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Pakistan's Five Currency Crises

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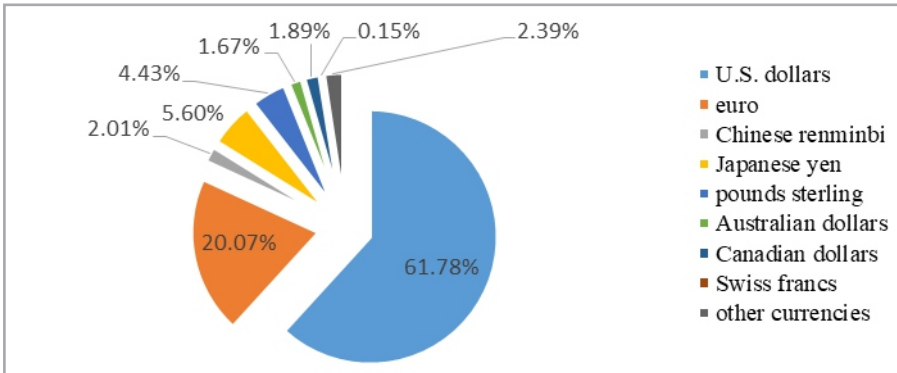
The foreign reserves comprise of bank notes, bank deposits, treasury bills and government securities of the reserve currency. According to IMF - Currency Composition of Official Foreign Exchange Reserve the popular reserve currencies are US dollar and euro (as shown by the blue and orange slice of pie chart).

The main reason to hold foreign reserve is to

i. Smooth unpredictable and temporary imbalances in international payments
ii. Manage the exchange rate and backing of domestic currency
iii. Servicing external debt and liabilities and
iv. Maintain confidence in financial markets and creditworthiness of the country.



World- Allocated Reserves by Currency for 2019Q3
Source: IMF Data - Currency Composition of Official Foreign Exchange Reserve

The rule of exchange rate management is that the value of domestic currency is determined by the market forces. Intervention is at best a temporary phenomenon to smooth out market conditions but without losing any significant amount of reserves. Modern Central Banks do not attempt to fix exchange rates at the expense of reserves. In fact, policy wisdom now is to maintain an undervalued real exchange rate to accumulate of foreign reserves while facilitating growth by promoting exports (Dooley *et al.*, 2003).

Exchange Rate Regimes and Financial Crisis

Fixed exchange rate is failed to cope the adverse external shocks like worsening of terms of trade or decline in capital inflows. The authorities pays the cost in terms of depletion of foreign exchange reserves to fix the rate (Edwards, 2001).

Intermediate regimes are more vulnerable to currency. The targeted exchange rate reliefs the economic agents not to worry about exchange risk. This complacency motivates them to invest into heavy, unhedged foreign currency borrowing. This damages the debt structure of the country and increases the potential risk of speculative attack (Esaka, 2010).

Flexible exchange rate avoids the possibility of currency crises by quickly response to negative external shocks and authorities do not need to defend the exchange rate (Joshi, 2003).

Should the exchange rate have been fixed?

