The changing role of central bank foreign exchange reserves

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The views and opinions expressed in this report are those of the authors and not of Baring Asset Management, OFI Global or Babson Capital Management.
This report by Gary Smith and John Nugée, two seasoned master craftsmen of reserve currency management, investigates the lessons learned from the accumulation of foreign currency reserves over the past 20 years. It is published at an intriguing time. After two decades of rises that the authors justly qualify as unintentional, unforeseen and unprecedented, official foreign assets around the world are starting to decline in many important countries, led by the biggest reserve owner, China.

This partly reflects a large shift of funds out of emerging market economies into the dollar in advance of the first rise in US interest rates for nine years. It is also the result of the sharp fall in the oil price which is one of the reasons for economic setbacks in countries like Russia, Venezuela and Malaysia, and has caused the governments even of the largest Gulf oil producers to dip into reserves to protect revenues. None of these recent developments counters the main assertion of the Smith-Nugée report, namely, that nearly all countries’ believe they need a far larger stock of reserves than earlier thought necessary as buffers against future turbulence.

Backing this contention, Smith and Nugée describe how some large economies with freely floating exchange rates, of which the UK is a foremost example, are making deliberate efforts to build reserves, both to bolster economic stability and also, in some cases, to add to the International Monetary Fund’s fire-power for international balance of payments assistance. The authors highlight an IMF report from April 2015 suggesting that developed countries as well as emerging market economies need to hold adequate reserves to guard against disorderly markets. Moreover, with the growth in the renminbi as a reserve currency, we have seen further significant moves towards the development of a multicurrency reserve system. This is likely to be still more volatile than the dollar-D-mark-sterling system that developed during the 1970s and 1980s and the dollar-euro system from the late 1990s – and thus provides yet another reason why reserves in future may continue to rise.

Smith and Nugée have chosen here to illuminate past trends as a way of exploring what may happen in the future. With the aid of reserve asset case studies among nations as diverse as China, Russia, the UK, Ireland and Iceland, the Smith-Nugée report provides new information on the wide and growing variety of uses to which reserves are put, and of the motivations for which they are held. The authors’ conclusion is that most countries will continue to practise the strategy of ‘self-insurance’ against turbulence, which will lead them to continue to acquire reserves – and find new ways of managing them. Once the world passes through the present phase of reserve weakness, the rebuilding seems likely to start anew.

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FOREIGN EXCHANGE RESERVES have grown rapidly over the past 15 years. From a total of just under $2tn in 2000, central banks currently hold around $11.4tn (as of March 2015) – with an additional $6–7tn of assets held by sovereign funds and other state investment agencies beyond central banks.

For most nations this growth was not intentional. Instead, it was the consequence of other policy objectives, usually a foreign exchange rate target. This helps to explain why the management of new higher reserves piles has been reactive, rather than proactive. Reserves managers are being asked to play catch-up, and to do so at a time when the macro investment climate is exceptionally difficult, as markets and interest rates react to extreme central bank monetary policies. This makes analysing the consequences for global markets of the increase in reserves both interesting and challenging, not least because, in many cases, the central banks themselves have not yet constructed a definitive dialogue. This paper has been written to help address this issue.

A key player in the story is China. Its increasing reserves have been a counterpart to growing global imbalances, in particular the current account imbalance between the US and China leading up to the 2008 financial crisis. The phenomenal growth in Chinese reserves not only significantly raised the reserves total, but also redefined accepted boundaries on the size of reserves that were manageable. China acted as a ‘pull’ factor for this development. China has been a role model for other Asian nations, some of which were aiming to emulate a mercantilist economic model and which, in turn, had to deal with the consequent growth in their foreign exchange reserves.

There are also ‘push’ factors that have been less well covered in the academic literature, but are important. A variety of country-specific crises over the past 25 years have had a key role in encouraging a defensive approach to reserves accumulation. The depletion of reserves during a crisis often appears to have the effect of encouraging subsequent growth in foreign exchange. The net effect is an eventual higher level of reserves rebuilding. Experience of crisis has helped to create pressure on other countries to follow similar action, with global repercussions. The list of reasons for building defences comprised of foreign exchange reserves only ever seems to grow. Conventional wisdom on reserves adequacy continually becomes outdated. Estimates of the size of reserves that might be considered uncomfortably large are pushed ever higher.

Causality is hard to identify. Reserves growth has been a consequence of global imbalances, but is also a defensive reaction to the existence of global imbalances in circumstances where imbalances reflect the view that the world is a dangerous place. Acceptance of reserve levels that are much higher than previously accepted has altered the nature of reserve managers’ jobs. This adds to their technical, organisational and political challenges, and introduces a form of ‘mission creep’ to their roles.
Changing rationale for holding reserves

The rationale for holding reserves has evolved over the last 50 years. Immediately after the collapse of the Bretton Woods system in 1971–73, foreign exchange reserves were viewed as required for foreign exchange intervention. Over time, the perceived importance of this purpose has declined for many nations, and for some they are no longer viewed as available for foreign exchange intervention at all. Reserves are held instead as a general fund for supporting the foreign currency exposures of the whole economy, whether public or private, and whether contractual or contingent.

Three major factors have encouraged reserves growth. First, in many nations the central bank has been given (or has inherited) a role as the ultimate backstop for the financial markets and economy. Second, the list of aspects of the economy that have been ushered in under the scrutiny of central banks has increased. Third, foreign exchange reserves are increasingly being relied upon to provide resources for a central bank in the event of a crisis.

