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Foreign exchange reserves in Africa: benefits, costs and political economy considerations

Jochen Schanz[1]

Introduction

Foreign exchange (FX) reserves are an integral part of the policy toolkit as they insure against shocks and complement monetary policy to achieve price and financial stability. At the same time, building and holding FX reserves is not without costs. To fulfil their main purposes, FX reserves need to be invested in safe and liquid assets, where yields are low. Against the backdrop of some of the circumstances of countries in Africa, this paper reviews the benefits and costs of FX reserves, and discusses political economy issues and mitigating strategies.

The benefits of holding FX reserves

Changes in FX reserves in African countries have mainly reflected policy responses to export revenues, transfers (including workers' remittances), and capital flows in recent years. For example, the 2014 decline in oil prices coincided with a fall of one third in the FX reserves of oil exporting countries, as the authorities resisted downward pressure on their exchange rates (Graph 1, left-hand panel). Fluctuations in the terms of trade seem to have mattered primarily in middle-income countries, which tend to have a higher export share, including of manufacturing goods. Political instability seems to be another important factor, particularly in the lower-income countries.[2]

In general, FX reserves form an integral part of a country's self-insurance. This is especially so in low-income countries, where the government usually provides insurance against foreign currency shortages. In comparison with emerging market economies (EMEs), the private sector in the region holds few foreign assets or none that could easily be repatriated in times of need: the median share of foreign portfolio assets in GDP is 3%, which compares with 11% for EMEs outside Africa.[3]

The benefits associated with FX reserves are substantial. For one, they provide a buffer to finance required imports or pay back FX debt if FX funding becomes unavailable or extremely expensive. Such foreign currency shortages materialise at times of severe macroeconomic, financial or political instability, putting an higher premium on adequate FX reserve levels. And even in less extreme circumstances,

[1] The author would like to thank Victor Murinde for several rounds of discussions, Mathias Drehmann for substantive comments and Sterre Kuipers for excellent research assistance. The views expressed are those of the author and do not necessarily reflect those of the Bank for International Settlements.

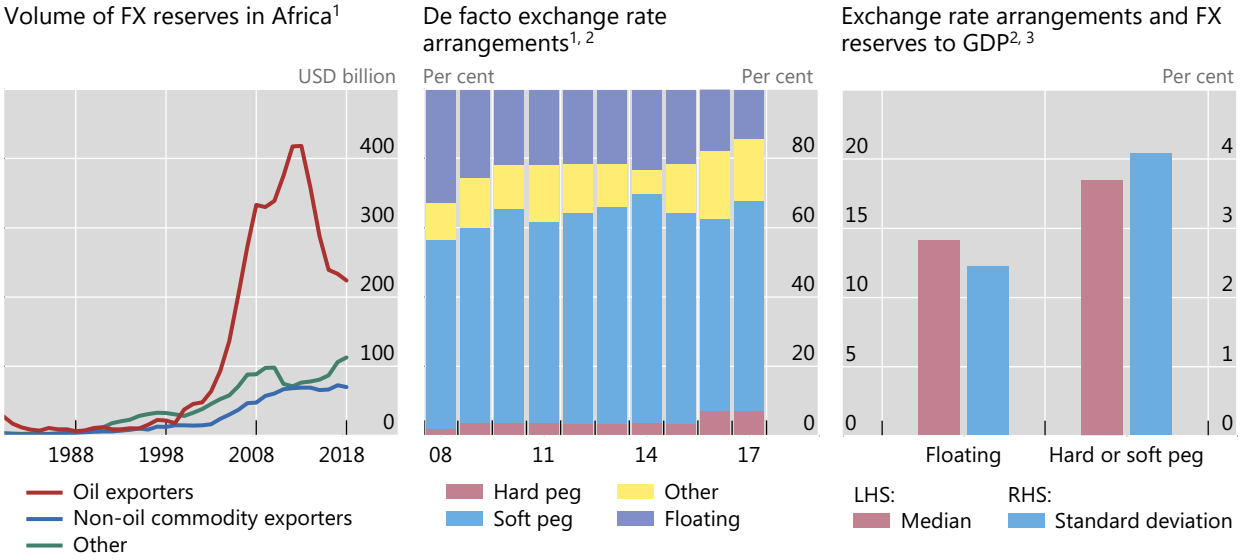
[2] The effects of terms of trade and political instability are evident from a simple regression using a sample of 21 African countries from 1987 to 2017.

