2 Financial Markets Risk Analysis

Deteriorating economic conditions and uncertainty among market participants about future economic direction have kept the financial markets under stress. The forex and equity markets have witnessed higher volatility in CY18, while the money market has remained calm. The dearth of US dollar liquidity in the domestic economy has been an important aspect of markets behavior and the associated spillover effects. Going forward, the stability of the financial markets largely depends upon the intended outcome of the corrective policy measures taken to address the economic imbalances.

Vulnerabilities might be building up in the global financial markets…

In recent years, global valuations across a broad range of asset classes (equities and bonds)—driven by strong global growth, low inflation and largely accommodative monetary policies—have remained high. The rising asset prices along with lower volatility, growing leverage in non-financial sector and continued deterioration in under-writing standards represent build-up of significant financial vulnerabilities.[87,88]

In 2018, escalating trade tensions, concerns about possible rise in inflation due to strong wage growth in the US and measured hike in federal funds rate resulted in bouts of volatility in the 1st and 4th quarter of the year. (See Chapter 1.) However, the financial conditions have remained relatively easy in Advanced Economies (AEs), mainly US and EU, which have contributed to further buildup of financial vulnerabilities.

As far as the vulnerabilities in the Emerging Markets and Developing Economies (EMDEs) are concerned, they remain moderate at large. For some EMDEs (e.g. Turkey and Argentina), however, the stress[89] has risen due to higher external leverage, weak policy buffers, geopolitical tensions, and escalated trade tensions. The jittery sentiments in such markets have not spread to other EMDEs because the country-specific factors seem to be instrumental in investors' decisions.[90]

Going forward, further escalation of trade dispute between the USA and China, geopolitical risks, and any negative growth shock could lead to widespread volatility, higher risk premia, re-pricing in financial assets and increased financial system stress at the global level. The monetary policy direction in AEs, especially in the US, also remains a key risk factor in this regard.

Volatility in domestic financial markets–driven by idiosyncratic conditions—has risen in CY18…

In CY18, rising twin deficits, inflationary pressures and uncertainty among market participants about economic outlook has translated into higher volatility in the forex and equity markets (Chart 2.1). The exchange rate has cumulatively depreciated by 23.61 percent against the US dollar in CY18. In

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[87](a)Reserve Bank of Australia (2018). Financial Stability Review. October.

(b) Low risk free rates—in the backdrop of accommodative monetary policy—are driving up asset prices, as these rates are central to many asset prices.

[88](a)Standard valuation metrics suggest that equity prices in the USA are hovering at levels significantly above its historical norm.

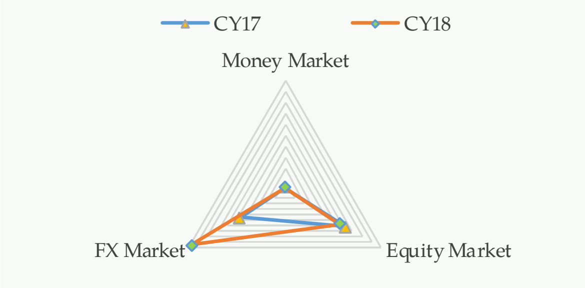
(b) According to IMF (Global Financial Stability Report-2018),total nonfinancial sector debt in jurisdictions with systemically important financial sectors has grown from $113 trillion (more than 200 percent of their combined GDP) in 2008 to $167 trillion (close to 250 percent of their combined GDP).

[89] Stress represents rising bond spread, declining equity prices and notable currency depreciation.

[90]IMF. (2018). Global Financial Stability Report. Washington, October.

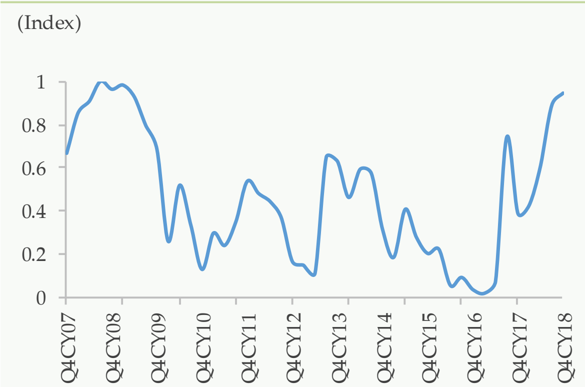
similar vein, domestic equity market was down by 7.58 percent (on average). Accordingly, stress in financial markets[91] has risen to higher level (**Chart 2.2**). However, volatility in money market, on average, has remained contained due to interest rate corridor mechanism in place, prudent management of market liquidity by SBP and better liquidity conditions prevailing in the last quarter of the year.