The International Monetary Fund recognises this trend. In April 2015 it identified five reasons for holding reserves: to engender confidence in the currency; to counter disorderly market conditions; to support monetary policy; to facilitate inter-generational transfers, and to influence exchange rates. This is a longer list than students of central banking would have expected to see ten, or even five years ago.

The list of responsibilities that are potentially covered by reserves is rather like a child’s wish list at Christmas. Items never seem to be removed from it. Moreover, the list of the child next door influences all the children’s lists, creating contagion. We are not suggesting that is an irrational response, because foreign exchange reserves managers are incentivised to learn from crises in other nations, and pay attention to the pressures these crises exert on worldwide assessments of reserves adequacy.

The number of countries reporting foreign exchange reserves data that meet exacting IMF standards jumped from 42 in 1996 to 184 in 2014. This statistic underlines the importance of foreign exchange reserves and of the accuracy of their reporting. An unintended consequence is a tendency for improved and accurate foreign exchange reserves data to be used as a temperature gauge for the entire economy. As a consequence, foreign exchange reserves are monitored closely by sovereign market analysts, and have acquired a weightier role in sovereign analysis. This becomes another reason for nations to err on the side of caution when assessing adequacy. For most nations over the past two decades the balance sheet of risks has revealed an asymmetry; around every corner, there seems to be another argument in favour of allowing reserves to grow.

In this paper, we analyse the causes of the 15-year trend for foreign exchange reserves growth, ask whether there are reasons for that growth to reverse, and consider the asset management implications. The world as a whole may have excess foreign exchange reserves, but can any individual nation ever admit to having such an excess?
There has been surprisingly little recent academic work either on the uses of reserves, or on what level of reserves should be considered adequate. In the latter case, this is possibly because the subject defies numerical analysis. Central bankers have found, when market sentiment turns negative, that the only correct answer to ‘How much reserves do we need?’ is ‘More’. The costs of having too many reserves are an order of magnitude less than the costs of having too few. This gives a bias to building safety margins. No finance minister wants to declare, ‘We have enough reserves’, only to be proved wrong by the market.

Until the collapse of the Bretton Woods fixed exchange rate system in 1971–73, currencies were largely fixed and adjusted in discrete policy moves, usually in response to balance of payments disequilibria. In the aftermath, it was believed that adopting flexible exchange rates would reduce the demand for foreign exchange reserves. Some academics even argued that a freely floating exchange rate would remove the need for reserves entirely.

During various sovereign crises in the 1970s and 1980s, it became clear that reserves remained useful – even necessary – including for countries with floating exchange rates. There was a growing realisation that reserves conferred credibility and heightened the perception of financial stability. One senior central banker was heard to say that those with significant levels of reserves seldom needed to use them, and those without felt the lack of them. The result was that countries had either a surfeit of reserves or a shortfall, but never the right amount.

The Asian crisis of 1997–98 highlighted two important points. First, despite the theoretical backstop of official financial assistance from the International Monetary Fund, the terms under which assistance was offered were often unattractive or unpalatable. There remained many advantages in self-insurance. As former Hong Kong Monetary Authority executive director Julia Leung commented in January 2015 at the launch of her book, The Tides of Capital, nations learned that a buffer was wise – and a big buffer, wiser still. Second, the Asian crisis highlighted that reserves were not only useful in fighting against a potential crisis, and hence guarding against a resort to the IMF; they were also useful after a basic decision had been made to seek IMF assistance. Negotiations with the IMF were best conducted from a position of at least modest strength. That meant a situation where some reserves remained. The concept of ‘conserving reserves’ during a crisis was born – abandoning defence of an exchange rate before the last dollar of reserves had been utilised.
The focus on reserves adequacy

A seminal work on reserves adequacy, and the uses to which reserves can legitimately be put, was written by Pablo Guidotti, former Argentine deputy minister of finance, in 1997. He suggested that a country’s reserves should equal its short-term external debt (of one year or less maturity). The rationale was that countries should have enough reserves to resist a withdrawal of short-term foreign capital and the closure of capital markets for refinancing. His analysis received wider notice when Alan Greenspan, then chairman of the US Federal Reserve, quoted it in speeches in 1999, and it became known as the Guidotti-Greenspan Rule. In subsequent research, economists Guzman Calafell and Padilla del Bosque found that the ratio of reserves to external debt is a relevant predictor of an external crisis.

Guidotti’s work helped to incorporate the possibility and consequence of a debt shock in the calculation of reserves adequacy. The intervention by Greenspan in 1999 specifically mentioned foreign currency debt falling due within one year, but also mentioned the foreign currency debts of state-owned (or guaranteed) banks. This latter point has proved apposite given events since 2008. John Nugée in his paper ‘Foreign Exchange Reserve Management’ in 2000 argued that reserves should be viewed for reasons beyond exchange rate management and servicing foreign currency debts. Reserves provided assurances to creditors of a state’s creditworthiness, and were available to act as an emergency fund in the last resort.