[3] For a discussion of the size, investment, and use of FX reserves in EMEs, see BIS (2019a).

FX reserves provide policy space to maintain price and financial stability in the face of large exchange rate swings. In general, most African countries intervene regularly in currency markets. The IMF has usually classified these exchange rate regimes as soft pegs (Graph 1, middle panel).

Exchange rate stabilisation is an important factor behind the level of FX reserves

Graph 1



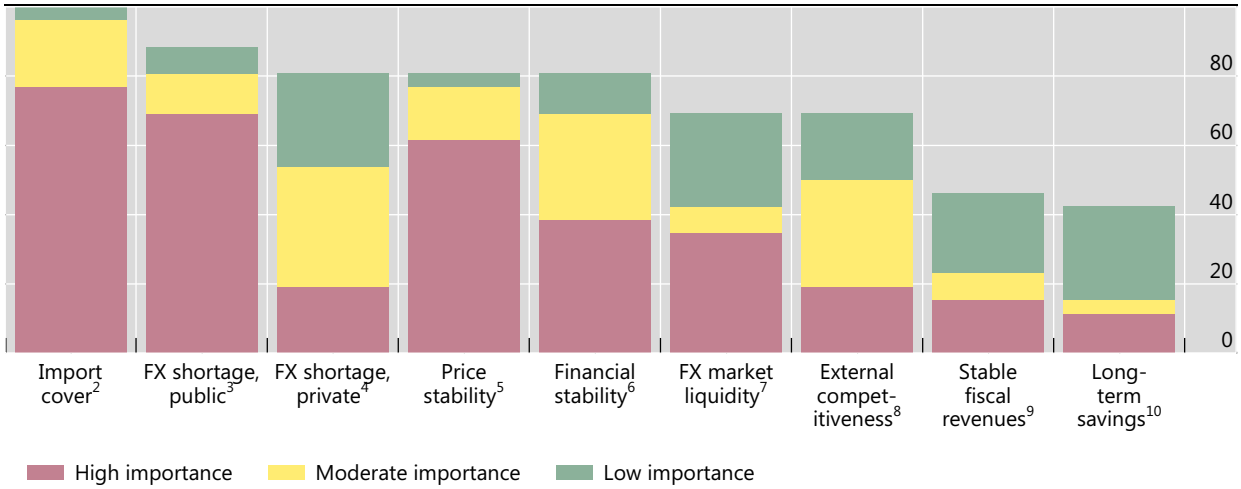
[1] For country groups see Annex 2. [2] As classified in IMF (2018). [3] Based on countries whose classification did not change in the 2008–17 period. Blue bars show the median standard deviation across countries.

Sources: IMF; World Bank.

FX reserves are primarily held for precautionary motives

In per cent of respondents[1]

