5 Performance and Risk Analysis of Corporate Sector

The corporate sector, as per estimates, has observed a broad-based steady growth in balance sheet and sales along with decent profitability in CY17. The listed firms, especially largest ones, are self-sufficient in liquidity with low debt burden and strong repayment capacity. However, the smallest of the listed firms are vulnerable in terms of borrowing capacity, cost of funds and repayment ability. Textile sector, being one of the largest borrowers of the banking sector, has relatively higher leverage and lower repayment capacity, but the financials depict improvement leading to lower probability of defaults. Most of the firms remain unrated; though, regulatory initiatives and other factors have brought some desirable shift in behavior during CY17.

Corporate sector remains the largest borrower of banking sector…

Assessment of risks to corporate sector has gained importance post GFC due to its strong linkages with the macro-economy as well as the financial sector. The assessment facilitates in making policy prescriptions necessary for ensuring financial stability from macroprudential perspective.

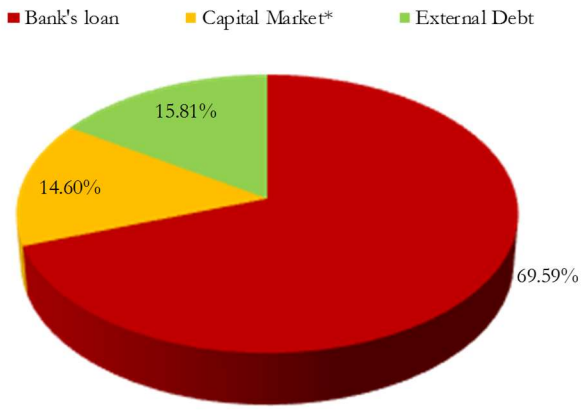
Easier monetary conditions over the last decade has allowed the corporates, particularly in the emerging market economies, to enhance their leverage. Pakistan is no exception as corporate debt as a percentage of GDP has risen to 15.55 percent in 2017 from 14.57 percent in 2012.

In Pakistan, corporate debt structure comprises of (i) banks' loans, (ii) borrowing through capital market, and (iii) external private debt. However, the quantum of financing availed through each avenue differs by a wide margin **(Figure 5.1)**.

Banking sector has been the key source of financing to the corporates. Out of a total of PKR 6.6 trillion lending as of December 2017, around PKR 4.6 trillion has been lent to the corporate sector by banks[243] **(Figure 5.2) (Also see Chapter 3.1).** With bank lending constituting 70 percent share in the overall corporate debt, there is a strong interconnectedness between the two sectors. As such, shock in any one of the two sectors could adversely affect the operating performance and solvency of the other.

The corporate financing through capital market stands at PKR 753.1 billion, of which, Sukuk funding (PKR 619.5 billion) plays the dominant role **(Figure 5.3).** A major share of Sukuk is issued by energy sector.

Figure 5.1
Bank's loan has major share in corporate's debt structure
Corporate's debt structure as on 31 December, 2017
(Percent)



Soruce: SBP and SECP

Finally, corporates have availed financing of USD 7.4 billion (PKR 815.7 billion) from abroad as of end December 2017, which is 41.51 percent (USD

[243] Private corporates have availed PKR 3.6 trillion of total corporate loans.

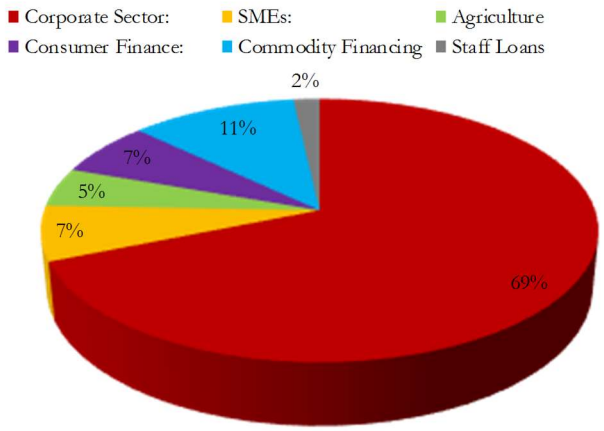
2.2 billion) higher than the outstanding amount as of end December 2016.[244]

Figure 5.2

Corporate sector has major share in banking sector advances

Segement-wise outstanding Banks advances as on 31 December, 2017

(Percent)



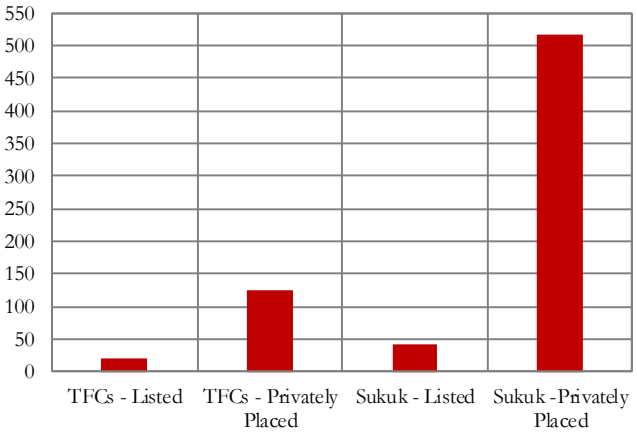
Source: FSD, SBP

Figure 5.3

Pakistan's corporate debt market is limited and has mainly confined in privately placed Sukuk

Corporate debt market of Pakistan as of December 31, 2016 (Outstanding)

(PKR Billion)



Source: Securities and Exchange Commission of Pakistan (SECP)

Estimates suggest that corporate sector has performed well during CY17…

As per the pro forma financial statements, corporate sector appears to have performed well with expansion in assets and decent profitability during CY17 **(Table 5.1)**. The total assets of the listed corporates are expected to have moved up by 11.26 percent during CY17[245]. The major thrust has come from current assets owing to sharp rise in trade debt and account receivables. Moreover, the corporates appear to have managed their cash flows by purchasing more on credit. This is quite reflective through surge in trade credit and other account payables.