Chart 2.1: Elevated volatility in FX and equity markets



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

Chart 2.2: Stress in financial markets has risen

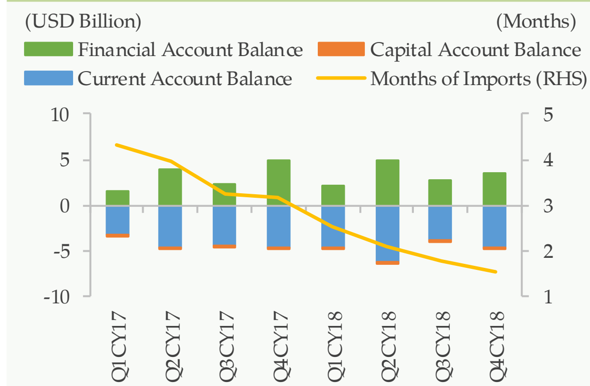


Source: SBP

Rising current account deficit leading to depreciation of domestic currency

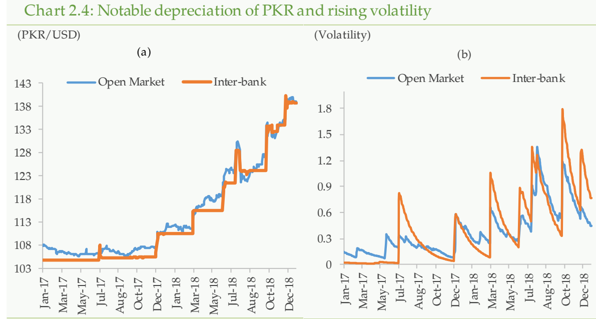
The continued surge in trade deficit[92] during CY18 has resulted in surge in the current account deficit, which contracted the SBP foreign exchange reserves by USD 6.9 billion to reach USD 7.2 billion or equivalent to 1.5 months of imports. (**Chart 2.3**). Because of weakening in capacity to finance imports, PKR has cumulatively depreciated by 23.61 percent[93] during CY18. Resultantly, volatility in the inter-bank forex and open markets has risen to a notable scale (**Chart 2.4a & b**). In addition, the average spread (between open market and the inter-bank exchange rates) during CY18 has remained at PKR 1—lower than PKR 2 in CY17, suggesting increased synchronization between interbank and open markets.

Chart 2.3: External sector pressures have continued in CY18



Source: SBP

Chart 2.4: Notable depreciation of PKR and rising volatility



Source: SBP

Changing exchange rate dynamics have influenced economic agents' behavior…

The notable adjustment in exchange rate has affected price and volume of short-term and long-term

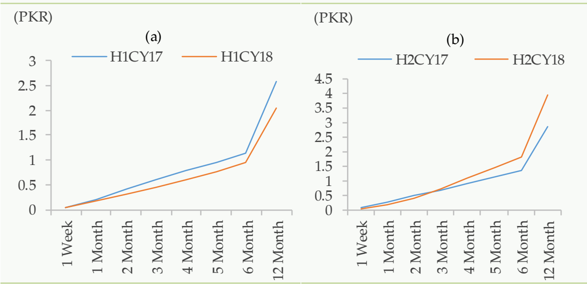
[91] Financial Market Stress Index is a composite indicator that measures the level of stress emerging from foreign exchange, money, and equity markets. For technical details see Appendix A.

[92] In CY18, trade deficit stands at USD 33 billion against USD 31 billion in CY17.

[93] On average, exchange rate has depreciated by 15.48 percent during CY18.

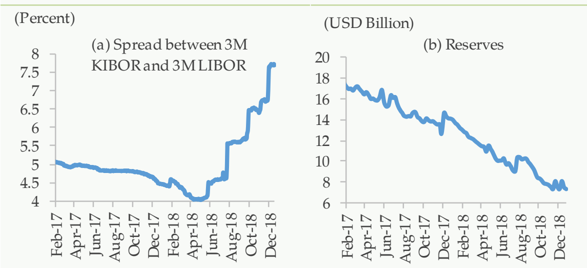
financial instruments, respectively. Lower interest rates differential kept the forward premium/Swap points[94]—a short-term forex instrument— lower during H1CY18 as compared to the previous year (**Chart 2.5a, 2.6a**).[95] However, in H2CY18—despite notable interest rate spread between domestic and international interest rates—forward premium has remained compressed (**Chart 2.5b**). This indicates higher demand for US dollars in the domestic market due to increase in external sector vulnerabilities. [96] **(Chart 2.6b)**

Chart 2.5: Forward premium has squeezed in H2CY18



Source: SBP

Chart 2.6: Rising interest rates spread and falling SBP reserves



Source: SBP; Federal Reserve Bank of St. Louis

Similarly, in case of longer-term financial instruments (such as the derivatives) a compositional change is quite apparent. While, in CY17, most of the derivative deals comprised of interest rates swaps (IRS),[97] the cross currency swaps (CCS)[98] have dominated the derivative market transactions in CY18.[99] This reflects the rising tendency of the market participants to hedge themselves against the growing exchange rate risk.