Graph 2



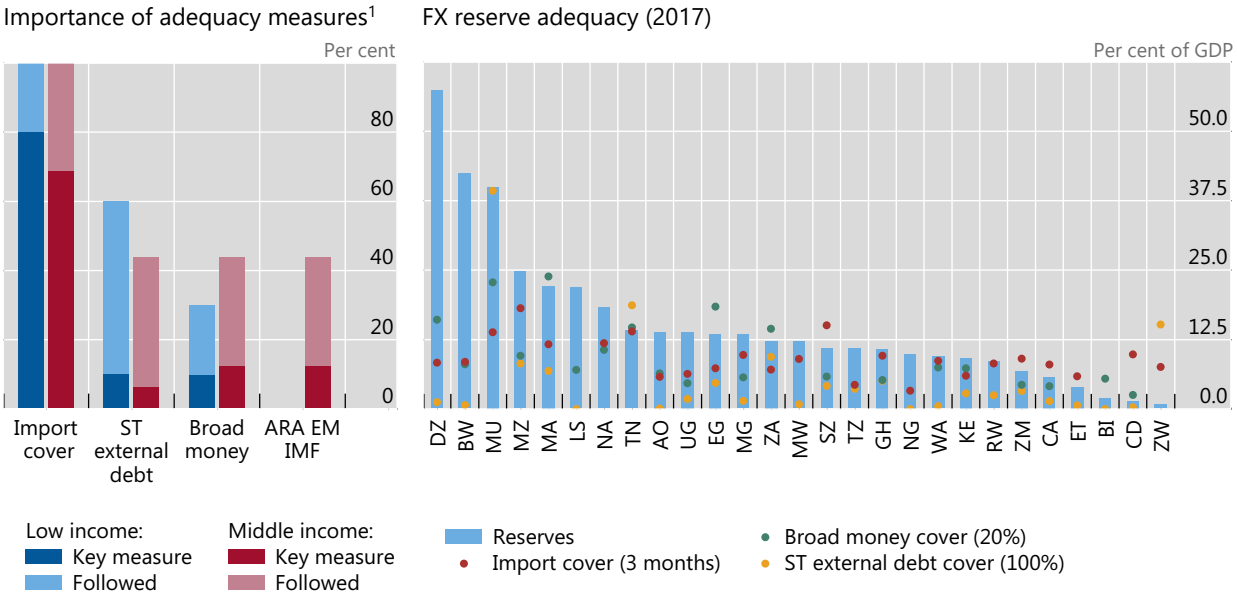
[1] Based on the responses of 26 central banks. Bars do not sum to 100% because multiple answers were possible. [2] To fund essential imports. [3] To alleviate FX shortages of the government. [4] To alleviate FX shortages of banks and corporations. [5] To stabilise exchange rate movements when these affect domestic inflation. [6] Eg to prevent depreciation from raising the domestic currency value of unhedged FX debt. [7] To support the liquidity of FX markets. [8] To resist appreciation pressure. [9] To move the exchange rate with the aim of stabilising the domestic currency revenues from commodity exports. [10] As in a sovereign wealth fund.

Source: BIS (2019b).

These benefits underpin many of the motives for holding FX reserves, as identified by the survey conducted for this meeting (Graph 2).

Holding sufficient FX reserves to cover imports for several months is the top reported priority (Graph 2). All survey respondents attach some importance to this motive and 77% of them a high one. For middle-income countries, ensuring the government's ability to continue servicing FX-denominated debt is also a relevant consideration. And some countries with relatively larger financial sectors also hold FX reserves, so as to be able to overcome potential private sector FX shortages.

Reserves are in most cases higher than traditional reserve adequacy benchmarks — Graph 3



AO = Angola; BI = Burundi; BW = Botswana; CA = Bank of Central African States; CD = Democratic Republic of Congo; DZ = Algeria; EG = Egypt; GH = Ghana; KE = Kenya; LS = Lesotho; MA = Morocco; MG = Madagascar; MU = Mauritius; MW = Malawi; MZ = Mozambique; NA = Namibia; NG = Nigeria; RW = Rwanda; SZ = Eswatini; TN = Tunisia; TZ = Tanzania; UG = Uganda; WA = Central Bank of West African States; ZA = South Africa; ZM = Zambia; ZW = Zimbabwe.

[1] Import cover: measures the number of months that FX reserves can sustain imports. ST external debt: measures the potential demand for repayments related to short-term external foreign currency borrowing. Broad money: measures the potential demand for foreign assets from domestic sources. ARA EM IMF: measures a broad set of risks reflecting potential drains on the balance of payments. See Annex 1 for details. Based on the responses of 26 central banks. Bars do not sum to 100% because multiple answers were possible.

Sources: IMF; World Bank; BIS (2019b).

These motives, often labelled precautionary, are also reflected in the ranking of reserve adequacy measures across countries (Graph 3, left-hand panel). There is no unique way to measure reserve adequacy for precautionary motives (see Annex 1 for an overview). But for most countries, and almost all low-income countries in Africa, import cover is the key measure.[4] Economies with banking sectors that have a large

[4] There are variations in calibration – three months are common but some countries use five or six months. Yet these variations are difficult to relate to economic fundamentals and may reflect differences in risk aversion.

share of foreign currency liabilities, such as Mauritius (58%, as of 2017) and Tanzania (36%), also put weight on the ratio of FX reserves to broad money.