As per estimates, sectors' operating fixed assets have observed sharp increase; well synchronized with the recent trend of rising demand for term finance by corporate borrowers to enhance productive capacity. Besides, the sector has further diversified the balance sheet through long-term investments (including in subsidiaries and associates).

The estimates also reveal that the sector has earned decent after-tax profits with ROA and ROE of 6.63 percent and 16.39 percent, respectively during CY17. The better performance appears to stem from sales growth supported by increase in domestic and external demand and lower interest rates. Other Financial soundness indicators (FSIs) also reveal a comfortable financial health of the sector, particularly, better debt repayment capacity with improved "interest coverage" ratio, although "debt to equity" ratio appears to have risen marginally. The improving financials of corporates suggest higher repayment capacity and lower probability of defaults (**See Box 5.2**).

[244] Private sector corporates' external borrowing mainly consists of non-guaranteed long-term loans. They have registered a significant increase during CY17 due to CPEC related projects, mainly in the energy sector. http://www.sbp.org.pk/ecodata/pakdebt.pdf

[245] The analysis is based on financial statements of 378 companies listed on Pakistan Stock Exchange (PSX). The sample period is 2005-2017. For 2017, where required, the data has been projected based on last five-year averages and exponential smoothing.

Table 5.1

Financial Statements of PSX Listed Companies and Ratio Analysis

	2013	2014	2015	2016	2017*
	PKR billion				
Balance Sheet					
Non-Current Assets	**3,112**	**3,280**	**3,524**	**3,767**	**4,138**
Net operating fixed assets	2,190	2,276	2,414	2,561	2,720
Long term investments including subsidiaries & associates	509	540	585	597	749
Current Assets	**2,300**	**2,670**	**2,758**	**2,884**	**3,262**
Inventories	596	575	525	555	584
Trade Debt / accounts recievables	765	1,044	1,083	1,082	1,382
Current Liabilities	**2,239**	**2,594**	**2,619**	**2,663**	**3,178**
Trade Credit & other accounts payables	-	1,463	1,510	1,560	1,611
Short term Borrowings	653	678	650	649	661
Non-Current Liabilities	**1,119**	**1,122**	**1,206**	**1,266**	**1,407**
of which Long term secured loans	548	466	480	528	553
Debentures/TFCs	22	20	68	61	57
Shareholders' Equity	**2,053**	**2,234**	**2,457**	**2,722**	**2,960**
***Proforma adjutment*					(144)
Total Assets	**5,412**	**5,950**	**6,282**	**6,651**	**7,400**
Income statement					
Sales	**6,183**	**6,610**	**6,045**	**5,469**	**5,594**
Gross profit	945	909	908	886	935
EBIT		698	688	642	714
Financial expenses	185	170	163	125	118
of which Interest expenses	141	146	140	106	101
Profit before taxation	520	528	525	517	595
Profit after tax		**370**	**384**	**379**	**466**
Cash Flows from operations	745	343	499	575	779
Financial Ratios					
Net Profit margin/Net profit to sales	8.41	5.60	6.35	6.93	8.32
Return on Assets (Percent)	9.70	6.51	6.27	5.86	6.63
Return on equity (Percent)	27.09	17.26	16.35	14.63	16.39
Current ratio	1.03	1.03	1.05	1.08	1.03
Inventory Turnover Ratio	10.37	11.50	11.52	9.86	9.58
Debt equity ratio	1.64	1.66	1.56	1.44	1.55
Interest coverage ratio	4.69	4.79	4.90	6.04	7.05

Source: State Bank of Pakistan

*CY17 represents proforma balance sheet projected based on Exponential Smoothing and income statement projected based on 5-years' average growth.

**proforma adjustment refers to the amount required for balancing the accounting equation (i.e. A=L+E)

Corporates continue to rely on own sources …

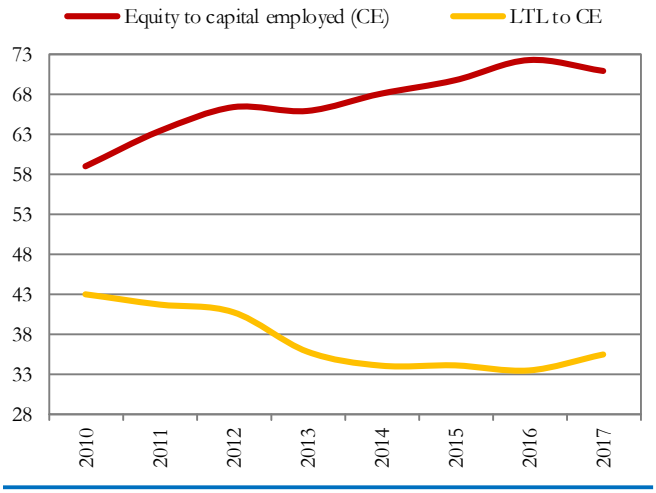
The gap between long-term liability (LTL) to capital employed (CE)[246] and equity to CE, which has been widening over the years, has slightly narrowed down in CY17 (**Figure 5.4**). This implies that the trend of reliance of corporates on their own rather than borrowed funding has reversed as per estimates. The corporates are already borrowing for capacity enhancement, their balance sheet footing is increasing and the domestic aggregate demand is strengthening. All these factors point to the need for higher funds in the future and the corporates are expected to tap the capital markets and the banking sector for the purpose (see **Box 5.1** for technical underpinning of this argument).