Fahad Alhumaidah, former head of fixed income at the Saudi Arabian Monetary Agency, argues that there are similarities between private individuals’ demand for money and central banks’ demand for international reserves. There is indeed evidence to support this theory. In 1936 British economist John Maynard Keynes identified three sources of demand for money: transactional, precautionary and speculative. Translating this into demand for reserves, it appears that the precautionary motive is driving the aggregate increase in demand for foreign exchange reserves. This is the case in the UK, as we will explore in detail.

As Alhumaidah describes it, sufficient reserves are required to cover ‘the need to provision for liabilities that are irregular and less recurring but could nevertheless prevail at the central bank level’. These ‘liabilities’, he argues, flow from the role of the central bank as a financial backstop. The role of financial backstop has not changed, but what is interpreted as deserving such a backstop has been expanded over time. It now includes commercial banks’ foreign currency liabilities, the foreign currency debt issued by domestic institutions (government and private sector), and even foreign holdings of domestic equities.

In his calculation of reserves adequacy, Alhumaidah posits that, if the exchange rate regime is fixed or semi-fixed, then this list would need to account for a potential internal drain of liquidity related to currency backing cover, and a proportion of M2 money supply. Such a comprehensive analysis of central bank responsibilities widens the definition of reserves adequacy. His application of the analysis to Saudi Arabia, if all liabilities were to be backed in full, implied a need for reserves of about $450bn in 2012, versus an actual reserves number of around $530bn. Using his broad definition of adequacy, there was thus a relatively modest excess of reserves. (It is useful to note that foreign ownership of domestic equities was negligible in 2012. Plans announced in 2015 to liberalise foreign ownership of Saudi equities could push the adequacy calculation sharply upwards.)
This is a broad interpretation of the responsibilities that might be foisted on the central bank. Although some commentators may not agree with the full extent of Alhumaidah’s list (which is a country-specific list for Saudi Arabia), he has highlighted items that were not previously on any list. A global interpretation is possible: the potential list for any nation has grown. Many central banks are being asked to take on more, not fewer, responsibilities. The implication is that the size of nations’ so-called ‘excess’ reserves is smaller than previously calculated. The whole globe might be due for a re-rating.

By 2014 the transformation of reserves from a financial exchange rate management tool (the value of which was demonstrated when they were spent) to a creditworthiness confidence-building tool (the value of which was greatest when they were not spent but held as a pool of potential spending) was almost complete. For some nations, reserves were said to exist only to meet external debt commitments, with little attention paid to their use for more traditional exchange rate management. In the most extreme versions of this argument, nations which had to resort to exchange rate management via intervention were seen to have already lost the battle, not least because, in a world of enormous capital flows, almost any amount of intervention might be ineffectual.

As it to reflect this, credit rating agencies developed the practice of citing reserves levels as a reason for upgrading or downgrading a sovereign. This is an important offset to the issue of ‘negative carry’, but it is hard to calculate and hence to quantify. Negative carry occurs when the interest rate paid out on domestic bills, used to sterilise foreign exchange intervention, is higher than the interest rate earned on the investment (e.g. in US Treasury bills). Credit rating agencies have begun to factor in not just the debts of the sovereign itself, but also the contingent liabilities a state has for the debts of its financial system. The financial turbulence of 2008, especially in Iceland and Ireland, reinforced the link between the creditworthiness of a state and of its banking system, to the extent that the two are now widely seen as inseparable.

**Currency composition of foreign exchange reserves, 2000–15 ($tn)**

![Currency composition of foreign exchange reserves, 2000–15 ($tn)](chart.png)
The current state of reserves adequacy theory

The recalibration of theories of reserves adequacy underscores that we have yet to settle on a definitive theory that can accommodate changing circumstances. Theories have been static, while managing economic and financial crises requires a dynamic approach. Theories tend to pass their sell-by date at the beginning of the next crisis. Central banks no doubt carry out internal assessments of adequacy, but these are not made public.

There is no easy answer to this conundrum. A forward-looking assessment of reserves adequacy would be optimal, but this militates against a rules-based formula that suggests a precise scientific number. An approach is needed that will allow for flexible management of reserves as circumstances (and markets’ expectations) change. Such an approach would avoid the twin traps under which central bankers would either say nothing definitive in the face of the shifting concept of adequacy, or would say merely that ‘whatever number you suggest will be inadequate’.

Nevertheless, some observations about any future reserves adequacy theory are possible. It seems odd that the most common expression of reserves data is in simple nominal dollars. Expressing reserves as a proportion of GDP would be a more useful means of international comparison. Using this measure would facilitate international benchmarking. Successful economies such as Hong Kong and Singapore have very high ratios; this might bring some comfort to nations whose reserves are growing quickly in nominal terms, but have ratios lower than Hong Kong and Singapore (see Chart on p. 15 and table on p. 28).

There appears to be a significant difference between developing and developed countries. Many attempts to build a theory of reserves adequacy overlook this, or try to encompass all countries in one theory. This is one reason why no serious theory of reserves adequacy has emerged. Even if separate theories are formed for countries in different states of development, there is a ‘boundary problem’: it is difficult to judge when a country moves from developing to developed.

The challenge of China

Since 2000, China’s reserves have grown rapidly to levels previously unimaginable. Almost any general theory of reserves accumulation, usage and adequacy is at risk of struggling to incorporate a country which is simultaneously the second-largest economy in the world, a major trading nation, yet at the same time still a developing economy with a managed capital account and a currency that is not fully convertible.