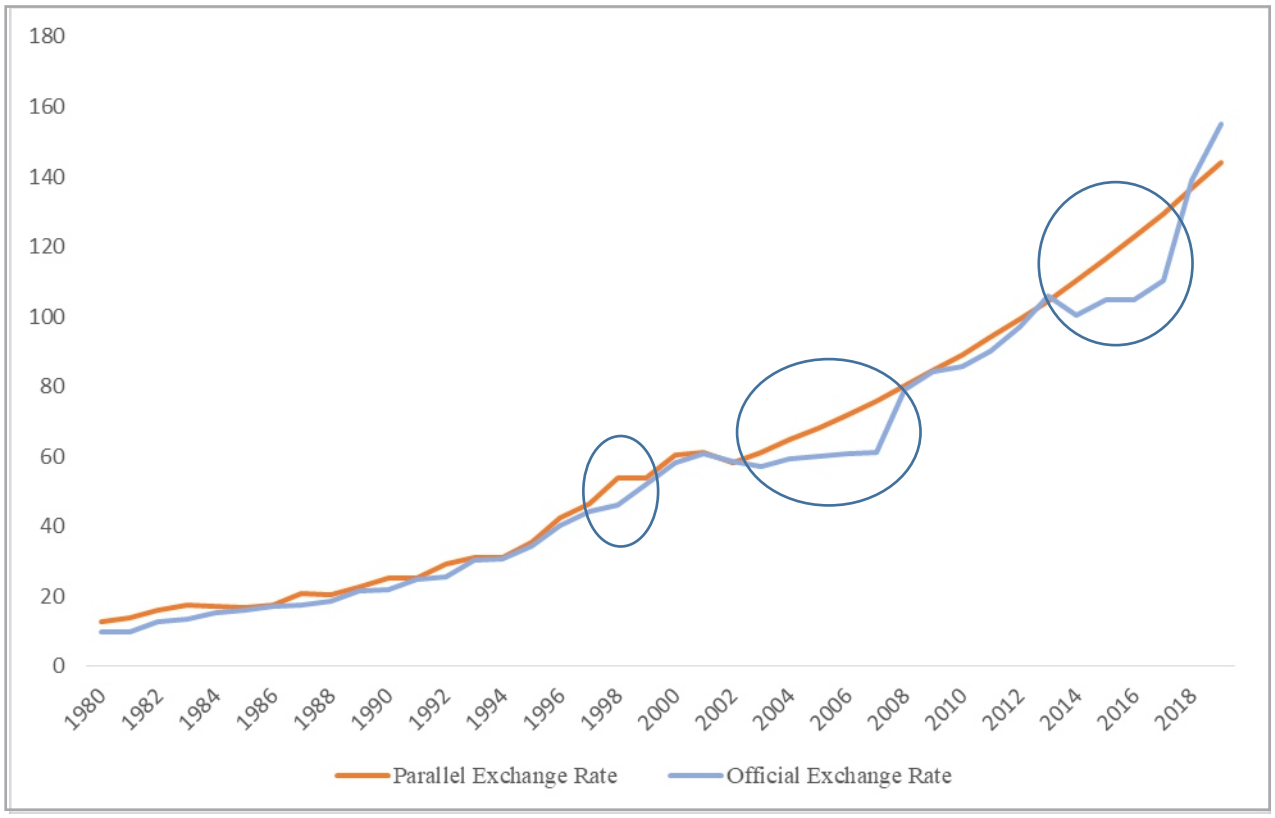
Since 1982, Pakistan has officially claimed to have adopted a flexible exchange rate policy or a "managed float". Is exchange rate of Pakistan at real equilibrium rate or does it depart from its equilibrium value?

Adequacy of reserves are gauge by two indicators which are internationally acceptable;

i. Coverage of months of imports (3 months considered adequate)
ii. Reserves to Short term debt (1 considered adequate)

The real equilibrium rate is the rate consistent with the internal and external balance. The misalignment in exchange rate is captured by the difference in parallel exchange rate and the official exchange rate. Parallel exchange rate is determine in a free market and not contaminated by the distortionary effects of government policy. Figure 1 shows that parallel exchange rate1 is higher than the official exchange rate upon the adoption of two tier exchange rate in 1999, 2003-2008 and 2013 to 2017. What about reserve adequacy?

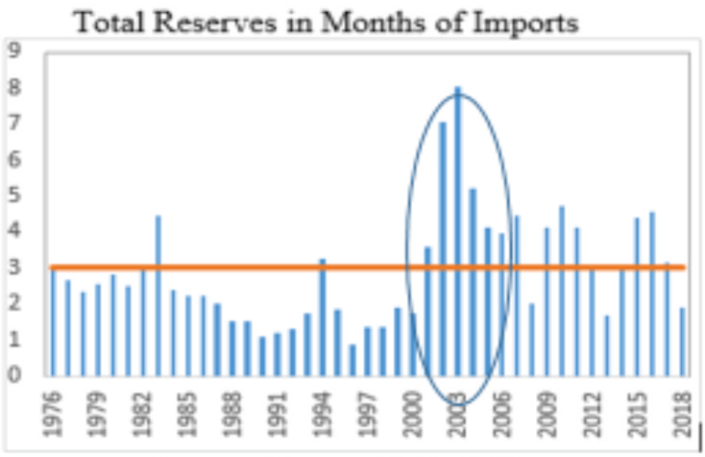
Figure 1: Parallel and Official Exchange Rate



