Risk Premium, Interest Rate Differential, and Subsidized Lending in Pakistan

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Abstract

Episodes of monetary contraction increases the risk premium of the enterprises which results in higher effective interest rate differential between market loans and subsidized loan; making these firms more reliant on subsidized loans. Since subsidies are easier to exploit and hard to administer. This study evaluates the subsidized lending schemes of Pakistan using information on risk premium and effective interest rate differential of 174 exporting corporate firms over thirteen years (1999-2011). Our results shows that export finance schemes (EFS) helped promoting exports, while long term financing facility (LTFF) facilitated fixed capital formation of these corporate firms. Additionally, using matched sample with loan level data from eCIB, we found that during the phases of high interest rate differential enterprises substituted their short term market loans with subsidized loans (export finance); while no such substitution is observed between long term loans and LTFF.

I.   Introduction

In developing economies, governments often subsidize enterprises to spur the momentum of economic growth. These subsidies are mostly meant to promote exports, encourage industrial development and help enterprises in innovation and research. Additionally, these subsidies are often aimed at increasing returns on investment that raise the survival rate of the firms, helping them to compete in international markets by maintaining their comparative advantage. Though provision of subsidies is debatable, yet economies have achieved export expansion and diversification in manufacturing along with positive spillovers to the other local firms which increased the welfare of the economy (Helmers and Trofimenko, 2010). However, economists believe that these subsidies are easy to abuse, yet empirical evidence in the literature is limited. Like other developing economies, Pakistan also aims at providing an environment conducive for businesses to achieve long term sustainable economic growth. However, instead of providing direct subsidies to the industries for expansion and to promote exports, State Bank of Pakistan under SBP act 1956 (Clause 17c) has facilitated industrial promotion and exports through subsidized credit by introducing Long Term Financing Facility (LTFF) for capacity development of industries, and Export Finance Scheme (EFS) to promote exports. These schemes are though operational since 1973, and were kept highly subsidized until 2001, after wards SBP linked EFS rate with weighted average yields on 6-month T-bill rate, maintaining a handsome interest rate differential. As subsidies are often blamed for misuse, the effectiveness of these subsidized credit schemes towards capacity building in industrial sector and export promotion at firm level is still debatable and unexplored.

Industrial sector of Pakistan helps in promoting the economic growth by directly contributing around 26 percent to GDP, while it stimulates the economy by creating demand for goods and services and initiates direct and indirect employment opportunities. Owing to lesser cash flows, these firms rely heavily on bank borrowing, primarily to meet their working capital requirements. Since interest rate pass through

to KIBOR is around 87 percent in one month (Khawaja and Khan 2008); effect of monetary policy broadly transmits to the industrial sector through an effective balance sheet channel, with asymmetric affects on net worth and cash flows of large, and SMEs (Shabbir 2012). Accordingly, recent episode of monetary contraction has substantially hit the corporate profitability, leading to a slower mean reversion rate of 19 percent during recession and thereby lowered the net worth and cash flows of the firms (Shabbir 2013). This has not only increased the risk premium of the corporate firms, but has also made it difficult for them to tap resources from banking sector. Moreover, it increased the effective interest rate differential between market loans and subsidized loan, which made businesses more reliant on subsidized loans.

Subsidies are good; yet easy to exploit. These are difficult to administer and are subject to manipulation for rent-seeking purposes. For example, export financing is available on production of an irrevocable letter of credit, which can easily be falsely obtained. It is difficult to check whether funds that have been obtained are being used for the purpose intended, while exporters complain of procedural delays. During last decade, subsidized credit under Export Finance Scheme held on average about 15 percent share in total credit to manufacturing sector; when combined with LTFF, it stayed around 19 percent of the total credit to manufacturing sector. While the difference in market lending rate and subsidized lending varied from 0.5 percent to 7.5 percent during 1999-2013, which provided a wide margin for industry to reap the benefits. Although this subsidized credit was meant to augment economic growth, yet given the substantial share in private sector credit and higher interest rate differential, these facilities, if exploited, might serve as a leakage to the financial system and affect the strength of monetary policy. Therefore, it is crucial for the policy makers to observe the role of interest rate differential towards the borrowing behavior of industrial sector and evaluate the effects of these policies for capital formation, product diversification and export promotion. In this backdrop, this is pioneer study is a valuable addition to the literature.

Results of this study are mix. Observing the firm level data on financials of 174 exporting corporate firms listed at Karachi Stock Exchange, we found that LTFF helps in capital formation of the firms, while EFS promotes the companies to expand their export sales. In addition, given the high risk premium of the corporate firms, interest rate differential plays a key role in export promotion as well as in fixed capital formation of these companies. Nevertheless, in order to assess whether companies substitute market loans with the subsidized loans, we have utilized the matched sample of the 140 corporates' financial statements to the loan level data available with eCIB (a unique and confidential dataset maintained by State Bank of Pakistan for every loan disbursed, covering the product classification and micro details of the loan) from July-2006 to April-2013 and observed that corporate firms substituted their short term market loans with the short term subsidized loans. However, no substitution is observed between long term market loans and Long Term Financing Facility (LTFF).