At the beginning of the century China’s foreign exchange reserves stood at $165bn. By 2015 they had grown more than 20-fold to almost $4tn. China has redefined what is bearable in terms of the reserves growth rate and reserves stockpile. This has led to some emulation pressures, but perhaps more importantly has challenged the consensus on the definition of ‘big’. This has helped other nations become more comfortable with reserves growth, especially where that growth has been as a consequence of policies in areas outside the international monetary sphere.
The Chinese experience has exerted a ‘pull’ pressure on the assessment of reserves adequacy globally. China’s reserves have grown, not as a conscious act of policy but as a by-product of other economic policies, specifically a drive for economic growth through exports, facilitated by a managed (and some would say artificially low) exchange rate.

As a result of its mercantilist trade policy and the pegging of the renminbi to the dollar, China has played a major role in the global macroeconomic imbalance of 2000–15. It ran large current account surpluses (peaking at almost 10% of GDP in 2007) and was the primary counterpart of the deficits run by the US before 2008.

Foreign exchange reserves, China, 2000–15 ($bn)

Source: IMF
As China accumulated foreign exchange reserves, it invested many of them in US Treasury bonds. These assets were purchased at a lower yield than the domestic Chinese sterilisation bills issued to facilitate the intervention. The effect of this ‘negative carry’ became ever more significant as reserves totals continued to increase. Over time the size of the Chinese position in US Treasury debt became sufficiently large to lead to concerns of how an eventual exit might be managed. This relationship between Chinese reserves and US Treasury debt has been referred to as a principal consequence of the ‘global savings glut’.

In 2007 the China Investment Corporation sovereign fund was established to help manage China’s growing foreign exchange reserves and offset the problem of ‘negative carry’. The creation of the CIC reinforced the trend established by the sovereign funds of Singapore and Korea, and created emulation pressure for other nations with increased foreign exchange reserves.

For some nations with growing reserves, sovereign wealth funds are essentially a part of the tranching process, under which those responsible for central bank reserve activities assign reserves into different tranches with varying risk, liquidity and return criteria, depending on the perceived overall level of reserve adequacy. Larger reserves (especially in today’s low return environment) create pressure for asset class diversification. These asset allocation pressures can be accommodated in a redesigned institutional architecture for the management of foreign exchange reserves, of which a sovereign wealth fund can be an integral part. Precedent has played a role in the historical narrative of foreign exchange reserves accumulation and, as a consequence, the management of these reserves.

China Investment Corporation asset allocation, 2008-14 (% of portfolio)
In this section we examine nations with experience of economic crises that have led to the depletion of foreign exchange reserves, and ask what lessons can be learned. In each of the examples in this section, depletion was more significant and more severe than the authorities believed possible.

Countries found, when faced with a crisis, that the calls on their reserves were larger and more varied than they had allowed for. Such experiences have helped to push the boundary of what is considered an appropriate level of foreign exchange reserves.

The large increase in global foreign exchange reserves since the late 1990s is partly a reflection of changes in the perceived uses of these reserves. This has occurred against a backdrop of relative silence from the authorities charged with managing reserves – except in the case of the UK.

Foreign exchange reserves, selected countries, 2014 (% of GDP)
The unusual case of the UK

The UK is an unusual example of a major developed country which suffered a crisis brought on by inadequate reserves. In 1992, the authorities were unable to hold sterling in the EU’s exchange rate mechanism. They spent massive quantities of the UK official reserves in trying to stay within the ERM, were forced to leave and then replenished reserves moderately from their previous inadequate level. Then, after a period of reflection, the authorities in 2010 announced a change in reserves policy. Both the process and transparency of this decision are of interest.

Until 1932, the UK’s reserves were held and owned by the (then private) Bank of England. This changed with the Exchange Equalisation Account in Neville Chamberlain’s 1932 Budget, which provided the legal framework to establish government-owned foreign exchange reserves. The original reason cited for holding reserves was ‘for checking undue fluctuations in the exchange value of sterling’.\(^\text{10}\) Although the legislative underpinning for the UK reserves was updated and extended (to cover potential IMF commitments) in 1979, the core focus on ‘checking the value of sterling’ remains to this day.\(^\text{11}\) In particular, it survived the 1992 ERM crisis.

However, in 2010 the UK government decided to increase the level of foreign exchange reserves. They have since grown by around 100% (or $50bn). But the exchange rate regime in the UK has not changed, and importantly, the UK did not engage in foreign exchange intervention to defend sterling between 1992 and the decision in 2010. This poses the question of why extra reserves were necessary. In 2014, UK Chancellor of the Exchequer George Osborne reiterated the need for still further (unspecified) growth. He said: ‘Following the government’s decision to increase the Official Reserves over the last five years by £30bn, future increases will build on a position of growing strength. But the reasons for the government increasing the reserves in 2010 continue to apply: the global economy is still uncertain, the UK’s reserves are relatively small compared to many other advanced economies, and the UK still needs to remain resilient to possible future shocks.’\(^\text{11}\)

Osborne set down three unquantified reasons for holding more reserves. One of the most significant factors is the UK government’s belief that its reserves are low compared with other countries in similar positions.

