2 Financial Markets Risk Analysis

The financial markets in Pakistan have performed smoothly; though bouts of volatility did appear in CY17. The mounting pressure in the external sector has led to depreciation of local currency in the interbank market during July and December. Emergence of political uncertainty, non-realized expectations of Pakistan's inclusion in MSCI emerging market category, and bottoming out of yields in advanced economies has shaken the equity market in the mid of the year. The market corrections seem to be technical in nature because the fundamentals remain strong. Despite high Government borrowings from banks, the volatility in the money market remains low, primarily, through SBP calibrated liquidity management.

Global financial markets have been characterized by political uncertainty, low yield and improved investors' risk appetite

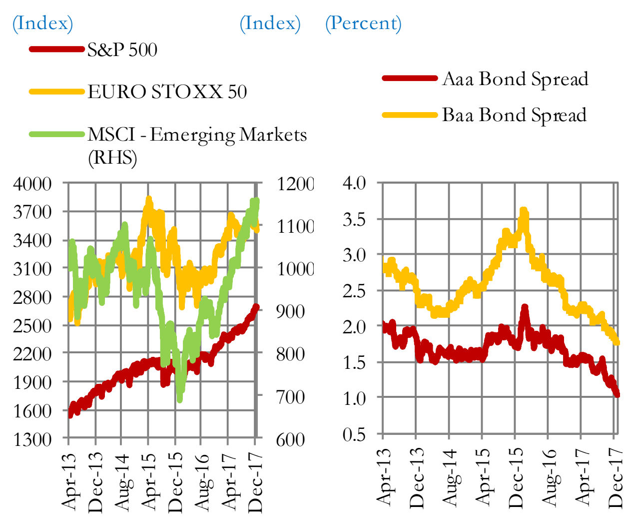
Global financial markets have continued to exhibit favorable sentiments on account of synchronized output growth, improved corporate profitability, and easy financial conditions. Resultantly, equity prices have remained buoyant while risk premium continued to decline **(Figure 2.1)**. The realized volatility in equity, bond, commodity, and foreign exchange markets across the globe (USA, euro area, EMEs, and Japan) has been at the lowest level since the global financial crisis (GFC).[76]

Financial markets, however, experienced some short-lived episodes of volatility in 2017 emanating from enhanced tension on the Korean peninsula and the growing uncertainty regarding expected timing and pace of monetary tightening in AEs.

The downside risks to financial markets arise from the combination of high asset values and low volatility, which might lead to disruptive corrections.[77] During such events, sharp increases in volatility can pose risks to financial stability by triggering demand for high premium on risky assets, which in turn would result in mark-to-market losses prompting outflows from riskier asset classes and regions.[78]

Figure 2.1

Financial Markets in Emerging and Advanced Economies have started to show sign of recovery



Note: Moody's seasoned corporate bond yield (10 Year) relative to yield on 10 Year Treasury Constant Maturity
Source: Bloomberg, Federal Reserve Bank of St. Louis

Volatility in domestic financial markets has increased…

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[76] European Central Bank (2017), Financial Stability Report. ,*October (2017)* .

[77] As happened in early February-2018, rising inflation expectations in the US have led to sharp correction in equity markets momentarily while stocks volatility rose to the noticeable level.

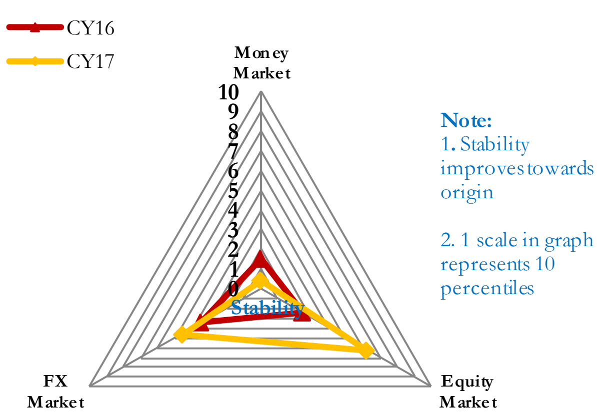
[78] In early February-2018, equity prices observed volatility due to higher inflation expectations in the U.S. Moreover, risky asset prices declined in March-2018 in the wake of trade dispute between the U.S. and China.

Domestic financial markets have witnessed higher volatility during CY17 though these episodes were short-lived and market sustained thereafter. The FX market observed bouts of volatility in July and December as PKR depreciated against USD, primarily, responding to pressures on the external front. Similarly, equity market (i.e. the dominant part of Pakistan's capital market) – after touching historical highs by end May 2017 - observed strong market corrections in the wake of political uncertainty and unfulfilled expectations **(Figure 2.2)**. The money market, by virtue of its structure after the introduction of SBP target rate in May 2016 (within the corridor) and SBP calibrated liquidity management, has remained calm. Almost throughout the year, average daily interbank overnight repo rate has hovered around SBP target rate.

Figure 2.2

Volatility has risen in equity and FX Markets during CY17

Financial markets stability map in Pakistan



Note: Volatility in respective markets are calculated using Exponential Weighted Moving Average (EWMA). Daily overnight repo rate, KSE-100 index and interbank PKR/USD Exchange Rate are used as indicators of the money, equity and foreign exchange market.respectively.
Source: SBP

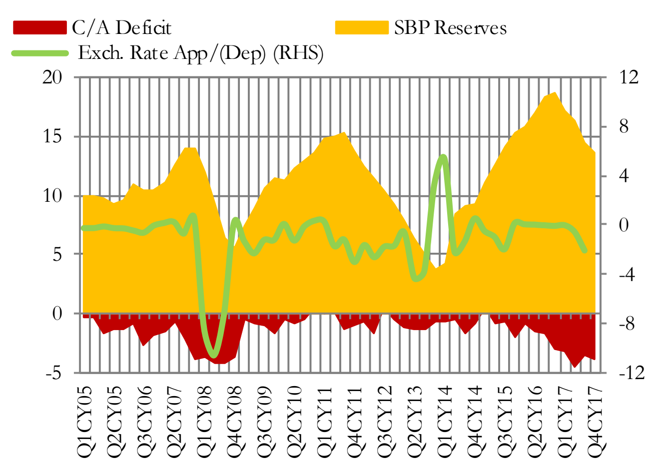
As external sector imbalances widen …

The expansionary phase of the economy has generated demand for capital goods resulting in higher imports of machinery and mechanical appliances during the year. This, coupled with rising import of oil products and increase in global oil prices, has expanded the overall import bill by 23.4 percent in CY17 (highest since 2008).[79] The unmatched FX inflows through key modes (such as exports, foreign direct investment (FDI), worker remittances, official inflows etc.) have stretched the overall trade deficit as well as balance of payment (BoP) position of the country. Consequently, FX market has observed higher but short-lived volatility. SBP's FX reserves have also dipped by 22.0 percent during the year **(Figure 2.3)**.