From Figure 2, import coverage ratio and reserves to short term debt ratio show that only during 2001 to 2007 did the reserve level significantly above levels considered adequate (3 months of imports). The average reserves during this period were 5.20; and reserves were 7.55 times short term debt (ever highest as compared to other periods). This buildup in reserves was due in part to the rescheduling of debt in 2001 as well as the steady global growth in this period.'

[1]The data on parallel exchange rate are collected from "http://www.carmenreinhart.com". The data is available only for the period 1948-2003. The remaining data from 2004 to 2015 is generated by forecasting univariate model of parallel exchange rate. According to Box and Jenkins (1970) methodology the suitable model for parallel exchange rate is ARMA (0,1,0). $Dlnpex_t = 0.053$„ Where, $Dlnpex_t = lnpex_t - lnpex_{t-1}$ therefore, the equation can be written as $lnpex_t = 0.053, + lnpex_{t-1}$ where, $lnpex_t$ is the log of parallel exchange rate.

Figure 2: Total Reserves in Months of Imports and in Short Term Debt



Source: The world Bank Data

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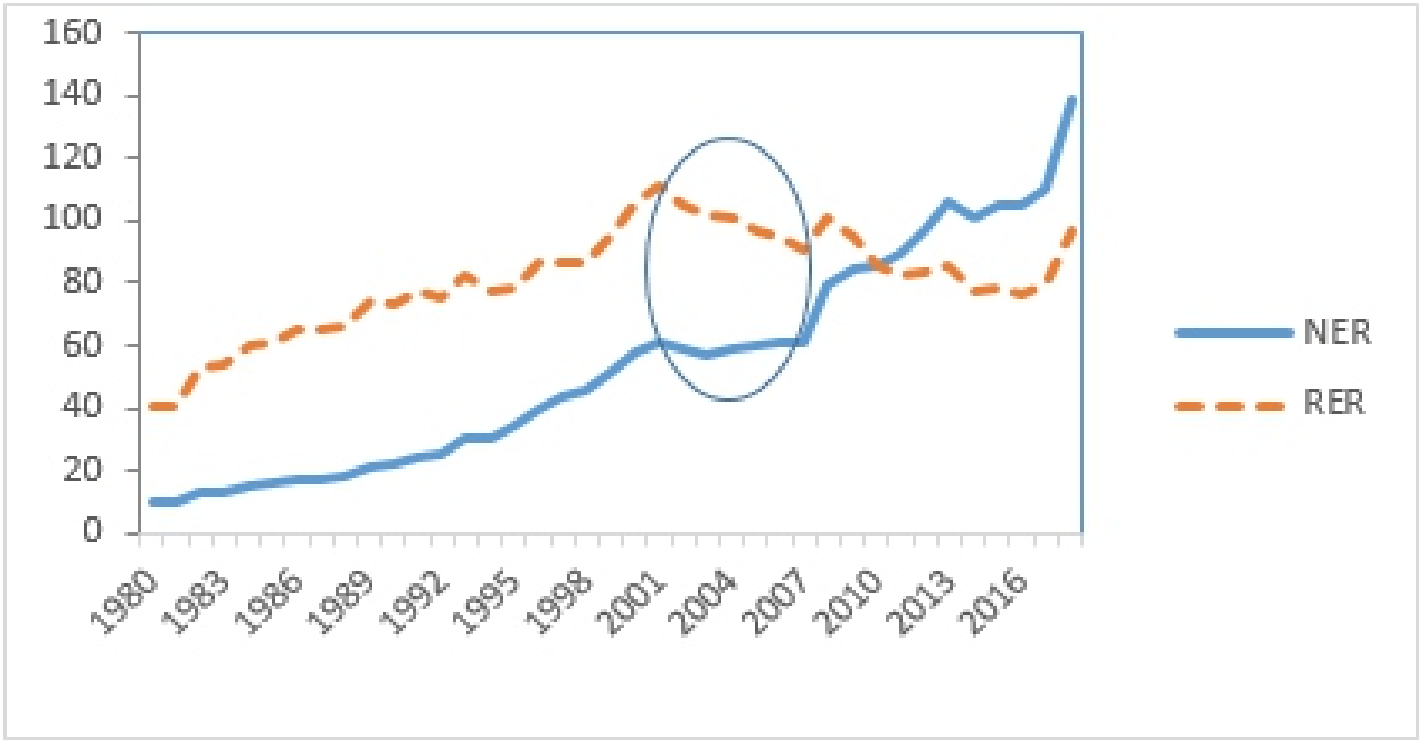
Looking at nominal and real exchange rate of Pak rupee per unit of US $, from 1980 to 2001both follow the same direction but after that NER and RER have been moving in opposite directions (rise in NER and RER shows the devaluation of nominal and real exchange rate respectively). It indicates that domestic prices are increasing relative to foreign prices and offsetting the impacts of NER devaluation. During the period 2001-2007 when reserves were adequate, the RER appreciated, clearly showing an official approach to stand against the market (see Figure 3). It seems that the window of opportunity offered by the rescheduling and the steady global growth of the early 2000s was used to check the necessary exchange rare movement.