After reviewing the subsidized lending schemes in Pakistan in Section II, the paper presents a brief description of literature review in Section III. Section IV discusses the details on sample selection and data management, while Section V evaluates the role of interest rate differential, risk premium and subsidized lending and Section VI concludes the paper and provides policy recommendations for the policy makers.

II. Regulatory Framework of Existing Subsidized lending Schemes in Pakistan[1]

To promote long term sustainable economic growth, State Bank of Pakistan under SBP act 1956 has introduced various subsidized lending schemes, which are broadly comprised of Export Finance Schemes (EFS) and Long Term Financing Scheme (LTFF). These schemes are in operation since 1973. Prime objective of these schemes

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[1] "Handbook on Long Term Financing Schemes of State Bank of Pakistan"; "Guidelines on Export Finance Scheme".

is to boost exports and augment long term growth through capacity development of industries. Framework of these schemes is as follows.

a) Export Finance Scheme (EFS)

This scheme is meant for providing working capital/short term financing to exporters to produce the goods, eligible under scheme, for export purposes. This facility has two parts i.e. EFS Part-I and EFS Part II. EFS Part-1 is primarily a transaction based facility for exports. Exporters may utilize this facility both at pre-shipment and post shipment stage. In case of pre-shipment, maximum limit of credit utilization is 180 days while under post shipment facility; this facility is provided up-to the realization of export proceeds or at maximum for 180 days. The SBP-BSC field offices process refinances requests within 48 hours from the date of receipt of the claims from commercial banks. Consequently, the banks are required to repay the refinance on realization of export proceeds in full or part thereof, within three working days. Otherwise, the concerned field office of SBP-BSC recovers the amount same on due date by debiting concerned banks' account, maintained with it. While EFS Part-II is a revolving finance limit based on the export performance of the exporter. Under this scheme 50 percent of revolving credit is provided to the eligible exporters. These exporters are supposed to repay this amount in total and provide an evidence of performance within two months after closing of financial year.

b) Islamic Export Refinance Scheme (IERS)

Islamic Export Refinance Scheme (IERS) introduced by State Bank of Pakistan, aims at providing level playing field to Islamic banks and dedicated Islamic branches of conventional banks for facilitating exporters having preferences for the Shariah compliant working capital finance. Operations of IERS are similar to EFS except the rate of refinance, which is not fixed under IERS.

c)   **Long Term Financing Facility**

LTFF provides necessary finance to exporters for adoption of new technology and updating of their plant and machinery in line with the international competitive environment. SME Exporters can avail financing under this facility through Participating Financial Institution (PFIs) for purchase of imported and locally manufactured plant and machinery. This facility is available for export oriented projects with at least 50 percent of their sales constituting of exports or annual exports equivalent to US$ 5 million, whichever is lower. Islamic banks are eligible for offering LTFF subject to availability of Shariah complaint compatible product duly approved by the bank's and SBP's Shariah advisor and cleared by SBP's Shariah Board. Loans are repayable within a maximum period of 10 years including maximum grace period of 2 years.

III.   Review of Existing Literature

The provision of subsidized credit to domestic firms is an important policy goal in many emerging markets, and is particularly widespread in export sectors. There is a vast literature that argues in favor of export subsidies, export promotion policies and industrial promotion policies and prefers them over devaluation policies. According to WTO (2006), subsidies to the industrial sector include, direct export subsidies, tax rebates, subsidized credit, contingent liabilities and provision of goods and services. Technically, only strong firms who are more efficient and productive can compete in international market and encounter entry barriers to export (Clerides et al., 1998; Bernard and Jensen,1999; Melitz, 2003), therefore, they acquire high technology from abroad and benefit from learning by doing (Mazumdar,1999); they have positive spillovers to the local firms which are socially desirable (Helmers and Trofimenko, 2010).

Several East Asian "miracle" economies – Japan, Korea, and Taiwan in particular – relied heavily on export promotion policies, while enjoying export growth rates in excess of 20 percent during the latter half of the 20th century (Kokko, 2002). According to World Bank export promotion policies are more effective than the investment policies; nevertheless, broad empirical literature also supports the effectiveness of investment promotion policies, while there are few evidences against them (Nogués, 1989). Brief description of the existing literature is as follows.

