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## ABSTRACT

In the framework of uneven access in bank finances, our study empirically examines the asymmetrical contribution of the large and small exporters in India's export growth. By using panel threshold model developed by Hansen, 1999 we examine the impact of packing credit and other available sources of bank finances utilized by large and small exporters during 2002-03 through 2018-19. Our major findings are (a) packing credit, short term bank loans are effective to induce export growth of India, however, packing credit is more conducive, especially for small exporters; and (b) reduction in lending cost through interest subvention has significant positive effect on export. The important policy recommendations of our study are (i) differentiated interest rate favoring the small exporters may boost India's export even further; and (ii) to reap the benefit of government induced interest subvention more emphasize to be given for the small exporters.

**Key Words**: Packing Credit, Short-term Demand Loan, Interest Subvention in Pre-shipment Credit, Export Growth.

**JEL Classifications**: F19, F39, F49

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## 1. Introduction

Achieving a significant export growth has long been one of the important objectives of the government of India (GoI). To reach this target, financial incentives in the form of direct and/or indirect cash subsidies, export credit facilities for pre- and post-shipment transactions, special foreign exchange allocation, remission of tax normally chargeable on profits, etc. are popular initiatives in export promotion in India. One among the recent schemes of the GoI which has received considerable attention in the banking and financial domain is *interest subvention scheme* (ISS). This subsidy scheme has been modified later as *interest equalization scheme* (IES) to accommodate more exporting sectors under subsidized financing with a differential pricing for MSMEs.[1] The main objective of ISS/IES is to provide packing credit (PC)[2] or pre-shipment credit in Indian Rupee to the exporters at a subsidized rate. It has two important policy bearings: (1) lowering the supply price in the international market by reducing the cost of production; and (2) to make the exporting sectors to grow further and thereby generating more employment opportunities. In this paper, we argue that PC plays an important way of financing the production cycle, especially when the seller receives a purchase order by which shipment happens in advance to the payment (Jimenez, 2012; Sanati, 2017).[3]Especially, in the absence of advance payment, an exporter may borrow either (a) short term demand loan or bank loan (BL) and/or (b) PC to execute the production and the shipment. However, these two alternative sources of export finance are available at two different ranges of interest rates.

Given this backdrop, we have three-fold objectives to examine 1) the distinctive impact of utilization of bank finances in terms of PC, BL and other alternative sources, for example bill purchase, bill discount and advances against the bill (henceforth, liquidity) on the export growth of India; 2) conducive impact of large and small exporters in this regard; and 3) the impact of interest rate subvention and reduction in the lending cost on export growth of India. It is obvious that banks are likely to follow variance lending policies depending on the creditworthiness or the size of the business. In this framework of non-linearity in accessing bank finance, our study empirically examines if there exists any significant difference between large and small borrowers in contributing to the

[1] ISS has been introduced in 2007 and modified as IES in 2015.

[2] According to the Reserve Bank of India (RBI), PC refers to the loan or advances availed from banks by an exporter for financing the purchase, processing, manufacturing or packaging of goods prior to shipment and/or working account expenses towards rendering of services (RBI, 2014). It is mainly provided against the irrevocable letter of credit (LC) opened in favor of exporter or some other person by the overseas buyer against the confirmed purchase order. LC is a non-fund-based credit facility provided by the bank of the importer. Irrevocability signifies that the terms and conditions of the payment cannot be changed without the consent of all the parties involved in trade transactions.

[3]Four different payment methods are common in international trade transactions. See Box 1 in the Appendix for further details. Also, financial instruments, for example bill of exchange or draft is described in Box 2.

export growth of India. For this we have considered bank finances through the channel of PC, BL and liquidity for the period 2002-03 to 2018-19.

Traditionally, most research has focused on the relation between firm size and trade (see Bonaccorsi, 1992; and Berry, 1992). Often, for both developing and industrialized countries, an inverted U-shaped relationship between size and export propensity has been observed (e.g., Wagner, 1995; Kumar and Siddharthan, 1994). However, the non-linear utilization pattern of bank finances by the large and small borrowers and its impact on the export growth remains unexplored. Our study is the first of its kind which examines the existence of threshold level in utilizing the bank finance and its impact along with examining the subsidy as a financial incentive to promote export of India. Our empirical findings suggest that the small borrowers are more sensitive to the availability of finances for all PC, BL and liquidity. Moreover, the PC availed by the small exporters is found to be more effective for export growth of India. It might also be noted that financial incentive is significant to boost export growth of India. Our study reveals that additional reduction in the cost of fund by reducing lending rate further can help enhancing export growth even more. Thereby, this study recommends that government's policy initiatives may be more inclusive to accommodate the small and medium scale exporters for more effective enactment of financial incentives.