Figure 5.4

Corporate sector has been increasingly reliant on equity financing

Equity and debt financing of corporate sector during 2010-2017

(Percent)



Source: SBP

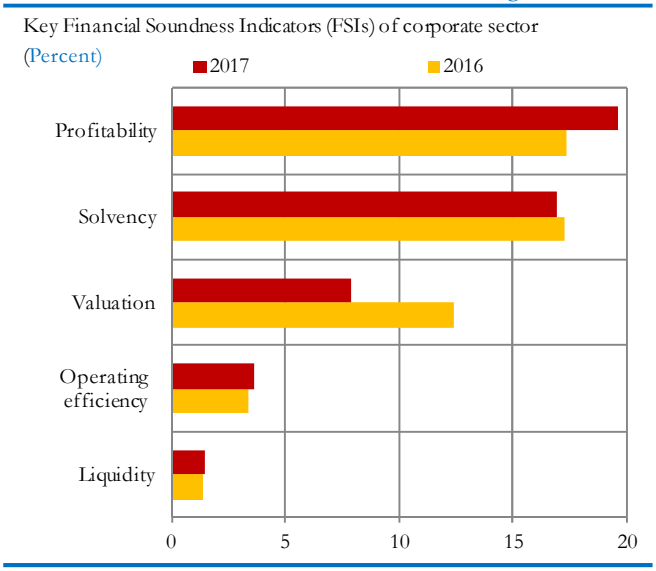
Performance of KSE-100 index companies corroborates with the estimated improved showing of the corporate sector …

The KSE-100 firms have dominant presence in the overall equity market with major share in market capitalization. The financial health of these firms has

[246] Capital employed is calculated as total assets less current liabilities.

remained stable during CY17 as indicated by various FSIs **(Figure 5.5)**.

Figure 5.5
The financial soundness of the sector has further strengthened



Source: Bloomberg

The profitability has improved with ROE rising to 19.65 percent in CY17 from 17.37 percent in CY16. With decline in debt to asset ratio to 16.93 percent in CY17 (17.23 percent in CY16), the sector has revealed slight improvement on solvency front. The liquidity is also strong as current ratio stands at 1.44, indicating firms' ability to meet short-term obligations. The asset utilization capacity (i.e. operating efficiency) has improved as well with higher asset turnover ratio.

Nevertheless, valuations decline due to price effect …

Valuation of KSE-100 companies has declined as the recent downturn in local bourse has translated into dip in the prices of listed companies. Thus, a sharp downfall has been witnessed in P/E ratio to 7.90 in CY17 from 12.43 in CY16.[247] However, there are expectations that the equity market could recover as macroeconomic conditions improve and corporate sector's performance could revert the P/E ratio back to its long-term trend in near to medium term **(See also Chapter 2)**.

Table 5.2
Extended DuPont Analysis- Top 100 Non- Financial Companies of KSE-100*

	2015	2016	2017
	PKR Billion		
Net Income (NI)	269	260	338
Profit Before Tax (PBT)	375	357	455
Profit Before Tax and Interest (PBIT)**	440	406	501
Revenue/Sales	3,436	2,921	3,531
Assets	3,295	3,549	4,101
Equity	1,566	1,719	1,922
Average Assets (Av. A)	3,190	3,422	3,825
Average Equity (Av. E)	1,501	1,642	1,820
Extended DuPont Components			
	Percent		
Tax Burden (a=NI/PBT)	0.72	0.73	0.74
Interest Burden (b=PBT/PBIT)	0.85	0.88	0.91
Operating Profit Margin (c=PBIT/Sales)	0.13	0.14	0.14
Asset Turn Over (d=Sales/Av. A)	1.08	0.85	0.92
Financial Leverage (e=Av. A/Av. E)	2.13	2.08	2.10
ROE (after tax) [axbxcxdxe]*100	17.94	15.83	18.57

*Asset-wise Top-100 companies of 2017 have been taken based on available financials on PSX website as of January, 2018.
***Financial Charges have been taken as proxy for interest expense*
Source: Pakistan Stock Exchange

Growing profitability stems from improved asset turnover …

The extended DuPont analysis suggests that the improvement in asset turnover has been the key factor behind surge in ROE **(Table 5.2)**. Corporates have efficiently used their assets to generate more sales. Moreover, besides slightly higher financial leverage, reduced burden from taxes and interest expenses have also pushed ROE up. The tax burden has been lower in CY17 as the GoP reduced the tax rate for corporate sector to 31 percent[248] The consistent low interest rates in

[247] The valuation is pure market indicators and, generally, is subject to high volatility

[248] Budget speech 2016-17, Ministry of Finance (MoF)

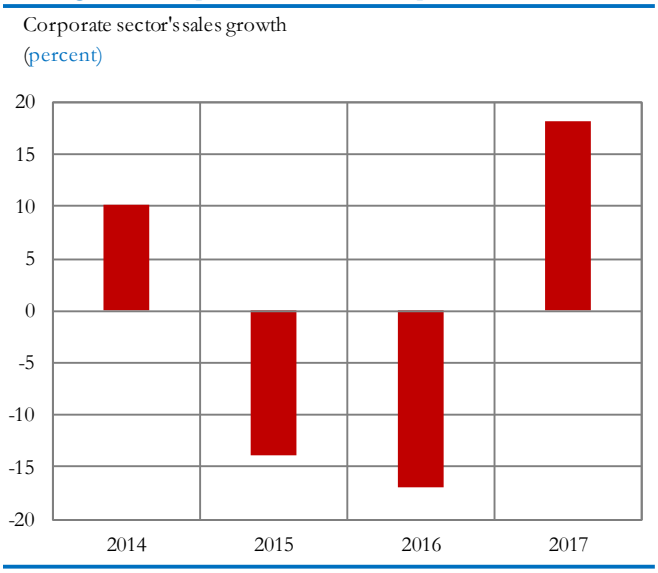
response to easy monetary policy is also translating into lower interest expenses for corporates.

