

# FOREIGN ASSET ACCUMULATION BY AUTHORITIES IN EMERGING MARKETS

## ARTICLES

Foreign asset accumulation by authorities in emerging markets

*Global foreign exchange reserves and other government-owned financial assets have, over the last decade, grown at a remarkable pace, and are likely to exceed USD 10,000 billion today. While no consensus on the optimal reserve levels has been reached among practitioners and academics, this article finds that the notable rise of foreign exchange reserves and sovereign wealth funds among commodity-exporting economies can be explained, to some extent, by intergenerational equity considerations. In the case of Asian countries where the accumulation of foreign assets by central banks and governments is mainly a reflection of inflexible exchange rate regimes, the economic rationale for large holdings of foreign assets appears weaker. The implications of the rise in foreign exchange reserves and assets held by sovereign wealth funds on the global financial system are difficult to predict. More transparency in this area would help in order to study possible global repercussions in this context, and would also contribute to greater global financial stability.*

## 1 INTRODUCTION

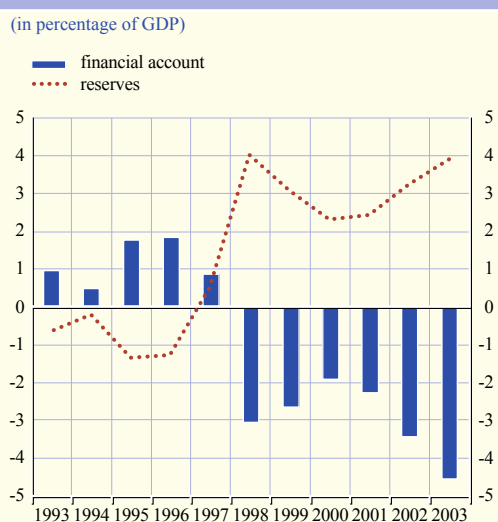
Over the past decade, governments in emerging economies have built up sizeable holdings of foreign financial assets, mainly in the form of foreign exchange reserves. More recently, sovereign wealth funds, which manage governments' financial assets outside "traditional" foreign exchange reserves, have grown rapidly and received considerable attention in the public debate. The growing pace at which governments in emerging economies invest in global financial markets has become an important policy issue. Against this background, this article first reviews the motives behind the accumulation of foreign assets by government authorities in emerging market economies, taking into account the different sources for funding such investments, as well as the vehicles and instruments that governments use to channel their savings into global financial markets. The article then provides a factual review of trends in the accumulation of traditional foreign exchange reserves over the past decade, and takes stock of the debate on the two main related policy issues, namely the question of whether foreign exchange reserves have grown too large and to what extent shifts in the currency composition of foreign exchange reserves have taken place or are to be expected. Finally, the article reviews the available evidence on the accumulation of assets by sovereign wealth funds, and provides a tentative assessment of the potential impact of sovereign wealth funds on the global financial system.

## 2 SOURCES AND MOTIVES FOR ACCUMULATION OF OFFICIAL RESERVES

Traditionally, the motives for holding foreign exchange reserves have been mainly explained by the transaction needs of the central bank.<sup>1</sup> Such transaction needs include temporary import financing, foreign exchange interventions or the balancing of capital outflows. A related argument suggests that an insurance motive has led to the accumulation of international reserves, reflecting the desire of governments for self-insurance against future sudden stops of capital inflows, in case of which reserves can be used to help domestic firms and thus avoid a financial crisis. The financial crises in Asia and Latin America in the 1990s have indeed reaffirmed the importance of such transaction and precautionary motives for holding foreign exchange reserves. In fact, emerging economies in Asia only started to accumulate sizeable foreign exchange reserves following the sudden stop in 1997 that caused massive net capital outflows (see Chart 1).

<sup>1</sup> See, for example, Chinn, Menzie D. and Frankel, Jeffrey A. (2008), "The Euro May Over the Next 15 Years Surpass the Dollar as Leading International Currency", National Bureau of Economic Research (NBER) Working Paper No 13909, Beck, Roland and Rahbari, Ebrahim (2008), "Optimal reserve composition in the presence of sudden stops: the euro and the dollar as safe haven currencies", ECB Working Paper No 916.

**Chart 1 Financial account and foreign exchange reserves in emerging Asia**



Source: International Monetary Fund.

More recently, the academic literature has explained the massive reserve build-up with “mercantilist” motives.<sup>2</sup> According to this view, the accumulation of foreign exchange reserves is the result of managed exchange rate regimes of countries that target the international competitiveness of the exchange rate in order to promote “export-led” growth. The empirical

literature tends, however, to find that traditional transaction and insurance motives have historically outweighed the mercantilist motive.<sup>3</sup> This is perhaps not surprising given that financial crises have been a recurring event also in recent years. In fact, between 1995 and 2003, countries experienced financial crises, either in the form of sudden stops of capital inflows or massive capital flight of domestic investors, in at least 36 instances (see Table 1). Even more recently, some emerging markets have been subject to capital outflows and reserve losses during the ongoing global financial crisis. In some countries, large holdings of reserves have also been used to provide the domestic banking system with foreign exchange liquidity.

The accumulation of large foreign asset holdings by emerging economies mainly originates in two sources, namely net receipts of foreign exchange through trade and through capital

- 2 See, for example, Dooley, Michael P., Folkerts-Landau, David and Garber, Peter (2004), “The Revived Bretton Woods System: The Effects of Periphery Intervention and Reserve Management on Interest Rates and Exchange Rates in Center Countries”, NBER Working Paper No 10332.
- 3 See, for example, Aizenman, Joshua and Lee, Jaewoo (2008), “The Real Exchange Rate, Mercantilism and the Learning by Doing Externality”, NBER Working Paper No 13853.