The paper unfolds as follows. Section 2 discusses the review of the existing literature in details. Section 3 describes preliminary analysis with descriptive statistics and correlation structure to understand some operational aspect of utilization of bank finance by exporters. While Section 4 discusses the data used in our study, Section 5 explains the methodology followed. Empirical findings are reported in Section 6, while Section 7 concludes. Appendix shows some further information.

## 2. Review of the Literature

To have a historical overview, India had emphasized more on import substitution than on export promotion during the initial years. For instance, devaluation of Indian Rupee in 1966 was supposed to benefit exports. However, with reductions in export subsidies and increases in export taxes accompanying devaluation, the extent of bias of the incentive system favoring import substitution and against exports has increased rather than decreased (Bhagwati and Srinivasan, 1975, Chapter 6). Export incentive measures introduced later, including cash subsidy, duty drawbacks, import replenishment licenses, and preferential licensing for capacity expansion. However, all these incentive schemes were in general subject to complex procedures and considerable uncertainty as to their extent and availability. In a nut-shell, India provides an example where investment, production, and import controls applied in the planning process actually compromised the effectiveness of export incentives and constrained the growth of the national economy (Balassa, 1978).

Role of the financial incentives in export promotion such as direct and/or indirect cash subsidies, export credit facilities for pre- and post-shipment transactions, special foreign exchange allocation, remission of tax normally chargeable on profits, etc. and various related issues have also been well discussed in the literature (see for example, Demirgüç-Kunt and Erzan, 1991; World Bank, 1993; Harrold et al., 1996; Banerjee and

Newman, 2003; Weiss, 2005; and others).[4] In India, export promotion policies took on a new urgency, especially in the 1980s, and were rewarded by a significant increase in the export growth rate in the second half of the decade. It is well known that export profitability is a key determinant of export success. In spite of the export promotion drive in the 1980s, profitability in the (heavily protected) domestic market remained significantly higher than that in the export market. Hence, the main objective of the trade and exchange rate policies introduced since July 1991 was to enhance export profitability and eventually eliminate the gap in it between the domestic and export markets (Kathuria, 1996). It is also well documented in the literature that the exports sector contributes to GDP growth more than many other sectors (see for instance, Tyler, 1981; Feder, 1982; Darrat, 1987; Ito et al., 1995; Sachs et al., 1995; Wangwe, 1995; Subasat, 2002; Abbasi et al., 2019; and others). Since Indian economy achieved mostly service-led growth in the recent past (see for instance, Banga, 2006; Ghose, 2015; and others), it may not be able to induce her tangible exports. Rather, such service-led overall economic growth may be so counter-productive that the efficiency and productivity of its commodity production may be compromised and make the producers' less competitive in the export market. Consequently, there exists a negative nexus between the export growth and GDP growth (Dodaro, 1993). Also, bi-directional relation is also observed in the literature in this regard (see Gabriele, 2006; Balcilar et al., 2013; Dritsaki, 2013; Ahmad et al., 2018; and others for details). However, empirical literature examining the impact of financial benefits to the exporter in enhancing export growth is limited. In this backdrop, this paper specifically discusses the differential role of trade credit and packing credit in the international trade literature.

### 2.1 Theory of Trade Credit and Packing Credit in International Trade

Mainly two types of financing are available in international trade: (a) trade credit (Maksimovic and Frank, 2005; Wilner, 2000; Fisman and Love, 2003)—a credit facility available for financing import coming to India and it is extended directly by the overseas suppliers, banks or financial institutions (RBI, 2014);[5] and (b) pre-shipment credit or packing credit, popularly known as export credit. The former is also of two types: (i) buyers'; and (b) suppliers' credit. In the literature, trade credit is usually measured by accounts payables and receivables (Mian and Smith, 1992; Ono, 2001; Vaidya, 2011). To specify, Vaidya (2011) shows that there exists strong empirical evidences in support of an inventory management motive for the existence of trade credit. Also, the firms with high profit are not active in paying and receiving trade credit. However, this study does not address the issue of availability of finance in promoting export growth, neither it distinguish export and import financing, especially from the banks' operational perspectives. We would like to address this issue as well in our study.

Studies are also there in the literature discussing the theory of trade credit and its relation with credit rating, credit insurance and profitability of the clients (see, for instance, Biais and Gollier, 1997; 2003; Burkart and Ellingsen; 2004; Auboin, 2009; Martínez-Sola et al., 2014). Ahn (2011) has examined and concluded that the riskiness of international trade transactions is rising day by day relative to that of domestic trade

[4] Role of the export credit insurance schemes in this regard, for both pre- and post-shipment of the export has also been discussed in the literature (see, for example, Fitzgerald and Monson, 1988).