Figure 2.3

Exchange Rate has depreciated due to rise in current account deficit

Current Account Deficit, SBP FX reserves and ER appreciation /depreciation



Source: SBP

Relative interest rates are important in determining the value of local currency vis-à-vis others. However, SBP has preferred to keep the Policy Rate (PR) unchanged in all of its six Monetary Policy

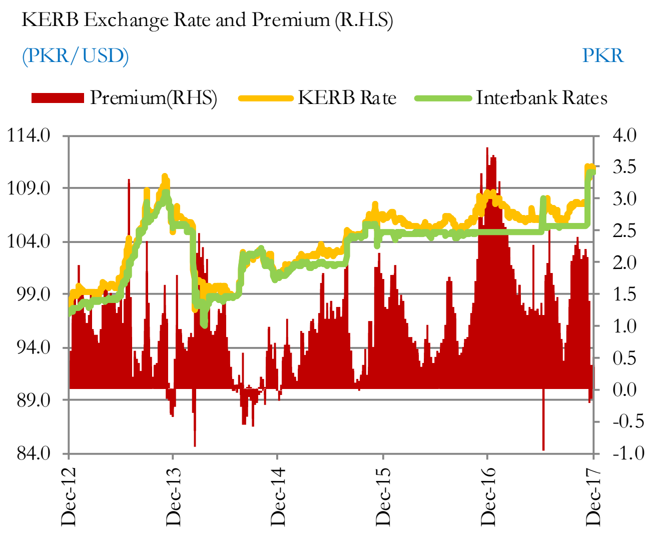
[79] The import of machinery, mechanical appliances and oils products (41 percent of overall imports) has contributed 51 percent for increase in imports in CY17 over CY16.

announcements during CY17. The intention has been to support the rising momentum of economic activity through growth in advances on the back of several favorable economic conditions including low and below target inflation, moderate inflation expectation and higher GDP growth, particularly, manufacturing activities (**see Chapter 1**).

The value of domestic currency adjusts to external sector developments …

Responding to external sector vulnerabilities, the PKR has depreciated by 5.1 percent in the interbank market and 2.2 percent in the open market against the greenback during CY17 **(Figure 2.4)**. Depreciation in the interbank has largely occurred during the months of July and December, while the Kerb market rates have been at the elevated levels during December. [80]

Figure 2.4
Domestic currency depreciation with relatively high KERB premium

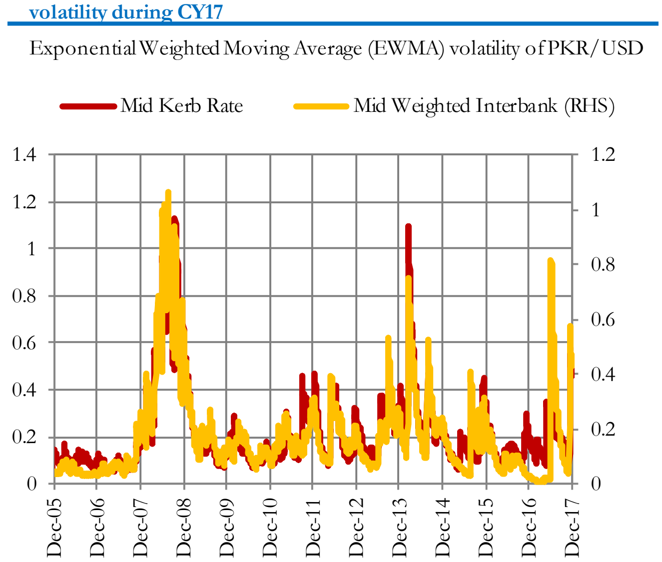


Source: DMMD, SBP

The open market appears to have factored-in the external sector vulnerabilities ahead of the interbank. The KERB premium, after remaining quite high during the first half of CY17 and peaking to 3.5 PKR/USD, has slid after the first episode of rupee depreciation in July 2017. The KERB premium almost touched zero after the second episode of PKR fall in December 2017, likely, due to dissipation of market expectations for further depreciation in PKR.[81]

The depreciation in the interbank market has been quite pronounced in CY17 compared to almost negligible change in CY16 (0.05 percent appreciation). On the other hand, PKR in KERB market has gradually depreciated in both years (2.2 percent in CY17 and 2.1 percent in CY16). However, the abrupt movements in the exchange rate in the interbank market has caused enormous jump in volatility **(Figure 2.5)**.

Figure 2.5
FX market has observed two short-lived episodes of elevated volatility during CY17



Source: SBP

The volatility, generally, raises the uncertainty about the future value of currency and, thus, impacts both

[80] Post CY17, PKR has further depreciated by 4.48 percent and 6.93 percent in interbank and KERB markets, respectively, till May 31, 2018

[81] See "The State of Pakistan's Economy - Second Quarterly Report 2017 – 2018", http://www.sbp.org.pk/reports/quarterly/fy18/Second/qtr-index-eng.htm

importers and exporters.[82] Therefore, a gradual adjustment in the exchange rate in response to evolving dynamics may be a more suitable option from market stability perspective.

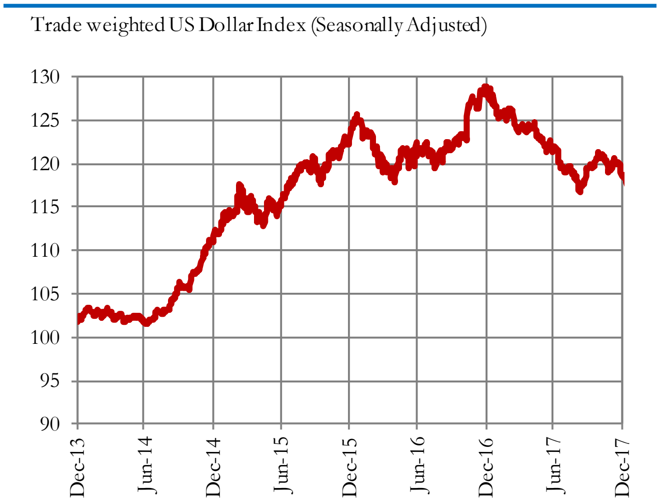
FX market is likely to follow the economic fundamentals going forward…

In the near term, the extent of volatility in FX market will depend upon the key economic fundamentals, particularly, the balance of payments position. However, the following may be important from the perspective of FX market and its volatility:

a. SBP's liquid foreign exchange reserves have declined by 22.8 percent in CY17.[83] There is a need to focus on improving more stable sources of inflows (e.g. exports, FDI etc.).