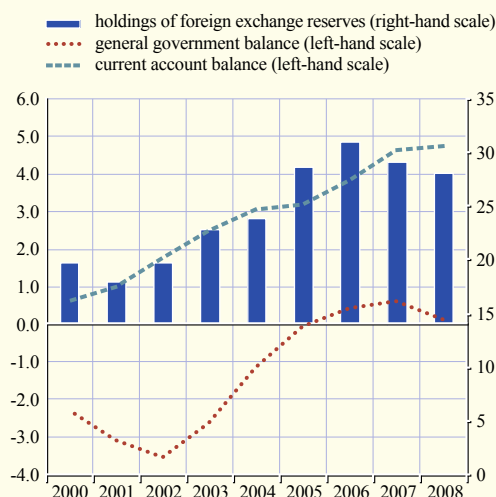
**Table 1 Financial account crises between 1995 and 2003**

Country	Beginning of the crisis	Country	Beginning of the crisis
Argentina	January 1995	Pakistan	May 1998
Brazil	February 1995	Chile	June 1998
Sri Lanka	February 1995	Jordan	October 1998
India	May 1995	Turkey	October 1998
Philippines	June 1995	Brazil	January 1999
Pakistan	September 1995	Peru	February 1999
Chile	October 1995	Slovak Republic	April 1999
South Africa	November 1996	Argentina	August 1999
Hungary	December 1996	Greece	October 1999
Thailand	December 1996	Indonesia	December 1999
Brazil	January 1997	Philippines	January 2000
Czech Republic	January 1997	Venezuela	March 2000
Philippines	June 1997	Sri Lanka	November 2000
Peru	July 1997	Argentina	March 2001
Slovak Republic	July 1997	Korea	April 2001
Korea	September 1997	Turkey	June 2001
Indonesia	December 1997	Slovak Republic	August 2003
Colombia	April 1998	Pakistan	December 2003

Sources: Rothenberg, Alexander D. and Warnock, Francis E. (2006), “Sudden Flight and True Sudden Stops”, NBER Working Paper No 12726.

**Chart 2 Foreign exchange reserves, current account balance, and fiscal balance of emerging economies**

(in percentage of GDP)



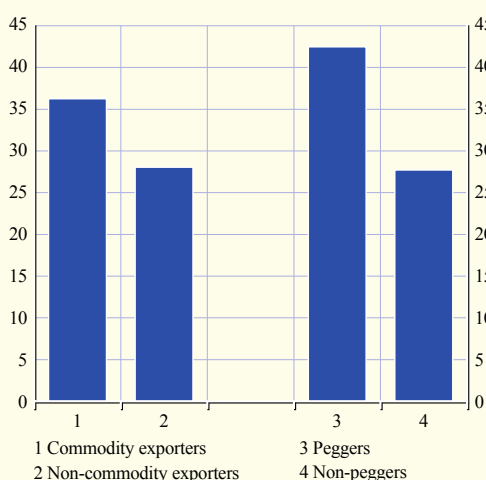
Source: International Monetary Fund.

inflows. From a balance-of-payment perspective, current account surpluses translate into either private sector or public sector savings that are invested abroad. What is striking and specific to many emerging market economies is that current account surpluses mostly translate into the accumulation of public sector foreign financial assets, rather than private sector capital outflows, as is the case for most advanced economies. In fact, emerging economies have, on aggregate, sharply improved their government balances during recent years of unprecedented growth in foreign exchange reserves, suggesting that a substantial part of the fiscal gains from large trade surpluses in many emerging economies have been channelled into global financial markets through official capital outflows in the form of foreign exchange reserves or sovereign wealth funds (see Chart 2).

One group of countries that has built up large sovereign foreign asset holdings are resource-rich economies, which, in recent years, have benefited from high oil and other commodity prices and have thus accumulated foreign assets at a remarkable pace, well above that of non-commodity-exporting emerging

**Chart 3 Foreign exchange reserves of commodity exporters, peggers and other emerging economies**

(2008, unweighted average in percent of GDP)



Sources: International Monetary Fund WEO projections and ECB calculations.

economies (see Chart 3). In these countries, foreign assets partly also serve the purpose of stabilising government and export revenues which would otherwise mirror the volatility of oil and commodity prices. A second motive for accumulating foreign assets in resource-rich countries is the desire to save for future generations, as natural resources are non-renewable and will be exhausted at some point.

A second group of countries, most notably in Asia, has been accumulating foreign assets through receipts from trade surpluses that are not directly linked to the recent hike in commodity prices, but rather to their choice of exchange rate regime. Many of these countries had experienced a strong depreciation of their currencies during the financial crises in the late 1990s, and subsequently re-pegged their currencies – de jure or de facto – to the US dollar. At the beginning of their economic recovery in the aftermath of the crises, this facilitated the pursuit of policies aimed at promoting export-led growth (see Chart 3). Savings rates

in this group of countries appear large by international and historical standards.

Traditionally, governments have accumulated foreign assets mostly as official foreign exchange reserves due to transaction motives of central banks which require reserve portfolios of highly liquid foreign securities. Some governments, however, have started using sovereign wealth funds to manage their foreign investments more and more intensively over the years. Most notably, many commodity-exporters – also in mature economies – have established sovereign wealth funds or similar investment vehicles over the past 50 years. Governments of commodity-exporting economies appear to hold at least half of their foreign assets in sovereign wealth funds (see Chart 4). This may, to some extent, reflect the fact that the transaction motive for holding foreign assets is dominated by the “investment” motive, as the need to save for future generations appears to have gained importance relative to macroeconomic stabilisation objectives.

Countries with inflexible exchange rate regimes have, until recently, managed their foreign assets within the central banks’ foreign

exchange reserves due to the importance of transaction motives in the context of balance-of-payment stabilisation and a history of financial crises (see Chart 4). Several of these countries, however, have also established sovereign wealth funds to manage part of their foreign assets, indicating that authorities in these countries feel that they have accumulated foreign assets in excess of the liquidity needed for transaction purposes or as insurance against sudden stops in capital flows.