[5] Interested reader(s) may look at https://www.rbi.org.in/scripts/BS_ViewMasCirculardetails.aspx?id=8101#S57 for further details in this regard.

transactions. There are many studies discussing on trade credit (see Meltzer, 1960; Kashyap et al., 1993; Calomiris et al., 1995; Petersen and Rajan, 1997; and Danielson and Scott, 2004). For instance, Petersen and Rajan (1997) show that the suppliers do not appear to rely on information provided by lending relationships. Measures of the strength of institutional relationships or the risk premium on institutional loans granted have little effect on how much trade credit a firm is offered. They conclude that suppliers actually collect and use different information than financial institutions. On the other hand, Agostino and Trivieri (2014) conclude that the banks seem to consider suppliers a reliable source of information on firms' financial conditions, even after several years of lending relationships. Danielson and Scott (2004) observe that firms increase their demand for trade credit and credit card debt when facing credit constraints imposed by banks. It provides some evidence of a pecking order of debt financing, where firms increase their reliance on potentially expensive sources of funds when bank loans are not available.

With regard to the trade credit-export nexus, Paravisini et al. (2015) observe in Peru that the credit shocks affect the intensive margin of exports, but have no significant impact on entry or exit of firms to new product and destination markets. Again, credit shortages reduce exports through raising the variable cost of production, rather than the cost of financing sunk entry investments. They have followed Mulligan and Rubinstein (2008) approach and document the heterogeneity of the intensive margin of elasticity for export flows with different probabilities of continuation. These probabilities have been estimated using Probit model in their study. Muûls (2015) also shows for Belgian manufacturing that Firms with lower credit constraints are more likely to be exporting or importing more. Specifically, for exports, the intensive and extensive margins in terms of products and destinations decreases with credit constraints. She uses a linear probability model for her econometric estimation in light of the work of Bernard and Jensen (2004).

From our critical review of the prevailing literature, it may be noted that packing credit and trade credit are two different types of credit available in banking operation to facilitate export growth and import growth respectively.[6] While the impact of trade credit is well examined, there hardly exists any study assessing the impact of PC utilization in enhancing export growth except one by Sanati, 2019. This study hypothesized that large borrowers receives loan at a low interest rate and concludes that, usage of PC by the medium and small exporting sectors is highly effective for export growth in India. In this milieu, our study adds to the literature by exploring the heterogeneity in bank finance utilization with an existence of threshold level and thereby, examining the non-linear contribution of large and small borrowers for India's export growth.

## 3. Analytical Framework and Operational Aspects of Export Finance

This section reveals some preliminary analysis on the utilization of PC and BL across the sectors. Figure 1 shows that the utilization of PC per account or per exporter is relatively much higher[7] compared to BL.

[6] See Box 3 in the Appendix for further details.

[7] Since PC is available only to the exporting firm while BL is to any production unit, the total number of accounts availing PC is likely to be smaller than for BL. Hence, we use *per account* outstanding PC with that of BL for a worthwhile comparison between them, unlike the way referred in the conventional literature considering export credit as a ratio of total bank credit.

On the other hand, if we compare the utilization of PC and BL to their respective sanctioned limit we observe that despite of limit being sanctioned under packing credit, percentage of utilization has been falling over time as shown in the Figure 2. Also, the subsidy under ISS or IES could not provide much boost in utilization pattern of packing credit by exporting funds. This is a little surprising that despite the low cost of PC and the sanctioned amount available, the industry is unable to reap the benefit at its best. The possible explanation could be the existence of unwillingness in disbursement of credit across *all size* of the exporters due to the skewed preference of banks. This results in likely exclusion of needy exporting sectors for whom the subsidized credit is purposively provided by the GoI.

Existence of credit risk automatically takes a pool of borrowers out from the PC facility itself. So, the subsidy is not at all a feasible option for this excluded group of borrowers. For instance, the Table 1 shows that the deployment of per account PC remains very high, for example, itwas INR798.4 million per account in 2013-14 and 974.6 millionper account in 2016 -17 for *petro and petro products*. All the more, the unparalleled trend in utilization of PC per account for large exporters may be obvious due to their large scale of operation and high credit rating. Also, sometimes procedural complications of having access to a low-cost PC could be a reason for certain non-inclusion.

Nonetheless, the sectoral distribution of BL per account and PC per account reveals that all the exporting sector prefer utilization of PC compared to otherwise available short-term loan (Figure 3). It may be noted that although *petro and petro products* are not eligible for any subsidy for availing PC, however, the sector is highly preferred to banks due to likely good rating and a high volume of the business (as seen in Figure 3 and Table 1). Hence, being one of the largest exporters, it effectively enjoys the benefits of low-interest cost even without any interest subsidy provisioning. For instance, this sector, along with gems and jewelry, may be charged only the base interest rate, i.e., 10% (and mostly without any processing fees), whereas the initial interest cost for a mid-size exporter, even if the most favorable, maybe 12% and the effective cost of fund, therefore, becomes 11% (with 3% interest subsidy, however, 2% additional processing fees).