Investigating the case of Korea, Jung and Lee (1986), in their study formulated an empirical model of the export supply. They found that cost reduction, support price affects the behavior of suppliers. Any change in subsidy programs alters the relative prices, and hence affect their output. Accordingly, Bernard and Wagner (1996) explored performance advantages at exporting establishments in Germany. Comparing plants within an industry, they found that exporters in German are substantially larger, more capital intensive, employ white collar workers, and are substantially more productive than non-exporters. The productivity advantage of 15-20 percent for exporters is of particular interest. If participation in foreign markets leads to substantial productivity gains for firms, then there are important consequences for policy and long run economic performance.

Contrarily, Panagariya (2000), concluded that export subsidies are a more costly instrument for achieving export expansion than other policies. Investigating the impact of subsidies in India, he found innumerable export-subsidy instruments over the years. Yet, significant break in exports came only after substantial import liberalization and real exchange-rate depreciation, rather than export promotion policies. On the other hand, Banerjee and Newman (2004) argued in favor of export subsidies. They believe that subsidies help correct allocative distortions created by poor credit markets, and therefore, boost export growth. A direct implication of their model is that for credit subsidy programs to be efficient, the subsidies should be

allocated to financially constrained firms. Yet, there are several reasons why this may not be the case.

Evaluating the role of learning by doing, export subsidies and industrial growth in Japanese steel industry in 1950s and 1960s, Ohashi (2004) proved the effectiveness of export subsidies for stimulating steel production. Using a dynamic estimation model, he found that learning by doing was an essential feature of steel-production process, and learning rate was found above 20 percent in German steel industry. He also observed that intra-industry knowledge spillover and the slope of the dynamic marginal cost curve is a key determinant of the degree of effectiveness of export subsidies.

Using time series data over 30 years, Haque and Kemal (2007) assessed the impact of subsidy schemes on exports. They found that both the subsidy mechanisms, i.e., export financing and rebate/refunds, are insignificant for long run exports. While, in short run, the rebate/refunds scheme seems to have a small positive impact suggesting a need to evaluate various government initiatives for export promotion. While Zia (2008) evaluated the impact of subsidized credit to the financially constrained private firms and financially unconstrained public firms. Exploring the impact of removal of subsidized credit for the export of Yarn, he observed that removal of this subsidy badly hurt the private sector, while it only reduced the profitability of the public firms. Moreover, he observed misallocation of credit subsidy; as almost half of subsidized credit for yarn was utilized by the financially unconstrained firms, who did not make any significant adjustment in their financials after the removal of export subsidy on Yarn. Yet, he found that subsidized credit boost up the exports of financially constrained firms.

Exploring the Chinese manufacturing sector, Girma et al., (2008) analyzed the impact of production subsidies on firms' export performance. They concluded that conditional on firm dynamics; production subsidies stimulate export activity. In

particular, the beneficial impact of subsidies is found to be more pronounced amongst profit-making firms in capital intensive industries holding past exporting experience.

Observing the heterogeneous firms in Colombia Helmers and Natalia (2009) found that subsidies have a positive impact on export performance, but it is inversely related to the degree of the firm's connectedness to the government officials. While, in a recent study Helmers and Natalia (2012) evaluated the impact of firm specific export subsidies on exports in Colombia. They used two step selection model to predict firm specific subsidy amounts based on their characteristics and eligibility for government support. Controlling for firm characteristics as well as persistence in exporting, they found that although, in general, subsidies exhibit a positive impact on export volumes, this impact is diminishing in subsidy size and in the degree of a firm's connectedness with the government officials.

Abraham and Sasikumar (2010) used tobit estimation techniques to analyze the export performance of Indian Textiles. He found that performance of Indian textiles was enhanced through low cost labor, while capital and technology based factors did not have any perceptive effect on the export performance of Indian firms in the international market. This endorses the view that the Indian textile and clothing firms by and large utilized the low road to competitiveness. In addition, high integration with the global value chain promoted the export performance of the industry.

Thus, firm level empirical literature demonstrates that allocation of export subsidies is more complex than suggested by the theoretical literature. Moreover, there is a lot of unexplained variation in the subsidy rates and subsidy types across countries.

IV.   Sample Selection and Data Management Process

This study uses two absolutely unique datasets. First dataset is based on the panel of 174 exporting corporate companies listed at Karachi stock exchange, observed over a

period of 13 years (1999-2011). These companies broadly belong to textiles, chemicals, paper and board, sugar, cement, engineering, automobile, and energy sector of Pakistan. Since this dataset is based on annual audited accounts of the companies, who report outstanding credit on long term loans, disbursed to the companies, we utilized the information available with Credit Information Bureau (CIB). Therefore, based on the set of exporting companies who utilized subsidized credit, our second, dataset is a matched sample of 140 exporting companies listed at Karachi stock exchange, with the loan level information available with Credit Information Bureau (CIB), State Bank of Pakistan, from July, 2006 to April, 2013. Details on sample selection and data management are as follows.

