

Newsletter



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Grasping Adequate Level of Foreign Exchange Reserves Assessment of Solvency Capacity Using the DT and the ARA Metric

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Summary

- "Data Template on International Reserves and Foreign Currency Liquidity (DT) is one of the statistical bases related to Foreign Exchange Reserves published by the IMF. It has been improved and extended after the Asian currency crisis for identifying the actual situation on international reserves.
- In addition to the data on outstanding official international reserves, the Data Template (DT) provides also the stock data on "other foreign currency liquid assets". The "other foreign currency liquid assets" mainly consist of foreign currency deposits of domestic banks placed in foreign banks, which are a bit less liquid than the official foreign exchange reserves, but they are basically highly liquid, therefore included in the assets available in the case of external crisis.
- The DT also makes it possible to confirm the predetermined short-term net drains including forwards and derivatives which are due within a year, enabling more detailed analysis of external positions than the traditional gross foreign exchange reserves data did. Currently 84 countries and regions publish monthly DT which are available on the website of the IMF.
- The IMF also proposes use of "Assessing Reserve Adequacy Metric" (ARA Metric) to

provide guideline for gauging an adequate level of foreign exchange reserves. ARA Metric calculates foreign currency drain risk using the data for (i) exports, (ii) broad money, (iii) short-term external debts and (iv) other liabilities (bonds and securities), each adjusted by respective weights and indicates the guideline of adequate reserves necessary to prevent the capital outflow risk. Currently the IMF calculates the adequacy for 78 countries, which are available on the website of the IMF.

- In this article, the author, using these two indicators, tried to assess the resiliency or strength to a currency crisis for 33 countries and regions. The outline of the results is as follows.
- Three countries (Argentine, Egypt and Turkey) had a problem under both the DT and the ARA Metric, and 13 countries (Sri Lanka, Mongol, Angola, Pakistan, Panama, Morocco, South Africa, Chile, China, Indonesia, Hungary, Jordan, and Kazakhstan) had a problem under either of the indicators.
- Both the DT and the ARA Metric are useful indicators when analyzing the adequacy of foreign exchange reserves, and serve as a useful reference for making loan and investment decisions. However, the countries publishing complete DT and ARA Metric are still few and further enhancement is much desired.

1. Renovation of Reserves and Related Statistics

Foreign exchange reserves serve as an important indicator to show the country's ability to pay its external liabilities. However, at the time of the Asian currency crisis about 20 years ago, the credibility of foreign exchange reserves was called into question. For reserves statistics in those days did not include futures and derivatives that had grown since the 1980s, and therefore the data failed to provide timely information of accurate reserves. Also other deficiencies were pointed out as follows¹.

- Pledged assets (for example, assets used as collateral for third party's loans) frequently were not identified, and assets of a similar nature, such as securities lent and repurchase agreements, often were included in reserve assets without separate identification.
- Deposits held in financially weak domestic banks and their foreign affiliates, which were not available for use in a crisis, often were included in reserve assets.
- Valuation practices could depart significantly from market values.
- Coverage of international reserve assets varied among countries, impeding cross-country comparisons.
- Lack of information on the authorities' financial derivative activities (for example, in foreign currency futures and forwards) could also obscure the risk exposure of

¹ IMF 「International Reserves and Foreign Currency Liquidity: Guidelines for a data template」 p.2

government entities.

- Information on principal and interest payments on loans and bonds falling due in the short term is incomplete and could hamper monitoring of drains on foreign currency resources.
- Publicly available information on reserves generally did not take account of unused unconditional lines of credit with other foreign monetary authorities and international institutions like the BIS.

As a lesson learnt from the Asian currency crisis, it was also pointed out that incomplete information could encourage paranoia among market participants and investors, prompting risk averting behaviors. The IMF recognized such risks, and in the early 2000s started to consider to renovate reserves related statistics with additional information. The efforts led to a publication of the “Data Template on International Reserves and Foreign Currency Liquidity”. The DT improved the deficiencies noted above and publishes more correctly the foreign currency liquidity the authorities hold. Currently the DT is published monthly for 84 countries and regions, which are available on the website of the IMF.

2. Example of the DT

Let’s see what are available from the DT by taking Mexico for example. In Section I of the DT we can confirm the stock data on “official reserve assets” and “other foreign currency assets” (Table 1). Official reserve assets represent total assets the monetary authorities and the central bank hold in the overseas official institutions and banks (including overseas branches of domestic banks). Other foreign currency assets include foreign currency deposits of domestic banks placed in overseas banks and they are somewhat less liquid than official reserves but basically they are highly liquid assets available for use at a time of crisis.

Mexico’s International reserves stood at about US\$186 billion as of July 2019, which consisted of \$175 billion for foreign currencies, \$2.6 billion for the IMF Reserve position, \$4.1 billion for SDRs, \$5.4 billion for monetary gold and negative \$1.2 billion for other reserve assets. So far there is no big difference from the traditional statistics on reserves.

Table 1 : Mexico's International Reserves (Section I)

In Millions of US Dollars (end of period)

	2019M06
	Central Government, excluding Social Security + Monetary Authorities
A. Official reserve assets	186,209
(1) Foreign curr. reserves (in conv. fgn.ccy.)	175,236
(a) Securities	109,317
(b) total currency and deposits with:	65,919
(i) other national central banks, BIS and IMF	6,814
(ii) banks hdqtrd in the rep. cntry. of which: loc. abrd.	
(iii) banks hdqtrd outside rep. cntry. of which: located in the rep. cnt	59,105
(2) IMF reserve position	2,640
(3) SDRs	4,062
(4) gold (incl. gold deposits and, if appr., gold swapped)	5,442
(5) other reserve assets (specify)	-1,171
financial derivatives	-1,174
loans to nonbank nonresidents	
other	3
B. Other foreign currency assets (specify)	38
securities not incl. in offic. res. assets	
deposits not incl. in offic. res. Assets	
loans not incl. in offic. res. assets	38
financial deriv. not incl. in offic. res. assets	
gold not incl. in offic. res. Assets	

(Source) Prepared by the IIMA based on the IMF data.

The following section II is a flow-based statistic that shows net drains of foreign currency obligations due during the 12 months ahead (Table 2). Mexico will have to pay \$19.5 billion in a year to come, which is about one tenth of the official reserves, seemingly not so big a burden.

However, Mexico has a high ratio of foreign ownership in its public debts, also with a high ratio of foreign ownership in government bonds denominated in pesos. In addition, the Mexican peso has a vulnerability that when an anxiety grows over the emerging currencies it is liable to become a subject for short-selling for hedge due to its top-class large volume of transactions among emerging currencies and due to relatively loose restrictions. Actually, Mexico had a bitter experience of a currency crisis in 1994, and the government has since concluded an arrangement of the Flexible Credit Line (FCL) equivalent to \$88 billion with the IMF² to improve its buffers.

The Section III (Contingent short-term net drains on foreign currency assets) shows possible flows of foreign currencies when a country has engaged in an arrangement like the FCL under which foreign currencies can be freely withdrawn (Table 3).