In 1992, when the UK was a member of the ERM, foreign exchange reserves had the unambiguous single purpose described in the 1932 Act: to defend the exchange rate. This was clearly demonstrated on 16 September 1992, sometimes referred to as ‘Black Wednesday’. On that day, the UK used an unprecedented $50bn in foreign exchange reserves to defend the value of sterling. Since ejection from the ERM, sterling has been a floating currency; the UK has not intervened in the foreign exchange markets to defend sterling. It is highly unlikely that either the current UK government or any replacement would change the present free-floating regime to a more managed arrangement.

The UK authorities perceive that there has been a general increase in risk levels. They are not alone, as the modification of IMF-related financing facilities highlights. This creates a feedback loop. Nations may need more reserves for self-defence to counter newly perceived risks; and at the same time they see the need to support supranational defensive initiatives designed to counter the same risks.
In April 2009 the G-20 – the world’s leading economies from developed and emerging market nations – agreed to increase resources available for the IMF by around $500bn, a threefold increase. These New Arrangements to Borrow (NAB) were calculated on the basis of existing IMF quotas, using a formula that gives a 50% weight to GDP, a 30% weight to ‘economic openness’ and a 15% weight to ‘economic variability’. Only a 5% weight is given to foreign exchange reserves. This formula partly reflects the relative quota size ascribed to the G-7 developed nations. Some of these developed nations do not have large official reserves holdings; hence, the NAB commitment may have an impact on future target levels for reserves.

The UK NAB commitment is just over Sdr18.5bn, or around $25bn. This is the same as that of France, which has a similar GDP to the UK (the nations are usually ranked fifth and sixth in the list of largest economies). In contrast, India and Brazil, which are almost as large in GDP terms (ranked seventh and eighth), have a NAB commitment of only Sdr8.7bn each. This is less than 50% than that of the UK and France.

Expressed as a proportion of foreign exchange reserves, the difference in commitment is striking. The UK’s and France’s NAB commitment is equivalent to 20% of existing official reserves. India’s and Brazil’s is equivalent to a little over 3%. China provides a further comparison. Its NAB commitment is just over Sdr31bn, around 70% larger than that of the UK and France. Yet the Chinese economy is around four times larger, and as a proportion of foreign exchange reserves, this NAB commitment is mere 1%.

Foreign exchange reserves, UK, 2000–15 ($bn)
As the IMF paper, ‘Assessing Reserve Adequacy’, made clear in April 2015, there are new arguments for developed nations to increase their levels of reserves, and the IMF NAB is a factor. The NAB commitment will be more relevant for reserves policies in developed nations with relatively small reserves totals. Nevertheless, in general, the NAB influence is another item on the extending list of reasons to have more, rather than fewer, reserves.

For the UK, the reason to hold reserves has changed, and this is not about exchange rate policy. The question this prompts is whether the UK is alone in this reasoning, or whether there has been a more general change in the perception of what constitutes an adequate level of reserves.

Our contention is that the UK is not an outlier; the large increase in the global quantity of foreign exchange reserves, and the observation of how nations have reacted to crises in recent years, provide evidence to support this view. We examine four episodes, and conclude that there has been a seminal change in the way reserves are treated and expected – by their owners and by creditors alike – to be used.

The UK has ‘broken ranks’ and revealed publicly, the new orthodoxy on reserves and the reasons why many nations have simultaneously perceived a need for a larger buffer. Other countries are perhaps less able to make such reasoning public, or less confident of the market’s reaction, but undoubtedly the UK action forms part of a wider pattern.
Reserves managers have grappled for 40 years with a growing list of responsibilities to be met from the deployment of foreign exchange reserves. During the Asian crisis there was a significant reassessment of this list.

Two key points became apparent which hold lessons for reserves managers today. First, reserves were not actually perceived as small in the mid-1990s in terms of their then widely-agreed responsibilities, namely exchange rate management and servicing government debts denominated in foreign currency. Second, governments were following economic policies that were viewed as conventional and fiscally sound. Most Asian countries were running balanced budgets if not a small surplus, and most had low public sector debt.

None of this was sufficient when private sector players in the various countries were threatened with insolvency and inability to pay their foreign currency debts. In country after country, foreign creditors forced states to assume de facto responsibility for debts they had no de jure obligation to meet. As a result, public sector prudence was overwhelmed by private sector profligacy.

The immediate trigger for exchange rate crises across the region was the fiscal cost of bank recapitalisation. This led to deficits, and forced governments to seek help from the IMF. As Galina Hale, research adviser at the San Francisco Federal Reserve Bank stated, ‘Prior to the Asian crisis, early warning systems… ignored private debt stocks that could become public liabilities’. For this reason, alarms were not triggered. This episode should have served as a warning that the foreign currency debts of domestic banks would henceforth be considered part of the layering of responsibilities placed at the door of reserves managers.

There was some evidence of reserves being conserved (that is, withheld from use despite there being a clear need to use them) during the Asian crisis. The Taiwanese dollar came under pressure in October 1997 as a reaction to weakness in the Singaporean dollar. The Taiwanese dollar was the third largest foreign exchange reserves in the world at this time, but also (in contrast to the Asean-4 countries, Indonesia, Malaysia, Philippines, and Thailand, and Korea) had reserves that greatly exceeded external (public sector) debt.