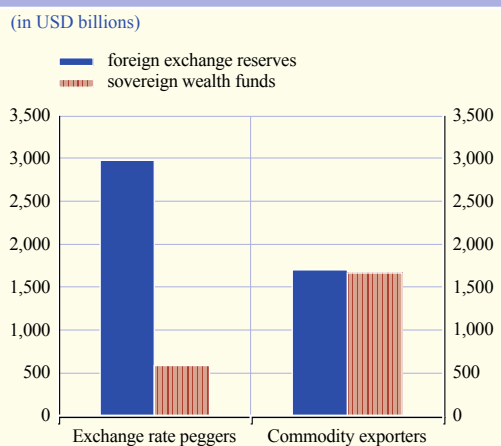
### 3 THE RISE IN FOREIGN EXCHANGE RESERVES AND ITS IMPLICATIONS

#### RECENT TRENDS IN FOREIGN EXCHANGE RESERVE GROWTH

Global foreign exchange reserves have risen significantly over the past decade, from around USD 1,600 billion in 1999 to more than USD 7,000 billion as of end-June 2008. During the same period, crude oil prices have risen ten-fold from around USD 12 per barrel to more than USD 120 per barrel at end-June 2008, though oil prices have declined again recently. However, while for a number of countries higher revenues from oil and other commodities are the main reason for the sharp increase in reserve accumulation, this is not the case for other emerging markets.

Disaggregating the rise in foreign exchange reserves by country groups shows that the increase in reserves has taken place almost entirely in emerging economies, rather than advanced economies with the exception of Japan, as reserves have risen from below USD 1,000 billion in 1999 to around USD 5,500 billion in June 2008 (see Chart 5, upper panel). At the same time, the increase of foreign exchange reserves in emerging economies has not been limited to commodity-exporting countries (see Chart 5, lower panel). To the contrary, oil-exporting countries account, in absolute US dollar terms, only for a relatively small share in total reserves held by emerging economies,

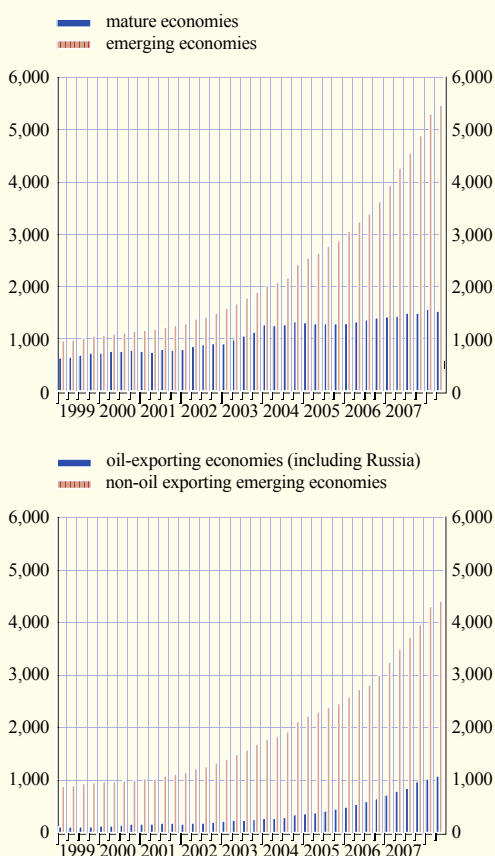
**Chart 4 Foreign exchange reserves and sovereign wealth funds**



Sources: International Monetary Fund and Beck, Roland and Fidora, Michael (2008), “The impact of sovereign wealth funds on global financial markets”, Occasional Paper No 91, July 2008, ECB.

**Chart 5 Global foreign exchange reserves by subgroup**

(USD billions)



Sources: International Monetary Fund and ECB calculations.

Notes: The aggregate for "oil-exporting countries" refers to Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Oman, Qatar, Saudi Arabia, United Arab Emirates and Venezuela (IMF definition in its International Financial Statistics) and Russia where oil and gas exports account for over 50% of total exports.

even when including Russia in this subgroup of countries (see Chart 5, lower panel).

In view of the large current account surpluses in oil-exporting countries, this observation appears surprising at first, since one would expect that authorities in these countries have accumulated sizeable foreign exchange reserves. To some extent, however, relatively moderate growth of foreign exchange reserves among oil-exporting economies can be attributed to the accumulation of foreign assets in sovereign wealth funds, which are not included under the category of foreign exchange reserves, and which will be reviewed in the next section of this article.

At the level of individual countries, the growth of foreign exchange reserves over the past decade has been mainly accounted for by a few countries, namely China, Japan and Russia which, together, account for more than 70% of the rise of foreign exchange reserves since 1999 (see Table 2).<sup>4</sup>

This implies that the degree of concentration of holdings of foreign exchange reserves has increased substantially over the past couple of years. In particular, the share of China's foreign exchange reserve holdings in global foreign exchange reserves has risen from around 9% in 1999 to around 31% in June 2008.

4 The Japanese authorities officially stopped interventions in the foreign exchange market in 2004. Since then, Japan's reserves have continued to rise due to return earned on these foreign assets and valuation effects.