The section indicates the foreign currencies that can be drained during the 12 months ahead due to contingent obligations. Receipt of credit lines from other foreign central banks and international institutions is positively stated as an inflow (+) and provision of guarantees on debts of the state-owned enterprises is negatively stated as an outflow (-), and debts with options and net positions of FX option transactions are also reflected in this section. This section suggests that Mexico has ample “buffers”, showing that the country has a relatively high resilience to external shocks.

² On November 29, 2017, the IMF renewed the arrangement with Mexico for two years.

Table 2 : Predetermined short-term net drains of foreign currency assets (Section II)

In Millions of US Dollars (end of period)

	2019M06 Central Government, excluding Social Security + Monetary Authorities
1. Foreign ccy. loans, sec., and dep.	-19,540
outflows (-) Principal	-10,944
outflows (-) Interest	-8,596
inflows (+) Principal	
inflows (+) Interest	
2. Aggr. short & long posit. in forwards and futures in fgn. ccys. vis-à-vis the dom. ccy (including the forward leg of ccy. swaps)	
(a) Short positions (-)	
(b) Long positions (+)	
3. Other (specify)	
outflows related to repos (-)	
inflows related to reverse repos (+)	
trade credit (-)	
trade credit (+)	
other accounts payable (-)	
other accounts receivable (+)	

(Source) Prepared by the IIMA based on the IMF data.

Table 3 : Contingent short-term net drains on foreign currency assets (Section III)

In Millions of US Dollars (end of period)

	2019M06 Central Government, excluding Social Security + Monetary Authorities
1. Contingent liabilities in foreign currency	
(a) Collateral guarantees on debt falling due within 1 year	
(b) Other contingent liabilities	
2. Fgn. ccy. sec. sec. iss. w/ embedded options (puttable bonds)	
3. Undrawn, unconditional credit lines provided by:	87,107
(a) other nat. monet. auth., BIS, IMF, and other int. orgs.	87,107
other nat. monet. auth. (+)	12,764
BIS (+)	
IMF (+)	74,343
4. Undrawn, unconditional credit lines provided to:	
(a) other nat. monet. auth., BIS, IMF, and other int. orgs.	
other nat. monet. auth. (-)	
BIS (-)	
IMF (-)	
5. Aggregate short and long positions of options in fgn. ccys. vis-à-vis the dom. Ccy	
(a) Short positions	
(b) Long positions	
(for the following blanks)	

(Source) Prepared by the IIMA based on the IMF data.

3. Searching for a safe level of official reserves~explanation of the ARA Metric

The DT that I introduced in the previous section is a statistic developed to complement the realities of reserves statistics and makes it possible to grasp the extent of actually usable foreign currencies.

However, the adequacy of foreign currencies is not just a problem of measurement of their real volume. As the size of the economy grows larger, not only the necessary reserves naturally become larger but also the necessary “buffers” vary depending on the extent of macroeconomic imbalances. The IMF publishes the Assessing Reserve Adequacy Metric (ARA Metric) to give member countries a guide to gauge adequate international reserves. The ARA Metric uses as factors to be taken into account from the analyses of the past currency crises, (i) exports, (ii) broad money, (iii) short-term external liabilities, and (iv) other liabilities (bonds and securities).

They correspond respectively to (i) the risk of lowered ability to earn foreign currencies due to decreased foreign demand and trade shocks, (ii) the risk of capital outflows by residents who withdraw their domestic assets and convert them to foreign assets, (iii) the risk of refinancing external debts, and (iv) the risk of outflow of portfolio assets. And with the ARA Metric, the IMF suggests the aggregated amount of the above factors, each adjusted by a certain weight, constitutes a necessary minimum reserves to prevent risks noted above. Currently the data are published for 78 countries on the website of the IMF. The calculating formula is as follows;

For countries with fixed exchange rate regime :

$10\% \times \text{exports} + 10\% \times \text{broad money} + 30\% \times \text{short-term external debts} + 20\% \times \text{other liabilities}$

For countries with floating exchange rate regime :

$5\% \times \text{exports} + 5\% \times \text{broad money} + 30\% \times \text{short-term external debts} + 15\% \times \text{other liabilities}$

The weights to adjust each factor are calculated based on the capital outflows caused by the volatility in the foreign exchange markets seen in emerging economies in the past, with additional adjustments depending on the exchange rate regime (fixed or floating) and the extent of capital controls. For example, as the possibility of capital outflows by residents in a country where capital controls are imposed on residents is smaller than in a country with no capital controls, the weight applied to money supply is smaller, and accordingly the size of international reserves required to prevent risks becomes smaller. The IMF proposes that countries regard reserves of 100-150% level of thus calculated adequacy as a guide for precautionary safety against external shocks.

4. Example of the ARA Metric

Let's see the situation of Thailand by using the ARA Metric. Thailand was the epicenter of the Asian currency crisis that took place in 1997. When Thailand abandoned the fixed exchange rate regime succumbing to pressures of speculative selling of the baht, the crisis spread to other Asian countries like Indonesia and Korea, precipitating rapid capital outflows and sharp depreciation of the currencies. That was the Asian currency crisis. Confirming the level of Thailand's international reserves of the time with the ARA Metric, the levels of reserves were 76% and 75% of the adequacy level in 1995 and 1996 respectively in the pre-crisis period, below the lower margin of the suggested adequacy in the ARA Metric and showing that Thailand had a low resiliency to a currency crisis (Figure 1 and 2). The historical data of the

ARA Metric also shows that the reserves had steadily increased after the crisis, implying that Thailand has currently few causes for concern in terms of external payments.