a.   Corporate Companies Financial Data

To observe the behavior of exporting corporate firms over a complete business cycle, we collected firm level micro information on 174 exporting corporate companies listed at Karachi Stock Exchange (KSE) from annual audited financial accounts of individual companies. To observe the effect of interest rate differential on long term market loans and LTFF scheme, as well as short term market loans and EFS loans; we collected information on interest rate charged and volume of long term market loans, LTFF, short term market loans, EFS loans and thus, calculated weighted average borrowing rate for each category by each firm from their 'notes to accounts', reported at the end of annual audited accounts of the financial statements of ith corporate firm at time t. This not only provided us unique dataset on interest rate premium of individual firm but helped us calculating the interest rate differential at firm level inclusive of risk premium of ith company over t period of time. As long term loans are meant for capacity expansion, we collected information on fixed assets of the corporate firms to observe the effect of long term borrowing under market based long term loans and long term subsidized loans -LTFF. While in the view of the fact that these corporate firms borrow in short term to meet their working capital requirements, which in addition to their existing cash and bank balances, helps these firms to run their business and are reflected in their increased sales, we collected information on

net sales and export sales as well as cash and bank balances held with these companies over thirteen years (1999-2011).

b.   **Loan Level Matched Sample of Corporate Firms**

In order to assess whether with an increase in interest rate differential, exporting firms substitute short term market loans with short term subsidized loans, or long term market loans with LTFF, we collected micro information on borrowing of these corporates from Credit Information Bureau (CIB), State Bank of Pakistan. eCIB is a unique database, which not only provides the product wise details on outstanding credit, principle amount of loan disbursed, interest accrued and other charges associated to each loan utilized by the corporate firms under consideration but it also provides information on date of issue of each loan, its maturity date, limit provided to the borrower by the bank and repayment status of every loan. This helped us calculating the tenor of each loan. Loans disbursed for less than a period of 365 days are treated as short term loan, while loans availed for more than 365 days are considered as long term loans.

In view of the fact that product wise information with eCIB is only available from 2006 onwards, we collected complete borrowing profile of sample firms from July, 2006 to April, 2013, which was comprised of 502,499 loans. Since we were interested in observing the behavior of exporting companies availing subsidized credit in response to interest rate differential, we considered fresh loans of the companies and thus removed the old outstanding loans. Moreover, several companies were provided revolving limits, against which no transaction/disbursement was made. We also removed such loans from the sample; this reduced the number of loans in our sample from 502,499 to 343,509 loans. In order to address our research question, we further refined our data by removing TFCs, SUKUK, debentures, and bonds etc. from our sample which provided us compact and comprehensive information on 260,157 fresh loans disbursed during July, 2006 to April, 2013 to our sample companies. We, therefore, utilized information of these 260,157 fresh loans to construct an annual