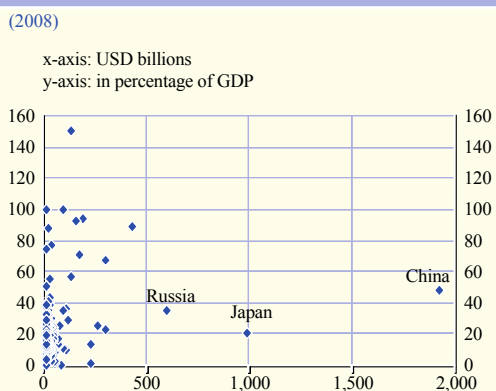
**Table 2 The largest foreign exchange reserve accumulators**

(June 2008 against March 1999)

		March 1999 (USD billions)	June 2008 (USD billions)	Change	
				(USD billions)	(percent)
1	China, Mainland	146.6	1,756.7	1,610.0	1,098
2	Japan	211.4	973.8	762.4	361
3	Russia	6.7	554.1	547.4	8,200
4	India	29.5	302.3	272.8	924
5	Taiwan, Province of China	93.0	290.1	197.1	212
6	Brazil	31.2	199.8	168.6	540
7	Algeria	5.1	133.2	128.1	2,490
8	Thailand	28.9	103.0	74.1	257
9	Mexico	30.8	93.0	62.3	203
10	Turkey	21.2	75.5	54.3	256

Sources: International Monetary Fund, national sources and ECB calculations.

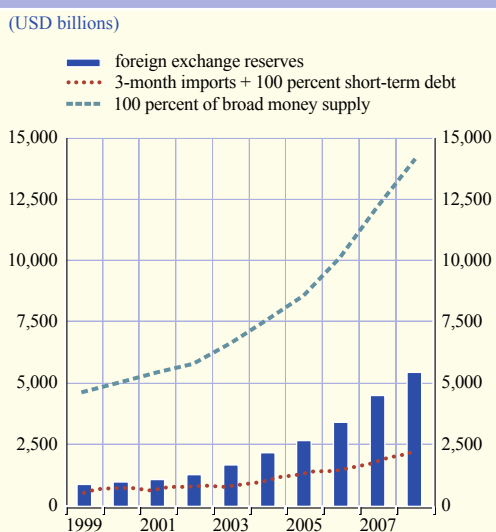
**Chart 6 Global foreign exchange reserves in absolute and relative terms**



Sources: International Monetary Fund and ECB calculations.  
Notes: The Charts refer to 162 IMF member countries excluding the Bahamas, the Maldives, Eritrea and the Solomon Islands due to a lack of reliable reserve data. End-2008 figures refer to IMF WEO projections.

Nevertheless, the accumulation of reserves is a more wide-spread phenomenon as many small open economies have accumulated sizeable levels of foreign exchange reserves (see Chart 6). Measured as a share of GDP, reserves in some of these smaller economies exceed those of many larger holders.

**Chart 7 Reserve holdings and indicators of reserve adequacy in emerging economies**



Sources: International Monetary Fund and ECB calculations.

## THE IMPLICATIONS OF THE ACCUMULATION OF FOREIGN EXCHANGE RESERVES

The notable rise of foreign exchange reserves has raised the question of whether foreign exchange reserves among emerging market economies have grown too large from a normative perspective. Most traditional rules of thumb for reserve adequacy suggest that foreign exchange reserve holdings have grown beyond what may be required for transactions needs. For example, foreign exchange reserves of emerging economies have risen substantially beyond the amount needed to cover three months of imports or 100% of short-term debt or even the sum of the two (see Chart 7), which are rules often used to assess reserve adequacy. Another benchmark that has been suggested in the literature to judge the adequacy of reserves is the stock of broad money supply, since the demand for foreign currency during a “sudden flight” could amount to the whole domestic money supply.<sup>5</sup> When applying this rather extreme benchmark, which would require reserve holdings in excess of what is required in a currency board arrangement, foreign exchange reserves in emerging economies do not seem overly large, as indicated in Chart 7.

Such computations should, however, be treated with caution. A more systematic assessment of reserve adequacy requires indeed a careful analysis of the costs and benefits associated with the holding of foreign exchange reserves.<sup>6</sup> Large holdings of foreign exchange reserves can create sizeable costs for the respective economies. From a public sector perspective, the difference between the interest rate paid on domestic government bonds and the return on foreign

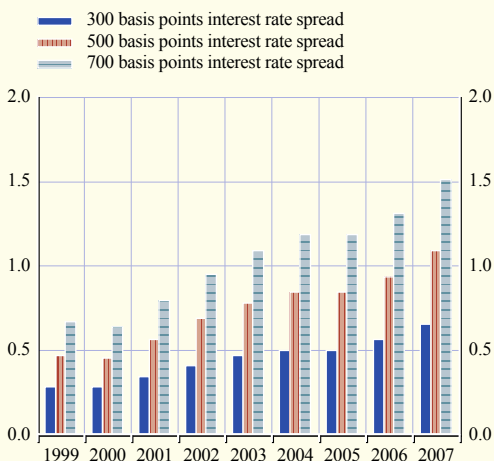
5 See, for example, Obstfeld, Maurice, Shambaugh, Jay C. and Taylor, Alan M. (2008), “Financial Stability, the Trilemma, and International Reserves”, NBER Working Paper No 14217.

6 See, for example, Jeanne, Olivier and Ranciere, Romain (2008), “The Optimal Level of International Reserves for Emerging Market Countries: A New Formula and Some Applications”, Centre for Economic Policy Research Discussion Paper No 6723, or Obstfeld, Maurice, Shambaugh, Jay C. and Taylor, Alan M. (2008), “Financial Stability, the Trilemma, and International Reserves”, NBER Working Paper No 14217.



**Chart 8 Cost of holding excess reserves in emerging economies**

(in percentage of GDP)



Sources: International Monetary Fund and ECB calculations based on the methodology developed in Rodrik, Dani (2006), "The social cost of foreign exchange reserves", *International Economic Journal*, Vol. 20(3).