Figure 3: Nominal and Real Exchange Rate



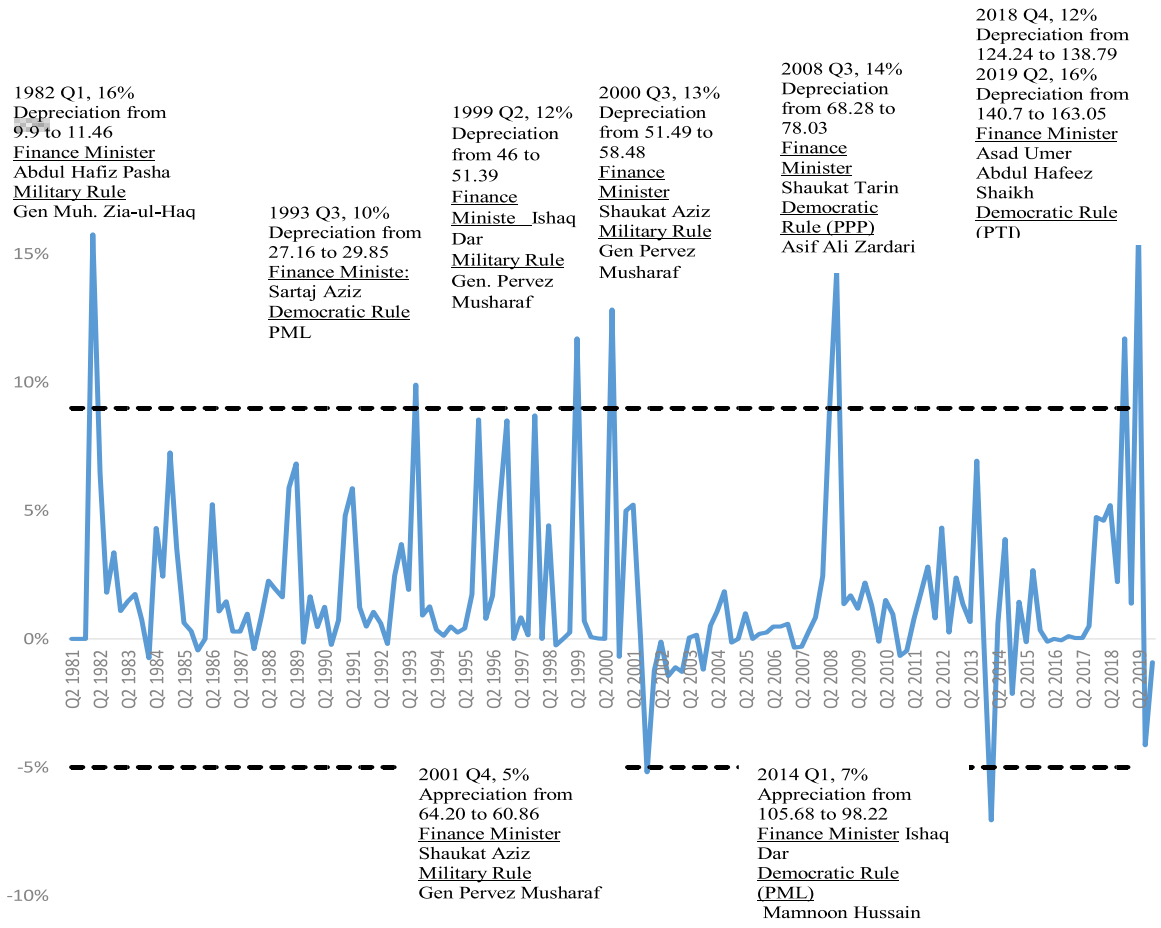
Data Source: International Financial Statistics