panel of 140 exporting companies (break up of loans by year is reported in Table 1 in Annexure).
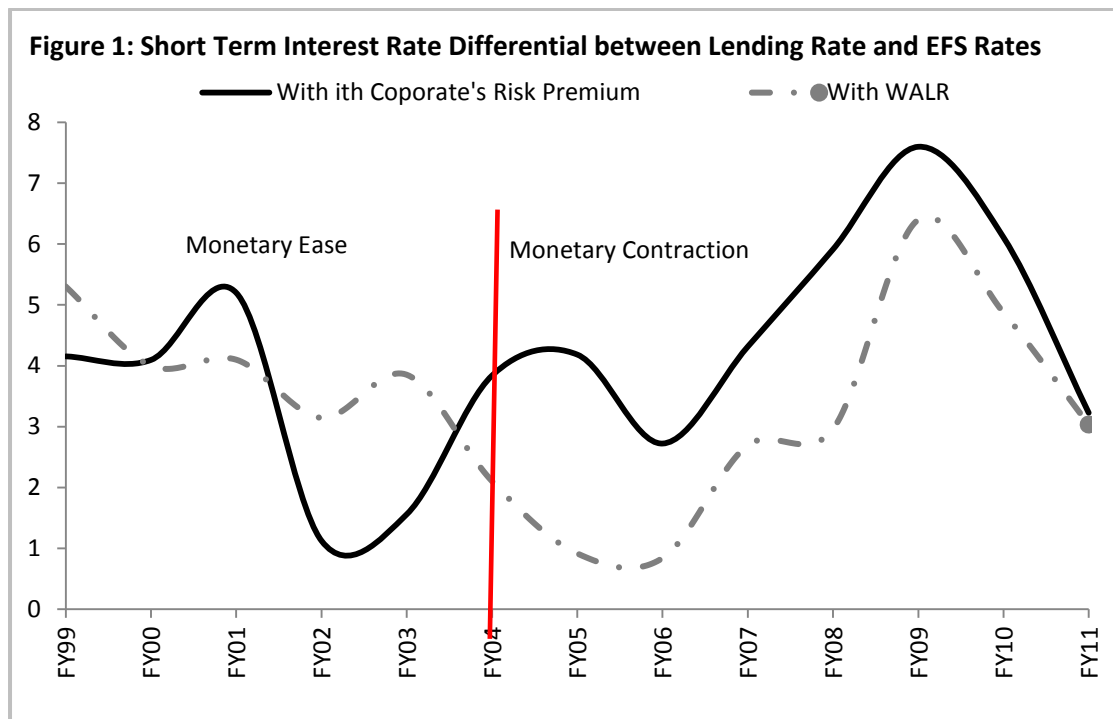
At the second step, we matched our loan sample with the net sales revenues and exports of the sample corporate firms. Matching these companies with the loan level information provided us a panel of 140 exporting listed companies who availed the subsidized credit facilities.
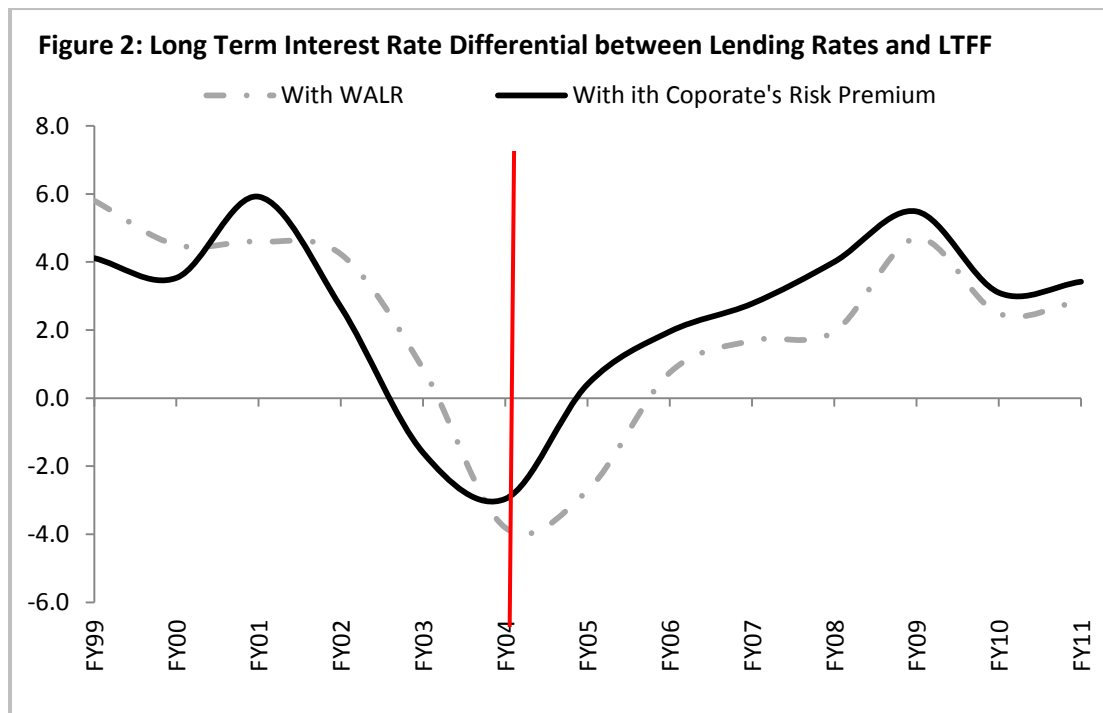
V.   Evaluating the Role of Risk Premium, Interest Rate Differential, and Subsidized Lending

In the presence of effective balance sheet transmission mechanism, monetary policy significantly affects both the net worth and cash flows of the corporate sector. Any increase in interest rate, reduces the supply of loanable funds to the businesses, originating competition among firms to tap resources. Moreover, during the times of monetary contraction banks readjust their portfolios and allocate resources away from small firms to the large firms (Black and Rosen, 2007). Since interest rate pass through is higher during monetary contraction (Choudhary et al., 2012), thus tight monetary policy reduces both the net worth and cash flows of the corporate firms with SMEs getting more hit (Shabbir, 2012). Pakistan economy has recently completed an episode of monetary contraction from 2004-2011, which not only deteriorated the net worth and cash flows of the large firms, but also reduced their profitability and affected their capacity to repay their outstanding debt. Big firms usually hold strong relationship with their banks, which let them tap resources from banking sector even during the phases of economic hardships. However, with continued deterioration in their net worth, banks assign risk weights to their customers and thus charge risk premium to the firms. Depending upon the risk premium charged to the enterprise, their effective borrowing rate may exceed Weighted Average Lending Rate (WALR). In the view of subsidized lending, State Bank of Pakistan provides subsidized lending and announces EFS as well as LTFF

rates, along with bank's margin, which keeps the effective lending rate on subsidized borrowing much lower. As a result, effective interest rate differential of the firms increases during the times of monetary contraction, while it stays much lower during the phases of monetary ease.