... as corporate sales growth has reversed its course

Improved performance of the top 100 listed corporates has resulted from the robust growth in sales during CY17 **(Figure 5.6)**.[249] Several factors have provided boost to sales including conducive business conditions, improvement in energy flows, low borrowing costs, higher domestic demand and better security conditions. In addition, the rise in exports since July 2017, because of firming up of global growth - hence higher external demand, has also contributed towards the sales growth.

Figure 5.6

Sales growth of corporate sector has turned positive in FY17



Source: Pakistan Stock Exchange (PSX)

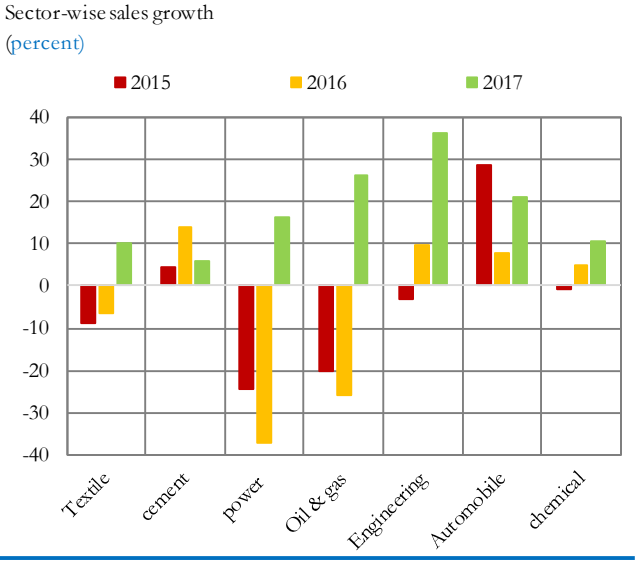
The sales growth has been broad based…

The sales growth has been broad-based across various sectors including Oil and Gas, Textile, Automobile, Refinery and Engineering etc. **(Figure 5.7)**. The Oil & Gas and Refinery sectors are the beneficiaries of bounce back in international oil prices. Better energy supply, grant of GSP Plus status and government's incentive package has turned the negative sales of textiles in last couple of years into positive during CY17.[250]

Moreover, automobile sector has observed steady rise in sales during last few years with highest growth recorded in CY17. The high demand of automobile products, well facilitated by consumer financing, along with favorable economic conditions especially low interest rates, has pushed the sales growth up.[251]

Figure 5.7

The sector has observed broad based sales growth during 2017



Source: PSX

Leverage is contained in major sectors and debt repayment capacity improves…

http://www.finance.gov.pk/budget/budget_speech_english_2016_17.pdf

[249] The sales growth is based on PSX companies with available data during CY13-17. At the time of analysis, financials for 200 companies was available.

[250] Under the Prime Minister's Package of Incentives for Exporters, the government: (i) allowed duty draw back up to 7.0 percent on the export of textile products(e.g; garments, home textiles, processed fabric, etc.) ; exempted customs duty on the import of raw material for textile and; exempted sales tax on the import of textile machinery.

[251] Please also see Quarterly Performance Review of Banking Sector (October – December, 2017)

Except for power, leverage appears to be contained in major sectors such as textiles and chemicals (**Figure 5.8 a, b & c)**. This is because, as explained earlier, corporates are generally utilizing their own funds for expansion; for example, textiles' average rise in equity is 7.35 percent during 2015-2017; cement is 16.38 percent and automobile is 21.98 percent.

The energy sector has benefited from government's efforts like retirement of circular debt in 2013, prioritizing energy projects under CPEC and effective control of transmission and distribution losses.[252]

The interest coverage ratio (ICR)—a proxy for debt repayment capacity—of most of the important sectors is at the comfortable level. Also, ICR is improving for majority of the sectors; perhaps a manifestation of easy monetary policy. However, in absolute terms, the ratio of textile sector (the major borrower of the banking sector) is relatively low. Around 37 percent of the listed textile firms have ICR close to the vulnerability threshold level in 2017.[253] It may be relevant to mention that the credit risk for textiles is relatively higher but is gradually declining **(See Chapter 3.1)**. In addition, the improving financials of the sector suggest better repayment capacity and lower probability of defaults **(See Box 5.2)**.

Economies of scale has benefited larger firms…

Literature generally suggests an inverse relationship between firm size and its leverage; bigger the size lower the leverage.[254] Similar relationship appears to exist in the corporate sector of Pakistan (see **Box 5.1**). The two largest quartiles (4&3) of corporates have observed the highest asset growth **(Table 5.3)** with low leverage (**Figure 5.9a**). Bigger firms, appear to be following the pecking order theory by utilizing their internal resources first. Smaller firms are more leveraged.

Table 5.3
Assets growth by corporate Size

Size-wise Category	2015	2016	2017
	Percent		
Quartile 4 (Large)	5.45	6.15	14.43
Quartile 3 (Medium)	6.58	11.69	16.29
Quartile 2 (Small)	1.59	5.98	9.31
Quartile 1 (Very Small)	0.93	-3.48	2.55

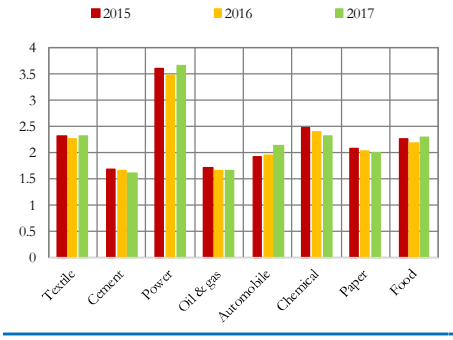
Source: PSX

Moreover, the larger firms have better debt repayment capacity (ICR), which has further improved during CY17 **(Figure 5.9b)**. This is in contrast to the smaller firms that have exhibited low and decreasing ICR. Larger firms also have lower costs per unit of borrowing than smaller firms do.[255]

The operating efficiency, measured as sales to average assets, of quartile 4 (large firms) has remained intact during CY17 while it has declined for the other quartiles **(Figure 5.9c)**.