Besides influencing the price and volume of financial instruments, the changing exchange rate dynamics may alter the borrowing pattern of businesses as well. When a firm envisages expansion, it takes into account exchange rate dynamics to determine its cost of imports. In times of rising forex market volatility, the investors' long-term financing appetite, generally, dwindles. This may be evident from the decelerating private sector fixed investment advances that expanded by 8.25 percent in CY18—down from 14.97 percent growth in CY17 (**Chart 2.7a**). Moreover, in volatile times, pricing of foreign currency loans becomes expensive and demand recedes. The abating level of foreign currency loans confirms this assertion. (**Chart 2.7b**). Therefore, the stability in the FX market is important for increased business confidence.

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[94] Forward premium on currency swap is based on interest rate differential prevailing between two currencies in a pair. Higher the differential implies higher forward premium. However, the settlement of interest rate spread at par requires easy liquidity conditions of both currencies involved. For instance, if US dollar liquidity is tight in the domestic market then in such conditions, the US dollar lender would pay less premium than what interest rate differential suggest against PKR borrowing.

[95] Lower spread in H1CY18—compared to H1CY17—has been on account of consistent increase in LIBOR.

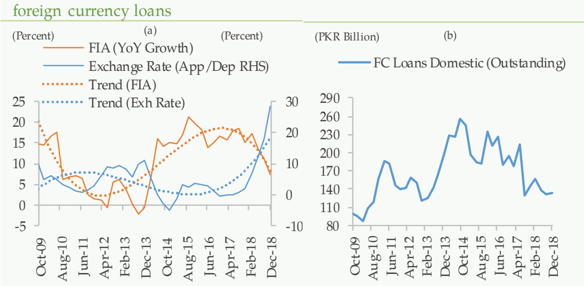
[96] SBP net reserves, on average, stood at USD 8 billion in H2CY18 against USD at 14 billion in H2CY17.

[97] In CY18, IRS deals amount to PKR 19 billion—down from PKR 23 billion in CY17.

[98] In CSS deals, counterparties exchange two different currencies at spot rate at the inception of the contract. Both parties receive interest rates on lending currency and pay on borrowed currency. The currencies are exchanges at the end of the contract with pre-determined exchange rate.

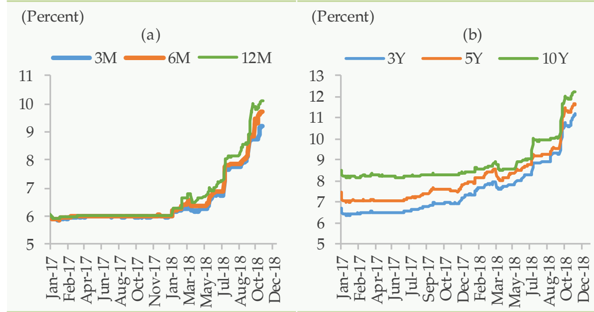
[99] In CY18, CSS deals amount to PKR 22 billion—up from 11 billion in CY17.

Chart 2.7: Exchange rate dynamics continue to influence fixed investments and foreign currency loans



Source: SBP

Chart 2.9: Rising YTM in short-term and long-term government securities

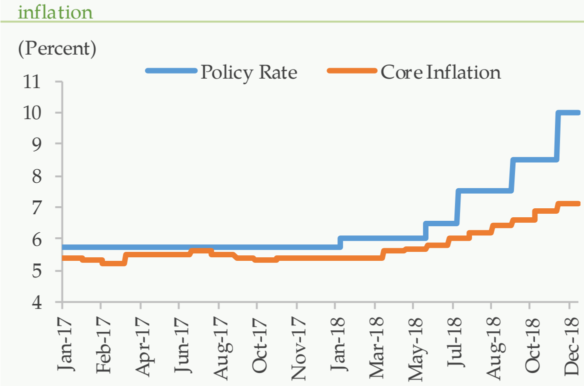


Source: SBP

Interest rates at the short-end of the yield curve have moved up in tandem with monetary policy tightening….