As Giancarlo Corsetti and other authors stated, ‘In principle, Taiwan had enough reserves to engage in an extensive defence of its exchange rate parity…but preferred to let the currency float’. Taiwan not only had the third largest foreign exchange reserves in the world at this time, but also (in contrast to the Asean-4 countries, Indonesia, Malaysia, Philippines, and Thailand, and Korea) had reserves that greatly exceeded external (public sector) debt.
Although the Taiwanese currency was allowed to float, the depreciation against the dollar was modest versus peers. In the second half of 1997 the Taiwanese dollar fell by 19% against the dollar, compared to 70% for the Indonesian rupiah, 55% for the Thai baht, 50% for the Korean won, and 42% for the Malaysian ringgit. This illustrates three points. First, contagion is difficult to escape, even when fundamentals differ. Second, there appeared to be an instance of reserves being conserved in the face of a market attack. Third, having stronger fundamentals (including the world’s third-largest pile of reserves at the time) mitigated the extent of the attack on the Taiwanese currency.

The financial fragility of 1996 is instructive in terms of how we should view national balance sheets today. The ratio of total short-term external liabilities (to Bank for International Settlements banks) versus foreign exchange reserves at the end of 1996 was as follows: Korea 213%, Indonesia 181%, Thailand 169%, Philippines 47% and Malaysia 47%. The ratio for China was 36%. In other words, reserves were insufficient to cover short-term liabilities in the first three cases.¹⁴

The 1997–98 Asian crisis taught Asian countries several key lessons, as Julia Leung highlighted.¹⁶ The first was the need for self-insurance. This meant building foreign exchange reserves to obviate the need for IMF help. Second, in the event of a crisis, a foreign exchange reserves buffer would be useful in terms of engaging in a conversation with the IMF. For Asian countries caught in the financial storm of 1997–98, preserving reserves had value. Perversely for orthodox theory, reserves were sometimes of more use when they were not utilised than when they were.

### Foreign exchange reserves, Asian economies, 1996–1997 ($bn)

![Foreign exchange reserves chart](chart.png)

Source: IMF
During the 2008 financial crisis Iceland provided another graphic example to illustrate that reserves stood behind more than just the narrowly defined debts of the sovereign itself. The Icelandic banking system expanded aggressively in the years following 2000, making full use of the freedom for any bank domiciled in the European Economic Area to operate throughout the EEA based on its home country authorisation and supervision. By 2007, the gross foreign currency denominated borrowings of the three major Icelandic banks, Kaupthing, Landsbanki and Glitnir, were seven times Iceland’s GDP, and their overall balance sheets 10 times GDP.

The financial crisis caused concern among lenders to the Icelandic banks about their ability to refinance their debts, and this turned rapidly into a full-scale liquidity run. By October 2008, all three were insolvent. Neither the Icelandic deposit protection scheme nor the Icelandic state (operating through Seðlabanki Íslands, the central bank) had sufficient foreign exchange reserves to support them. The banks were left to fail, and foreign creditors to pursue their assets through the liquidation process.

The Icelandic experience prompts four observations. First, there appears to have been an assumption by both the Icelandic authorities and the banks’ foreign creditors that it was legitimate to look to the state to provide social insurance against all the banks’ debts, both domestic currency and foreign currency. Indeed initially the authorities tried to support the smallest of the three banks, Glitnir, with a direct injection of dollars from the central bank’s reserves.

Second, when the scale of the banking collapse made continued support from the reserves impossible, the Icelanders responded by fully insuring and honouring local currency deposits while abandoning other creditors completely.

Third, as a result of this differential treatment, it became necessary to complete the isolation of the domestic Icelandic króna-based banking system by imposing capital controls. Seven years later, in 2015, the Icelandic authorities are only now beginning to consider the amendment and removal of these controls.

Fourth, the decision to abandon banks’ foreign creditors was taken while the central bank still had substantial dollar holdings. The authorities decided to preserve reserves for the greater good of the national economy, and to default on what was widely seen as an obligation to foreign creditors of the banking system. The concept of ‘not spending all the reserves but keeping some back’, which was first observed in the Asian financial crisis, was revived and reinforced.
After Iceland, another decisive example to face a withdrawal of international confidence in its banking system was Ireland. The two cases have similarities as well as important differences. By 2008 there was serious doubt about the solvency of at least one major Irish bank, and the authorities took the unusual unilateral step of declaring full state backing for all the banks. This formalised the growing belief that, in a crisis, the obligations of the state go far beyond the letter of the law.

Unfortunately for the Irish government, the move did not have the desired effect. Rather than persuading the market that the Irish banks were now as safe as the Irish state, it merely caused the market to fear that the Irish state was now as insolvent as its banks. Uncertainty spread rapidly to the Irish government bond market, so that Ireland had to seek assistance from the European authorities and its euro area partners.

As a country within economic and monetary union, Ireland was unable to create domestic currency at will. This was the key difference between Ireland and Iceland. The latter could not create dollars and so defaulted on the banking system’s foreign debt, but could create krónur in unlimited quantities and so kept the domestic banking system alive. The root cause of both countries’ problem was the same: the unspoken but by now firmly established belief that it was the state’s duty to stand behind the entirety of the national banking system’s liabilities in a crisis. In effect (and with the single but notable exception of the US), banks do not appear to be allowed to default, and arguably all banks are considered ‘too big to fail’.