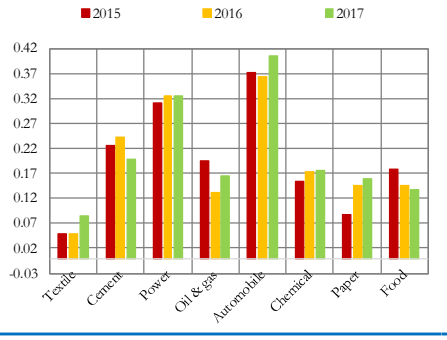
[252] Chapter 14, Pakistan's Economic Survey 2016-17.
[253] As Bank of Korea indicates financially distressed firms are those having ICR below 1 for three consecutive years. (FSR-June 2016,Box I-4)
[254] Onofrei, M., Tudose, M. B., Durdureanu, C., & Anton, S. G. (2015). Determinant factors of firm leverage: An empirical analysis at Iasi county level. Procedia Economics and Finance, 20, 460-466.
[255] Average per unit cost of borrowing in 2017 for largest firms in quartile 4 is 7.75 percent as compared to 8.28 percent for smallest firms in quartile 1.

Figure 5.8a
Power and textile sectors observe highest leverage



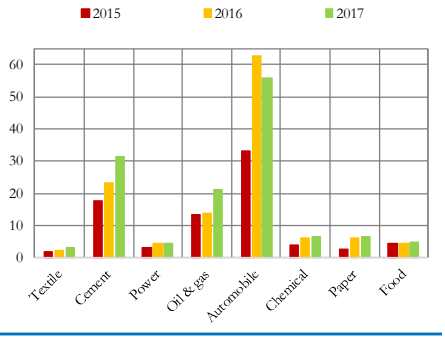
Source PSX

Figure 5.8b
ROE has seen a rise in most of sectors



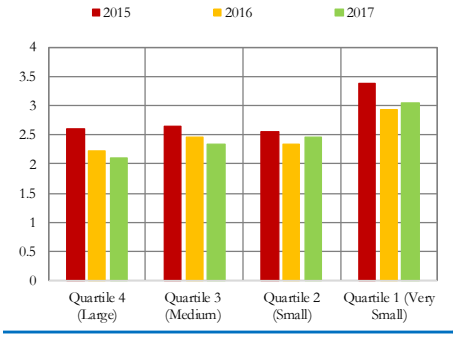
Source PSX

Figure 5.8c
Most of sectors has observed improved debt servicing capacity



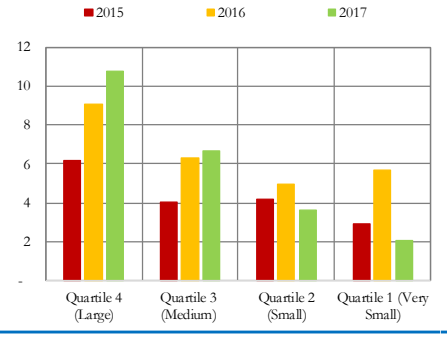
Source PSX

Figure 5.9a
Largest quartile has lowest leverage



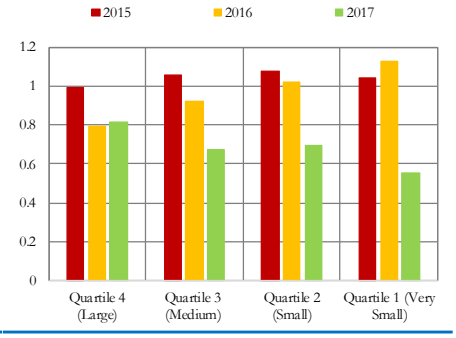
Source PSX

Figure 5.9b
Largest quartile of corporate has highest debt repayment capacity



Source PSX

Figure 5.9c
The operating efficiency has remained intact for largest quartile



Source PSX

Corporates remain unrated; requiring higher capital charge under Basel III …

Credit risk rating is an important signal, which demonstrates the relative debt repayment capacity of corporates. Such rankings allow the banks to take on higher quality credit exposures. In Pakistan, the rating culture is not prevalent, as most of the banks' corporate clients remain unrated **(Figure 5.10)**. At the end of CY17, 71.21 percent (*PKR 2.6 trillion*) of corporate exposure remained unrated as compared to 77.83 percent (*PKR 2.5 trillion*) in CY16. Consequently, banks' exposure attracts higher risk weights and more capital charge under Basel requirements.

However, some change in the behavior is visible during CY17, as some of the additional exposure has been categorized under lower (higher rated) bands. Some regulatory measures introduced by the SBP to promote the rating culture (such as higher risk weights assigned to large sized unrated exposure, adoption of more robust and prudent risk management practices, and enhanced capacity of External Credit Assessment Institutions (ECAIs)) might have brought about this desirable improvement.

Overall, the outlook of corporate sector is positive for 2018. It is expected that corporate profitability will benefit from favorable tax policies, rising domestic and global demand, and improved energy

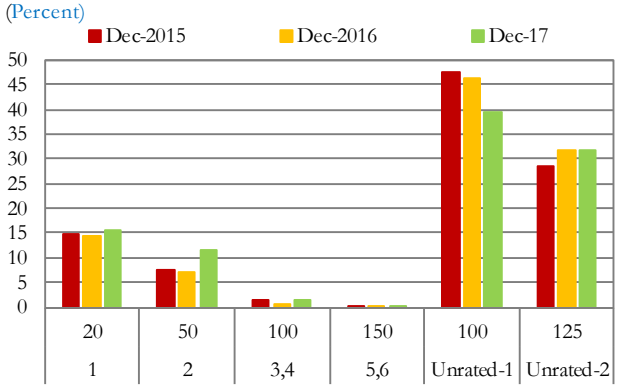
supply etc. Also the capacity enhancement presently underway will lead to higher production with reduced cost through economies of scale. As such, improving financial performance and strengthening global and domestic demand may induce corporate to rely more on the banking sector and capital markets.