Figure 1 : Thailand’s ARA Metric Decomposition

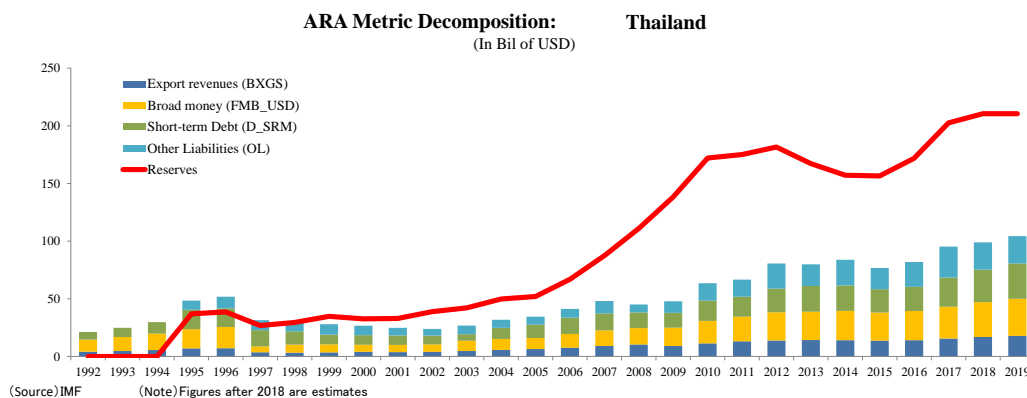
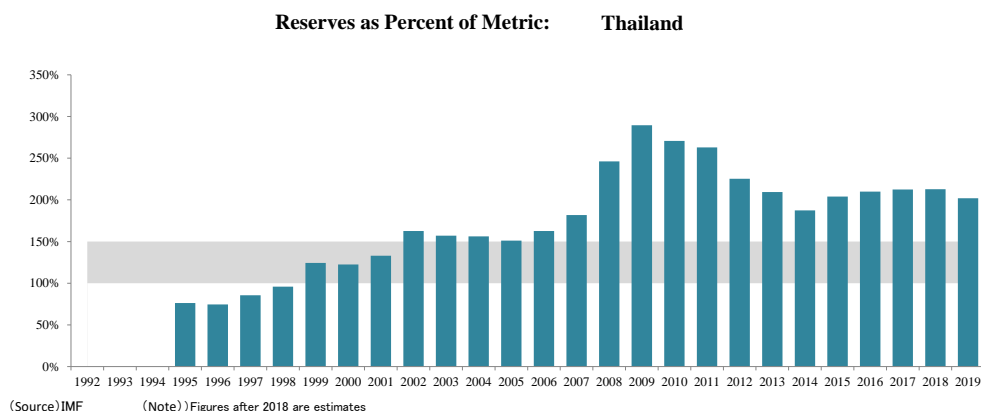


Figure 2 : Range of Suggested Adequacy of Thailand Reserves



5. Reserve Situation in Emerging Countries

In the following section, using the DT and ARA Metric, let us verify the ability of external payments in the 33 countries and regions³.

First, when focusing on the section I of the DT, there exist several countries with information on “other foreign currency assets” in addition to official reserve assets (Table 4). For example, Egypt has \$11.9 billion in “other foreign currency assets” in addition to official reserve assets of \$43.9 billion, indicating that Egypt has more reserve assets available for external payments than the traditional reserves statistics will suggest. Chili too has a much larger size of reserve assets available for external payments than the traditional statistics show, holding official reserve assets of \$39.5 billion and additional \$26.4 billion in the other foreign currency assets.

³ Angola, Argentina, Brazil, Chile, China, Columbia, Croatia, Czech, Egypt, Hong Kong, Hungary, India, Indonesia, Israel, Jordan, Kazakhstan, Malaysia, Mexico, Mongolia, Morocco, Pakistan, Panama, Peru, Philippines, Poland, Romania, Russia, Saudi Arabia, South Africa, South Korea, Sri Lanka, Thailand, and Turkey.

Building on the findings above, let us try to confirm financing ability of each country making a comparison with (i) Section I (official reserve assets and other foreign currency assets), (ii) predetermined short-term net drains on foreign currency assets due in the coming 12 months (Section II) and (iii) contingent short-term net drains on foreign currency assets due in the coming 12 months (Section III).

Argentina's predetermined short-term net drains on foreign currency assets exceed the official reserve assets. Of course, this does not necessarily mean that Argentina will be drained of official reserve assets since investors might reinvest in the Argentine assets even if the scheduled payments are made. However, recently a currency crisis has been intensifying triggered by the result of the primary election for presidential polls held on August 11, causing a rapid decrease in the official reserves.

Next, in the case of Chili, although its official reserve assets are not so large at \$65.9 billion, both drains of foreign currency assets predetermined within a year (Section II) and combined net drains in Section II and contingent Section III remain at a slim 3.2% of the official reserve assets. In the case of Thailand, net drains both in Section II and Section III have a positive value, meaning that the official reserve assets in Thailand will increase in a year to come. Factors for an increase include holding long positions in forwards and futures in foreign currencies vis-à-vis the domestic currency shown in Section II and undrawn, unconditional credit lines provided by the IMF shown in Section III.

From the comparison of these three countries, it can be seen that Argentina's vulnerability is outstandingly high. Mongolia and Sri Lanka also have very high risks. The countries with net drains within a year of more than 30% of official reserve assets include Turkey, Hungary and Egypt, while Jordan and Kazakhstan will join them if the contingent obligations should be realized.

Meanwhile, let us confirm on the ARA Metric the ratios of actual official reserves to appropriate reserves for each country covered (Table 5). The IMF recommends the participating countries to maintain official reserves of 100-150% of calculated adequacy on the ARA Metric as a precautionary guideline. In this article focus is given to the countries whose actual official reserve ratios are less than 100% of appropriate adequacy level. Those countries whose actual reserves are expected to be less than 100% based on the estimates for 2018 and 2019 include Argentina, Egypt, Indonesia, Turkey, South Africa, China, Angola, Pakistan, Panama and Morocco, and they can be said to be liable to cause a concern for their ability to financing eternal obligations.

Table 4 : Official Reserve Assets and Predetermined Net Drains on Foreign Currency Assets (DT)

In Millions of US Dollars (end of period)