In order to assess the role of risk premium, and interest rate differential for subsidized lending; we collected effective borrowing rate of ith firm for market loans (both the short term and long term) as well as subsidized loans (both the EFS facilities and LTFF) over time period t. Availability of risk premium of individual company helped in assessing the effective/true interest rate differential of ith corporate firm over time t. This is, thus, observed significantly different from the interest rate differential calculated with WALR. This difference is graphically presented in Figure 1 and Figure 2.

Figure 1: Short Term Interest Rate Differential between Lending Rate and EFS Rates

Figure 2: Long Term Interest Rate Differential between Lending Rates and LTFF

We, therefore, relied on the effective interest rate differential obtained after incorporating ith corporate firms' risk premium. Figure 1 and Figure 2 shows that effective interest rate differential increased immediately after monetary contraction, with the short term interest differential much higher than the long term interest rate differential.

To empirically investigate the role of interest rate differential, we used log-linear panel data models of fixed effects, random effects and between effects. Additionally, robust standard errors are used to handle the issue of heterogeneity, while the value of Hausman test is used to decide between Fixed Effects (FE) and Random Effects (RE) models. The reason to use log linear form is to take advantage of its ability to normalize the data, and remove the non-linearities (if any). Detailed assessment is given below.

a. Importance of Working Capital for Revenue Generation

Since most of the borrowing requirements of the corporate firms arise to fill the gap in their working capital, we start off from the contribution of liquidity, including bank borrowing, towards their revenues. Our baseline equation for corporates' sales revenues is given as:

$$\log \text{Sales}_{it} = \alpha i + X_{it}\beta + u_i + \mathcal{E}_{it} \qquad\qquad i = 1, 2,\ldots.. N \qquad\qquad (1)$$

Where, log Sales is log of net sales revenue of the ith firm observed over the period t, u_i is between-entity error, $\mathcal{E}_{it}$ is within-entity error while αi captures the entity's fixed effects, X is a set of independent variables:

$$X = f\,(\log \text{Short Term Loans}_{it}, \log \text{Cash and Bank Balances}_{it\text{-}1}, \log \text{EFS Facility}$$
$$\text{Availed}_{it}, \log \text{Short Term Market Loans}_{it})$$

The reason to incorporate short term loans, and then separately observe the effect of EFS loans and short term market loans is obvious. However, we additionally added the lag of cash and bank balances to the equation. The motivation behind adding this variable is that it provides information about the total cash available with the firm at the beginning of the year. Results obtained from the regression are reported in Table 2 under regression (1). Our estimates shows that one percent increase in opening cash balance increases the sales revenue by 11 percentage points (*0.11 percent*), while short term borrowing increases the sales revenues by 25 percentage points.

Based upon Hausman test whose value turned out 0.08 (Prob > chi^2 = 0.08), we used random effect model. Our equation takes the following form:

$$\log \text{Sales}_{it} = \alpha + X_{it}\beta + u_i + \mathcal{E}_{it} \qquad\qquad i = 1, 2,\ldots.. N \qquad\qquad (2)$$

Where, log Sales is log of net sales revenue of the ith firm observed over the period t, u_i is between-entity error, ε_{it} is within-entity error while, X is a set of independent variables:

$$X = f (\text{log Short Term Loans}_{it}, \text{log Cash and Bank Balances}_{it-1}, \text{log EFS Facility Availed}_{it}, \text{log Short Term Market Loans}_{it})$$

Results obtained from equation 2 are reported in table 2, our estimates shows that one percent increase in EFS facility boosts the sales revenues by 11 percentage points, while short term market borrowing improves the sales revenues by almost 17 percentage points. Our results are significant at 5 and 10 percent.

b.   Role of Short Term Subsidized Lending for Exports

At the second step we assessed the role of subsidized lending and interest rate differential for the exports of the *i*th corporate firm. Our baseline model is given as:

$$\log \text{Exports}_{it} = \alpha i + Log\ EFS_{it} \beta + u_i + \varepsilon_{it} \qquad i = 1, 2,..... N \qquad (3)$$

Where, log Exports$_{it}$ is log of net export sales revenue of the ith firm observed over the period t, u_i is between-entity error, ε_{it} is within-entity error while αi captures the entity's fixed effects. Results obtained from the equation are reported in Table 2. Our estimates show that one percent increase in EFS loans boosts the exports by 19 percentage points. These results are significant at 1 percent.