As the exchange rate is often a key determinant influencing other objectives such as monetary or financial stability, changes in FX reserves may also be a by-product of FX interventions conducted in the pursuit of these other goals.

Price stability is the key objective here for many African countries. Many countries are partially dollarised.[5] Widespread pricing of consumer goods in foreign currency tends to increase the exchange rate pass-through to consumer price inflation (Graph 4, left-hand panel).[6] Countries with a high pass-through, in turn, tend to emphasise price stability as an important objective for FX reserve accumulation (Graph 4, right-hand panel).

Other objectives also matter. Export competitiveness, and, in some countries, financial stability feature prominently (Graph 2). For some countries, smoothing the impact of fluctuations in commodity exports on fiscal revenues in domestic currency is also an objective.

Yet another goal is alleviating FX market illiquidity in normal times. The median ratio of FX turnover to GDP is only about 3% in African countries (BIS (2019b), see also Annex 3)), far lower than for other EMEs (18%, see BIS (2018)). As a result, FX markets are easily overwhelmed by short-term fluctuations in trade-related payments and one-off capital flows accompanying foreign direct investment or profit repatriations.

As buffers that help macroeconomic stabilisation, FX reserves are closely monitored by rating agencies and foreign investors. The importance attached to FX reserve holdings may be particularly high because data on FX reserves are readily available, timely and easily comparable, in contrast to many other indicators for a country's resilience. Together with the fact that resilience is typically evaluated on a relative basis across countries, this may explain why a third of the central banks surveyed place importance on holding FX reserves at a level similar to that of peers.[7]

Other types of potential access to FX liquidity are no full substitute for holding FX reserves. In contrast to FX reserves, gaining access to IMF resources comes along with conditionality and is typically viewed as incurring a stigma. Nevertheless, IMF resources provide essential backstops and can create additional buffers. This was, for instance, the reason why Kenya obtained an IMF stand-by credit facility in 2016, even though it did not subsequently use it.[8] Central bank FX swap arrangements can also serve as backstops but may need to be renewed and can restrict the use of FX reserves. For example, the swap agreement between China and South Africa is

[5] The median share of FX liabilities in the banking sector is 25% in low-income countries, and 7.5% in middle-income countries (Christensen and Schanz (2018)).

[6] For the link between dollarisation and inflation pass-through, see eg Fischer (2006) and Carranza et al (2009). Absent data on the use of foreign currency as a unit of account, Graph 4 uses the dollarisation of the banking sector as a proxy. For a discussion of pass-through in EMEs more generally, see eg Carstens (2019) and BIS (2019c).

[7] Simple regressions show that the ratio of FX reserves to GDP relative to those of peers is a key determinant of reserves accumulation, even after controlling for macroeconomic and political factors.

[8] See Central Bank of Kenya (2016).

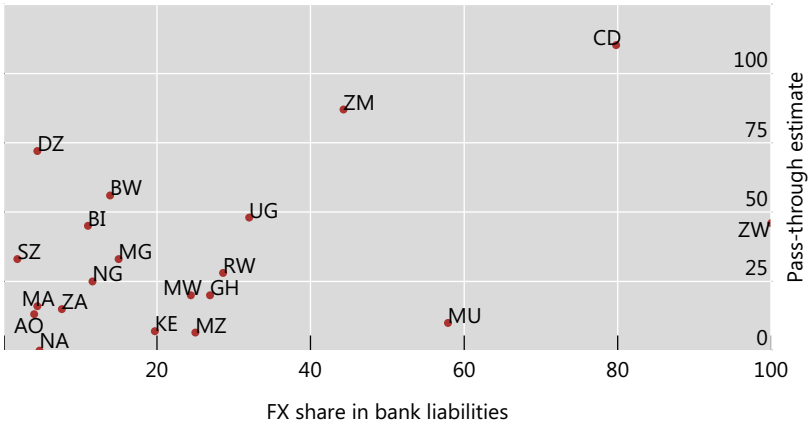
designed to support trade and investment and to mitigate short-term balance of payment pressures.[9]