Figure 5.10

Rating culture has started to improve backed by regulatory initiatives

Share of outstanding Banks's lending to corporate sector against SBP's supervisory mapped rating grades*

(Percent)



**Banks are required to map the rating assigned by agency with SBP supervisory rating grades ranging form 1 to 6. For example AAA to AA fall in grade 1 with 20 percent risk weight.*

Source: SBP

However, few factors that may challenge the steady performance of the sector in the year ahead include resurgence in global oil prices, rising momentum of inflationary pressures, uncertainties related to upcoming elections, and rising financing cost due to tightening of monetary policy in 1st half of 2018.

Box: 5.1: Credit riskiness of corporate non-financial listed firms – An econometric analysis

The credit allocation is an important driver of the economic growth and the firms utilizing the credit are the engines of real growth. The credit, however, tends to be pro-cyclical and its availability to riskier firms increases during expansions.[256] The easy monetary conditions, therefore, tend to breed financial excesses, which unwind during contractions, leading to defaults.[257] This will have consequences for the real growth as well as financial stability.

The corporate non-financial firms (NFFs) of Pakistan happen to be the largest borrowers of the banking sector. Of the PKR 4,982.1 billion loans extended by the banks to the domestic private sector as of December 2017, the corporate private sector has availed PKR 3,589.9 billion.

While banks institute all measures to ensure that the selected borrowers are financially sound and solvent, and have capability to service their obligations, the idiosyncratic and systemic uncertainties always leave a possibility of default, however small it may be. As of end-CY17, the loan delinquency rate in the domestic corporate lending stands at 10.11 percent. Given the high exposure of banks to the non-financial sector, it would be interesting to explore how the dynamics of financial and macroeconomic factors affect the possibility of corporate delinquencies, based on the information of already delinquent corporates. Specifically, we use five accounting ratios of a sample of 276 listed firms as well as macroeconomic variables over 2013-2017 period and assume that

$$P(D_{i,t} = 1) = \Phi(\alpha + \sum_{i} X_{i,t-1} + \sum_{k} Y_{k,t-1}),$$

where X_i refers to the firm-specific financial information and Y embodies the systemic factors common to all firms, both lagged one period, while $\Phi(.)$ is the probability transform function, the logit model in our case.[258] The X_i includes the working capital, retained earnings, earnings before tax, equity and sales, all normalized by total assets, while the Y_k includes industrial sector growth and interest rate. The D_i equals unity if the firm, *i*, has defaulted on its credit obligations in year *t*, or zero otherwise. We proxy the default by using firm specific data from SBP's Credit Registry, where a firm is taken to have defaulted if its credit obligations remain overdue by 365 days and above (OD 365).

Important as the overall NFF sector is, the textile industry is the mainstay of Pakistan's economy. The industry's contribution in the export earnings of the country is around 55.81 percent in CY17. It also constitutes a substantial share of the corporate lending of the banking industry – around 27.24 percent. Although, better energy supply, grant of GSP Plus status and government's incentive package has turned the negative growth of textiles exports during last couple of years into positive during CY17,[259] the major concentration of NPLs continues to be in the textile sector – 49.11 percent of the total corporate NPLs. Given that textile sector is a key borrower, it has been subjected to the same analysis as the NFFs.

Empirical Results

(a) All Non-financial Firms

The financial performance of the NFFs in terms of above-mentioned five ratios over five-year periods shown in **Figure 1**.[260] The working capital ratio, though positive on average, remains highly tilted towards lower

[256] Borio C. and Lowe P. (2002). Asset prices, financial and monetary stability: exploring the nexus. BIS Woriking Paper No. 114

[257] IMF (2018) Global Financial Stability Report, *April.*

[258] This is in essence an Altman-type model augmented with macro-variables. [Altman E. (1968). Financial Ratios, Discrimnant Analysisand the Prediction of Corporate Bankruptcy. *The Journal of Finance*, 23(4), 589-609.] A similar analysis has also been carried out in Chapter 2 of IMF (2018).

[259] (a) See State of Pakistan's Economy: Third Quarterly, FY17 for discussion on the Prime Minister's Package of Incentives for Exporters; (b) The year-on-year growth of textile exports during CY13-CY17 has been recorded at 8.50 percent, -2.26 percent, -4.25 percent, -5.01 percent and 8.77 percent, respectively.

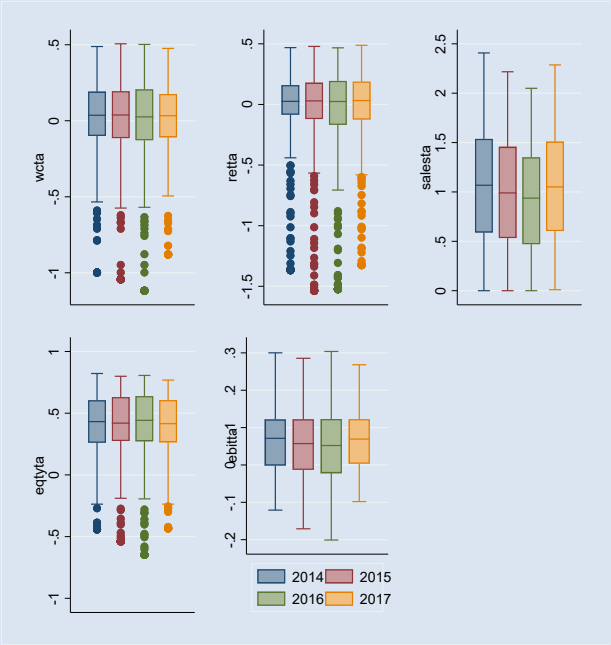
[260] **wcta**=Working Capital to Total Assets; **retta**=Retained Earnings to Total Assets; **salesta**=Sales to Total Assets;**eqtyta**=Equity to Total Assets[260] and **ebitta**=Earnings Before Interest and Taxes to Total Assets . For CY17, the average accounting information of last five years has been used.

quartile with substantial outliers, implying reliance of firms on sources other than their own in the short run. This corroborates the fact that working capital finance dominates the lending by the banks (**see Chapter 3.1**).