SBP: A history of Currency Crises

A currency crisis occurs when the State Bank of Pakistan (SBP) is forced to sharply devalue the currency in the face of declining reserves. We have seen several such cases in the last 30 years. Large depreciations happened in 1982, 1993, 1999, 2000, 2008, 2018 and 2019. Each of these was a currency crisis caused by earlier attempts to maintain an unrealistic exchange rate in the face of declining reserves (see Figure 4).

Currency crisis refers to a situation when country faces a significant and unwanted depreciation of the currency and forces the authorities to defend the currency by selling foreign exchange reserves (Krugman, 1995; Glick and Hutchison, 2011).

Figure 4: Rate of Change in Exchange Rate



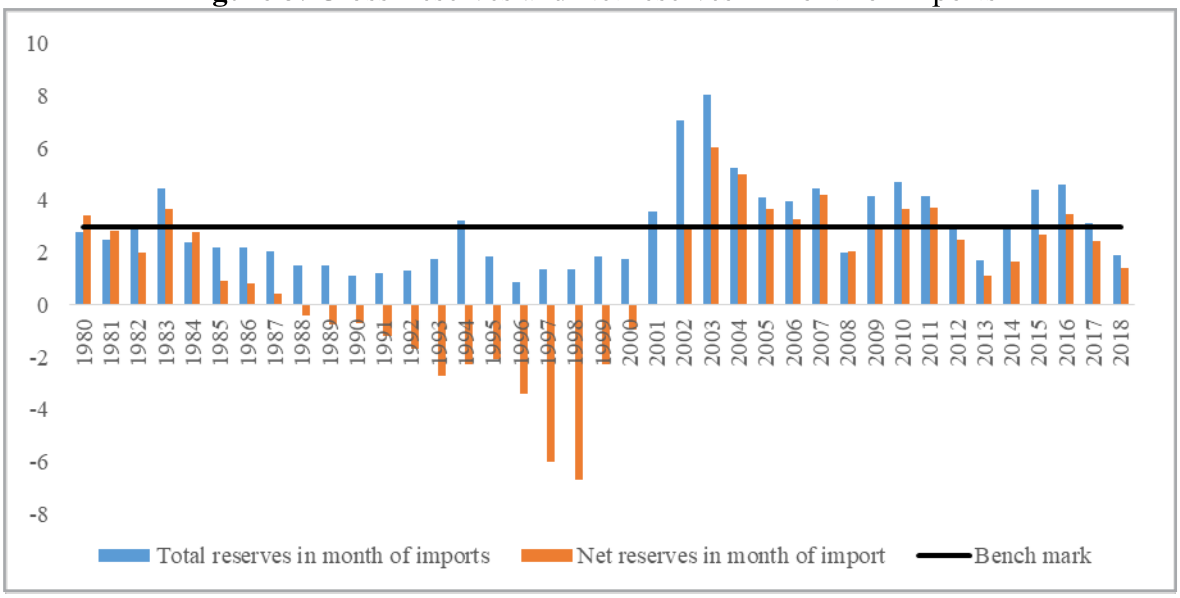
In 1982, the decision was made to delink PKR from US $ and allow it to float against a trade weighted currency basket. This was done with a 16% devaluation as in the previous fixed peg regime reserves were declining.