Also, the similar conclusion can be drawn from our preliminary analysis of descriptive statistics. It is observed that utilization of PC is higher across various sectors, since central tendency values (i.e., mean and median) are also way above for PC than BL(in the Table 2).[8] Moreover, negative kurtosis for many of the sectors imply that, these are not subject to any unexpected loss scenario or tail risk. On the other hand, few sectors with positive values signify that some borrowers are allowed to borrow unexpectedly large amount of BL and/or PC compared to the overall intra-sector borrowing distribution. It implies that if such large borrowers default, although less likely, it may have an adverse effect on the lending banks.

Sector-wise correlation (in the Table 3) reveals that there exists a strong complementary relationship between disbursement of PC and BL mostly for all the sectors, except a few, for example, engineering, petro and petro products, cements etc. On the other hand, correlation structure between export and BL vis-à-vis export and PC show positive and significant relationships for most of the sectors except mining and quarrying and construction. With such preliminary findings, we hypothesize that availability of

[8] Needless to note a general feature of different sectors of the Indian economy is that, per account usage of both PC and BL is far above for the *petro and petro products* group than the others for obvious reason.

finance for the exporters and, hence for overall export growth in India play a highly significant role.

## 4. Database

*Financing* aspect of *international trade* is mostly an unexplored area in academic research, particularly due to the lack of availability of a comprehensive and consistent set of empirical data. And, that again for the area being highly operational and there exists extensive diversity in related concepts and activities[9].

Of course, some macro-level time series data are available in the International Chamber of Commerce's (ICC) annual report (2010, 2011 and 2012 and so on) on the total use of each of these payment methods for the world as a whole and sometimes even across countries. With impressive growth in the area of trade finance across both the developed and developing countries, it was only in 2009 when the ICC Banking Commission decided to provide a timely analysis of patterns of trade finance across markets worldwide.

We use export value data from Export-Import Databank, Ministry of Commerce and Industry, Government of India, while that on sector-wise PC and BL, export bill purchased, discounted and advanced against are extracted from Basic Statistical Returns of Scheduled Commercial Banks in India by the RBI. On the other hand, individual bank-wise data on the disbursement of PC and short term BL are not available in the public domain, although all banks mandatorily do report pre- and post-shipment credit disbursement information to the RBI. The data for lending rate and GDP growth are taken from world development indicator.

Depending on the availability of the data, we choose 2002-03 through 2018-19 as our sample period. We first calculate per account use of PC for each industrial sector and subsequently choose the sub-sectors to be studied. To be specific, if any of such sub-sectors usage of per account packing credit is consistently more than the overall usage, then we select it for our analyses. For example, per account packing credit in textile is INR 9.37, 10.19 and 9.39 million in 2011, 2012 and 2013 respectively. So, we select only cotton industry as the sub-sector which is consistently using PC more than the respective overall usage of the textile sector during these three years. Conversely for the agricultural sector, as the data on outstanding PC is available in two subgroups: direct and indirect finance, we consider the overall amount of per account use of PC considering both the sub-groups. Largely we have followed the RBI classification for mapping the data of export growth and utilization of PC and BL

## 5. Methodology

Heterogeneity is found to be very common in time series analysis. However, in recent times the issue is gaining importance in panel data analysis also. While panel data models are estimated especially for the purpose of economic policy analysis, it is extremely important to consider the possible presence of heterogeneity. The ordinary fixed effect and random effect models only consider heterogeneity in intercepts. In this regard, the panel threshold model developed by Hansen (1999) considers heterogeneity in slopes and has been extensively used to address different economic policy issues.

[9] Even the firm-level balance sheet data, available at CMIE-Prowess or Ace Equity databases, sometimes lack consistency over periods.