The policy rate—after remaining unchanged since Jun-16—began to move up in Jan-18. Rising inflationary pressures and higher fiscal and current account deficits explain the successive increases in policy rate during CY18 (**Chart 2.8**). Cumulatively, policy rate has risen by 425 basis points to reach at 10.0 percent in Dec-18. Accordingly, the short-term interest rates on government securities have inched up in the secondary market (**Chart 2.9a**).

Chart 2.8: Monetary policy tightening in response to rising inflation



Source: SBP

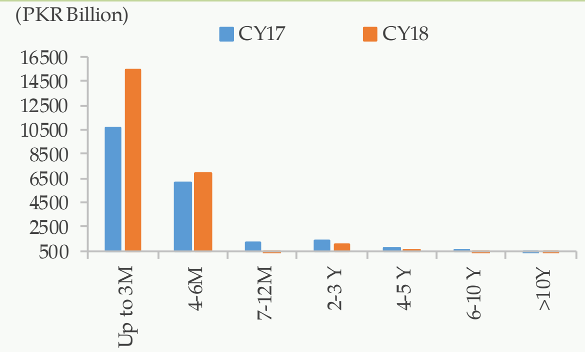
…and the interest rates at the long-end of the yield curve have inched up…

In CY17, yield on long-term government securities averaged at 7.38 percent. With rise in policy rate in CY18, average yield has increased by 200 basis points to 9.35 percent (**Chart 2.9b**). However, in perspective of term premium[100], the yield on long-term securities has risen to a lesser extent as compared to the short-term securities. As a result, the term-premium is trending downwards. This may suggest less than optimistic expectations of market participants about the future economic prospects.

In the secondary market, most of the trading activity of government securities during CY18 has taken place in maturities of up to 3 months, mirroring the primary market developments (increasing interest in short-term securities by market participants) (**Chart 2.10**). Thin trading in longer-term maturities may undermine their true price discovery, besides reflecting the risk averse behavior of market participants.

[100] The term-premium has been proxied by the spread between long-term (3Y PIBs) and short-term (3M T-bills) yield.

Chart 2.10: Secondary market trading remains concentrated in short-term maturities

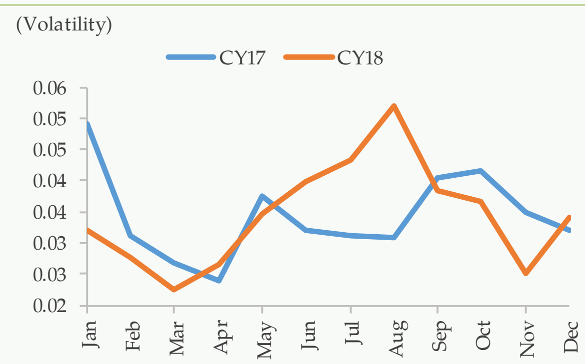


Source: SBP

Government's borrowing pattern as well as market's bidding behavior have remained key drivers of money market volatility…

In CY18, overnight repo rate, on average, has been one basis point above the policy rate (versus 7 basis points higher in CY17). The average volatility has also remained at a lower level in CY18 compared to CY17. However, dynamics of the overnight repo rate during the year reveals that—from Apr-18 to Aug-18—volatility has remained high and it declined only towards the end of CY18 (**Chart 2.11**).

Chart 2.11: Changing volatility dynamics during CY18

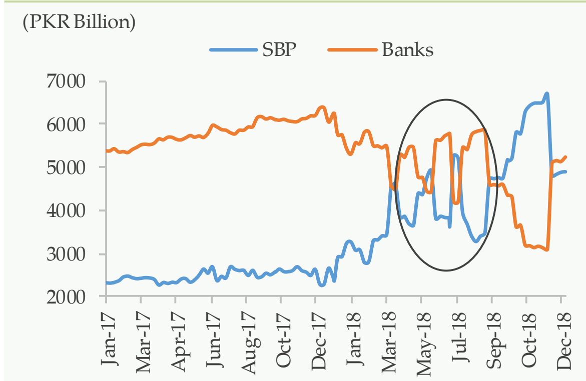


Source: SBP

The liquidity conditions in the money market are strongly influenced by the government's institutional choice for budgetary borrowings as well as market participant's appetite for government bonds. Due to transition in government during the mid of the year, consistency in choice of government borrowing has been effected, which increased uncertainty and volatility in the market during Apr-Aug 18. Moreover, during the same period, banks have not been a willing lender to the government, which added to the volatility.