For most of this period SBP has struggled with clarity on exchange rates allowing reserves often to be depleted on account of trying to dictate a rate to the market. Here we define a crisis to be a depreciation of 2 standard deviations

Crisis 1. In 1993, PKR was devalued by 10% from Rs. 27.16 to Rs.29.85 per US dollar. The ostensible rationale behind the devaluation was the massive devaluation of Indian rupee, which increased Indian textile exports in Pakistan exporting area by 19.3 in dollar terms by May 1993. In reality, as Figure 2 Shows, reserves had declined

both in terms of imports and short-term debt to very low levels. Besides as Figure 5 below shows the inflation differential between Pakistan and partner countries too had been growing substantially prior to this sharp depreciation. Put these 2 facts together, it becomes obvious SBP was trying to keep an artificial exchange rate level.

Figure 5: Gross Reserves and Net reserves in month of imports



Crisis 2. The foreign currency deposit crisis: Through the 90s dollarization increased as the SBP was allowing banks to take dollar deposits and on lend to the SBP with the SBP taking the exchange risk. By the end of the decade the SBP had liabilities stood at about 11 billion dollars some 30% of imports while reserves had fallen to 2-3 weeks of imports. Net reserves, in fact had started going into negative territory through this period (see Figure 5).

When an external shock (the Indian Nuclear test) hit the economy in June 1998, a run on the rupee had to be nipped in the bud by freezing the SBPs and imposing restrictions on capital outflows. There followed a period of unravelling the FCDs into bonds and dual exchange rate regime. The currency depreciated by about 13% on weighted average of the official rate (pegged to US dollar) and weighted Free Interbank Rate (FIBR) (determined in the interbank forex market).

(a) **In 1999**, State Bank of Pakistan replaced the two-tier exchange rate system with a market based unified exchange rate system and put the PKR on dirty a float. Under the dirty float exchange rate policy, PKR was pegged to the US dollar and allowed to float within the narrow band of 52.10 - 52.30 rupees per US dollar.

(b) Dirty float exchange rate band was abolished by the State Bank of Pakistan in **July 2000** and a flexible exchange rate system was finally achieved. With the implementation of flexible exchange rate policy, exchange rate volatility increased dramatically and depreciated PKR from Rs.57.5 to Rs. 60.9 per US dollar.

(c) The total depreciation in unraveling the FCD crisis stretched out over 2 years was 28%. And during this period SBP also maintained a dual exchange rate.

The boom in the country that had been created by the rescheduling and the global growth of the period was endangered by an unrealistic exchange rate policy. During this period not only was the exchange rate allowed to appreciate in real terms, the interest too was kept negative in real terms to facilitate a domestic consumption boom (see Figure 7). The currency crisis was inevitable.

Crisis 3. **Fixed rate of the 2000s** Through the Pervez Musharraf's government, the exchange rate was fixed at 60 to the USD. Economic performance, government finances and balance of payments improved in the early Musharraf years as worker remittances increased in the face of increasing migration and as the overall debt to GDP ratio declined with a generous debt rescheduling in 2001. As a result, SBP, was able purchase US $ 8.3 billion from foreign exchange market to control the excess liquidity. During 2001 to 2003, nominal exchange rate against dollar appreciated by 6 percent and foreign exchange reserves increased by 398 percent (from $ 2146 million to $ 10693 million) equivalent to 11 months' imports.

(a) However, the exchange rate was appreciating in real terms through this period as inflation in Pakistan remain higher than the rest of the world. As can be seen from Figure 6, the domestic inflation has always higher than foreign inflation (average of trading partner's is taken as proxy of foreign inflation). But the gap rises from 2004 to 2009 and after that it has been declining. Therefore, RER moves opposite to the NER (see Figure 3).