Foreign exchange reserves, Ireland, 2000–15 ($bn)

Source: IMF
Russia illustrates a further development in the extension of potential calls on reserves – the ‘mission creep’ for reserves managers. Russia’s geopolitical and economic problems in early 2014, including a falling oil price and disputes with Ukraine and then more widely with the West, caused negative sentiment towards the rouble, which came under extreme pressure. The Central Bank of the Russian Federation initially responded with repeated bouts of intervention using its substantial reserves. By mid-2014 interventions slowed markedly. After the initial phase, the authorities seemed less than enthused by the market response, and became keen to conserve reserves. 17

Russia’s unwillingness to use its reserves for ‘exchange rate management’ (slowing the rouble’s fall) continued despite pressure on the currency in the second half of 2014 when the rouble fell 50% against the dollar. Perhaps there was a perception in Moscow that the reserves were not large enough to be effective. Some commentators have offered an alternate opinion that exchange rate management is no longer the purpose of reserves. There was widespread press coverage of the notion that the combined resources of Russia’s central bank reserves and sovereign funds could instead be kept back to pay the foreign currency debt obligations of corporate Russia, should western sanctions make refinancing in the markets difficult. This analysis assumes that the Russian state would need to refinance not just Russian banks, but all Russian companies.

![Foreign exchanges reserves, Russia, 2000–15 ($bn)](chart.png)

Source: IMF
Lessons from the case studies

The cases studied show that nations have found, in a crisis, that market participants extend their expectations of the uses of reserves.

The Russian example highlights how markets speculate that the foreign currency debts of a country’s corporate sector are potentially backed by foreign exchange reserves. Although Russia could be seen as a special case – a country where the role of the state is highly significant even for nominally private corporations, with restricted access to western markets for normal banking finance due to financial sanctions – it is symptomatic of a general trend.

BIS statistics show that dollar debt issuance by emerging market corporations has grown markedly in recent years. Historically this type of trend might have been of limited interest to central bank reserves managers. But if the Russian experience acts as a trigger, this trend may provide another incentive for reserves growth. Michael Chui and Philip Turner describe that the full extent of currency mismatch facing emerging market corporations requires information on any hedging activity that might have occurred, and information on the asset side of the corporate balance sheet. They report that ‘macroeconomic or aggregate data on these areas are generally not available’.

This lack of clarity is unlikely to diminish the concern over dollar debt exposures. Given the tendency for problems to be passed to the central bank at times of crisis, this data shortfall might encourage a somewhat exaggerated response, in the form of an over-provision of reserves to deal with an opaque problem.
Even though the world may now have excess foreign exchange reserves, individual nations are unlikely to admit to this problem. They are wise to remain silent, because of the uncertainty on the definition of what constitutes excess reserves. The yardstick for measurement is constantly shifting, influenced both by new crises and by reserves growth in other nations. Because the nature of future crises is unknown, and because the aspects of the economy ‘backed’ by reserves have a tendency to increase, the concept of reserves adequacy is elusive. The default position for many developing countries is to allow reserves to grow. For developed economies, there might even be a need to pursue an overt strategy of growth.

Some argue that the growth in reserves is a response to the greater obligations placed on the authorities, as in the case of the UK. But we cannot rule out that in some instances a greater list of responsibilities has been a consequence of the need to find purposes for swollen reserves levels.

Over the last 20 years both ‘push’ and ‘pull’ trends have been important in driving growth in foreign exchange reserves. Many nations now hold much larger foreign exchange reserves than market commentators ever thought possible. Partly as a consequence, expectations on how those reserves might be used have evolved.

In its April 2015 report, the IMF explicitly referred to the trend for mature market economies’ to build reserves to guard against disorderly markets. This is a relatively new perspective on the often perceived need for emerging market countries to hold reserves to preserve order in markets. The IMF has also stressed a need for a more ‘flexible assessment of (reserves) adequacy’. This echoes the UK Treasury’s suggestion in 2014 that the global economy is uncertain, and that nations need to remain resilient to future shocks, and to hold reserves comparable in size to their peers’.

It seems that self-insurance via reserves accumulation is still the default position for countries large and small. Alternative strategies have been identified but have not really proved convincing. Two of these are reserves pooling and the greater use of bilateral swap lines. The first sounds intuitively appealing, but, as William Allen and Richhild Moessner highlight, ‘reserves pooling arrangements carry the risk that … members will want to draw at the same time’.19

Perhaps reflecting this conceptual weakness, existing pooling arrangements have been modest. The Chiang Mai Initiative linking 13 Asian nations is perhaps the most well-known. Its initial pool was $120bn in 2010, increasing to $240bn in 2012 – small numbers compared to the total reserves of the Asean+3 nations of $6.5tn.

**CONCLUSION: A NEW ROLE FOR RESERVES**
Possible use for swap lines

Swap lines have been suggested as part of the solution, and indeed the bilateral swap lines announced by the US Federal Reserve in 2008 were helpful in bringing to an end to a dollar funding crisis that led to a localised foreign exchange reserves crisis in South Korea. However, the Federal Reserve extended swap lines only to nations which might be described as strategic partners. In Asia this list amounted to Korea, Singapore and Japan. Brazil and Mexico were the only recipients in Latin America. Foreign policy and financial policy appeared to be aligned for recipient nations. Some nations will view this as a dilemma, and they may take the view that they might not qualify (or indeed wish to qualify) for a Fed swap line in the future. And as Stanley Fischer, vice chairman of the Board of Governors of the Federal Reserve, intimated in 2014, Fed swap lines should not be assumed to be a permanent feature of the international monetary system.