Figure 2.6

USD is loosing ground against global currencies since inception of CY17



Source: Federal Reserve Bank of St. Louis

b. The export competitiveness of the country has improved as indicated by Real Effective Exchange Rate (REER), which has declined by 8.6 percent during CY17.[84] This improvement is primarily attributed to depreciation of local currency against the basket of currencies. PKR has depreciated by 5.1 percent against USD in CY17, 13.4 percent against JPY, 19.0 percent against Euro and 16.0 percent against GBP. Noticeably, the lesser depreciation of PKR against USD could be due to weakening of USD against global currencies (**Figure 2.6**).

c. The currency forward rates seem to follow traditional interest rate parity, particularly, post July 2017 **(Figure 2.7)**. The three-months PKR/USD forward rate spread has declined after July 2017 due to squeeze in spread between almost stagnant PKR yield (on 3-month's MTBs) and continuous rise in USD yield. The forward rate spread seems quite volatile during first half despite the rise in USD treasury yield. Such frictions were likely built on anticipation of PKR depreciation and disappeared post PKR depreciation in July.

[82] If there are expectations of local currency depreciation, the importer will benefit from earlier payments while exporter from delaying the realization of export receipts. This may create a supply-demand gap in the FX market.

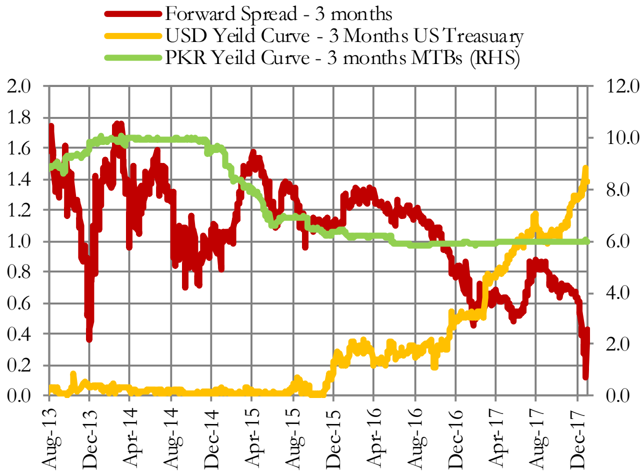
[83] The reserves have further dipped by 32.6 percent post CY17 (till May 31, 2018).

[84] Besides, SBP's monetary tightening with 25 bps rise in Policy Rate in January 2018 will further augment to PKR and, thus, stabilize the market.

Figure 2.7

Rising yields on USD has reduced forward spread of PKR

Mark to market revaluation exchange rates for Authorized Dealers

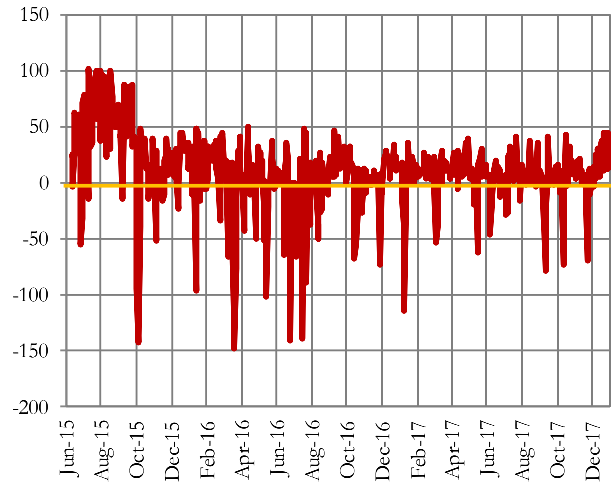


Source: SBP and US Department of Treasury

Figure 2.8

Interbank overnight repo rate has hovered around SBP target rate with low volatility

BPS Spread between daily O/N repo rate and SBP target rate



Source: SBP

It is likely that exports may improve due to (a) high growth in imports of machinery during CY16 & CY17, (b) rise in fixed investment advances **(see chapter 2)**, (c) improvement in export competitiveness with declining REER, and (d) positive growth prospects in advanced economies **(see Chapter 1)**.

Money market continues to perform smoothly…

CY17 is characterized by another year of easy monetary policy stance as SBP has not changed its corridor rates (i.e. reverse repo at 6.25 percent and repo rates at 4.25 percent) and kept the SBP target rate (i.e. policy rate) at 5.75 percent in all six monetary policy decisions. With SBP's calibrated liquidity management, the money market continues to perform smoothly with low volatility as weighted average O/N repo rate has hovered around SBP target rate. However, some liquidity pressures are seen during the last quarter with O/N rate approaching the SBP ceiling rate **(Figure 2.8)**.[85]

The overnight weighted average call rates has also remained low at 5.83 percent (on average) during CY17 compared to 5.87 percent in CY16. Due to liquidity ease, banks made lesser number of visits to SBP reverse repo facility (i.e. discount window) availing contained amount in CY17 compared to CY16 **(Table 2.1)**. The last quarter of CY17 has seen most of visits.

Table 2.1

Access to Overnight Repo/Reverse Repo Facilities

	Reverse repo		Repo	
	No of Visits	Amount	No of Visits	Amount
	Amount in PKR Billion			
CY16	107	1,824	61	425
CY17	73	715	33	366

Source: SBP

The existing mechanism of monetary policy provides an implicit shield to liquidity needs of the market. Based on the market liquidity needs, SBP carries out OMO (as and when required) and keeps

[85] The average daily O/N rate during December month has been observed at 5.97 percent compared to yearly average of 5.82 percent.

the short-term weighted average O/N rate closer to SBP target rate to give the market an unambiguous signal of its monetary policy stance.[86]

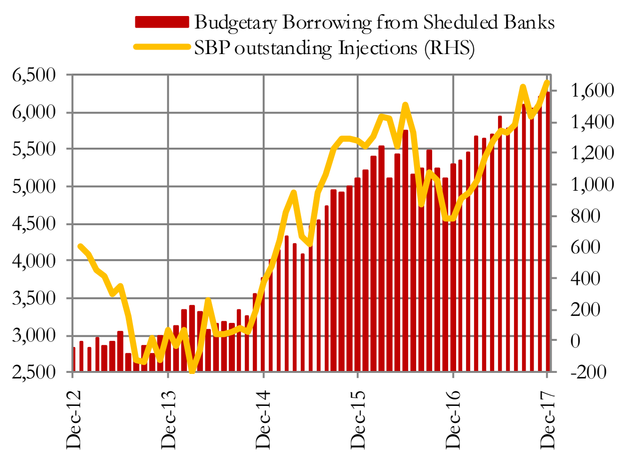
A deeper analysis reveals a synchronized pattern of SBP liquidity management and government budgetary borrowing from commercial banks. During CY17, government borrowing from commercial banks has remained high.[87] Resultantly, SBP has to deepen its liquidity injections to satisfy the market liquidity needs **(Figure 2.9)**.[88] This is in contrast to second half of CY16 when government borrowed from SBP and made net-retirement to commercial banks.