Price stability plays an important role in accumulating FX reserves

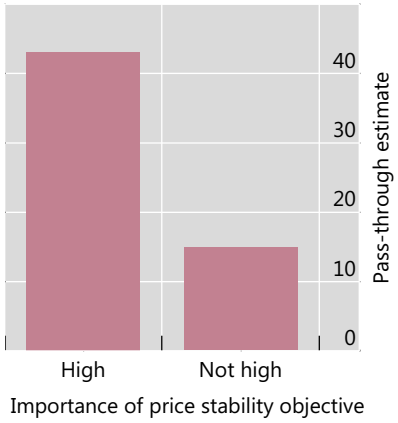
In per cent

Graph 4

Dollarisation tends to increase pass-through



Importance of price stability objective vs pass-through[1]



[1] Mean pass-through estimate. Share of respondents assigning high / not high importance to price stability objective as a motive for holding FX reserves. For pass-through estimates, see Annex 3. Based on the responses of 21 central banks.

Sources: Christensen and Schanz (2018); IMF; World Bank; BIS (2019b).

Costs of holding FX reserves

While FX reserves offer crucial benefits, holding them does not come for free for the economy. From the perspective of the consolidated public sector balance sheet, accumulating reserves amounts to issuing debt to invest in foreign currency assets. From an accounting perspective, FX reserves are typically held on the central bank's balance sheet in African countries (BIS (2019b)), so these costs are borne, in the first place, by the central bank.

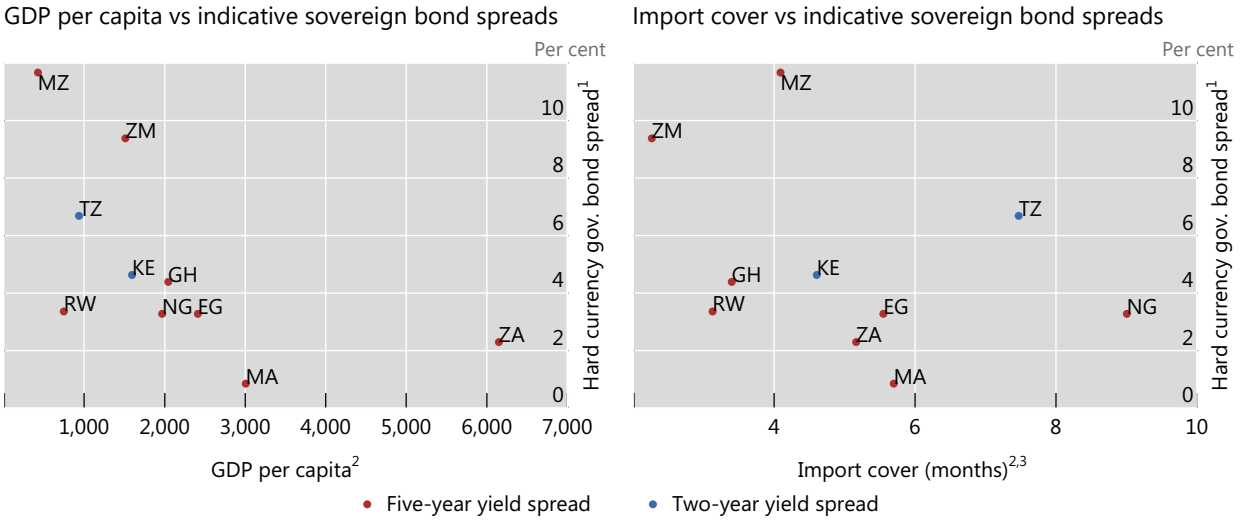
The financial cost of FX reserves depends on the difference between the return earned on reserve assets and the interest paid on the corresponding liabilities. These can be bank deposits, sterilisation instruments or, in the case of borrowed FX reserves, FX liabilities. The expected return on assets is typically lower than that on liabilities (see next section).