Notes: Excess reserves are computed as the difference between actual reserve holdings and reserves required to cover three months of imports; interest rate spread refers to the difference between the return on domestic and foreign investment.

exchange reserves is often considered as a yardstick for the fiscal costs of holding reserves. Such costs typically arise in the balance sheet of the respective central bank that is accumulating foreign assets through sterilised interventions, i.e. through purchases of foreign assets and concomitant sales of domestic government bonds. From a macroeconomic perspective, however, the cost of holding reserves originates in the spread between the interest on private short-term external borrowing and the return on foreign assets.<sup>7</sup> Some observers have also suggested measuring the social costs of holding reserves in terms of the opportunity cost of not investing in the domestic economy. These costs need to be weighed against the benefits of holding foreign exchange reserves. One way of accounting for these benefits is to consider only reserves in excess of what may be needed for transaction purposes. Approximating reserves needed for balance-of-payment purposes with traditional rules-of-thumb, such as the three-months-of-imports rule, and considering alternative assumptions about the relevant interest rate spread suggests that the costs of holding reserves

may have grown to up to 1.5% of GDP in emerging economies (see Chart 8).<sup>8</sup>

A final issue is the implications from the rapid reserve accumulation of emerging markets for advanced economies, and, in particular, for the United States and the euro area, where a large part of the reserves are invested. In fact, some have argued that under the current system of fixed exchange rates in several emerging economies, emerging market central banks have increasingly contributed to the financing of the US current account deficit and to exceptionally low real interest rates by investing the bulk of their foreign exchange reserves in low-yielding US government bonds.<sup>9</sup> According to this line of reasoning, countries with managed exchange rates against the US dollar find it difficult to diversify their reserve portfolios, as such changes would be inconsistent with their overall exchange rate policy framework. Others have stressed that the rise in reserves may offer scope for "reserve diversification".<sup>10</sup> The available empirical evidence suggests, though, that the currency composition of global foreign exchange reserves has, following a gradual rise in the share of the euro during the first years of European Monetary Union, remained relatively stable over the past couple of years (see the box).

7 For a detailed discussion, see Rodrik, Dani (2006), "The social cost of foreign exchange reserves", *International Economic Journal*, Vol. 20(3).

8 To achieve more precise estimates of the costs of holdings reserves at the country level, the pure fiscal costs can be computed using actual interest rate differentials between (typically) US dollar and domestic interest rates. Data on interest rates for short-term external private borrowing or estimates of the social rate of return are not available for most emerging markets.

9 For macroeconomic considerations in this context, see Dooley, Michael P., Folkerts-Landau, David and Garber, Peter (2004), "The Revived Bretton Woods System: The Effects of Periphery Intervention and Reserve Management on Interest Rates and Exchange Rates in Center Countries", NBER Working Paper No 10332. Regarding the impact on US interest rates, see Warnock, Francis E. and Warnock, Veronica Cacadac (2006), "International Capital Flows and U.S. Interest Rates", NBER Working Paper No 12560.

10 See, for example, Summers, Lawrence H. (2006) "Reflections on Global Account Imbalances and Emerging Markets Reserve Accumulation", speech at the L. K. Jha Memorial Lecture at the Reserve Bank of India.

### THE CURRENCY COMPOSITION OF GLOBAL FOREIGN EXCHANGE RESERVES

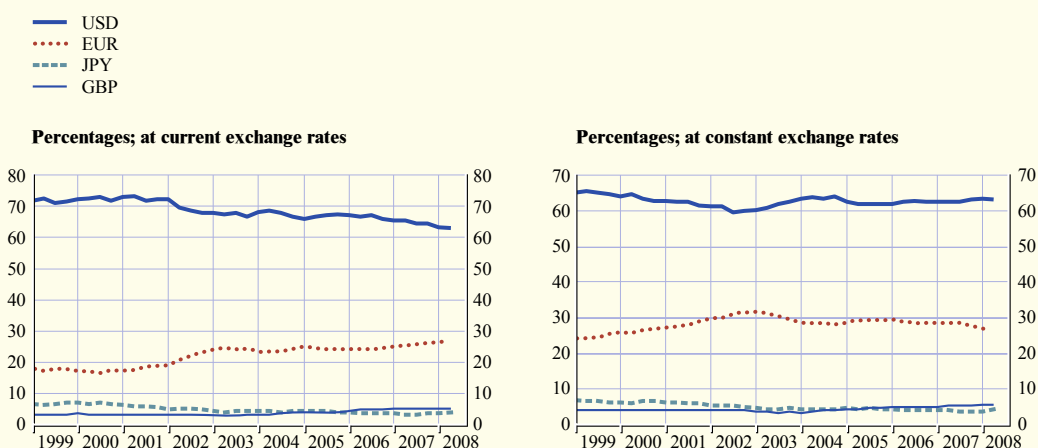
The currency composition of foreign exchange reserves has remained relatively stable during the rise in reserves in emerging economies, according to the IMF data on the Currency Composition of Global Foreign Exchange Reserves which covers, however, only around two-thirds of global foreign exchange reserves (see the chart, left panel). To some extent, the gradual decline in the share of the US dollar and the rise in the share of the euro reflect valuation effects, as shown when measuring the currency shares at constant exchange rates (see the chart, right panel). In addition, the gradual increase in the use of the euro – in particular over the first few years of European Economic and Monetary Union – may reflect the establishment of a credible, stability-oriented monetary policy and the improvements in the liquidity of euro area capital markets.<sup>1</sup>

Moreover, the above patterns in the currency composition of foreign exchange reserves may also reflect the declining importance of transaction motives in central bank reserve management, as many emerging market economies may have accumulated reserve levels in excess of precautionary levels.<sup>2</sup> Given that such transaction motives typically appear to favour the use of the US dollar as a reserve currency, their declining relevance in reserve management can be interpreted as one possible reason for the increase in the share of the euro in the early 2000s.