2019M06	Section I			Section II					Section III	Rate of outflow		Resistance to currency crises
	Official reserve assets	Foreign currency Reserves	Other foreign currency assets (specify)	Predetermined short-term net drains on foreign currency assets	Foreign ccy. loans, sec., and dep.	Short positions	Long positions	Other (specify)	Contingent short-term net drains on foreign currency assets	Section II ÷ Section I	(Section II + III) ÷ Section I	
Argentina	64,278	64,278	0	-81,315	-61,286	0	0	-20,030	0	-126.5%	-126.5%	D
Mongol	3,986	4,101	-116	-3,471	-2,844	-627	0	0	437	-87.1%	-76.1%	D
Sri Lanka	8,897	8,865	32	-4,850	-4,010	-838	0	-1	-262	-54.5%	-57.5%	D
Turkey	96,326	96,326	0	-35,391	-17,255	-17,580	0	-556	-36,318	-36.7%	-74.4%	D
Hungary	30,888	30,800	87	-11,131	-5,128	-18,523	12,534	-13	720	-36.0%	-33.7%	C
Egypt	55,781	43,850	11,931	-17,080	-15,742	0	0	-1,337	-5,094	-30.6%	-39.8%	C
Indonesia	123,823	123,823	0	-30,375	-25,832	-4,543	0	0	-6,225	-24.5%	-29.8%	B
Croatia	22,631	22,631	0	-5,444	-3,085	0	0	-2,360	-175	-24.1%	-24.8%	B
Jordan	14,453	14,291	162	-3,149	-3,149	0	0	-858	-1,364	-21.8%	-31.2%	C
Malaysia	102,780	102,722	58	-20,493	-5,807	-14,685	0	0	-336	-19.9%	-20.3%	B
Poland	118,727	117,801	926	-17,340	-12,920	0	0	-4,420	505	-14.6%	-14.2%	B
Kazakhstan	28,222	28,222	0	-3,555	-1,513	-2,177	0	135	-5,075	-12.6%	-30.6%	C
Mexico	186,247	186,209	38	-19,540	-19,540	0	0	0	87,107	-10.5%	36.3%	A
Romania	41,771	41,771	0	-3,870	-3,870	0	0	0	-2,866	-9.3%	-16.1%	B
Philippines	86,745	84,932	1,814	-7,937	-7,937	0	0	0	-593	-9.1%	-9.8%	A
Colombia	57,152	51,929	5,223	-4,429	-4,429	0	0	0	11,972	-7.7%	13.2%	B
South Africa	49,790	49,803	-13	-3,085	-3,463	-286	662	2	-840	-6.2%	-7.9%	A
Morocco	24,476	24,476	0	-1,184	-1,185	-506	507	0	-1,781	-4.8%	-12.1%	B
Israel	120,135	120,135	0	-4,595	-4,595	0	0	0	0	-3.8%	-3.8%	A
Peru	65,751	65,751	0	-2,212	-2,212	0	0	0	-8,755	-3.4%	-16.7%	B
Chile	65,942	39,516	26,426	-2,108	-2,087	0	0	-21	0	-3.2%	-3.2%	A
India	431,801	429,837	1,964	-9,653	-6,412	-7,070	3,829	0	-1,130	-2.2%	-2.5%	A
Hong kong	471,332	445,689	25,643	-9,379	-2,085	-7,212	0	-82	-1,398	-2.0%	-2.3%	A
Saudi Arabia	512,869	512,869	0	-4,299	-4,299	0	0	0	0	-0.8%	-0.8%	A
Russia	518,369	518,363	5	-3,857	-3,800	-57	0	0	0	-0.7%	-0.7%	A
Czech	146,855	146,668	187	-103	-103	0	0	0	0	-0.1%	-0.1%	A
China	3,396,846	3,225,235	171,611	3,420	-2,716	0	0	6,137	0	0.1%	0.1%	A
Brazil	388,092	388,092	0	10,503	8,200	0	2,303	0	-3,118	2.7%	1.9%	A
South Korea	403,072	403,072	0	28,097	518	0	27,579	0	-8,210	7.0%	4.9%	A
Thailand	215,857	215,808	48	34,286	-204	0	34,490	0	11,933	15.9%	21.4%	A
Angola	-	-	-	-	-	-	-	-	-	-	-	-
Pakistan	-	-	-	-	-	-	-	-	-	-	-	-
Panama	-	-	-	-	-	-	-	-	-	-	-	-

(Note 1) Data are for May 2019 for Morocco and Jordan. (Note 2) Covered area with hatching indicates when either the values of the section II divided by the section I or those of aggregated section II and III divided by the section I falls below 30%. (Note 3) The IIMA independently estimated the resiliency to a currency crisis by defining A if the values of aggregate of sections II and III divided by section I stand above -10%, B when the values are below -30% and C when they are below -50%.

(Source) Prepared by the IIMA based on the IMF data.

Table 5 : Official Reserve Assets and Predetermined Net Drains on Foreign Currency Assets (ARA Metric)

2019M08	ARA Metric			
	2016	2017	2018	2019
Argentina	79%	85%	95%	86%
Sri Lanka	-	-	-	-
Mongolia	-	-	-	-
Hungary	96%	92%	108%	109%
Egypt	66%	71%	92%	85%
Indonesia	128%	88%	80%	78%
Turkey	89%	80%	76%	75%
Jordan	122%	118%	107%	116%
Croatia	90%	108%	119%	126%
Malaysia	117%	112%	108%	116%
Kazakhstan	185%	174%	171%	175%
Philippines	221%	203%	193%	183%
Poland	126%	113%	119%	120%
Mexico	133%	120%	118%	116%
Romania	162%	152%	143%	130%
Colombia	138%	131%	131%	133%
Israel	-	-	-	-

2019M08	ARA Metric			
	2016	2017	2018	2019
Peru	267%	260%	240%	240%
India	155%	159%	147%	139%
South Africa	78%	62%	70%	66%
Chile	104%	90%	91%	89%
Hong Kong	-	-	-	-
Saudi Arabia	-	-	-	-
Russia	248%	266%	301%	324%
Czech	-	-	-	-
China	106%	96%	92%	85%
Brazil	167%	161%	169%	160%
South Korea	121%	107%	112%	113%
Thailand	210%	212%	213%	202%
Angola	138%	99%	86%	88%
Pakistan	69%	56%	37%	37%
Panama	18%	15%	11%	11%
Morocco	99%	92%	85%	88%

(Note1) Figures after 2018 are estimates. (Note2) Covered area with hatching indicates when either the percentage of 2018 or those of 2019 falls below 100%. (Source) Prepared by the IIMA based on the IMF data.

The situations for each country seen from the DT and the ARA Metric are summarized as follows (Table 6). Out of 33 countries and regions covered, 3 countries (Argentina, Egypt and Turkey) fall in the category of “caution needed” based on both indicators, and 13 countries (Sri Lanka, Mongolia, Angola, Pakistan, Panama, Morocco, South Africa, Chili, China, Indonesia, Hungary, Jordan, and Kazakhstan) are considered to need caution according to one of the indicators. Among them, in Argentina, Mongolia, Sri Lanka and Turkey, the ratio of Section II of the DT divided by Section I or aggregated Section II and III divided by Section I stood below minus 50% and in Pakistan and Panama the share of actual official reserves to appropriate reserves calculated by the ARA Metric is expected to fall below 50% in 2019. The economic conditions of these countries are reviewed in the next chapter in more details.

Table 6 : Countries’ Level under the DT and ARA Metric

DT	ARAM	Country
○	○	Thailand , South Korea , Brazil , India , Peru , Colombia , Philippines , Romania , Mexico , Poland , Malaysia , Croatia
○	No data	Czech , Russia , Saudi Arabia , Hong Kong , Israel
△	○	Jordan , Kazakhstan
×	○	Hungary
○	×	South Africa , Morocco , Chile , China , Indonesia
No data	×	Angola , Pakistan , Panama
×	No data	Mongoria , Sri Lanka
×	×	Argentina , Egypt , Turkey

(Notes) In the DT, × is marked when the predetermined drains exceed 30%, △ when the contingency drains exceed 30%, and otherwise marked as ○. As for the ARA Metric, × is marked when the values measured by the ARA Metric for 2019 are below 100% and otherwise ○ is marked.

(Source) Prepared by the IMF based on the IMF data

6. Situations in Selected Countries

(1) Argentina

Argentina had many currency crises in the past and more recently in 2014 it fell into a technical default due to conflicts between foreign investors and former (Cristina Elisabet Fernández de) Kirchner administration. After the inauguration of new president Macri in December 2015 the government led moderate policy management but in May 2018 rises of the US long-term interest rates and domestic inflation rates, coupled with a change of investors’ psychology, triggered another currency crisis. The country was forced to rely on the IMF financing, and is still suffering from a stagflation where inflation and economic slump coexist. As is seen from such a situation the fundamentals of Argentina are weak and fragile. Especially outstanding is a weakness in the external financing. Although reserves tend to increase since the latter half of 2015, external debts are also on the rise (Figure 3 and 4).