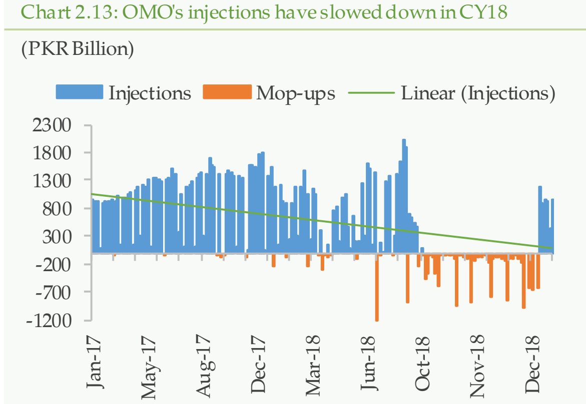
Moreover, SBP has had to calibrate its market interventions according to the liquidity conditions existing in the market (**Chart 2.12 and 2.13**). It has made injections until Aug 18 and thereafter mostly mop-ups. It is interesting to note that despite injections during Apr-Aug 18, the money market has remained volatile, due to government's borrowing pattern.

Chart 2.12: Rising budgetary borrowing from SBP during CY18



Source: SBP

Chart 2.13: OMO's injections have slowed down in CY18

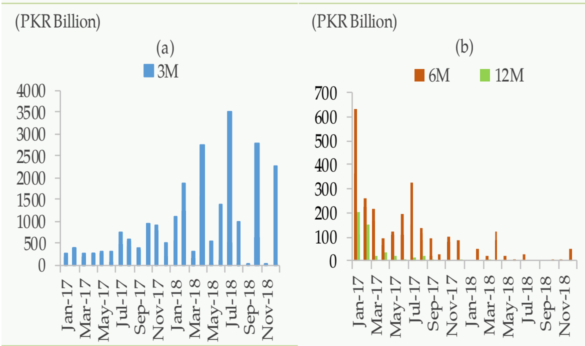


Source: SBP

Banks increasingly invested in short-term treasury bills…

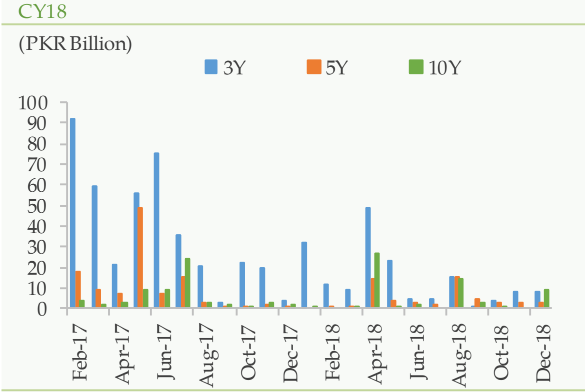
The analysis of primary market reveals that the banks have been actively participating in 3 months treasury bills auctions since latter half of CY17, while their participation in 6 months and 12 months treasury bills auctions have remained negligible (**Chart 2.14**).[101,102] This is mainly due to higher interest rate expectations—a fact corroborated by decreasing interest of banks in long-term government securities (PIBs). The banks have not only demanded higher returns on PIBs during CY18 but have also offered lower amounts (**Chart 2.15**). [103] This also suggests that the formation of higher interest rate expectations by the market participants began a few months prior to the monetary policy tightening.

Chart 2.14: Banks have been offering higher investments in 3M treasury bills auctions



Source: SBP

Chart 2.15: Reduced banking sector's appetite in PIBs during CY18

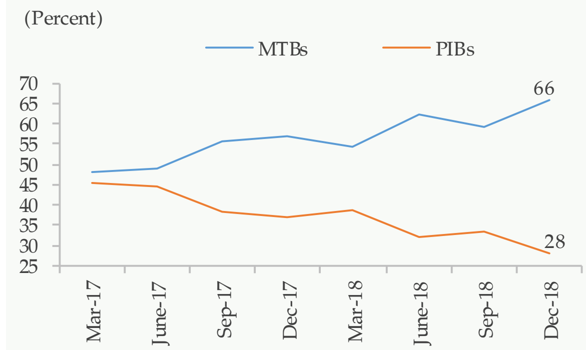


Source: SBP

...leading to higher rollover risk for the Government

Banks interest in short-term government securities have led to further increase in rollover risk for the government[104]. The share of MTBs in total government debt from the banking sector has increased to 65.86 percent in Dec-18 from 57.06 percent a year ago, while that of PIBs has declined to 28.07 percent in Dec-18 from 37.17 percent in Dec-17 (**Chart 2.16**).

Chart 2.16: Increasing exposure of the Government on short-term debt



Source: SBP

The equity market valuation is trending downwards...