Figure 2.9

Government borrowing from commercial banks has continued to create liquidity demand in the money market

Government borrowing from commercial banks and SBP's liquidity injection through OMOs

(PKR billion)



Source: DMMD, SBP

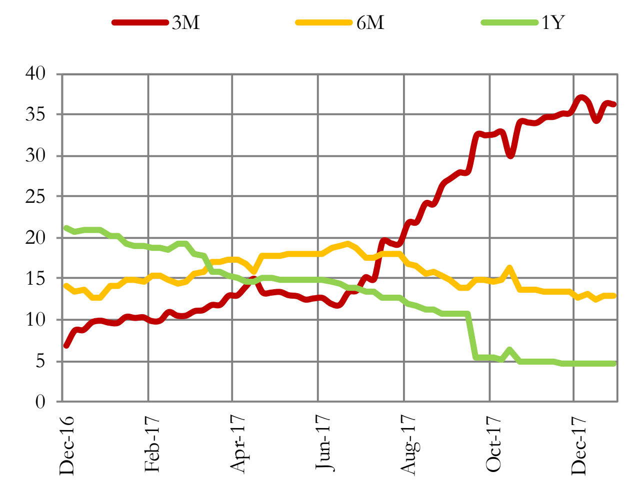
Government borrowing not only has seen an increase but also a tilt from longer term PIBs to short-term MTBs. This is due to changing course of interest rate expectation and, consequently, higher bid rates demanded by the banks as compensation on term instruments.[89] Within MTBs, instruments of 3-month maturity has appealed to the investors due to expectation of a rate hike **(Figure 2.10)**. Keeping in consideration the deceleration in deposit growth, current momentum of advances disbursement, expected budgetary expansion in CY18, continuity in development spending and rise in debt servicing cost, it is expected that government borrowings[90]—and hence SBP liquidity injections—may rise going forward. The higher portion of 3-monhts MTBs may enhance the rollover risk.[91]

Figure 2.10

Share of investment in 3-months MTBs jumps up

Share composition of MTBs in investment in Government securities

(Percent)



Source: FSD, SBP

The point-in-time term structure of sovereign papers as of end December 2017 reveals a flat curve up to one year, but a sharp increase thereafter. Further, if compared to YTM of last year, the yields on longer-term papers are higher in CY17 than CY16 **(Figure 2.11)**. This widening of term spread

[86] The low volatility in short-term money market rates helps in ensuring stability in long-term rates (weighted average lending rate (WALR))

[87] The outstanding amount of govt. budgetary borrowing from commercial banks has increased by PKR 966 billion to reach PKR 6.2 trillion as of 31-12-2017.

[88] SBP's monthly average outstanding injections are recorded at PKR 1.3 trillion in CY17 compared to PKR 1.1 trillion during CY16.

[89]The auction pattern of PIBs during second half of CY17 reveals rejection of all bids except one due to higher rates demanded by banks http://www.sbp.org.pk/ecodata/Pakinvestbonds.pdf

[90] Please see SBP's 2nd Quarterly Report on State of Pakistan's Economy

[91] To avoid this risk, government has introduced floating rate PIBs in May 2018 (http://www.sbp.org.pk/dmmd/2018/C9.htm).

shows even stronger expectation of rate hike. These expectations are based on high oil prices in global markets and existing current account deficit prompting SBP to support local currency through interest rates rise.

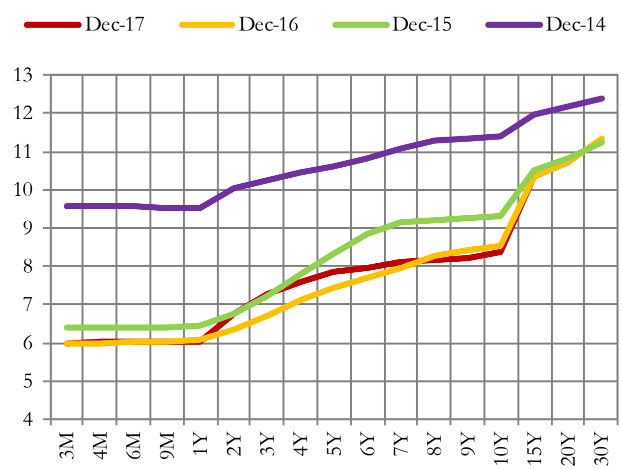
The more frequent data of term spread (3 years minus 6 months) reveals, relatively, a sharp rise post June 2017. Further, the pattern of the term spread seems quite aligned with one month lagged CPI inflation (i.e. the latest information available to the investor) in the long term **(Figure 2.12)**.[92]

Figure 2.11

Yield curve depicts rising inflation expectations in medium term

Term Structure of Interest Rates

(Percent)

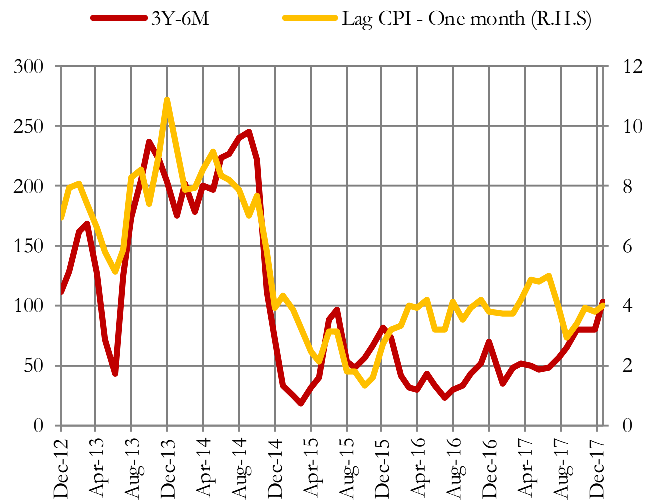


Source: DMMD, SBP

Figure 2.12

Expected inflation picks up with concomitant rise in yield spread

BPS yield spread (3 years minus 6 month) and one month lag CPI inflation



Source: SBP

Expectation of interest rate rise and pressure on domestic currency may also be seen through the derivative deals carried out by Authorized Derivative Dealers (ADDs). The reviewed year observes a rising volume of pay float – receive fixed Interest Rate Swap (largely with corporate clients who are short in fixed rate and long in floating) and Cross Currency Swaps (CCS). Through IRS deals, clients intended to lock-in the prevailing low rate for the longer-term while ensuring the certainty related to future interest cost **(See Box 2.1).**[93]