1 For a detailed analysis, see ECB (2008), “The international role of the euro”, July 2008.

2 See, for example, Beck, Roland and Rahbari, Ebrahim (2008), “Optimal reserve composition in the presence of sudden stops: the euro and the dollar as safe haven currencies”, ECB Working Paper No 916.

#### Currency shares in global foreign exchange reserves (with disclosed currency composition)



Source: ECB (2008), “The international role of the euro”, July 2008.

#### 4 THE RISE OF SOVEREIGN WEALTH FUNDS

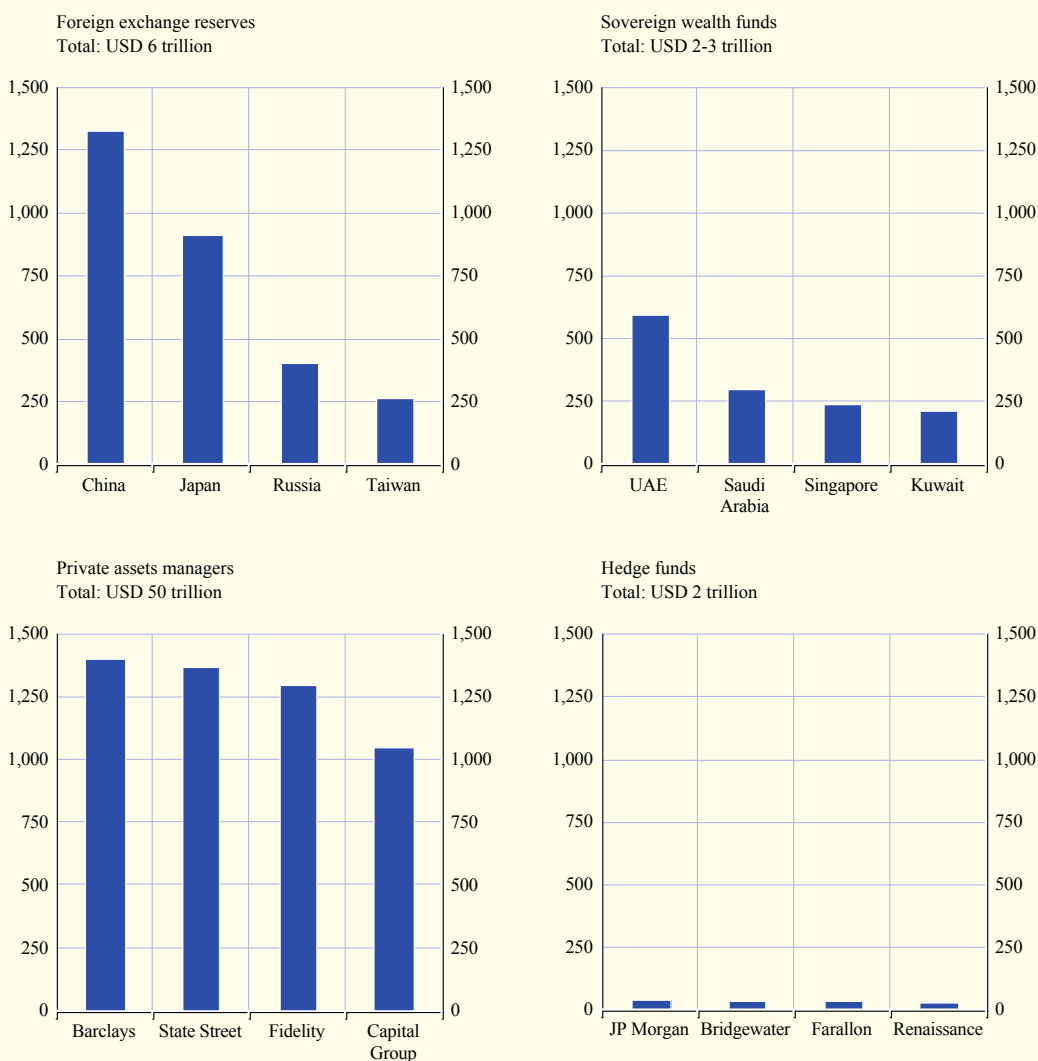
Sovereign wealth funds, broadly defined as public investment agencies which manage part of the foreign assets of governments, have

grown rapidly in recent years and have attracted considerable public attention. Although there is no commonly accepted definition of sovereign wealth funds, three elements can be identified that are common to such funds. First, sovereign



Chart 9 The largest sovereign and private asset managers

(in USD billions)



Source: See Beck, Roland and Fidora, Michael (2008), "The impact of sovereign wealth funds on global financial markets", Occasional Paper No 91, July 2008, ECB.

wealth funds are state-owned. Second, they are not subject to a committed stream of permanent payments, as with pension funds, for example, and, third, sovereign wealth funds are managed separately from official foreign exchange reserves.<sup>11</sup> In addition, most sovereign wealth funds share certain characteristics that originate from their specific nature. For example, the lack of a continuous stream of outflows favours the pursuit of long-term investment strategies, as

implemented by most sovereign wealth funds. In this respect, sovereign wealth funds differ

<sup>11</sup> The International Working Group of Sovereign Wealth Funds defines sovereign wealth funds as "special purpose investment funds or arrangements, owned by the general government. Created by the general government for macroeconomic purposes, SWFs hold, manage, or administer assets to achieve financial objectives, and employ a set of investment strategies which include investing in foreign financial assets. The SWFs are commonly established out of balance of payments surpluses, official currency operations, the proceeds of privatizations, fiscal surpluses, and/or receipts resulting from commodity exports."

from sovereign pension funds that operate subject to explicit liabilities and a continuous stream of payments, making sovereign wealth funds more similar to private mutual funds. Second, the absence of explicit liabilities also has a bearing on the willingness to take risk, as standard theory predicts a higher share of fixed-income securities for funds that are subject to recurring payments. Third, most sovereign wealth funds appear to have substantial exposure to foreign investments or are even entirely invested in foreign assets.