More recently, a currency crisis has been deepening since it was triggered by the pre-election

for presidential election held on August 11 while the central bank has been intervening in the market by selling dollars for pesos to prevent a depreciation of the peso. However, so far no visible impact has been seen despite rapid decrease in the official reserve assets, which stood at \$54.1 billion at the end of August, after dropping about 20% in a month. In view of such situations the Argentine government introduced capital controls⁴ on September 1. The government has also been faced with difficulty in refinancing domestic short-term government bills and on August 28 it announced its intention to extend redemptions of domestic short-term bills by three to six months. It also announced that it will demand a moratorium to overseas bond holders, while negotiating with the IMF on the extension of repayment period on the loans. In April 2018, Argentina was approved with an IMF loan of \$56.3 billion, of which \$44.5 billion has been already disbursed. The disbursement of the rest depends on the future negotiations. As is seen from this case, a country with a problem on its ability for external financing as is seen by the DT (in the case of Argentina the net drains will reach 126.5%) also has vulnerability to foreign exchange volatility, and tends to experience foreign exchange shortage when the risk averting behaviors (risk off) increase globally.

Figure 3 : Official Reserve Assets

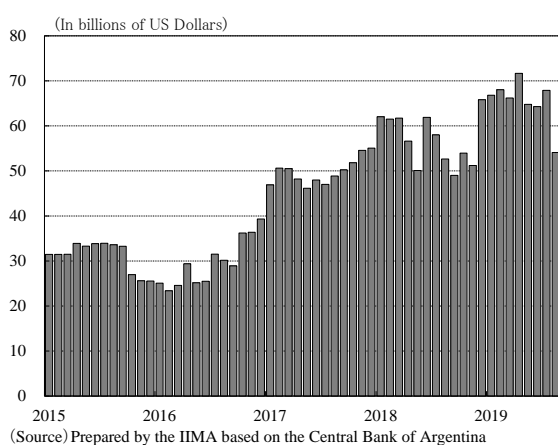
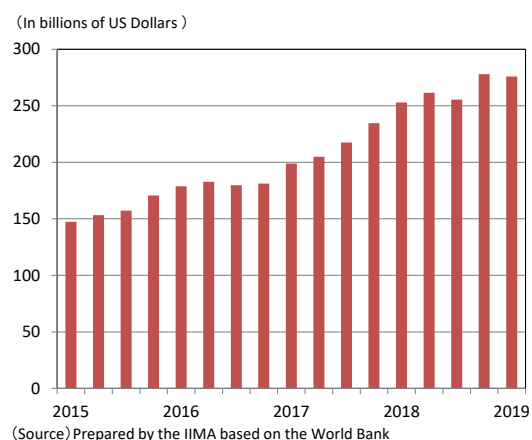


Figure 4 : External Debts



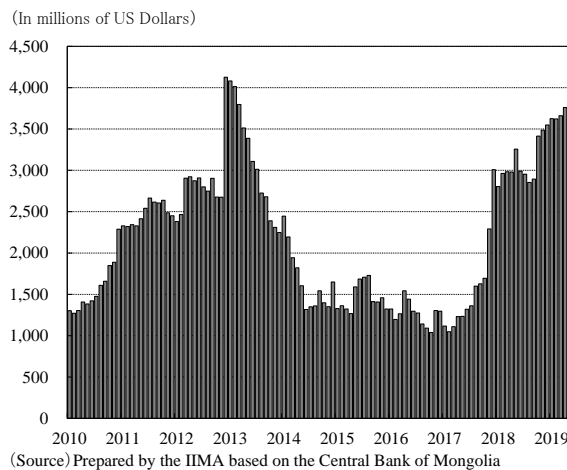
(2) Mongolia

Mongolia's fiscal balance deteriorated heavily affected by the fall of international prices for copper and coals, its main export items, as well as the slowdown of the global economy. The country faced with difficulty in repayment of external debts and formally came to agree with the IMF on May 2017 on the extension of the Extended Fund Facility (EFF) in the amount of \$430 million over the period of three years. The Asian Development Bank, the World Bank, and other

⁴ It set a ceiling on the dollar purchase of individuals while obligating export companies to convert into pesos the foreign currency earnings within 5 days of the receipt.

lending partners including Japan and Korea pledged to provide money and project support while the People’s Bank of China (Chinese central bank) agreed to extend its swap line with the Bank of Mongolia (Mongol central bank). These funds for financing amounted to about \$5.5 billion in total. Thanks to these supports, the official reserve assets of Mongolia started to increase since the middle of 2017, to \$4.1 billion at the end of June 2019 (Figure 5).

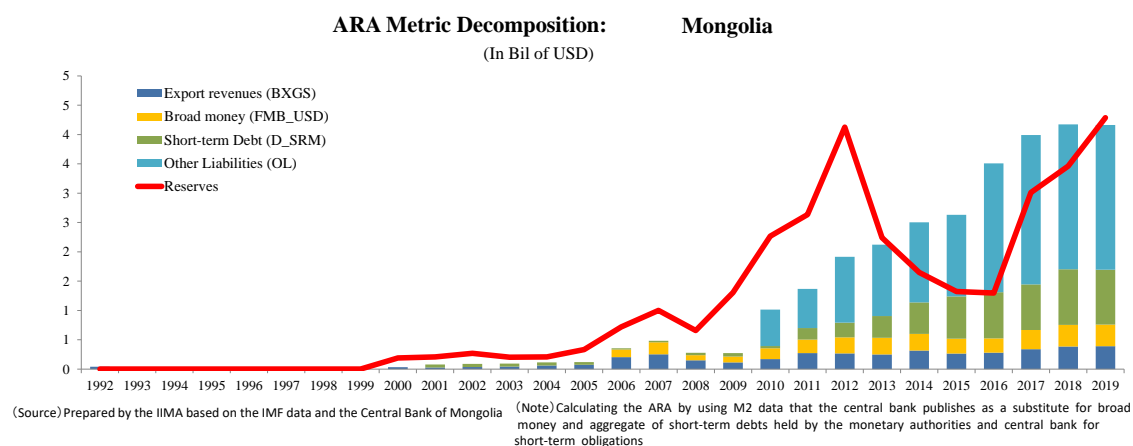
Figure 5 : Official Reserve Assets



However, the DT indicates that the ratio of net drains in the coming year to official reserve assets will be 87.1%, or not on an adequate level and showing the country is vulnerable to external shocks (although according to Section III, the ratio will improve slightly to 76.1% if you include credit lines of \$450 million that Mongolia has been provided with so far).

Meanwhile, according to the IMF ARA Metric for Mongolia, no data are available for broad money and short-term debts, making it difficult to confirm its appropriate level. Calculating the ARA by using M2 data that the central bank publishes as a substitute for broad money and aggregate of short-term debts held by the monetary authorities and central bank for short-term obligations, we can get the values shown in the Figure 6. If we compare the values calculated using the latest export returns and broad money with official reserve assets, it is understood that the reserves had been below the adequate level from 2014 (66%) to 2018 (83%). Although the ratio is expected to go back to 103% in 2019 to fall within the range of the adequate level, it requires attention whether the country can maintain the adequate level or not in the future.