Figure 1

Financials of non-financial corporates improves

Financial Indicators – Non-Financial Firms



Source: SBP Staff Calculations

The retained earnings also turn out to be highly concentrated below the median, with substantial number of outlying firms, implying low incidence of retention. The corporates' sales, on the other hand, remains robustly positive with some firms having sales more than double their asset size. The dispersion of this indicator is the highest amongst all the variables. With strengthening domestic demand conditions, the sales are expected to rise in the future.

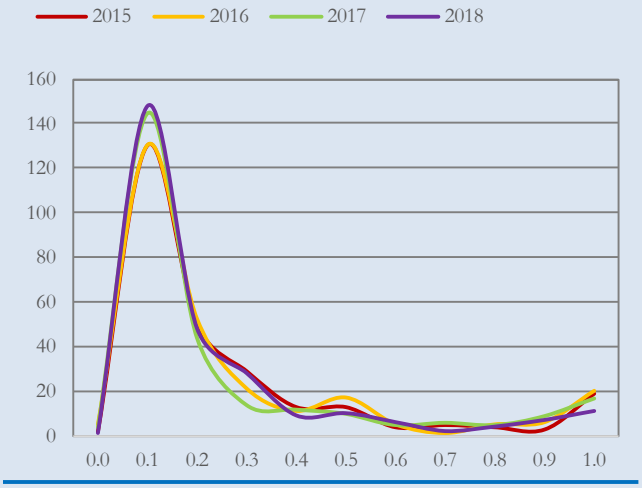
The equity of the firms on average remains strongly positive as well, though some outliers on the negative side can also be observed. Finally, the corporate sector remains largely profitable and is expected to witness a rise in earnings.

Figure 2

More firms are expected to travel to non-default zone

Probability of Default - Corporate Non-financial Firms

(Number of Firms)



Source: SBP Staff estimates

Table 1

Actual and projected number of defaults

	2014	2015	2016	2017	2018
All NFFs					
No. of Firms, *of which*	272	271	272	270	273
OD 365*	54	58	60	61	NA
P(D>=0.5)**	43	47	53	51	39
Textile Sector					
No. of Firms, *of which*	109	108	109	109	109
OD 365*	33	37	40	41	NA
P(D>=0.5)**	29	35	40	38	36

Source: Finanial Statements of Firms and Credit Information Bureau, SBP

* Firms with credit obligations overdue by 365 days and above as per CIB data;

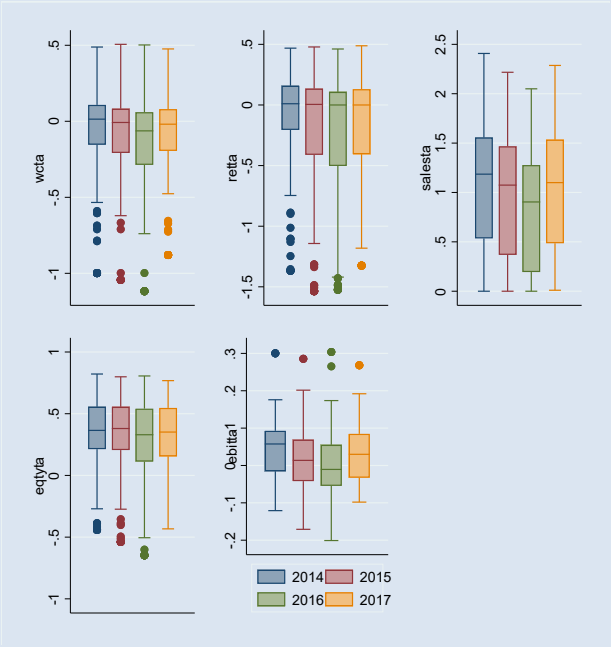
** Model based projections.

The model-based distribution of probabilities of default (PDs) are depicted in **Figure 2**. The mass of PDs are concentrated in the range of 0.01 percent to 0.40 percent, i.e. in the *safe zone*. The curve beyond 0.50 percent, the *default zone*, remains thinner and is projected to thin out further in 2018. Indeed, as shown in Table 1, the number of firms expected to default in 2018 is 40 against 61 that actually defaulted in 2017 (see **Table 1**), largely on the back of improving sales and profitability.

Figure 3

Financials of textile sector are improving

Financial Indicators – Textile Sector



Source: SBP Staff Calculations

(b) Textile Sector

The financials of the textile sector depict some improvement. The sales and profitability indicators present a better picture, although the sector remains net borrower in the short term (see WCTA ratio in **Figure 3**). With more firms moving into positive territory in terms of earnings, the solvency has strengthening as well.

The distribution of default probabilities presents some interesting facts (see **Figure 4**). The mass under *safe zone* has shrunk during 2016-17 period compared with 2015. Moreover, the distribution seems to have worsened during 2017.

In 2018, a significant movement within the *default zone* is expected: area under 0.5-0.7 percent interval is estimated to increase while the area under 0.7-0.9 percent is anticipated to decrease. This is indicative of the fact that some firms are moving away from the state of extreme default to just-default condition. Some firms are even expected to migrate to safe zone as the mass under 0.4-0.5 percent interval is expected to increase in 2018. In number terms, 36 firms are projected to be delinquent in 2018 as against actual 41 in 2017.