For regression 4 and 5 in Table 1, the value of Hausman test turned out to be greater than 0.05, we, therefore, used random effects model, which takes the following form.

$$\log \text{Exports}_{it} = \alpha + X_{it} \beta + u_i + \varepsilon_{it} \qquad i = 1, 2,..... N \qquad (4)$$

Where, log log Exports$_{it}$ is log of net export sales revenue of the ith firm observed over the period t, u$_i$ is between-entity error, $\mathcal{E}_{it}$ is within-entity error while αi X is a set of independent variables:

$$X = f \text{ (log Short Term Loans}_{it}, \text{ effective interest rate differential on EFS}_{it}, \text{ log EFS Facility Availed}_{it}, \text{ log Short Term Market Loans}_{it})$$

Results obtained from equation 4 are reported in Table 1. Our estimates shows that on average, with one percent increase in EFS facility to the corporate firms exports on average boosts up by 16 percentage points, while interest rate differential also helps improving the exports. In addition, short term market loans over time contribute about 19 percentage points to the exports.

c.   Role of Long Term Subsidized Lending in Fixed Capital Formation

Assessing the role of long term subsidized borrowing towards fixed capital formation and capacity building in large firms, our baseline equation is given as:

$$\log \text{Fixed Assets}_{it} = \alpha i + Log\ X_{it}\beta + u_i + \mathcal{E}_{it} \qquad i = 1, 2,….. \text{ N} \qquad (5)$$

Where, log Fixed Assets represents the fixed assets of ith firm observed over period t, u$_i$ is between-entity error, $\mathcal{E}_{it}$ is within-entity error while αi captures the corporate firms' fixed effects. X is given as:

$$X = f \text{ (log LTFF Availed}_{it}, \text{ log Long Term Market Loans}_{it}, \text{ effective interest differential on LTFF}_{it})$$

Estimates obtained from equation 5 are reported in Table 1. These results are significant at 1 percent. Our estimates shows that both the LTFF and the long term market loans, equally contribute to the capacity expansion and fixed capital formation of the corporate firms. With a one percent in increase in long term market loans and

LTFF, fixed assets increase by almost 17 percentage points. While, interest rate differential also play a significant and positive role in fixed capital formation.

d.   Do Corporate firms' Substitute Market Loans with Subsidized Loans?

Subsidies are good; but are easy to exploit. In response to monetary contraction and higher risk premium, whether corporate firms substitute their market loans with the subsidized loans, we made following assumptions for our baseline models; a) corporate firms do not utilize bank borrowing for any other purpose except meeting their own financial needs. This assumption is important to exclude the possibility of misallocation, or utilization of these funds for any purpose other than company's core business, b) each corporate firm has a predefined range of borrowing requirements. This implies that at a given point of time, each company has a given range of demand and it utilizes the mix of loans, i.e., market loans and subsidized loans. When a company switches between market loans and subsidized loans, volume of one type of loan falls in response to the other loan. With these assumptions, we define our equation for short term subsidized loans as:

$$\log \text{EFS} = \alpha + Log\ \text{X}\beta + u_i \qquad i = 1, 2,\ldots N \tag{6}$$

Where $\text{X} = f$ (log Short Term Market Loans, Effective Interest Rate Differential on Short Term loans) and u_i is between entity error. In addition, to see whether interest rate differential improves exports of the corporate firms, we estimate the following equations:

$$\log \text{exports} = \alpha + Log\ Interest\ rate\ differential\ \beta + u_i \tag{7}$$

Results obtained from Equation 6 and Equation 7 are reported in Table 3. These results show that with one percent increase in effective interest rate differential EFS increases by 1 percent, while one percent increase in short term loans reduces the EFS loans by 77 percentage points (0.77 percent). In addition, in the presence of

subsidized loans for exports, interest rate differential positively affects the export sales.

While, the equation for long term subsidized loan is defined as:

$$\log \text{LTFF} = \alpha + Log \ X\beta + u_i \qquad i = 1, 2, \dots N \qquad (8)$$

Where X = f (log Long Term Market Loans, Effective Interest Rate Differential on Long Term loans) and u_i is between entity error. Results obtained from equation 8 are reported in Table 3. These results are significant at 1 percent. Based on results of our sample companies, we do not find any evidence of substitution of loans between long term loans and LTFF. However, we observe that effective interest rate differential on Long term loans significantly increases the volume of LTFF. One plausible reason for this could be the low interest rate differential between long term market loans and LTFF, as graphically explained in Figure 2 in earlier part of this section.

VI.   Conclusion

Most developing countries have used subsidies to promote exports, generate new investment opportunities and facilitate existing firms to update their knowledge, increase their R&D expenditure for innovation and diversification of their products, and expand their existing capacity. This not only helps these corporate firms to compete in international market, acquire new knowledge, but it usually holds positive spillovers on the economy. However, if these subsidies are misallocated and misutilized, economies might not reap the full benefits.