[92] The long-term correlation coefficient between term spread and lag CPI turns out to be 0.32 which is statistically significant at 99 percent level of confidence.

[93] Example, if a local client borrowed in USD for a specific term, he will be required to convert USD in local currency for utilizing the amount and payback, again, in USD at maturity. In case of exchange rate uncertainty, CSS provides the client a hedge cover to lock the rate today for future date.

Table 2.2

Progress of Capital Markets in Pakistan during CY17

	31-12-2014	31-12-2015	31-12-2016	28-12-2017
Million PKR except companies, index and bond data				
Total No. of Listed Companies	557	554	558	559
Total Listed Capital - PKR	1,168,485	1,269,703	1,291,040	1,276,914.17
Total Market Capitalization - PKR	**7,380,532**	**6,928,497**	**9,628,514**	**8,513,478**
KSE-100™ Index	**32,131**	**32,811**	**47,807**	**40,371**
Growth (KSE-100 Index)		**2.1%**	**45.7%**	**-15.6%**
KSE-30™ Index	20,772	19,309	25,852	20,212
KSE Meezan Index (KMI-30)	50,735	55,647	81,795	68,634
KSE All Share Index	23,398	22,868	32,842	29,580
New Companies Listed during the year	6	8	4	7
Listed Capital of New Companies - PKR	26,973	29,941	5,490	12,549
New Debt Instruments Listed during the year	6	2	1	1
Listed Capital of New Debt Instruments - PKR	15,000	25,000	10,000	10,500
Average Daily Turnover - Shares in million	219	258	293	248
Average value of daily turnover - PKR	9,402	11,465	11,638	12,111
Average Daily Turnover (Future™) YTD	24	36	49	60
Average Value of Daily Turnover - YTD	2,205	3,142	3,057	4,303

Source: Pakistan Stock Exchange

Equity market observes corrections after touching historical high…

The equity market has experienced a roller-coaster ride during the year. KSE-100 index carried on the momentum of last year's growth, reaching historic high in the month of May, before suffering sharp corrections in June and July **(Table 2.2)**. Thereafter, market witnessed a partial recovery. Overall, the 15.3 percent decline in KSE-100 index in CY17 is the second largest fall after the 2008's crisis episode when equity market dropped by 58.3 percent.

The top-10 sectors (except tobacco) have observed a dip in market capitalization with the highest decline recorded in the "construction and material" (44.2 percent) followed by "pharma and bio tech" (24.2 percent), "commercial banks" (20.9 percent) and "chemicals" (17.4 percent). The oil and gas sector, which has highest share in terms of market capitalization (16.5 percent), observed only a decline of 4.7 percent due to favorable bounce-back in global oil prices.

The downward movement in equity prices in June and July may be linked to few key developments. First, the country observed high political uncertainty mid-year, which shook the confidence of local investor confidence. Second, in anticipation of higher inflows from abroad due to Pakistan's inclusion in MSCI's emerging market category in June 2017, local investors took aggressive positions that pushed the market up beyond its normal trend. However, when these expectations did not materialize, the market declined.[94] This led institutional investors such as Mutual Funds to switch to money market funds from equity funds. Third, foreign investors have remained net-seller in the market due to monetary tightening in advanced economies (thus, offering better risk free returns) and uncertainty about the value of PKR (i.e. possibly lower currency adjusted returns from Pakistan).

Amid high volatility, the downside risk of investment have risen in PSX…

The market returns have been quite volatile during CY17. In fact, the level of volatility has been the

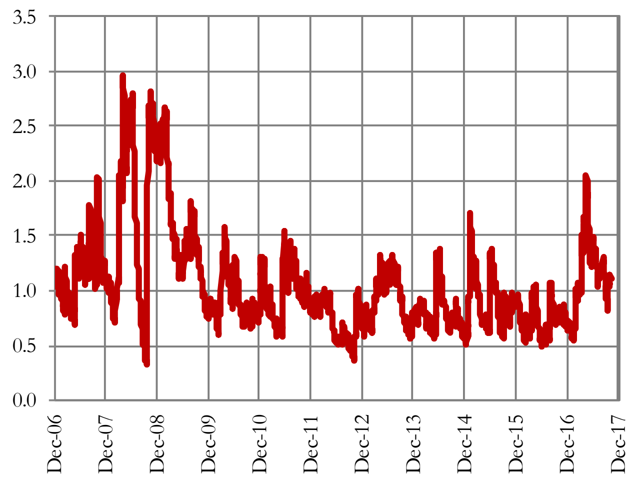
[94] In the MSCI's frontier markets index, KSE-100 had a weight of 9.16 percent (as of end December, 2016) which came down to only 0.08 percent in the emerging markets category. Also, the number of scripts included in the index reduced from 16 in the former to 5 in the later. Perhaps, the lesser prominence of KSE-100 index in the emerging markets category resulted in lower foreign inflows.

highest since CY08 **(Figure 2.13)**.

