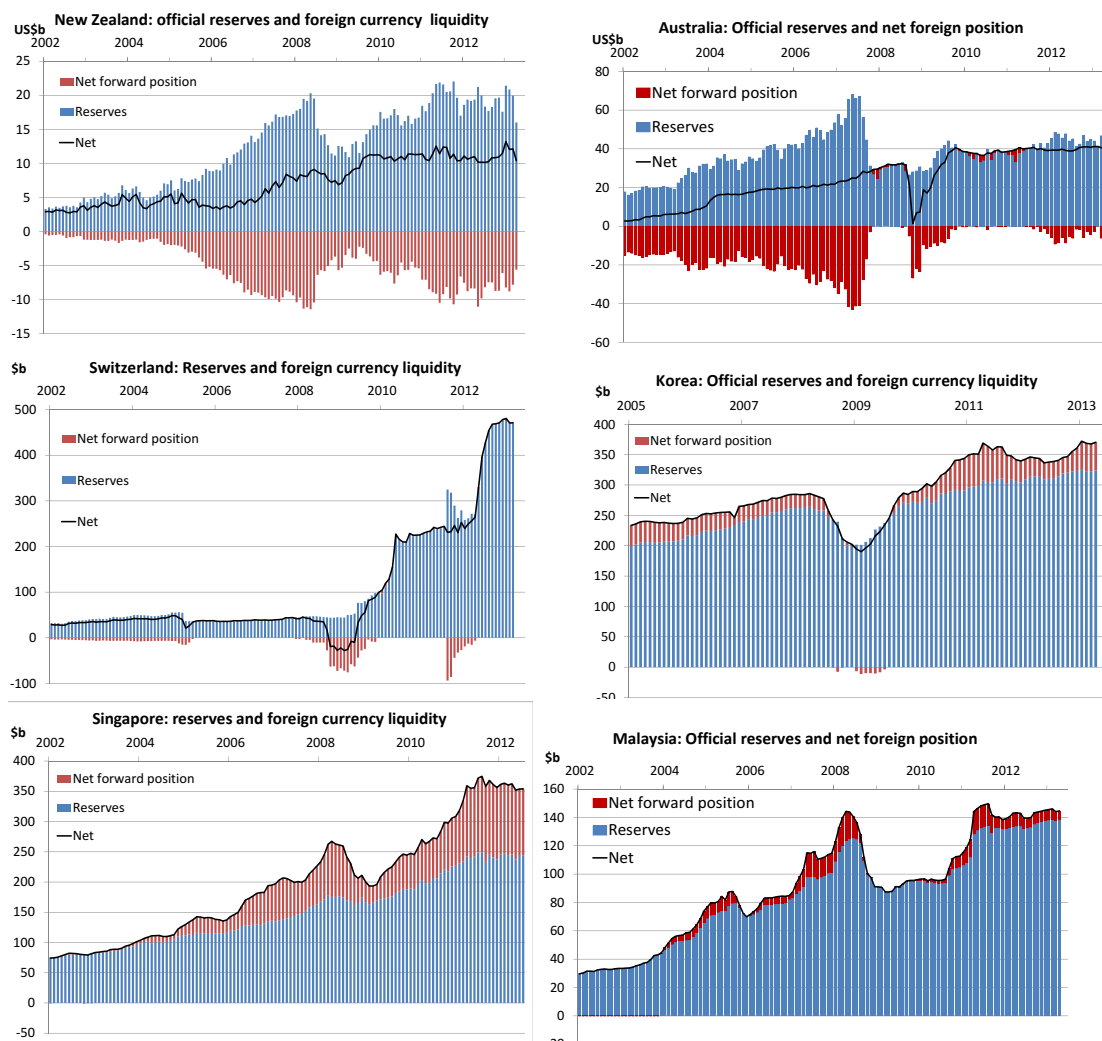
The second issue I would like to focus on in these comments is potential pitfalls in measures of official reserves. Official reserves is a concept based on gross foreign currency assets, typically those on a central bank balance sheet. The need to account for predetermined and contingent drains foreign currency liabilities and a broader set of assets that may be available in crises, led the IMF to develop a foreign currency liquidity template to better measure a country's access to foreign currency liquidity in a crisis.<sup>2</sup> The three potential pitfalls that I would like to highlight are illustrated by the IMF template data in Figure 1. They are (i) the use of FX swaps in repos, (ii) the use of Federal Reserve swap lines during the crisis, and (iii) forward claims on foreign currency.