Sovereign wealth funds are currently estimated to manage between USD 2,000 and 3,000 billion, although estimates are subject to considerable uncertainty since most sovereign wealth funds do not disclose detailed information about their size and asset allocation and the delineation between sovereign wealth funds and other public

financial entities, such as development banks, is blurred in a number of cases.

The largest sovereign wealth funds have more assets under management than the world's biggest hedge funds, though they continue to command significantly less market exposure than the largest global asset managers. As regards the relative size of sovereign wealth funds, total assets are relatively small compared with the more than USD 50,000 billion managed by the private asset management industry. However, the largest sovereign wealth funds currently already manage portfolios that are in the order of magnitude of the biggest private investment companies and could in the future – to the extent that external surpluses are increasingly accumulated in sovereign wealth funds or that existing reserves are shifted into such funds – even exceed the largest private investment managers' portfolios (see Chart 9).

**Table 3 The world's largest sovereign wealth funds**

(in USD billions)

Country	Fund	Assets	Foreign investment	Equity investment
<b>Oil exporters</b>		<b>1240-2220</b>		
UAE	Abu Dhabi Investment Council	400-800	high	high
Norway	Government Pension Fund – Global	373	high	medium
Saudi Arabia	SAMA	300	high	low
Kuwait	Kuwait Investment Authority	213	high	high
UAE	Investment Corporation of Dubai	20-80	high	high
Qatar	Qatar Investment Authority	20-60	high	high
Libya	Libyan Investment Authority	20-60	high	high
Brunei	Brunei Investment Agency	10-50	high	high
Norway	Government Pension Fund – Norway	~20	low	medium
Russia	National Welfare Fund	~24	high	high
Kazakhstan	National Oil Fund	22	high	low
Malaysia	Khazanah Nasional Berhad	~18	low	high
<b>East Asia</b>		<b>~585</b>		
China	China Investment Corporation	~200	high	high
Singapore	Government of Singapore Investment Corporation	~130	high	high
Hong Kong	Exchange Fund Investment Portfolio	~112	high	low
Singapore	Temasek Holdings	~108	medium	high
Korea	Korea Investment Corporation	~20	high	high
Taiwan	National Stabilisation Fund	~15	low	high
<b>Others</b>		<b>~138</b>		
Australia	Government Future Fund	~49	medium	medium
United States	Alaska Permanent Fund Corporation	~38	medium	medium
United States	Permanent University Fund	~20	medium	medium
United States	New Mexico State Investment	~16	medium	medium
Canada	Alberta Heritage Savings Trust Fund	~15	medium	medium
<b>TOTAL</b>		<b>1963-2943</b>		

Source: Beck, Roland and Fidora, Michael (2008), "The impact of sovereign wealth funds on global financial markets", Occasional Paper No 91, July 2008, ECB.

Oil exporters, mostly from the Middle East, but also Norway's Government Pension Fund, are estimated to account for the largest part of total assets managed by sovereign wealth funds, probably between USD 1,200 and 2,200 billion, although this estimate is subject to substantial uncertainty (see Table 3). A smaller fraction, of around USD 600 billion, is accounted for by Asian emerging economies,

**Table 4 Major sovereign wealth fund investments since 2007**

(in USD billions and percent of firm value)

Sovereign wealth fund	Acquired company	Transaction value	
		(in USD billions)	(in percent of firm value)
GIC of Singapore	UBS	9.8	8.6
Abu Dhabi Investment Council	Citigroup	7.6	4.9
GIC of Singapore	Citigroup	6.9	4.4
Investment Corporation of Dubai	MGM Mirage	5.1	9.5
China Investment Corporation	Morgan Stanley	5.0	9.9
Temasek (Singapore)	Merrill Lynch	5.0	11.3
Qatar Investment Authority	Barclays	4.0	8.0
Qatar Investment Authority	Sainsbury	3.7	25.0
KIA (Kuwait)	Merrill Lynch	3.4	7.0
China Development Bank	Barclays	3.0	3.1
China Investment Corporation	Blackstone	3.0	10.0
Investment Corporation of Dubai	London Stock Exchange	3.0	28.0
Temasek (Singapore)	China Eastern Air	2.8	8.3
SAFE (China)	Total	2.8	1.6
SAFE (China)	British Petroleum	2.0	1.0
KIC (Korea)	Merrill Lynch	2.0	4.3
Temasek (Singapore)	Barclays	2.0	1.8
Qatar Investment Authority	London Stock Exchange	2.0	20.0
Temasek (Singapore)	Standard Chartered	2.0	5.4
Undisclosed "Middle East investor"	UBS	1.8	1.6
Abu Dhabi Investment Council	Carlyle Group	1.4	7.5
Investment Corporation of Dubai	Och-Ziff Capital Management	1.3	9.9
Investment Corporation of Dubai	Mauser Group	1.2	100.0
Investment Corporation of Dubai	Alliance Medical	1.2	100.0
GIC of Singapore	Myer Melbourne	1.0	100.0
China Citic Securities	Bear Stearns	1.0	6.0
Borse Dubai	Nasdaq	1.0	19.9
Investment Corporation of Dubai	Standard Chartered	1.0	2.7
Investment Corporation of Dubai	Almatis	1.0	100.0
GIC of Singapore	Merrill Lynch Financial Centre ( <i>real estate</i> )	1.0	100.0
Investment Corporation of Dubai	Barney's New York	0.9	100.0
Investment Corporation of Dubai	EADS	0.8	3.1
GIC of Singapore	Hawks Town ( <i>real estate</i> )	0.8	100.0
Investment Corporation of Dubai	ICICI Bank Ltd	0.8	2.9
Temasek (Singapore)	Tokyo Westin	0.7	100.0
Mubadala Development Comp. (UAE)	Advanced Micro Devices	0.6	8.0
GIC of Singapore	WestQuay Shopping Centre ( <i>real estate</i> )	0.6	50.0
Investment Corporation of Dubai	Sony	0.5	1.0
Qatar Investment Authority	OMX	0.5	10.0
GIC of Singapore	British Land	0.3	3.0
Investment Corporation of Dubai	Metropole Hotel ( <i>real estate</i> )	0.3	100.0
GIC of Singapore	Kungshuset ( <i>real estate</i> )	0.2	100.0
SAFE (China)	Commonwealth Bank of Australia	0.2	0.3
SAFE (China)	Australia and New Zealand Banking Group	0.2	0.3
SAFE (China)	National Australia Bank	0.2	0.3
GIC of Singapore	Roma Est Shopping Centre ( <i>real estate</i> )	0.1	50.0
Temasek (Singapore)	9You Online Games	0.1	9.4
<b>TOTAL</b>		<b>95.5</b>	