Evaluating the case of Pakistan from the perspective of monetary policy, we used effective interest rate differential on short term and long term loans to assess the effectiveness of subsidized lending towards export promotion and fixed capital formation. Our results shows that short term subsidized lending helps in boosting

exports, and sales revenues of the corporate firms while long term subsidized loans (LTFF) does help in capital formation. At the second step, we investigated whether corporate firms substitute their subsidized loans with the rise in interest rate differential. Our results shows that in short run companies readjust their borrowing portfolios and substitute their short term market loans with EFS loans; however, given the lower interest rate differential for long term loans, no such substitution takes place in long term loans.

Findings of this study suggest that subsidized lending can be effectively used as a tool to promote exports, and may help companies in fixed capital formulation. This study only considered large firms, listed at Karachi Stock exchange. These firms hold good relationship with the banks and are able to tap resources from the system even during the times of economic hardships. Yet the study observed that during the phase of tight monetary policy, these firms face high risk premium, which keeps their interest rate differential quite high and as a result they become more reliant on subsidized loan. While, bulk of this facility is availed by SMEs, who might have much higher risk premium and survive as well as compete on the basis of subsidized loans. We expect them to be more dependent on subsidized loans and thus discontinuation of these facilities may harm the small scale industries. However, given the fact that even large firms, who are comparatively less financially constrained, substitute their short term market loans with the EFS loans; there is a need to make these subsidized loans schemes more rational. Different measures such keeping a smaller interest rate differential and strong checks for the utilization of facility can be introduced. Additionally, now SBP uses Policy rate as tool for monetary policy, these rates should be linked with policy rate, rather than T-Bill rate.

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Annexure

	Market Loans	Subsidized Loans	Short term market loans	EFS loans	Long term Market Loans	LTFF Loans
Table 1: Number of Fresh Loans in Matched Sample						
FY07	49,284	12,658	10,650	7,570	38,634	5,088
FY08	48,125	10,870	12,064	7,969	36,061	2,901
FY09	39,398	6,899	15,437	5,243	23,961	1,656
FY10	29,502	5,106	14,665	3,638	14,837	1,468
FY11	23,653	4,939	13,340	4,330	10,313	609
FY12	17,075	2,698	11,556	2,357	5,519	341
FY13	6,928	3,022	6,352	2,819	576	203
Total Loans	**213,965**	**46,192**	**84,064**	**33,926**	**129,901**	**12,266**

Source: eCIB, State Bank of Pakistan

	log Sales Revenue	log Sales Revenue	log Exports Sales	log Exports Sales	log Exports Sales	log Fixed Assets	log Fixed Assets
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Table 2: Interest Differential, Borrowing Effects and the Firms Productivity							
log Cash and Bank Balances (lag1)	0.112***	0.0425*					
	(0.0199)	(0.0218)					
log Short Term Loans	0.258***						
	(0.0247)						
log EFS Facility Availed		0.111**	0.199***	0.200***	0.117*		
		(0.0489)	(0.0571)	(0.0607)	(0.0609)		
Interest Differntial (Short Term)				0.0329*			
				(0.0189)			
log Short Term Market Loans		0.166***			0.197***		
		(0.0505)			(0.0513)		
log LTFF Availed						0.249***	0.0923**
						(0.0276)	(0.0429)
log Long Term Market Loans							0.167***
							(0.0408)
Interest Differntial (Long Term)							0.0298***
							(0.0071)
Constant	14.40***	15.41***	16.22***	15.78***	13.74***	16.15***	15.76***
	(0.5440)	(0.5930)	(1.0840)	(1.1650)	(1.0450)	(0.5060)	(0.5280)
Observations	1,504	406	387	356	373	437	415
Estimation Tech	FE	RE	FE	RE	RE	FE	FE
Number of id	162	60	56	53	55	57	53

Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 3: Do Corporate Firms Substitute Subsidized Loans with Market Loans

	log EFS	log LTFF	log Exports	log Sales
	(1)	(2)	(3)	(4)
Log Short Term Market Loan	-0.777**			
	(0.3480)			
Interest Rate Differential (Short Term)	1.627*			0.137***
	(0.8260)			(0.0262)
Log Long Term Market Loan		0.592***		
		(0.0514)		
Interest Rate Differential (Long Term)		0.686***		
		(0.2040)		
EFS			0.0250**	
			(0.0118)	
Constant	25.99**	7.460***	20.58***	22.17***
	(8.8670)	(1.2340)	(0.2420)	(0.2740)
Observations	352	270	273	915
Estimation Technique	BE	RE	FE	RE
Number of Firms	108	95	82	136

Robust standard errors in parenthesis: *** p<0.01, **<0.05, *p<0.1