In the present study, we have estimated the following single-threshold model:

$$\ln exp_{it} = \alpha + \boldsymbol{X}_{it}(q_{it}, \gamma)\boldsymbol{\beta} + u_i + e_{it} \quad (1)$$

where $\ln exp_{it}$ is the log of exports, $\boldsymbol{X}_{it}$ is the vector of explanatory variables used, $q_{it}$ is the threshold variable, and $\gamma$ is the threshold parameter. The variables$u_i$ is the sector-specific fixed effect and $e_{it}$ is the error term.

$$\boldsymbol{X}_{it}(q_{it}, \gamma) = \begin{cases} \boldsymbol{X}_{it} I(q_{it} < \gamma) \\ \boldsymbol{X}_{it} I(q_{it} \geq \gamma) \end{cases}$$

where $I(\bullet)$ is an identity function.The Eq. (1) can alternatively be written as follows:

$$\ln exp_{it} = \alpha + \boldsymbol{X}_{it}(q_{it} < \gamma)\boldsymbol{\beta_1} + \boldsymbol{X}_{it}(q_{it} \geq \gamma)\boldsymbol{\beta_2} + u_i + e_{it} \quad (2)$$

where $\boldsymbol{\beta_1}$and $\boldsymbol{\beta_2}$are coefficient vectorsfor the two regimes. These two regimes coefficients are used to test for the possible presence of non-linearity. The null and alternative hypothesis for testing the linear versus the single threshold model is as follows:

$$H_0: \boldsymbol{\beta_1} = \boldsymbol{\beta_2}$$

and

$$H_1: \boldsymbol{\beta_1} \neq \boldsymbol{\beta_2}$$

The test statistics follows $F$ distribution. Now, since the threshold value is not identified under the null hypothesis, the test statistics has a nonstandard asymptotic distribution. Then the critical values for $F$ statistics has been estimated using bootstrap to test the significance of the threshold effect.

In specific, here we have estimated three models as follows:

$$\ln exp_{it} = \alpha + \beta_1 \ln REER_t + \beta_2 D\_Sub_t + \beta_3 LRD_{it} + \beta_4 \ln PC_{it}\,(q_{it} < \gamma) + \beta_5 \ln PC_{it}\,(q_{it} \geq \gamma) + u_i + e_{it} \quad (3)$$

$$\ln exp_{it} = \alpha + \beta_1 \ln REER_t + \beta_2 D\_Sub_t + \beta_3 LRD_{it} + \beta_4 \ln BL_{it}\,(q_{it} < \gamma) + \beta_5 \ln BL_{it}\,(q_{it} \geq \gamma) + u_i + e_{it} \quad (4)$$

$$\ln exp_{it} = \alpha + \beta_1 \ln REER_t + \beta_2 D_{Sub_t} + \beta_3 LRD_{it} + \beta_4 \ln Liq\ Adv_{it}\,(q_{it} < \gamma) + \beta_5 \ln Liq\_Adv_{it}\,(q_{it} \geq \gamma) + u_i + e_{it} \quad (5)$$

where $\ln REER_t$ is the log of India's real effective exchange rate with export-based weight and at base 2004-05, D_Sub is a dummy variable to capture interest rate subvention scheme, which takes value zero for the period 2002-03 to 2006-07 and one for the years 2007-08 and later, $LRD_{it}$ represents the interactive dummy for interest rate subvention and lending rate in India at which banks lend to its most creditworthy customer.

The other three explanatory variables are $\ln PC_{it}$, $\ln BL_{it}$, and $\ln Liq\_Adv_{it}$. Model1 and 2 considerln $PC_{it}$ or log natural of packing credit outstanding (in millions of Indian Rupees). Models 3 and 4 consider $\ln BL_{it}$ or log of Bank loan with one-year maturity (in millions of Indian Rupees). Lastly, Model 5 and 6 consider $\ln Liq\_Adv_{it}$ or Liquidity which is the total of export bill purchased, export bill discounted and export bill against advanced payment (in millions of Indian Rupee).[10] In other words, equations (3), (4) and

[10]Data for bills against advance payment is not available for some sectors in few years. So, it is unweighted average of the other two in such cases. Moreover, since overall *Liquidity* value comes as

(5) are referred as Model 1, 3 and 5 respectively, whereas their corresponding counterparts, incorporating time-specific fixed effects as an additional component on the right hand side, are respectively referred as Models 2, 4 and 6. We have done this as a robustness check.

To divide the exporters group into the large and small borrowers we have used a threshold variable represented by *total credit of each sector in a particular year*. Primarily we have used three models to examine 1) the impact of interest rate subvention and utilization of PC by large and small exporters on export growth; 2) the impact of interest rate subvention and utilization of BL by large and small exporters; and 3) the impact of interest rate subvention and liquidity for large and small exporters. Exporter may go for purchasing or discounting the bill or requesting for advance against the bill in case any export bill is due for payment from overseas party. Exporters submit the bill of exchange along with other documentary evidences of shipment to banks and request for advances. Therefore, these are alternative sources of otherwise available liquidity in hand, either to repay the existing loans or endure the next production cycle. Hence, its expected effect on export is positive.