Figure 2.13

Volatility in equity market has increased during CY17

Exponential Weighted Moving Average of KSE-100 Index



Source: Pakistan Stock Exchange

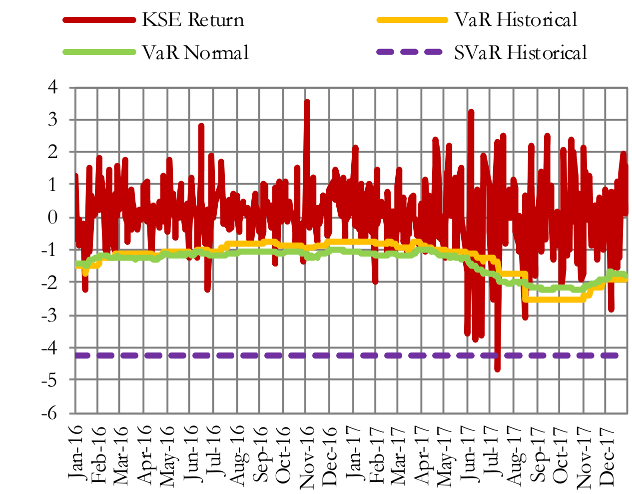
The bearish sentiments of the market, post May 2017, have elevated the downside risk of the equity market returns. Within the short span of a few weeks (30th May till 11th July), the actual returns of KSE-100 index breached 7 times (out of 20 times over CY17) the Value at Risk (VaR) measure by a wide margin **(Figure 2.14)**.[95] The intensity of the daily fall may be gauged by the fact that, at one occasion, the return dropped even below the stressed VaR (SVaR).[96]

Figure 2.14

Downside risk of equity market returns rises

VaR and Stressed VaR of KSE-100 index

(Percent)



Source: PSX and SBP

Corrections in the market appear to be sentiment driven.

The mid-year corrections in the market have mostly been sentiment driven arising from unmet expectations. The fundamentals have generally remained unchanged for the reasons given below:

a. Except external sector pressures, the overall macroeconomic conditions of the country have remained stable (low and below target inflation, low interest rates, pick-up in LSM and GDP growth, improved investor confidence etc. **(See Chapter 1)**).
b. The alternative investment avenues have remained relatively un-attractive. Owing to monetary easing, profit rates offered by the banks and National Saving Schemes (NSS) have remained low.
c. The episode of high growth trajectory of KSE-100 index witnessed during January 2016 till

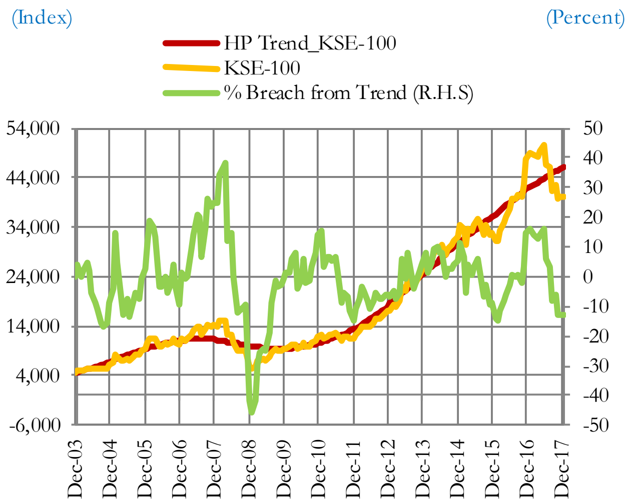
[95] VaR represents the probable amount (or percentage) of downside risk of investment at any given point in time. Here, to assess the riskiness of KSE returns, 100 days rolling Historical and Normal VaR along with stressed VaR (SVaR), at 95 percent confidence level, have been computed.

[96] Stressed VaR refers to minimum 100-days rolling value during the entire sample period (January 2001-December 2017). S-VaR was observed during May 2005.

May 2017 had an unparallel match with its own historic standards **(Figure 2.15)**. The Price-Earning (P/E) ratio had jumped to 11.74 in May 2017 compared to 5-year average of 9.67 during CY11-16. The FSR-2016 cautioned about the meteoric rise in equity prices. Therefore, the market corrections were not completely unexpected. The P/E ratio gradually reduced and touched 7.9 in December 2017.[97]

Figure 2.15
KSE-100 Index - Actual Vs. HP Trend

KSE-100 started to pick sharply since Jan-16 and breached long-term trend by a wide margin



Source: SBP

d. The corporate profitability has remained strong during CY17. The after-tax Return on Equity (ROE) of top-100 listed companies has in fact improved to 18.57 percent in CY17 as compared to 15.85 percent in CY16. **(See chapter 5)**.

Bearish trend in the market has declined equity-based investment…

Both institutional and retail investors have reacted to the slide in equity prices. Particularly, Mutual Funds have switched their investment towards less risky but lower yielding money market instruments. The value of mutual fund investment in equities has dropped by 26.5 percent from PKR 373 billion in May 2017 to PKR 274 Billion in December 2017. In contrast, investment in money market instruments has increased by 26.3 percent from PKR 89 billion to PKR 113 billion during the same period.

However, equity funds still dominate the mutual funds' portfolio. Noticeably, both net selling and net-redemption have observed a gradual fall since May 2017, perhaps, indicating investors following the "wait and see" policy. **(See chapter 4.2)**.

Banks have faced limited impact of equity market volatility…

Banks have remained insulated from the volatility in equity market owing to regulatory safeguards resulting in small equity investment relative to size of their capital.[98] **(See Chapter 3.1)**.

Corporate debt market constitutes a thin portion of Capital Markets…

The trading of debt instruments is marginal at the local bourse. Most of the outstanding TFCs and Sukuk are privately placed, thus, a very small portion of such instruments is traded in the market.[99] Therefore, yields on existing corporate debt instruments do not truly signal the market prices.[100]

[97] Source: Bloomberg
[98] As per R-6 (B) of Prudential Regulations (PRs) for Corporate/Commercial Banking, SBP has limited bank's aggregate investments in equity (including future contracts) up to 30 percent of their respective equity (35 percent for Islamic Banks), subject to certain stipulated conditions. Similarly, as per Basel III rules, under the Look-Through Approach (LTA), banks are required to assigned capital charge on their indirect equity exposure through AMC.
[99] In Past, various banks issued TFCs to meet Minimum Capital Requirement (MCR) stipulated by SBP.
[100] Though PIBs yield of residual maturity over one year is also a long-term yield, these sovereign bonds carries negligible credit risk, thus, may not substitute the yield of corporate bonds.

The limited incidence of funds mobilization through debt market by corporates may be attributed to several factors including strong disclosure requirements and relatively lengthy procedure for listing. Also, the lack of appropriate pricing benchmark (such as corporate bond index) and thin volume of trading make them unattractive for perspective investors. There is a need to address the impediments for the development of corporate debt market so that corporate firms could tap the funding from investors directly. Once the debt market matures, the relevant bond indices could better serve the investors' risk-return apetite.

The outlook for financial markets is mixed…

Money market activities will primarily be driven by the size of fiscal needs and government's institutional preference for borrowing. The depreciation of PKR and rise in export competitiveness may positively impact financial inflows. However, there is a need to keep a watch on the quantum of FX flows during CY18.