Figure 6 : ARA Metric Decomposition



(3) Sri Lanka

In Sri Lanka, the current administration under President Maithripala Sirisena and Prime Minister Ranil Wickremesinghe shifted the policies with overdependence on China and domestic protection that had been promoted during the days of former President Râjapaksa toward diplomacy more balanced between China and India and economic open-door policy. In 2017, however, Sri Lanka was forced to hand over to China the use right of Port Hambantota located in the southern part of the country⁵

On the macro-economic and financial front, due to increase of fiscal deficits and decrease of official reserve assets, Sri Lanka came to formally agree with the IMF on the Extended Fund Facility (EFF) of \$1.5 billion over the three years and received several disbursements of the loan. However, even after it received the loan, the current account has continued to be in deficit mainly due to large trade deficits (Figure 7). The financial account shows that inflows of foreign direct investment and portfolio investment have financed the current account deficits (Figure 8). With the increase of the current account deficits, the external obligations also have been increasing (Figure 9).

Sri Lanka's official reserve assets somewhat increased after the country received the IMF loan, but they have not gotten on a trend of steady increase (Figure 10). The latest DT (net drains of 54.5% in the coming year, and 57.5% if contingent debts included) shows that the level of official reserves are not adequate and the country is still vulnerable to external shocks. As the data for short-term external debts and other obligations are not available, correct ratios on the ARA Metric cannot be confirmed, but comparing the values obtained by export returns

⁵ The Port Hambantota located in the south of the country was constructed in the time of the former president with the support of the Chinese Government and started operation in 2011. However, due to low operation rates and low income thereof, Sri Lanka had difficulty to make repayment of the debts, and concluded in December 2017 an agreement with Chinese companies to lend them the port for 99 years in exchange for exemption of the payment of over \$1 billion.

and broad money with its official reserve assets, Sri Lanka has little buffers for external payments and if the values computed by short-term external debts and other obligations are added, the level of the official reserves is highly likely to fall below the level recommended by the IMF⁶. As is seen in the Figure 11, it is desirable that the values of the line graph representing the reserves are higher than those of the bar graph (that is, the official reserves exceed the 100% level recommended by the IMF), but if the variables of exports and other obligations are added, the values on the line graph probably fall below the values of the bar graph. It is highly possible that the ARA Metric also indicates the weakness of Sri Lanka in terms of external payments.

Figure 7 : Current Account Balance

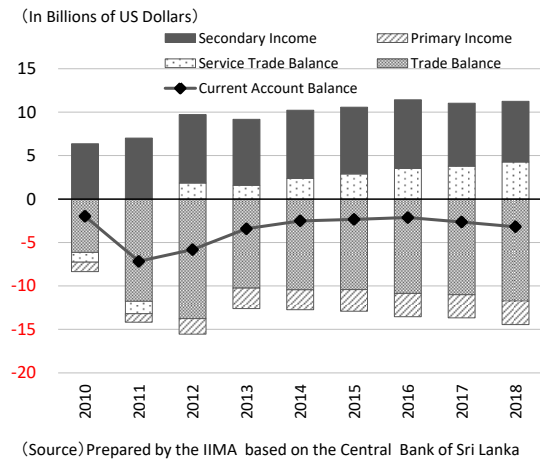


Figure 8 : Financial Account Balance

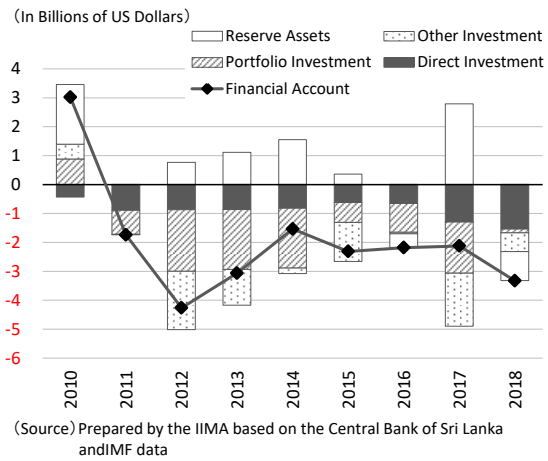


Figure 9 : External Debts

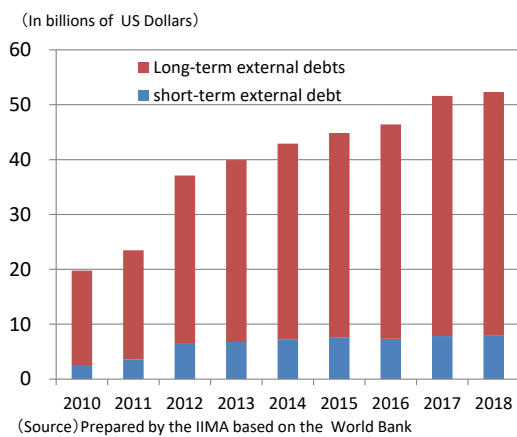
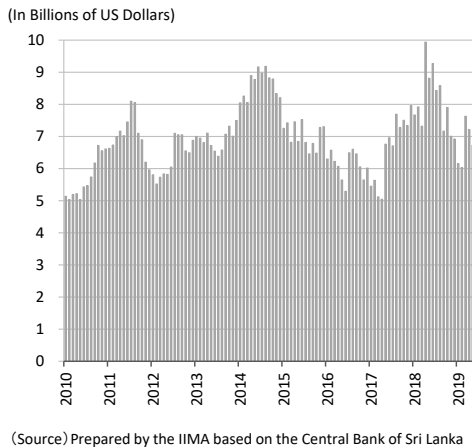
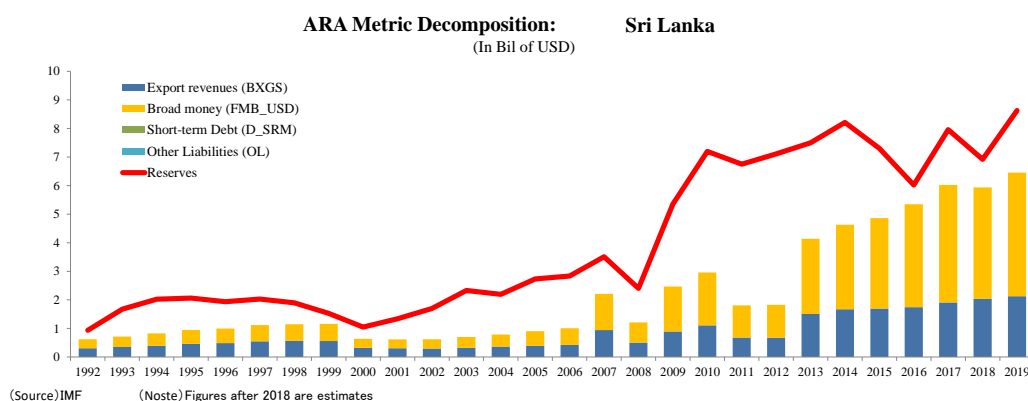


Figure 10: Official Reserve assets



⁶ Sri Lanka adopts independently freely floating exchange rate system (since January 23, 2001). The Central Bank of Sri Lanka (CBSL) announces daily a weighted average rate of interbank exchange rates, and the CBSL itself buys and sells foreign exchange at a market rate or close to market rate. The IMF classifies Sri Lanka's exchange rate regime as managed floating exchange rate system without a prior notice and when calculating an ARA metric for Sri Lanka, the IMF uses the same calculating formula as used for countries with fixed exchange rate system to compute its adequate level of reserves.