The cost of FX reserves holdings, as proxied by sovereign bond spreads, appears to be higher for poorer countries but seems to matter little in the choice of how much to hold (Graph 5). For instance, FX reserves (normalised by months of imports) are not necessarily lower if costs are higher. This could suggest that costs are seen as a minor consideration compared with the benefits (discussed above). Moreover, high

[9] See South African Government (2015). For an overview of currency swap arrangements, see Council on Foreign Relations (2019)

FX reserve levels support greater monetary, financial and macroeconomic stability and, as such, tend to make a country more attractive to foreign capital, which in turn reduces funding costs.

Costs of reserve accumulation seem to be higher for poorer countries — Graph 5



[1] As observed for one or two sovereign bonds per country with the respective remaining maturity in the 2017–19 period. Tenure of spreads determined by data availability. [2] Based on 2017 data. [3] Import cover: number of months that FX reserves can sustain imports.

Sources: IMF; World Bank; Bloomberg.

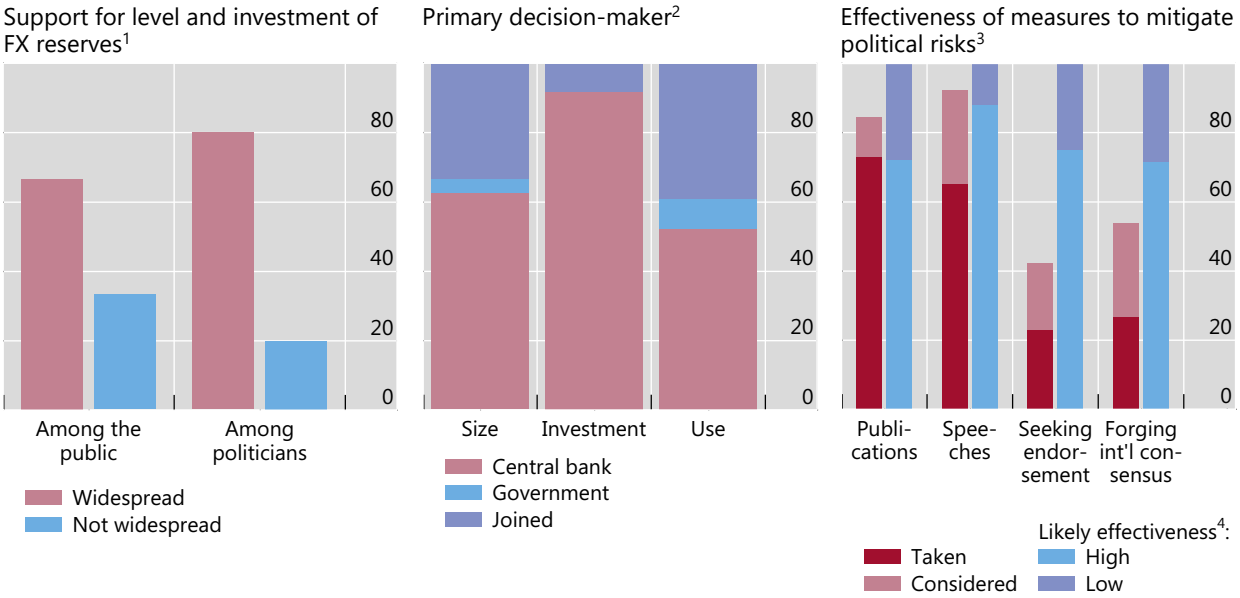
Political economy considerations

Investing scarce resources in beneficial but costly FX reserves can be controversial, in particular in low income countries. While the majority of survey respondents judged that holding FX reserves is widely appreciated by politicians and the public in their respective countries, in about a third of African countries this is not perceived to be the case (Graph 6, left-hand panel). And the less the support, the greater the vulnerability to political pressure to use FX reserves to fund budget deficits or to invest in riskier, possibly illiquid, assets. These pressures tend to increase when the economic and political environment deteriorates – precisely when the benefits of FX reserves are greatest.

Institutional arrangements for deciding the size and investment allocation of FX reserves may influence the susceptibility to political pressure. In practice, the government frequently has an important say in the determination of the size, use and, less frequently, investment of FX reserves (Graph 6, centre panel). Shared responsibilities might reduce pressure on the central bank to justify its decisions but may also make them overly politicised.