(b) Exchange rate pressures also started surfacing in 2006 onwards requiring sharp interest rate increases. Prior to 2006, SBP was by policy maintaining a negative real interest rate policy to drive growth. As inflationary pressures rose the, SBP had to raise the policy rate from 4 percent in Jan 2005 to 8 percent in May 2005 in a matter of months. But key interest rates remain negative in real terms (see Figure 7).

(c) Despite higher worker's remittances, the current account moved into deficit in 2004-05 due to high international oil prices. Despite a large increase in oil prices and budget deficit, SBP let rate be fixed till June 2008.

Global financial crisis 2007-2008 had slowed the global demand and fall in commodity prices hurt Pakistan's economy through trade imbalances, and significant reduction in remittances and capital inflows. The fixed peg of the 2000s then resulted in another currency crisis as reserves were quickly used up to defend the peg. Rupee lost its value by 21 percent during 2008 and this has caused the exchange rate to reach the level of 86 Rupees per US dollar.

Crisis 5. The Dar fixed rate: In 2014**,** domestic currency appreciated by 7%. The reason behind this appreciation is that PML-N had relied mostly on borrowing loans from international financial institutions and friendly countries to build up foreign exchange reserves. Foreign exchange reserves increased from $ 5.67 billion as on February 2014 to $ 8.70 billion on April 2014.

Finance Minister Dar willfully fixed the exchange rate despite much public opposition from various factions such as known economists. In defense of the rate substantial reserves were lost. By 2017, the folly of the fixed rate had become apparent and a series of depreciations were allowed as reserves continued to bleed. By the middle for 2019 the exchange rate had depreciated from 98 to the USD to 164, a depreciation of 67%. It finally settled at 155 to the USD after an IMF program had been signed.

Figure 6: Pakistan- Trading Partners' inflation

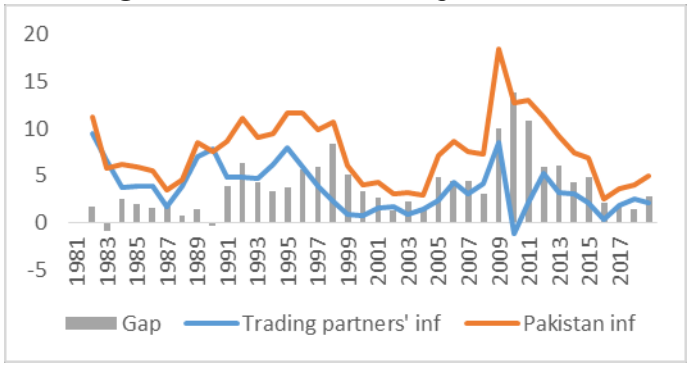
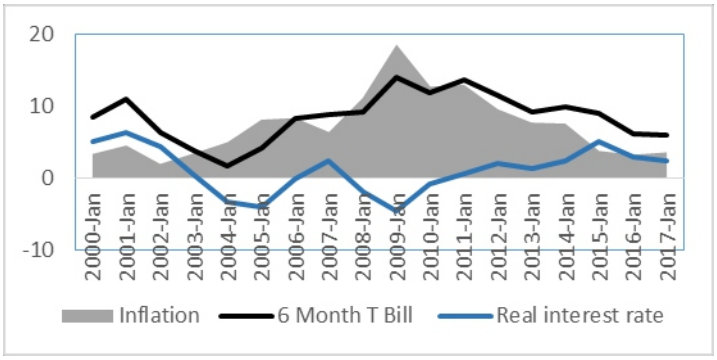


Figure 7: Interest rates and Inflation



Data Source: International Financial Statistics

Exchanged Market Pressure

As described earlier, a currency crisis occurs when an artificial rate is supported in the face of declining reserves. This can be formally addressed by developing an index of exchange market pressure (EMP) Kaminsky et al., (1999).

We used the EMP to estimate the periods of currency crisis and corroborated the above episodes. EMP identifies the following the periods of currency crisis: 1993, 1996, 2000, 2008 and 2019 (see Figure 8, where dotted line show the 95% confidence interval). There was a massive decrease in foreign reserves prior to these episodes: 31 % in 1993, 51% in 1996 31% in 2008 and 10% in 2019. Following a depreciation there was an increase in foreign reserves (see Table 1).