In CY18, equity market—down by 7.58 percent on average—has remained bearish and range bound (**Chart 2.17**). Tightening macrofinancial conditions (rise in interest rates, exchange rate depreciation, inflationary pressures etc.), uncertainty (arising from political transition), and net-foreign outflows in response to persistent increase in the Federal funds rate have contributed to the equity market slowdown. As a result, the market capitalization has

[101] CY17 statistics show that out of the total 26 auctions held for 6M treasury bills, banks—with one rejection—participated in 25 auctions. However, in CY18, participation is down to 13 auctions with 6 rejections due to higher bidding.

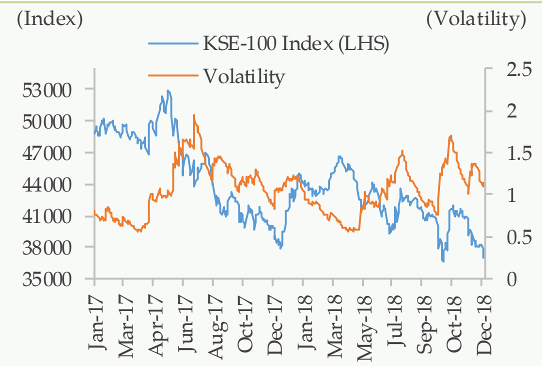
[102] Banks participated in 20 auctions against 12M treasury bills during CY17 while 4 were rejected. In CY18, banks have participated just in one auction which has been rejected.

[103] In CY18, most of the bids have been rejected in PIBs.

[104] Re-pricing of the debt with higher frequency could lead to higher cost of debt servicing especially in rising interest rate scenario.

reduced by 10.25 percent during CY18 (versus 10.98 percent decline in CY17) (**Table 2.1**).

Chart 2.17: Equity market has remained volatile during CY18



Source: SBP

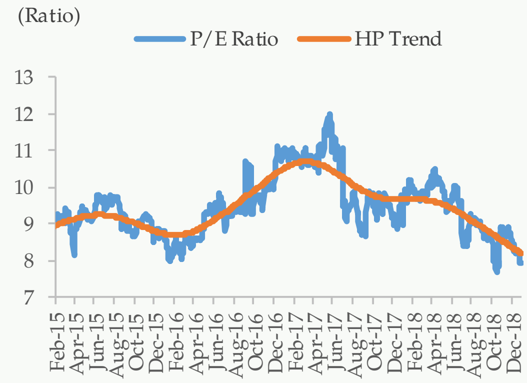
Table 2.1: Capital market developments in Pakistan

	Dec-16	Dec-17	Dec-18
	Million PKR except companies, index and bond data		
Total No. of Listed Companies	558	559	546
Total Listed Capital - PKR	1,291,040	1,276,801	1,322,748
Total Market Capitalization - PKR	9,628,514	8,570,926	7,692,787
KSE-100™ Index	47,807	40,471	37,067
Growth (KSE-100 Index)	45.7%	-15.3%	-8.41%
KSE-30™ Index	25,852	20,215	17,174
KSE Meezan Index (KMI-30)	81,795	68,611	61,174
KSE All Share Index	32,842	29,774	28,043
New Companies Listed during the year	4	7	3
Listed Capital of New Companies - PKR	5,490	12,549	5,432
New Debt Instruments Listed during the year	1	1	6
Listed Capital of New Debt Instruments - PKR	10,000	10,500	28,820
Average Daily Turnover - Shares in million	293	249	194
Average value of daily turnover - PKR	11,638	12,099	7,871
Average Daily Turnover (Future™) YTD	49	60	68
Average Value of Daily Turnover - YTD	3,057	4,307	3,022

Source: Pakistan Stock Exchange

The corporate profitability has also come under pressure as their earnings[105] growth declined to 2.91 percent in CY18 from 18.77 percent a year earlier.[106] **(See Chapter 5)**. This along with PKR depreciation has resulted in reduced dividends (USD 1.9 billion in CY18 versus USD 2.4 billion in CY17) on foreign portfolio (in dollar terms) and inflow of direct investments.