Mostly strong support for holding beneficial FX reserves in Africa

As perceived by central banks. Percent of survey respondents — Graph 6



[1] Survey responses to the question "In your country, is the need for holding FX reserves and for investing them in safe and liquid assets widely appreciated?". Based on the responses of 24 (for public) and 25 (for politicians) central banks. [2] Based on the responses of 24 (for size), 25 (for investment) and 23 (for use) central banks. [3] Based on the responses of 25 central banks. [4] As percentage of central banks that indicated an effectiveness level.

Source: BIS (2019b).

To build and bolster support, central banks focus on speeches and publications (Graph 8, right-hand panel). Most judge these to be effective. Engaging in a public debate about FX reserves management is not without risks, however. The central bank might not have much influence over the outcome of the debate. Some African central banks have considered other avenues to mitigate political risk, such as attempting to forge an international consensus backing their choices, or seeking endorsement from an international institution. A majority of central banks thought that such approaches could be effective.

Political pressure becomes less of an issue when fewer FX reserves are needed. As such, sound macroeconomic policies would help. These include, above all, a strong fiscal position and a sound financial system.

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Annex

1. FX reserve adequacy measures[10]

There is no unique framework for assessing the adequacy of FX reserves for precautionary motives. Central banks follow an array of measures that compare a country's FX reserve position with proxies for a specific risk or vulnerability. These measures provide a practical starting point, but a complete assessment must consider country-specific factors such as the exchange rate regime and capital account openness as well as financial market depth and liquidity. Traditional measures employed by African countries include:

- **Import cover:** measures the number of months that FX reserves can sustain imports. This indicator is considered relevant for countries with a closed capital account. The benchmark is three months of coverage.
- **Ratio of FX reserves to short-term external debt:** measures the potential demand for repayments related to a country's short-term external foreign currency borrowing. The Guidotti-Greenspan rule proposes a 100% cover. This rule can be extended to consider the full potential 12-month financing need, measured by short-term external debt minus the current account balance.
- **Ratio of FX reserves to broad money (M2):** measures the potential demand for foreign assets from domestic sources. This indicator is considered relevant for countries with financially developed markets and an open capital account. The benchmark is typically set at 20%.
- **Assessing FX reserve adequacy (ARA) metric:** measures a broad set of risks reflecting potential drains on the balance of payments. The IMF's metric has four weighted components: short-term external debt; M2; export income; and other liabilities. The last two components reflect potential terms-of-trade shocks and other portfolio outflows, respectively. The measure is adjusted if the country is dollarised, if it has capital controls or if it is a commodity exporter/importer. The benchmark is between 100% and 150% FX reserve cover.
- **Jeanne and Rancière (2011):** measure the optimal level of FX reserves by calibrating a cost-benefit model. The model balances the opportunity cost of holding FX reserves with the gains from smoothing domestic absorption during sudden stops. The level of optimal FX reserves varies considerably depending on the assumptions on output loss, probability of a sudden stop, and risk aversion.

2. Country classifications

- **By exchange rate regime**:[11] Floating: Ghana, Madagascar, Mauritius, Mozambique, Seychelles, South Africa, Uganda, Zambia. Soft peg: Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central

[10] Reproduced for convenience from Arslan and Cantu (*forthcoming*), Box 1.

[11] IMF (2018).

African Republic, Chad, Comoros, Côte d'Ivoire, Egypt, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Guinea, Guinea-Bissau, Kenya, Lesotho, Libya, Malawi, Mali, Mauritania, Morocco, Namibia, Niger, Nigeria, Republic of Congo, Rwanda, São Tomé and Príncipe, Senegal, South Sudan, Tanzania, Togo, Tunisia. Hard peg: Djibouti. Other: Algeria, Democratic Republic of the Congo, Liberia, Sierra Leone, Sudan, The Gambia, Zimbabwe.