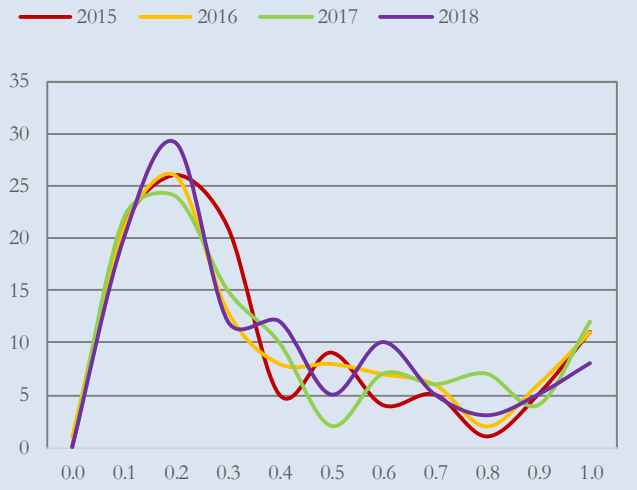
From a policy perspective, there is a need for banks to strengthen their credit origination and monitoring standards while a continuous regulatory macro-prudential oversight is warranted as well.

Figure 4

Tail of the distribution smooths but still carries significant mass

Probability of Default- Textile Sector

(Number of Firms)



Source: SBP Staff estimates

Box: 5.2: The Determinants of Corporate Leverage: An empirical analysis of non-financial firms listed on PSX

A balanced capital structure with an optimal composition of equity and debt is key to a sustainable funding strategy as well as cost minimization. A very low leverage may reduce the ROE (as seen in DuPont analysis earlier) while a highly excessive leverage enhances the credit risk and, consequently, the cost of debt.

Table 1

Definition of variables

Variables		Definition	Expected Sign
Dependent variable			
Total Debt Ratio	Y	Total debt to total assets	
Independent variables			
Profitability	X1	Operating profit to total assets	PO(-ve) TO(+ve)
Growth	X2	Percentage change of total assets	PO(+ve) TO(-ve)
Size	X3	Natural log of total assets	PO(-ve) TO(+ve)
Liquidity	X4	Current assets to current liabilities	PO(-ve) TO(+ve)
REER	X5	Index of Real Effective Exchange Rate	?
Agregate Demand	X6	Per capita income	+ve

Note: PO = Pecking Order Theory; TO = Trade-off Theory

Source: SBP Staff Estimates

The research in the capital structure field is dominated by two principal themes: '*Trade-off theory*' and '*pecking-order theory*'.[261] This note investigates the applicability of capital structure theories and tries to explore the firm-specific and macroeconomic factors that might affect it. The investigation is performed using panel data technique for a sample of 331 firms listed on the PSX for a yearly sample spanning 2006-2016. Various factors hypothesized to affect the leverage are appended in **Table 1.**

The following model is estimated using fixed effects technique.[262]

$$y_{it} = \alpha_0 + \sum_{i=1} X_{it} + u_i + \epsilon_{it},$$

where α_0 is the intercept, $X_{it}{}'s$ are idiosyncratic and systemic factors defined in **Table 1,** u_i are the individual fixed effects while ϵ_{it} are the firm-specific residuals.

Table 2

The key determinants of leverage of corporate sector Fixed Effect Model (FEM) estimation

Dependent variables	Total Debt Ratio
Independent variables	
Constant	2.586
	(0.000)
Profitability	-0.436
	(0.000)
Growth	0.027
	(0.129)
Size	-0.106
	(0.000)
Liquidity	-0.118
	(0.000)
Aggregate Demand	0.188
	(0.000)
REER	-0.330
	(0.000)
R2	0.331
No.of observations	3612
Residual unit root (Fisher)	*0.000*

Note: (i) *p*-values are reported in parenthesis below the slope estimates (ii) *Fisher*-type unit root test for unbalanced data (Madala & Wu, 1999).

Source: SBP Staff Estimates

The results, given in **Table 2**, reveal that, on average, profitability, size and liquidity of firms have statistically significant and negative impact on the leverage. This is consistent with the *pecking order theory*. It suggests that highly profitable businesses prefer to finance their projects through own resources rather than relying on

[261] Pecking order theory argue that companies prefer to finance their investment first by internal resources and then by borrowed capital, and finally by using the equity provided by shareholders (Myers and Majluf, 1984). Kraus and Litzenberg (1973) laid the foundations of trade-off theory pointing out as the more profitable the company is, the higher the need for the debt tax shield.

[262] The Hausman (1978) test favors modeling fixed effects over the random effects.

external funding. Further, the large sized firms, generally blue chip big corporates, tend to have sound financial health and are likely to rely less on external borrowings. Furthermore, the availability of liquidity obviates the need of reliance on outside sources.

The leverage is found to have statistically significant and positive relationship with aggregate demand (proxied via per capita income) and worsening currency parity conditions.[263] Growing economic activity raises the demand for borrowing, most probably, due to funding requirement in expansionary phase of the business cycle (including the need for operating fixed assets). A positive impact of a depreciation on borrowings makes sense either in case the firm is an importer of inputs or an exporter. In case of former, higher input costs may likely increase the need for finances. In case of the later, however, a weak local currency enhances the external demand for local goods, requiring higher production and a need for higher financing.

The results largely confirm our analysis in the previous sections, where it was observed that larger, liquid and profitable firms tend to have lower debts on their balance sheets.

[263] Since we use REER, an increasing trend implies appreciation. Therefore, a negative relationship with REER actually implies a positive association with depreciation.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of financial economics, 13(2), 187-221.

Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. The journal of finance, 28(4), 911-922.

Hausman, J. A. (1978). Specification tests in econometrics. Econometrica: Journal of the econometric society, 1251-1271.