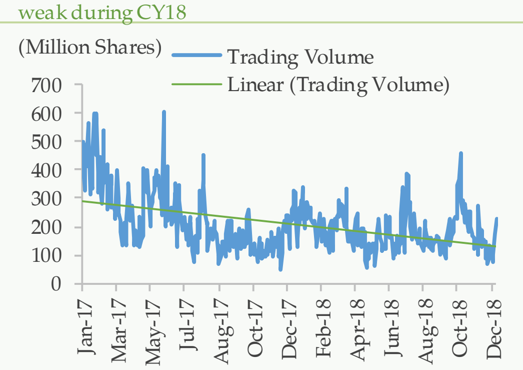
Chart 2.18: Downtrend in equity market valuation



Source: Bloomberg

With decline in market prices and the corporate earnings, the average Price-to-Earnings ratio (P/E) has also reduced to 9.24 in CY18 against 10.18 in CY17. **(Chart 2.18)**. Further, the investors became risk averse and refrained from taking aggressive positions, which has squeezed trading volume in equity to 194 million shares in CY18 against 249 million shares in CY17 (**Chart 2.19**).

Chart 2.19: Trading activity in equity market remains weak during CY18



Source: SBP

...leading to increase in risk aversion...

The narrowing gap between earnings yield[107] in equities and risk-free money market instruments in CY18 has compounded the risk averse behavior

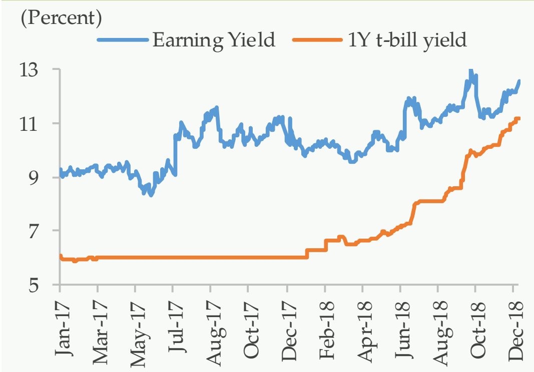
[105] Earnings before interest and taxes (EBIT). It represents 303 firms listed on Pakistan Stock Exchange

[106] Financial expenses of 303 listed firms are higher by 19.35 percent in CY18 as compared to CY17.

[107] Earnings yield refer to the earnings per share for the most recent 12-month period divided by the current market price per share.

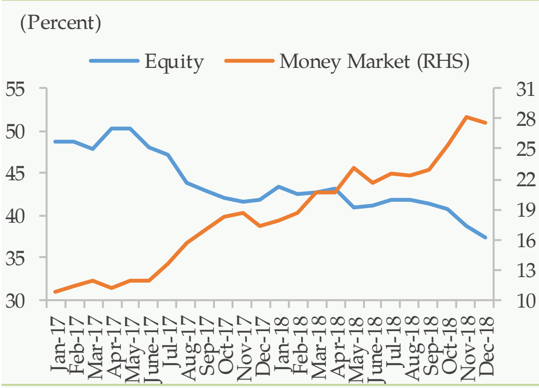
(**Chart 2.20**). This is evident from the changing composition of asset portfolio held by the mutual funds. The share of money market assets (in total assets) has increased to 27.67 percent (17.42 percent in Dec-17), while the exposure to equity market has declined to 37.43 percent (41.90 percent in Dec-17) (**Chart 2.21**).

Chart 2.20: Narrowing gap between earning yield and money market yield



Source: SBP

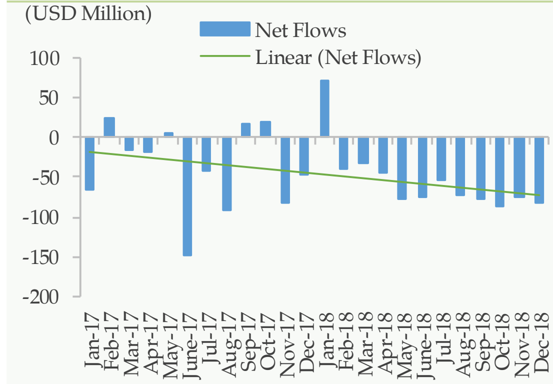
Chart 2.21: Increasing investments of mutual funds in money market instruements



Source: SBP

Increased risk aversion is also reflected in the persistent net outflow of foreign portfolio investment (**Chart 2.22**). [108] Though the foreign investors has been net sellers in the previous year as well, the bearish sentiment has been re-enforced by the fading macroeconomic prospects.[109]

Chart 2.22: Foreign portfolio investment has observed consistent outflow in CY18

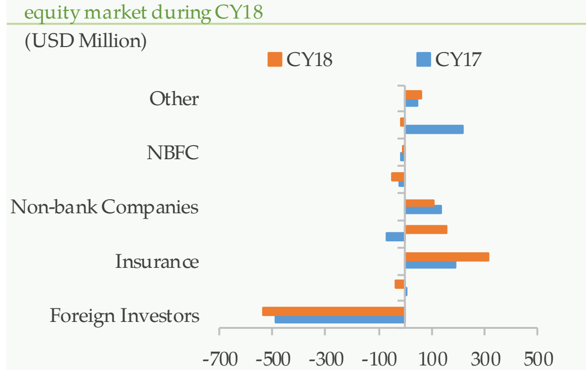


Source: SBP

…and rise in market volatility

The non-conducive market conditions have kept the volatility in the equity market at elevated level (**Chart 2.17**). Notably, the nervous withdrawal by the foreign investors from the market could have resulted in higher volatility, had it not been mitigated by active participation of domestic institutional investors such as Insurance (**Chart 2.23**).