As is already noted, we have considered an intercept dummy to capture the effectiveness of interest subvention scheme introduced in 2007. Since it is defined to take the value unity for the period 2007-08 onward, its positive (negative) coefficient would indicate that the scheme successfully serves (fails to serve) its purpose. We have also considered an interactive dummy in this connection, by taking the product of *Lr* and subvention dummy in order to capture the additional effect of change in the cost of fund after the subvention scheme is introduced. Thus, its negative coefficient would imply that the interest subvention scheme does successfully boost India's export through reducing cost of fund. Due to the lack of sector specific data available over the years, our major time varying control variable is *REER*. Since an increase in REER implies an appreciation of Indian Rupee, it is supposed to negatively affect her export from the conventional theoretical point of view.

## 6. Empirical Findings

Our estimated results of panel threshold model proposed by Hansen (1999) show that there exists a significant non-linear relationship for utilization of credit for all our empirical models. Overall, we find that the utilization of PC, BL and liquidity are effectively and significantly contributing to the export growth of India. Moreover, the similar coefficient values for all PC, BL and liquidity across the models with statistical significance reveal the robustness of the test. *Model 1 and 2* conclude that 1 per cent increase in utilization of PC by small exporters will lead to 0.21 percent and 0.13 per cent increase in export growth of India respectively. This result is relatively stronger compared to its counterpart which concludes that the large exporters account for 0.16 percent and 0.08 percent increase in export growth respectively. On the other hand, *Model 3* concludes that 1 per cent increase in utilization of BL by small exporters significantly contributes in enhancing the export growth by 0.11 per cent whereas there is no significant contribution seen for BL utilized by the large exporters. Similarly, *Model 4* reveals that BL is not significantly contributing either for small or larger exporters. On the contrary, *Model 5 and 6* conclude that for small exporters 1 per cent increase in bill

zero for some cases, we change the origin of this variable by unity for all the observations to maintain the balanced nature of our data panel.

purchase, discount and advances against bill (refer variable *liquidity*), leads to 0.05 per cent and 0.06 per cent increase in the export growth, while these alternative sources of finance have no statistically significant impact on the export growth for the large exporters.

All the above-mentioned results imply that, although *packing credit* and *bank loan* and *liquidity* are important determinants for export growth, the utilization of PC has been relatively more dominant than the rest. Most notably, all the above-mentioned bank finance channels are especially effective for the small exporters. These findings are significant as we observe that banks remain reluctant to lend *packing credit* with majority of its sanctioned limit are underutilized. Also, an unparallel disbursement trend towards large exporters might be a deterrent to achieve a better export growth trajectory. In this context, our empirical findings reveal a significant asymmetrical impact of utilization of PC and BL by the small and large exporters. Moreover, our non-linear estimation concludes that the efficacy of subsidized PC is more on the small exporters.

Furthermore, interest subvention scheme is also observed to successfully boost India's export growth. Our empirical findings in *Model 1, 3 and 5* with the significant and positive coefficients of the subvention dummy imply that financial incentives provided by GoI are effective for export growth. However, we argue that the cost of borrowing for the large exporters, sometimes even without subsidy, is much lower than the small and medium exporters, eligible for subsidy. In this context, our empirical finding confirms that improved affordability of such subsidized finance might effectively fulfill the need of the small exporters. Also, we find that the interactive dummy with lending rate is significant and negative which implies that additional reduction in the cost of fund would improve India's export growth further. These findings are in line with the study of Sanati (2019) which shows that interest subsidy leads to the reduction in the production cost and thereby contributes to further growth of Indian export. Also, the small and medium size exporters contribute more to the export growth of India.

We have also observed significant negative effect of *REER* on India's export in Model 2, 4 and 6. Needless to mention that, these observed effects elaborated above corroborate theoretically desired results.

## 7. Conclusion

In this study we examine if there exists any significant non-linear relationship in utilization of bank finance by the exporters and that leads to a distinctive role in India's export growth. The determinants of export are well examined in the economics literature, however, the impact of the availability of bank finance and the related subsidy available to large and small exporters in executing the export order remained largely unexplored. Our study, for the period 2002-03 to 2018-19, addresses this issue by examining the relative role of utilizing *packing credit*, *short-term bank loan* and otherwise available credit, for example, *bill purchase, bill discount, bill against advance payment* (referred as liquidity) on export growth. In addition, this study examines the financial incentives of GoI in terms of interest rate subsidy and the reduction in cost of fund to promote export growth.

Our empirical estimations of threshold panel analysis reveal that there exists a significant non-linear or asymmetrical utilization of available bank-finance and it plays a very important role in determining India's export growth. Although all of the *packing credit*, *short-term bank loan* and liquidity have export-inducing effects, relative

importance of the *packing credit* is more conducive than the others as far as the India's export growth is concerned. Especially, this finding is more effective for the small exporters. Importantly, it might be noted that government induced interest rate subvention scheme is effective to contribute faster export growth and an additional reduction in the cost of credit will be more beneficial.