Exchange Market Pressure (EMP) Index

EMP index is developed to capture unsuccessful currency attacks. Kaminsky *et al.*, (1999) calculated EMP index as a weighted average of exchange rate changes and reserve losses.

$$EMP_t = \frac{\Delta e_t}{e_t} - \frac{\sigma_e}{\sigma_r}\frac{\Delta r_t}{r_t}$$

Where σ_e: standard deviation of exchange rate and

σ_r: standard deviation of reserves

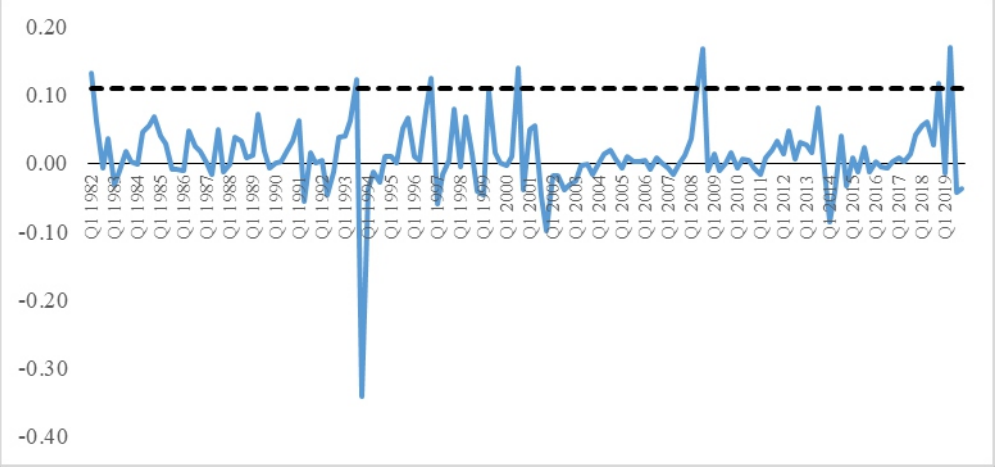
When value of EMP index exceeds the mean plus two times SD is considered as currency crisis. The intuition is that if there is an attack on the currency, either the exchange rate would depreciate or the central bank would sell foreign currency to support the exchange rate.

Table 1: Change in Reserves during the period of Depreciation

Currency Crisis on the basis of EMP index	Change in Foreign Exchange Reserves	Depreciation of nominal exchange rate
1981 Q4	7% ↓	0%
1982 Q1	32 % ↑	16%
1982 Q2	5% ↑	6%
1993 Q2	55% ↓	2%
1993 Q3	30% ↓	10%
1993 Q4	445 % ↑	1%
1996 Q3	32 % ↓	5%
1996 Q4	51% ↓	9%
1997 Q1	75 % ↑	0%
1999 Q1	61 % ↑	0%
1999 Q2	14 % ↑	12%
1999 Q3	11 % ↓	1 %
2000 Q2	12 % ↓	0%
2000 Q3	14% ↓	13%
2000 Q4	41 % ↑	0 %
2008 Q2	14 % ↓	9 %
2008 Q3	31 % ↓	14%
2008 Q4	30 % ↑	1 %
2019 Q1	37 % ↑	1 %
2019 Q2	13% ↓	16%
2019 Q3	2 % ↑	-4 %

Green color are the periods of currency crisis

Figure 8: Exchange Market Pressure Index



CONCLUSION

The lesson we learnt from above discussion is

1. Let the exchange rate be market determined. There is a lot of evidence from around the world to confirm this. This note also substantiates this.
2. Accumulate reserves and keep the exchange rare somewhat undervalued.
3. SBP should not try to use reserves to fix the value of the exchange rate except to deal with very short-term disorderly conditions. The principle should be to never lose significant reserves to fix the exchange rate.
4. Currency crises or attacks happen if the SBP attempts to use reserves to hold the exchange rate against the market. In the end the market wins and destabilizes the rate.
5. There is nothing wrong with some exchange rate variability and a depreciating trend in an orderly market. Fixing the rate with a low level of foreign reserve invites currency crises.

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