The equity investors are likely to continue their "wait and see" strategy up until the outcome of general elections. Smooth transition of power to the next elected government will strengthen the positive investor sentiments. However, global regulatory environment, future monetary policy stance and external sector vulnerabilities may weigh-in on market direction.

Box 2.1: Derivatives Market in Pakistan

A derivative is an instrument whose value is determined from the value of underlying commodities, metal, index, currency, bond, stock etc. Derivatives are zero sum game (i.e. cost of one counter party is the benefit of other). Besides speculative motives, derivative also provides an opportunity to hedge against the potential risks.

A limited number of derivatives are permitted in Pakistan. For example, SBP has allowed few over the counter (OTC) derivative products for hedging purposes only subject to certain stipulated conditions and disclosure & reporting requirements.[101,102] Only Authorized Derivative Dealers (ADDs) and Non Market Maker Financial Institutions (NMI) can carry out derivatives.[103] SECP has allowed futures of listed equities through Future Market Act, 2016 where National Clearing Company of Pakistan Limited (NCCPL) plays its role as a clearing house.[104] Pakistan Mercantile Exchange (PMEX) has allowed futures of commodities.

Through SBP's Financial Derivative Business Guidelines (FDBR) - 2004, four types of derivative instruments have been allowed i.e. (a) Interest Rate Swap (IRS), (b) Forward Rate Agreement (FRA), (c) Third Currency Option, and (d) Cross Currency Swaps.[105] Derivative deals are conducted over the counter (OTC).
Although the derivative trading in Pakistan is thin with limited number of well-aware clients, and, that is too for hedging only, such deals do signal the risk perception of the counterparties. Such signals may be treated as Early Warning Indicators (EWIs) and used as input, proactively, in formulating policy toolkit (e.g. monetary policy, macro-prudential policy etc). However, the underlying assumption holds that counterparties must have fundamental knowledge to understand the mechanics of the instruments in the context of their specific business needs.

The consolidated data of derivative transactions during CY17 depicts that major derivatives deals are carried out in Interest Rate Swap and Cross Currency Swaps. In IRS, the clients (generally corporate) enter into contract to either pay fix – receive floating (based on underlying loan) or vice versa on some notional amount.[106] The general trend of IRS deals in CY17 shows that clients have short (paying leg) the fix rate and long (receiving leg) the floating rate[107]. This could be attributed to expectation of bottoming out of low interest rate in near future where clients intend to lock-in low cost of borrowing for the term of their obligations. The ADDs, generally, factor in several risks associated with such transactions (e.g. credit risk, risk of rate rise, rate volatility etc) while determining the fix rate to be paid by the client. The current deals reveal fixed rate incorporate premium of around 200 bps over the floating rate.

The other major component of derivatives in Pakistan is CCSs, which, generally, provide a cover against the exchange rate risk.[108] The prevalent exchange volatility and external sector pressures have increased the quantum of CCSs in CY17. The data reveals the ADDs carrying out deals amongst themselves as well as with other institutional and corporate clients, both, for hedging as well as market making. The deals are mostly done in USD and PKR for a wide range of tenors.

Besides, a few ADDs have FX options on their derivative portfolio, mostly European in nature, for both

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[101] See BSD Circular No.17 of 2004 (http://www.sbp.org.pk/bsd/2004/C17.htm)
[102] All derivative transactions are being reported through Derivative Transactions Reporting System (DTRS) to SBP on weekly basis (http://www.sbp.org.pk/dmmd/2015/C6.htm)
[103] See for ADDs and NMIs (http://www.sbp.org.pk/DFMD/FS-Dom.asp)
[104] Please see SECP's Future Market Act, 2016 (https://www.secp.gov.pk/document/futures-market-act-2016/?wpdmdl=14687)
[105] http://www.sbp.org.pk/DFMD/FS-Dom.asp
[106] The IRS may be used for both betting and hedging purposes (in Pakistan, only hedging is allowed). The party, which pay fixed rate (also called fix payer), expects the rate rise in future. At the same time, fix payer also know the stream of his payment outflows (i.e. cost) at the inception of contract. The fix receiver (float payer) expects rate changes in such a way that his receipt (fixed) would be higher than the payment (floating). IRSs are generally carried out for long tenor.
[107] Mostly, 3-months KIBOR is used as benchmark for floating rate.
[108] In CSS deals, counterparties exchange two different currencies at spot rate at the inception of the contract (also termed as borrowing and lending two different currencies). Both parties receive interest rates on lending currency and pay on borrowed currency, and exchange the original currencies at the end of the term with pre-specified exchange rate.

hedging and market making. However, FRA has been rarely seen in derivate contracts in CY17.

Besides the uncertainty arising from mark-to-market changes, the derivatives are prone to a number of others risks including liquidity risk (i.e. inability to unwind the deal at fair cost), legal risk due to ambiguous clauses in the deal etc.

Going forward, the size, number and types of derivative will depend upon the quantum of uncertainty in key economic variables, particularly, the exchange rate and interest rates. However, considering the lack of sophisticated customers and the fact that such instruments are only allowed to hedge the risks, the derivate deals are expected to remain limited in CY18.

Box 2.2: Commodity Market in Pakistan

Commodity exchanges operate in many countries around the globe, providing a platform to buyers and sellers for trade of commodities. Some of these commodity exchanges, having a long history and offering diverse products along with efficient and cost effective trading platforms, have become international/regional hubs. Leveraging upon the use of information technology, these exchanges offer the ease of trading irrespective of geographical location and time zone. While exchanges like Inter Continental Exchange (ICE), Chicago Mercantile Exchange (CME), Dubai Gold & Commodity Exchange are globally well known, exchanges of smaller scale operate in other countries as well.

In order to provide a regulated platform for trading of commodities and enhance the confidence of the investors, the Securities and Exchange Commission of Pakistan (SECP) allowed the creation of Pakistan Mercantile Exchange Limited (PMEX) (erstwhile National Commodity Exchange Limited) as the country's first demutualized exchange, where ownership and trading rights were completely segregated. The initial key stakeholders included Karachi, Lahore and Islamabad stock exchanges and leading financial institutions. In the beginning, only cash settled contracts of a few actively traded international commodities were listed and offered for trading, but, at present, both cash settled and deliverable (future) contracts are being traded.

Currently, PMEX has 300 plus members[109]. During FY17 the total trading volume reached PKR 1.3 trillion with crude oil, currency pairs and gold constituting the major chunk of trading volume. [110] The healthy trading is reflected through the surge in PMEX index which touched 3,232 points at the end of CY17, depicting a YoY growth of 5.57 percent.