Sources: Company announcements and media reports.

most notably Singapore, which has been running sovereign wealth funds since the 1970s. But also mature economies, other than Norway, have set up sovereign wealth funds, mostly to save receipts from the exploitation of natural resources. In sum, a plausible estimate of total assets managed by sovereign wealth funds ranges from USD 2,000 to 3,000 billion.

Despite the scarce information available, two main traits of the portfolio composition of sovereign wealth funds can be identified: First, the largest part of sovereign wealth funds' holdings is accounted for by foreign investment, although some sovereign wealth funds either restrict their portfolio to domestic assets. Second, the share of risky assets in sovereign wealth funds' portfolios appears to be substantial. In fact, sovereign wealth funds have, over recent years, acquired significant shares in many large stock corporations in advanced economies, in particular, in the financial sector (Table 4). Overall, the share of sovereign wealth funds' equity investments exceeds, in most likelihood, one half of the total assets.

An important issue arising from these considerations is whether a gradual shift of official portfolios away from traditional foreign exchange reserves to more diversified sovereign wealth funds might have an impact on global capital flows. While the magnitude of future capital flows is difficult to quantify, the rise of sovereign wealth funds could, potentially, generate net capital flows between major regions of the global economy. Changes in the patterns of global capital flows due to the rise of sovereign wealth funds could also have an impact on asset prices and exchange rates either directly through price pressure on certain market segments and currencies, or indirectly via a decrease in average risk aversion. Against this background, it seems, however, likely that major sovereign holders of foreign assets will only gradually change the composition of their portfolios so as to minimise the impact on asset price configurations.

Given their systemic relevance, sovereign wealth funds have received considerable attention also

in several international organisations and policy fora, including the IMF and the G7, which led to the establishment of an International Working Group of Sovereign Wealth Funds comprised of 23 investor countries as well as permanent observers, including from the OECD and the World Bank. In late 2008, the International Working Group, in consultation with representatives from mature economies and the IMF, agreed on a set of 24 Generally Accepted Practices and Principles for Sovereign Wealth Funds that are intended to guide the appropriate governance and accountability arrangements, as well as the conduct of appropriate investment practices by sovereign wealth funds. Likewise, the OECD is working on issues relating to the treatment of sovereign wealth funds in capital recipient countries. These multilateral efforts aim at ensuring efficient asset management of sovereign wealth funds based on purely financial considerations, sound corporate governance standards, and transparent and open capital markets, in order to promote the potentially beneficial role of sovereign wealth funds in global financial markets. Thus, sovereign wealth funds could contribute to a widening of the long-term investor base for non-government securities, including corporate bonds, private equity, emerging market assets, real estate and commodities, and more efficient sharing and diversification of risk at the global level. Such positive effects on the global financial system will, however, only materialise if investments by sovereign wealth funds are only driven by financial and not political motives.

## 5 CONCLUSION

Global foreign exchange reserves and foreign assets managed by sovereign wealth funds have risen substantially over the past decade as authorities in emerging markets have accumulated external assets for a variety of reasons. Most prominently, authorities in the emerging markets have increased their holdings of foreign exchange reserves as an insurance against sudden stops in capital flows. During the current turmoil in the financial markets,

these high levels of reserves have reduced the vulnerability of these countries to shifts in global risk aversion.

In most oil-exporting countries, foreign assets have been accumulated mainly in sovereign wealth funds, as intergenerational equity considerations in the context of non-renewable resources have gained importance relative to macroeconomic stabilisation objectives.

Large holders of foreign exchange reserves in Asia – where the reserve build-up is, to a large extent, a reflection of inflexible exchange rate regimes – have also recently started to set up sovereign wealth funds in order to improve the returns on their reserve portfolios. These transfers of traditional foreign exchange reserves into national investment vehicles can be interpreted as an indication of possibly too large reserve holdings in these countries.

Transfers of sizeable amounts of traditional foreign exchange reserves into sovereign wealth funds may also have an impact on global capital flows since such funds are likely to pursue an investment strategy that differs considerably from that of central banks. Whether sovereign wealth funds could have an impact on financial stability will depend critically on the motives underlying the investment decisions of such funds. In fact, provided that such funds pursue only financial objectives, sovereign wealth funds may contribute to a widening of the long-term investor base for risky assets. In this regard, measures aimed at restricting capital flows into developed countries entail the risk of curtailing these benefits.

As central banks and sovereign wealth funds have become large market participants in the global financial system, it is of particular importance that transparency is raised in this area. While the size of global foreign exchange reserves is public information, details about their composition is available only for around two-thirds of global reserves. In the case of sovereign wealth funds, their size and composition is subject to considerable uncertainty. Improvements in this

area, in particular along the lines suggested by the Generally Accepted Practices and Principles for Sovereign Wealth Funds, would make an important contribution to the transparency of global financial markets.