A swap line with the US Federal Reserve is superior to a swap line with another central bank because of dollar hegemony in the international monetary system. This position might change in the future when the dollar (for example as represented in the share of global foreign exchange reserves) becomes less dominant. In turn, this may lead to an elevation in the usefulness of swap lines denominated in other currencies. But this will be a longer-term development. Most nations see the dollar as still the primary reserve currency. Dollar swap lines help to reinforce dollar dominance.

There are doubts about the efficacy of reserves pooling and questions about the permanence of, and qualification criteria for, Federal Reserve swap lines. Moreover, in many countries, opprobium is attached to seeking assistance from the IMF. Consequently, compared with all available options, self-insurance via accumulating foreign exchange reserves remains an attractive proposition.

But quantifying the potential calls on the reserves – and so calculating whether a given level of reserves is adequate – remains very difficult, not least because of the lack of clarity on data on contingent responsibilities. This will encourage precaution, and in turn encourage the accumulation of larger rather than smaller reserves totals. Game theory may be more helpful than mathematics in determining how much is enough. Neighbours and peers will have an influence.

Traditional academic work falls short, and has not proved dynamic enough to keep pace with the real world evolution of the perceived use of reserves. As the IMF highlighted in April 2015, ‘Traditional metrics have been narrowly based, and have not guided behaviour’. It rightly went on to underscore ‘the importance of judgement in making assessments, and the need to avoid the mechanical application of any metric’.

Hence there will not be a Smith-Nugée mechanical application for calculating reserves adequacy. History shows that theories tend to be overwhelmed by developments. Arguably what has developed is an arms race between central banks and the financial system. As the global financial system grows at a rate which is a multiple of world GDP, central banks and their government owners feel the need to bolster their reserves at a faster rate than the growth of their own economies.
Process without an evident ending

We do not find it evident where this process might end; nor do we believe that ever larger holdings of reserves at the central banks of the world are necessarily the most efficient use of the scarce resource of capital and state finance. However, until there is a satisfactory answer to the question of ‘How much is enough?’, the bias will be for larger foreign exchange reserves, and the focus for central bank reserves managers will be on how their large and growing stockpiles of reserves are managed.

Traditionally the management of central bank reserves has focused on a need to preserve liquidity. While liquidity is very important, it is not certain that it is as important for the second $50bn as the first $50bn. This leads to the issue of rules governing central banks’ management of reserves, and whether existing internal rules are sufficiently flexible to accommodate asset class diversification. There is evidence that, for some central banks, rules tend to be static, while reserves levels and the need to manage them are dynamic. The tranching of foreign exchange reserves is not a new concept for central banks, but more clarity on this topic might help win stakeholders over to the argument for both increasing the number of tranches, and introducing more clarity on the asset class diversification that follows.

One special case of tranching is the creation of distinct portfolios managed by separate government agencies. In many nations where foreign exchange reserves have grown quickly, political debate has sprung up on the need for a sovereign wealth fund. This is related to the IMF observation that one reason for holding reserves is to facilitate inter-generational transfers.

In simple terms, a sovereign wealth fund can be viewed as part of the tranching process, albeit one that provides a formal framework for central banks to invest their growing reserves utilising different styles and employing a wider range of asset classes. In some countries the central bank provides the operational management of the sovereign fund. In others it also retains some managerial oversight, including the right to call funds back from the sovereign fund to the central bank in times of need.

The topic of foreign exchange reserves management has become more complex. Larger reserves and wider uses for them lead inexorably to different investment strategies, differing needs for liquidity, and heightened asset diversification pressures. Adding new asset classes is only part of the solution. We have seen on numerous occasions that movement between asset classes is the key to delivering alpha in a multi-asset portfolio. Acquiring those multi-asset investment skills is of paramount importance.

The challenges facing reserves managers are multiple and changing, and the old rules need to be updated. To handle new challenges reserve managers will be wise to adopt a more dynamic approach to managing foreign exchange.

‘Buy and hold’ may in the past have been sufficient; in the future, this will certainly not be the optimal strategy.
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<th>Rank</th>
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<td>1</td>
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¹Includes assets managed by SAFE
²Includes assets held by Ministry of Finance
³Includes the Russia Reserve Fund and National Wealth Fund
⁴Includes assets held by HM Treasury and Bank of England

Source: IMF. Note: Figures refer to foreign exchanges reserves only. They do not include gold (or gold derivatives) or IMF positions or SDRs. Data are in current dollars as of 31 Dec 2014.
NOTES


3. This suggestion was made by Guidotti at a seminar of the Group of 33 in Bonn in the spring of 1999, but it followed earlier reflections on the subject. See J. Onno de Beaufort Wijnholds and Arend Kaptelyn, Reserve Adequacy in Emerging Market Economies, IMF Working Paper, Sep 2001


7. Dimitra DeFotis, ‘New World for Saudi Stocks’, Barron’s, Jan 2015

8. Frances Coppola, ‘Russian Ruble: Let It Fall, Let It Fall, Let It Fall’, Forbes, Dec 2014


10. See Management of the Official Reserves, www.bankofengland.co.uk

11. George Osborne, 2014 Autumn Statement

12. Galina Hale, ‘Could we have learned from the Asian Financial Crisis of 1997-98?’, Federal Reserve Bank of San Francisco Economic Letter, Feb 2011


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