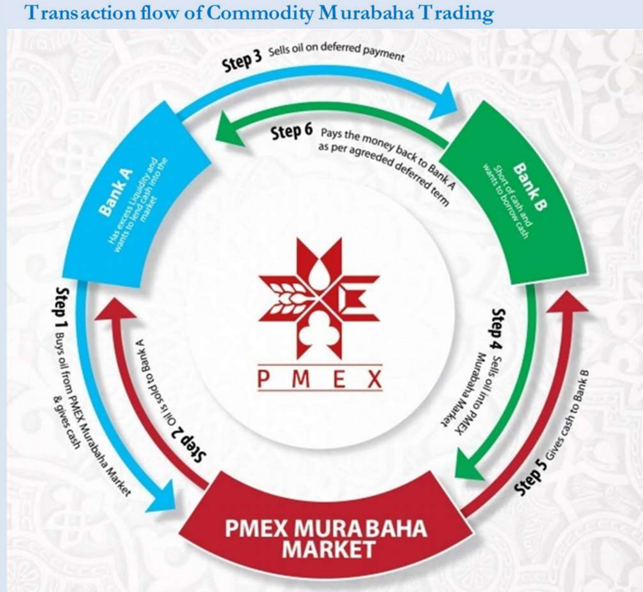
PMEX is designed to connect the participants of the real economy with the investors. Although various agri-based commodities are traded on the exchange, the direct participation of farmers seems to be low owing to lack of financial literacy, capital and access to the market itself.

Apart from that, PMEX can potentially become an important platform to manage the liquidity placement needs of Islamic financial institutions (IFIs) and mitigate settlement risk in some of the Islamic financial products.

In December 2017, SBP and SECP allowed the launch of three-month pilot commodity Murabaha trading product[111] facilitated through PMEX Shariah Compliant Murabaha Trading Platform (**Figure 1**). The country's first electronic Murabaha transaction was conducted between two Islamic Banks[112] in December 2017. Thus, PMEX can become an effective intermediary to cater to the long-standing issue of excess liquidity held by Islamic banks.

Figure 1

Transaction flow of Commodity Murabaha Trading



Source: PMEX Newsletter, Oct-Dec 2017

Besides, several products of Islamic modes of finance e.g. Salam, Murabaha, Istisna require that, in case of default, the underlying (promised) commodity be delivered through spot buying from the market. Thus, the development of wide ranged commodity market

[109] http://www.pmex.co/wp-content/uploads/2018/04/PMEX-Membership-Database-Web-Site.pdf

[110] PMEX Annual Report, 2017 http://www.pmex.co/wp-content/uploads/2017/12/00-PMEX-AR-2017-web-version.pdf

[111] This is an Islamic alternative to traditional repo transaction (in Arabic: Bai Ina)

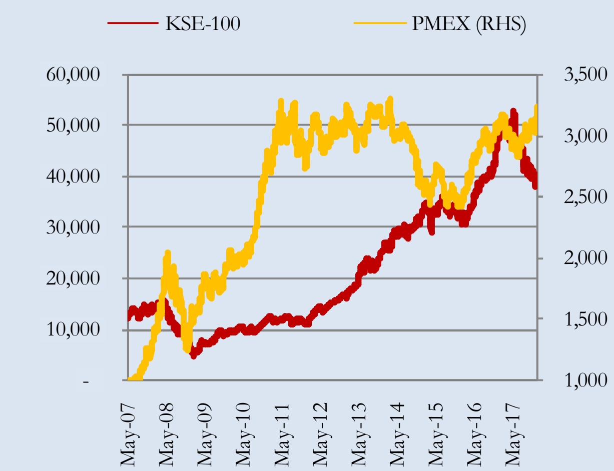
[112] PMEX Newsletter, Oct-Dec 2017 http://www.pmex.co/wp-content/uploads/2018/04/NL-PDF.pdf

exchange will also reduce the settlement risk (which is the risk due to unavailability of commodities in the market) and promote Islamic Banking as well.

In the context of financial stability, a robust commodity market (as an alternative investment avenue) may provide an effective hedge through diversification against downturns in the returns of traditional financial assets (e.g. equity, bonds, derivatives etc.).[113] In case of Pakistan, a comparison of historical data of PMEX and KSE-100 indices suggests that the correlation between the two (based on daily data) is negative 0.21 during the past five years (**Figure 2**). This reflects that during the period that witnessed a downturn (with high volatility) in KSE-100 index, the PMEX gained.

Figure 2
PMEX and KSE-100 index show countercyclical behaviour

Comparison of PMEX and KSE-100 index
(Points) (Points)



Source: SBP, PMEX

Furthermore, prior to the commencement of formal commodity exchange in Pakistan, traders were more exposed to foreign exchange risk. In fact, they had to carry out trading through international exchanges involving payment in foreign exchange. PMEX offers an advantage in this respect as well because it allows the participants to pay margins in local currency despite the fact that the prices of many commodities are denominated in US Dollar.

An efficient technology based operational framework along with a strong risk management practices are the two prerequisites for a robust commodity market. It is worth mentioning that during CY17, PMEX has instituted a technology overhaul program whereby it has migrated its core technology architecture on cloud computing to provide efficient services to its members. Moreover, PMEX is also working towards strengthening its risk management regime. The Exchange has put in place a comprehensive 'Enterprise Risk Management' framework, developed a code of conduct for the brokers and elaborated market regulations to protect the interest of all the stakeholders.

In addition to providing a trading platform, PMEX also facilitates the clearing and settlement of transactions. As this entails settlement risk, PMEX requires its members to maintain historical Value at Risk (VaR) based margins with it and has also established a 'Settlement Guarantee Fund', which amounted to PKR 68.84 million at June 30, 2017[114] to mitigate the possibility of any systemic event.

Notwithstanding, there is a need to enhance the outreach of the market by bringing in more participants from the real sector (particularly farmers) within its domain to enable them to get the benefit from the fair-price mechanism. As PMEX develops, it could provide a risk-hedging platform especially during distress episodes in the financial markets.

[113] Source: Bhardwaj, Gorton and Rouwenhorst (2015): NBER Working Paper no.21243, "Facts and Fantasies about Commodity Futures Ten Years Later "
http://www.nber.org/papers/w21243

[114] PMEX Newsletter, Oct-Dec 2017
http://www.pmex.co/wp-content/uploads/2018/04/NL-PDF.pdf