Our findings have important policy implication favoring further even disbursement of *packing credit*. Policy makers might need to incentivize the financial institutions for effective implementation of disbursement of subsidized credit, especially with a differential interest cost charged to the exporters below the threshold level. This would surely boost India's export growth even further.

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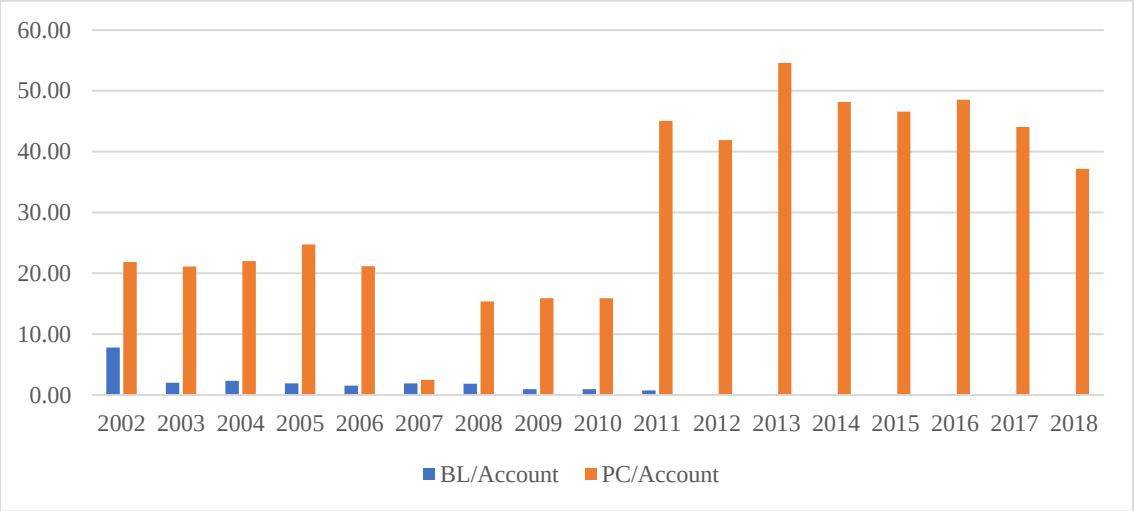
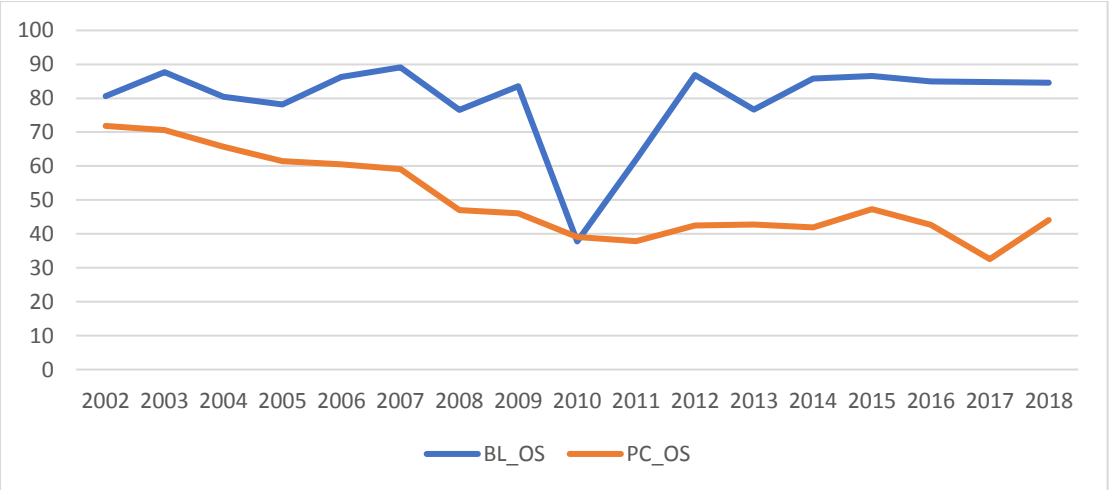
**Figure 1: Per account PC vs. Per account BL outstanding for Exporting Sector (in INR Million for 2002-03 to 2018-19)**