Figure 11 : Decomposition of ARA Metric



(4) Turkey

In Turkey, its currency Lira sharply depreciated in 2018 mainly due to delayed rate cut by the central bank and economic sanctions by the US government, falling to a record low against the dollar (a fall by 47.5% at the maximum since the start of the year). Since then, large increases of policy rates amounting to 6.25%, improvement of relationship with the US and suspension of interest rate hikes by the Fed, the lira bottomed out to recover a bit, but since March 2019, the lira started to fall again reflecting a decrease of official reserves, coupled with the reignited fear of deteriorating relationship with the US triggered by the delivery to Turkey of Russian-made surface-to-air missile system S400, and political uncertainties posed by the result of the local general elections. While the retreat of political uncertainties following the result of reelection of the mayor of Istanbul and the move in the G20 toward avoidance of US economic sanctions temporarily helped the lira to recover since the middle of June, the lira is again on a soft price since early August influenced by the intensifying US-China trade frictions (Figure 12)

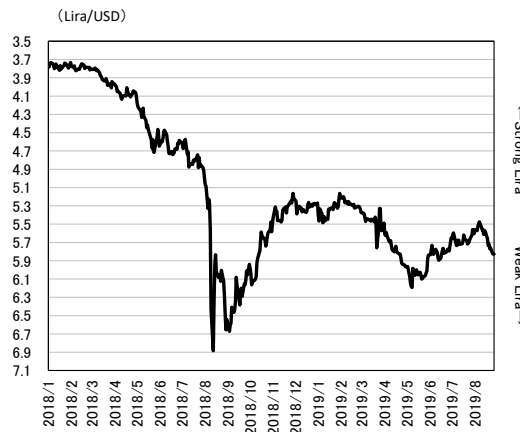
The official reserves are declining due to buying intervention of the lira, to \$72 billion in the second quarter of 2019 (Figure 13). External debts outstanding has been on the rise since 2010 (Figure 14). As most of the external debts are denominated in foreign currencies, it is feared that the debt burdens will increase with the depreciation of the lira.

In Turkey, there is a strong confidence in foreign currencies (especially in the US dollar) among people, resulting in the ratio of domestic foreign currency deposits to total deposits exceeding 50%. While reserve requirements on foreign currency deposits vary depending on the terms to maturity, set at high levels from 12% to 16%, the reserve equivalent portions of foreign currency deposits are included in the official reserve assets (Section I of the DT)⁷. Since these foreign currency deposits are funds presumed to be returned to depositors and the reserve

⁷ Of course, the ownership of foreign currency deposits belongs to depositors, the foreign currency deposits other than the reserve requirement portion are not included in the official reserve assets.

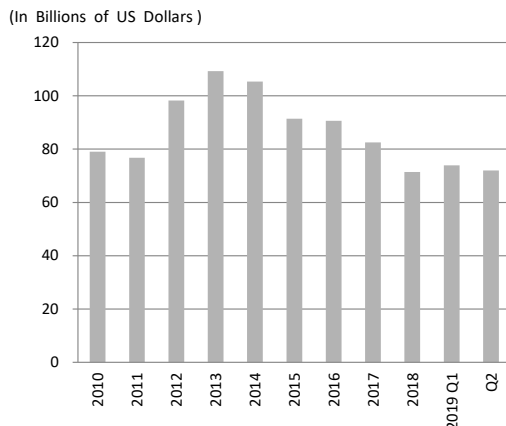
equivalent portions will be drained from the official assets when the depositors withdraw their deposits in large quantity (they are included in the net drains on the contingent obligations in the Section III of the DT), it requires careful attention. The ratio of net drains in the Sections II and III combined against the Section I of the DT is high at -74.4%, and it should be noted that when the lira should sharply fall due to a financial crisis, foreign currency deposits will heavily decrease through withdrawal of foreign currencies, causing a decrease of the official reserve assets.

Figure 12 : Exchange Rate of the Lira against the US Dollar



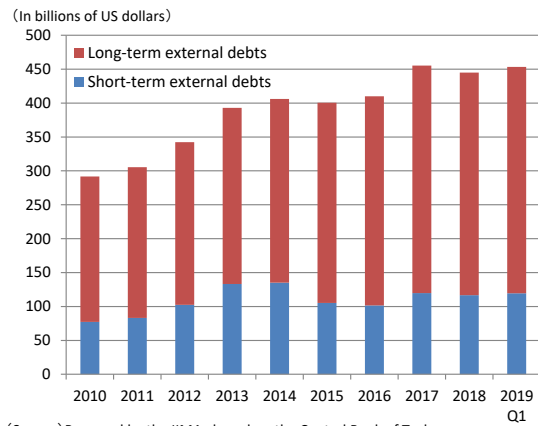
(Source) Prepared by the IIMA based on the Bloomberg.

Figure 13: Official Reserve Assets



(Source) Prepared by the IIMA based on the Central Bank of Turkey

Figure 14: External Debts



(Source) Prepared by the IIMA based on the Central Bank of Turkey.

(5) Pakistan

Pakistan faces twin deficits on the current account and fiscal account (Figure 15 and 16). Main causes of the current account deficits include strong consumption, increase in material imports associated with the China-Pakistan Economic Corridor, increase of oil imports due to expanded demand for energy. Reflecting the increase of the current account deficits and market interventions to protect the rupee, the decrease of the official reserve assets has shown no sign

of touching bottom, and the government was forced in May 2019 to borrow \$6 billion from the IMF under the EFF program over three years.

As is seen from the ARA Metric (37% forecasted for both 2018 and 2019), Pakistan faces an acute shortage of reserve assets. While Pakistan achieved high economic growth by making an aggressive infrastructure investment using foreign capital, its external debts drastically ballooned due to increased current account deficits, and the reserve assets declined (Figure 17). Although the country more recently received a loan under the EFF from the IMF, its vulnerability to external shocks still remains unchanged, requiring it to implement medium-to-long-term structural reforms. The data on the DT is not available.