The effect of the use of FX swaps in central banks' ordinary liquidity operations is illustrated by the New Zealand graph. Prior to the GFC, New Zealand government gross debt was low relative to demands for government securities, for example from portfolio mandates for government securities and for use as collateral. Government paper became expensive to hold and it was agreed that financial institutions could use foreign currency as collateral in Reserve Bank repo operations. In response to the USD shortage in the autumn of 2008, the set of acceptable collateral was

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<sup>2</sup><http://www.imf.org/external/np/sta/ir/IRProcessWeb/index.aspx>

Figure 1: Official reserves and foreign currency liquidity



Source: IMF Foreign currency liquidity template data.

widened, and banks switched from using foreign currency as collateral and replaced it with domestic currency assets. Official reserves fell, as did the central bank's short position in foreign currency, but that fall did not reflect official sector use of reserves. A similar pattern in the Australian data likely reflects a similar effect. In practice, neither would have changed the author's classification during the August 2008 - Feb 2009 period examined - in this case, they occurred earlier.

The second pitfall of official reserves measures is the use of Federal Reserve swap lines during the GFC. This can be seen in the graphs for Australia, Korea, and Switzerland. US dollars provided under the Fed Swap line were typically provided to the private sector the same day. As such they ceased to be reserves, but the receiving central bank had a USD liability to the Federal Reserve, so a short position on its balance sheet. In thinking about the use of foreign currency reserves during the crisis, is there a difference between selling a foreign currency asset and acquiring a foreign currency liability? They are substitutes, although there may

be reasons to use the Fed Swap line, for example, if foreign currency reserves holdings are relatively small so as to maintain a positive official reserves position. Accounting for the Fed Swap line would change the author's classification for Australia and Switzerland, and reinforce her conclusion that flexible exchange rate regimes also used reserves. That use of reserves, likely reflected gross asset positions in those countries that required continued hedging, as discussed earlier.

Finally, some countries have long positions in foreign currency. That group includes several Asian countries including Korea, Malaysia, Singapore and the Philippines. Countries may hold long positions in foreign currencies for a number of reasons: it may be cheaper for high interest rate countries to fund reserves through forward purchases, the official sector may provide FX swaps to the private sector, or it may be a means of holding foreign currency liquidity that is outside the headline official reserves measure. In the latter case, running down long positions before official reserve may have signaling benefits. In thinking about the use of foreign currency reserves during the crisis, is there a difference between selling reserves and running down a long position? The answer may depend on the reason for the the initial long position.<sup>3</sup> In the few cases shown here, accounting for long positions wouldn't change the author's classifications for the August 2008-February 2009 period, but only by a whisker, so it is a measurement issue worth thinking about in empirical work.

Addressing the measurement issues using the IMF template data, at least for the available recent period during which these measurement issues feature more prominently and data is available is probably worth doing at least as for robustness. The reserves measurement issues likely reinforce the author's conclusion that floating exchange rate countries also sold 'reserves'. Addressing the exposure issue is more complicated, but Goldstein and Turner (2004) and the BIS securities data and banking data provide a starting point.

To summarise, this paper examines an interesting question and asks important questions about adjustment to crises. If, as the paper concludes, the trilemma regime is unimportant as a driver of reserves use during the crisis, it may be worth examining foreign currency exposures on both sides of the national balance sheet as a driver of the use of reserves during the crisis. Ironically, asset side exposures in a number of countries, associated with 'good behaviour' ex-ante, created a material need for foreign currency liquidity during the GFC. Understanding gross exposures is increasingly important as countries become more financially interconnected.

## References

- Cifuentes, R. and A. Jara (2012, July). Volatility in international capital flows and the role of international asset diversification. Paper prepared for a conference organized by the east-west center and the korea development

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<sup>3</sup>For example, as Takatoshi Ito pointed out, if reserves had been used to provide swaps to the private sector, then the long position may not be available in a crisis.

institute, honolulu, 19-20 july 2012. forthcoming conference volume edited by Hyun Song Shin, East West Centre and Korea Development Institute.  
Goldstein, M. and P. Turner (2004). *Controlling Currency Mismatches in Emerging Markets*. Washington DC, USA: Petersen Institute for International Economics.