Chart 2.23: Insurance sector has absorbed most of the selling in equity market during CY18



Source: Pakistan Stock Exchange

Though, the downside risks to equity market returns remain muted…

Value at Risk[110] (VaR) analysis indicates that—despite the prevailing stress in the equity market—

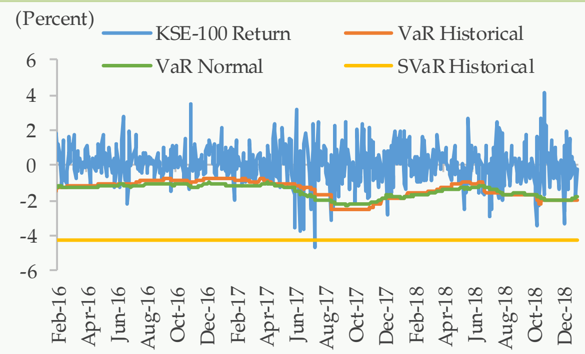
[108] In CY18, cumulative net foreign investment outflow from equities stands at USD 647 million against USD 447 million in CY17.

[109] Pakistan's sovereign risk ratings by Fitch has been revised downward to B in Jan-18 and further to B Negative in Dec-18.

[110] 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.

downside risks to the market returns have remained contained during CY18 **(Chart 2.24).** The actual returns of KSE-100 index have breached the VaR measure with lower frequency (17 times in CY18 vs. 20 times in CY17). Moreover, unlike CY17, the returns have not dipped below the stressed VaR[111] during CY18.

Chart 2.24: Downside risks to equity market returns remain muted



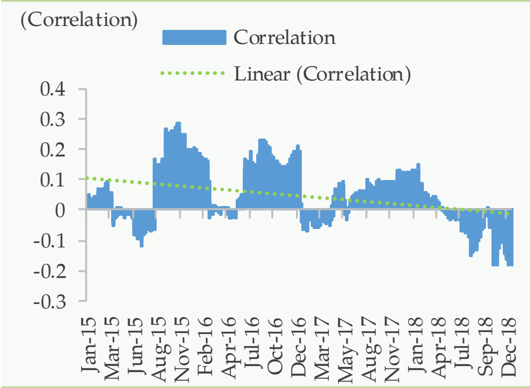
Source: SBP

The equity market returns are in-sync with MSCI Emerging Market Index …

The synchronized behavior of KSE-100 index with MSCI EM index during CY18 suggests that the idiosyncratic vulnerabilities experienced by the EMDEs as a group have been aggravated by the external environment. [112]

Moreover, the correlation between domestic equity market and S&P 500 index has not only weakened over-time but it has also turned negative in H2CY18 (**Chart 2.25**). This recent decoupling suggests the growing chasm between the business cycles of the US and domestic economy, the "flight to safety" motive of global investors, and weakening of spillover effect through trade channel in view of the protectionist stance in the US.

Chart 2.25: Correlation between KSE-100 index and S&P 500 has weakened overtime



Source: SBP

Going forward, the stability in financial markets hinges on several factors…

Domestic financial markets—particularly forex and equity markets—in CY18 have remained volatile primarily due to external account pressures, higher fiscal deficit, rising inflationary pressures, and elevated uncertainty among market participants. In addition, the dearth of US dollar liquidity has been important aspect of financial markets behavior and connectivity during CY18 **(see Box 3).**

Going forward, improved stability in the financial markets—particularly forex and equity markets—largely depends on (i) how effectively the dearth of forex market liquidity is addressed; (ii) the realization of anticipated outcomes of corrective policy measures; (iii) the direction of investors' sentiments; and (iv) the successful implementation of the IMF program.

[111] Stressed VaR refers to minimum 100-days rolling value during the entire sample period (January 2001-December 2018).

[112] The correlation coefficient turns out 0.78 between MSCI EM and KSE-100 index during CY18. Moreover, the returns (on average) of MSCI EM (-.06 percent) and KSE-100 index (-.05 percent) have been almost the same.