Figure 15 : Current Account Balance

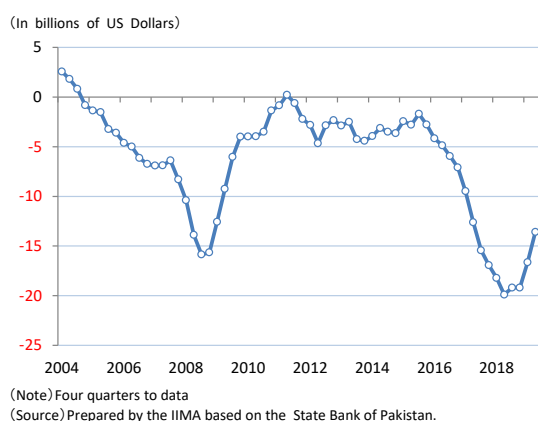


Figure 16 : Fiscal Balance

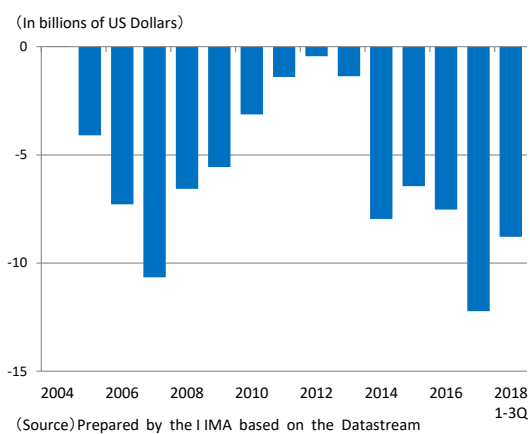
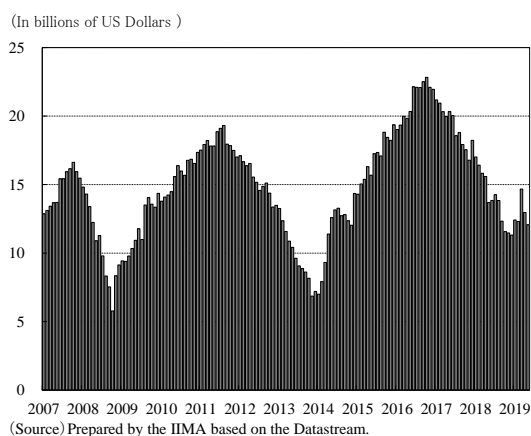


Figure 17 : Official Reserve Assets



(6) Panama

Panama has implemented for long the “dollarization” of its currency, setting the dollar the only legal tender since it abolished its home currency soon after its independence in 1903⁸. Due

⁸ The government of Panama concluded a currency agreement with the US government on December 6 1904

to this policy of dollarization, there exists no risk that its local currency becomes inconvertible.

Therefore, although the ARA Metric of forecast for 2019 stands at 11%, massively falling below the 100~150% range considered to be adequate, it cannot be simply said that this low level on the ARA Metric represents a high risk⁹ (Figures 18 and 19). Yet, it should be noted that Panama will be placed under strong deflationary pressures when the dollars flow out due to anxieties over the economy since Panama has not issued its own currency and therefore has no “lender of last resort” function.

Figure 18 : Decomposition of ARA Metric for Panama

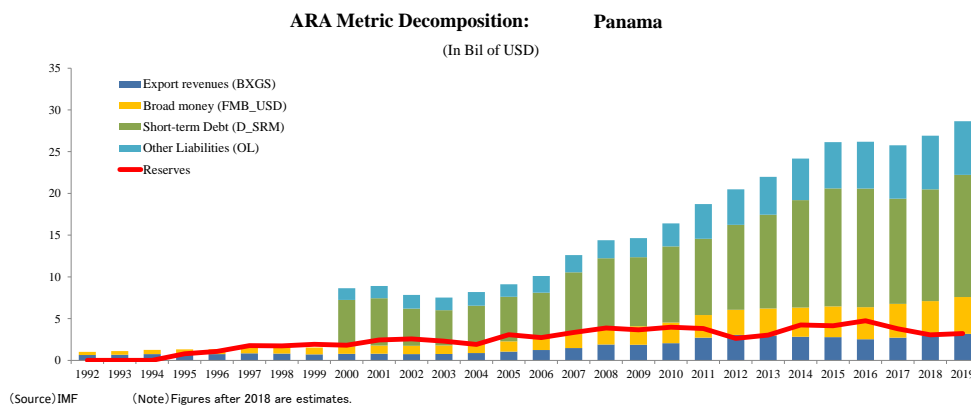
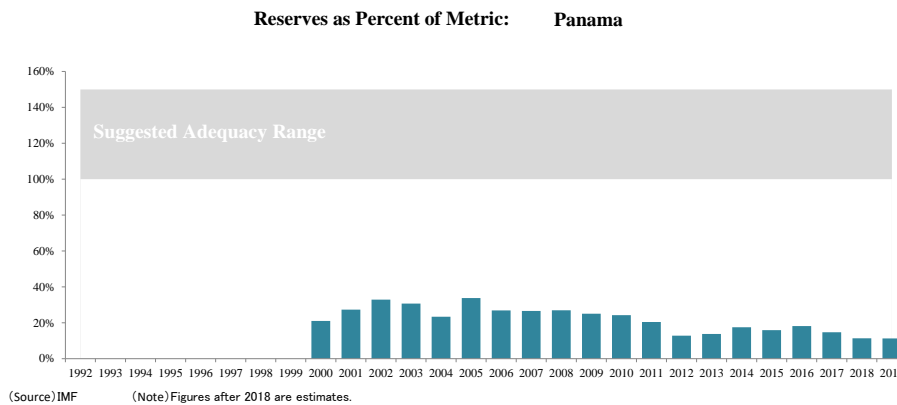


Figure 19 : Suggested Adequacy level of Reserves for Panama



7. Conclusion

In the past decade or so, statistics on the foreign currency liquidity have been much improved,

formally to make the US dollar a legal tender of Panama. The currency is called balboa. Actually, the US dollar notes and one-balboa coins are in circulation (one balboa equals one dollar and coins are issued by the Ministry of Economy and Finance of Panama). The minting and issuance of the coins are permitted by the Decree No. 84 dated of June 29 1904.

⁹A Policy Paper of the IMF published on November 13, 2013 states that although the ARA Metric cannot be applied to the dollarized countries as equally as the countries with floating exchange rate system, it “may be a relevant, if not a conservative, benchmark even for these fully dollarized economies” in considering the reserve buffers to multiple external shocks. The IMF points out that Panama has not met the standard level of the adequacy measured by the ARA Metric, but does not see this as a special problem.

providing much more information for use than before. They enable us, not only just to recognize the amount of foreign exchange reserves, but also to analyze with the DT the strength of the external positions not visible on the surface, while to check the adequacy of reserves in relation to the ARA Metrics and make cross-national comparisons. However, they still need cautious use as, for instance, the treatment of Sovereign Wealth Funds (SWF) varies in some countries. Also, some countries do not fully disclose the information the IMF recommends to include. Especially no information is available or the value is filled in zero in many countries for the Section III of the DT. In analyzing the adequacy of the reserves, efforts will be needed also to collect carefully the information related to these areas as well.

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