- **By export type**:[12] Oil exporters: Algeria, Angola, Cameroon, Chad, Equatorial Guinea, Gabon, Libya, Nigeria, Republic of Congo, South Sudan. (Other) resource intensive countries: Botswana, Burkina Faso, Central African Republic, Democratic Republic of the Congo, Ghana, Guinea, Liberia, Mali, Namibia, Niger, Sierra Leone, South Africa, Tanzania, Zambia, Zimbabwe.
- **By income group**:[13] Low income: Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Eritrea, Ethiopia, Guinea, Guinea-Bissau, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, Sierra Leone, South Sudan, Tanzania, The Gambia, Togo, Uganda, Zimbabwe. Middle income: Algeria, Angola, Botswana, Cabo Verde, Cameroon, Côte d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eswatini, Gabon, Ghana, Kenya, Lesotho, Libya, Mauritania, Mauritius, Morocco, Namibia, Nigeria, Republic of Congo, São Tomé and Príncipe, Senegal, Seychelles, South Africa, Sudan, Tunisia, Zambia.
- **EMEs outside Africa** refer to Argentina, Brazil, Chile, China, Colombia, the Czech Republic, Hong Kong SAR, Hungary, Indonesia, Israel, India, Korea, Mexico, Malaysia, Peru, the Philippines, Poland, Russia, Saudi Arabia, Singapore, Thailand, Turkey.

3. Selected country-specific answers to the survey conducted for this meeting

Central banks' pass-through estimates and the liquidity of the FX spot market — Table A1

	Impact of a persistent 10% depreciation of domestic currency on CPI within a year (in percentage points)[1]		Spot market liquidity	
	Point estimate	Plausible range	Foreign currency against which the domestic currency is most liquid	Monthly turnover on trades excluding central bank in the most liquid currency (USD millions)
Algeria[2]	7.2	7–7.4	…	…
Angola[3]	1.32	…	USD	1000
Botswana	5.6	3.3–6.7	Rand	70[8]
Burundi	…	4–5	…	…
Congo (DRC)	11	…	USD	204.7[8]
Eswatini	3.3	3–5	…	…
Ghana	2	…	USD	500

[12] Based on IMF (2019a,b).

[13] Based on IMF (2019a) and World Bank (2019).

Kenya	0.7	…	USD	400[9]
Madagascar	3.3	…	USD, Euro	425[8, 10]
Malawi	2	1.5–2	USD	264
Mauritius	1	0.5–1.5	USD	340
Morocco[4]	1.6	…	USD, Euro	5,200[8, 11]
Mozambique[5]	0.65	…	Rand	850[8]
Namibia	0	–0.4–0	…	…
Nigeria[6]	2.5	0.1–4	USD	10,122
Rwanda[7]	2.8	…	USD	300[8]
South Africa	1.5	1.3–1.5	USD	45,200
Tunisia	1.7	1.5–2	USD, Euro	495[8, 12]
Uganda	4.8	…	USD	1,200
Zambia	8.7	7.7–9.6	USD	1,276.5
Zimbabwe	4.6	4–5.4	USD, Rand	300[8]

[1] Excluding a possible monetary policy response. [2] Impact on inflation after 8-9 quarters. [3] No inflation impact of post-2017 persistent depreciation. [4] Scaled linearly using the estimated impact of a 2.5% depreciation. [5] Estimated inflation impact of a 10% depreciation against the Rand. Against the US dollar, the impact is estimated to be 0.17%. [6] Inflation impact is 2.4% according to Bada, A, A Olufemi, I Tata, I Peters, S Bawa, A Onwubiko, and U Onyowo (2016): "Exchange Rate Pass-Through to Inflation in Nigeria", *CBN Journal of Applied Statistics*, vol 7, no 1. Inflation impact is 2.6% according to A Zubair, G Okorie, and A Sanusi (2013): "Exchange rate pass-through to domestic prices in Nigeria: an empirical investigation", *CBN Economic and Financial Review*, vol 51, no 1. The range of impacts is from Balakeffi et al (2018): "Pass-through of exchange rate and crude oil price to inflation in Nigeria", mimeo. [7] See National Bank of Rwanda (2015), *BNR Economic Review*, vol 7, August. [8] Figures refer to turnover of more currencies than the most liquid currency, either because the response indicated more than just one currency as the most liquid, or because the response referred to total spot market turnover. [9] KHS 41.5bn. [10] EUR 139mn and USD 269mn. [11] MAD 24.9bn against the US dollar and MAD 26.6bn against the euro. [12] TND 1.5bn.

Source: BIS (2019b).

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