Source: Authors' Own Compilation using RBI database

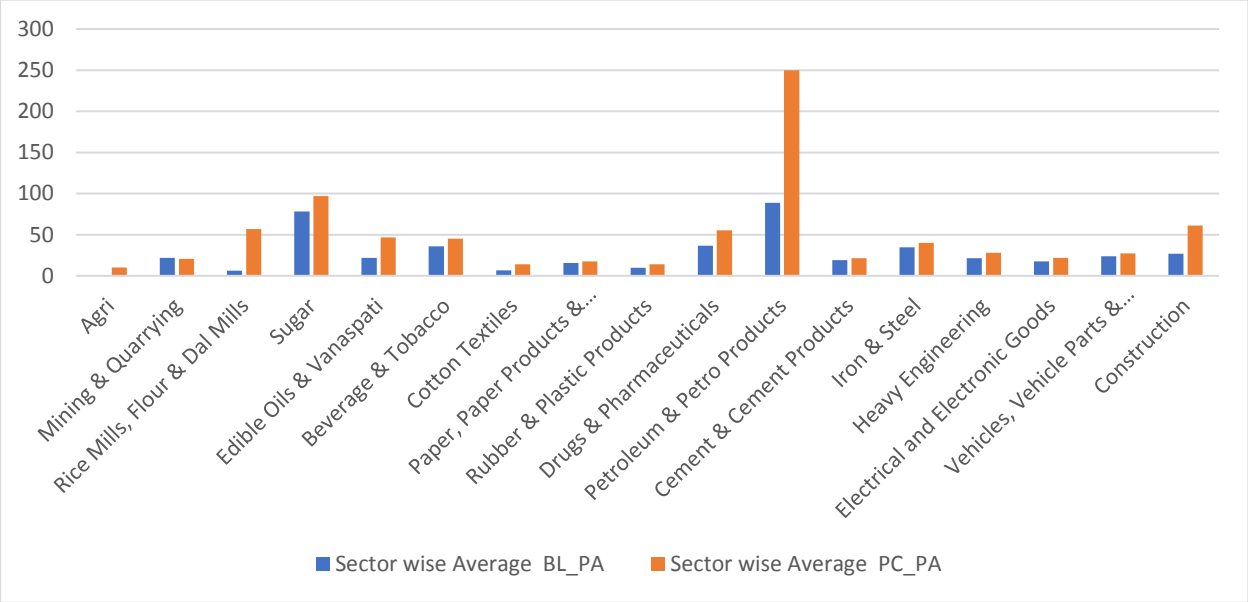
**Figure 2: Outstanding PC and BL to their Respective Sanctioned Limits (in Percentage for 2002-03 to 2018-19)**




Source: Authors' Own Compilation using RBI database

**Figure 3: Sectoral Distribution of Outstanding BL and PC per Account during 2002-03 to 2018-19**

(amount in Million INR)




Source: Source: Authors' Own Compilation using RBI database.

**Table 1: Per account Packing Credit Outstanding across Different Sectors of the Indian Economy (in INR Million)**

| | 2002-2003 | 2003-2004 | 2004-2005 | 2005-2006 | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 | 2016-2017 | 2017-2018 | 2018-2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Agriculture | 16.32 | 16.07 | 9.38 | 7.94 | 3.70 | 0.90 | 4.42 | 4.50 | 17.46 | 18.79 | 15.92 | 13.12 | 17.12 | 10.94 | 18.46 | 20.74 | 20.36 |
| Mining & Quarrying | 24.10 | 13.23 | 20.40 | 16.82 | 13.60 | 2.58 | 26.35 | 40.2 | 26.54 | 54.61 | 27.23 | 38.74 | 21.24 | 24.87 | 30.50 | 21.51 | 9.22 |
| Rice Mills, Flour & Dal Mills | 57.69 | 62.32 | 69.40 | 29.74 | 32.91 | 3.48 | 74.50 | 59.0 | 67.65 | 80.54 | 81.34 | 139.42 | 139.46 | 85.06 | 59.08 | 68.27 | 61.02 |
| Sugar | 27.18 | 31.04 | 70.97 | 78.75 | 107.99 | 9.70 | 53.68 | 46.37 | 130.64 | 242.61 | 175.60 | 329.23 | 301.24 | 249.08 | 128.57 | 219.02 | 126.55 |
| Edible Oils & Vanaspati | 17.09 | 25.05 | 24.80 | 32.09 | 30.50 | 7.11 | 50.37 | 35.69 | 51.46 | 72.02 | 103.50 | 76.19 | 80.73 | 77.86 | 96.09 | 110.37 | 94.87 |
| Beverage & Tobacco | 55.45 | 47.72 | 37.28 | 53.09 | 57.39 | 4.12 | 44.99 | 50.73 | 41.94 | 99.52 | 42.79 | 127.32 | 65.43 | 50.14 | 47.55 | 39.23 | 34.95 |
| Cotton Textiles | 13.69 | 15.54 | 15.35 | 16.05 | 13.94 | 1.37 | 10.20 | 11.33 | 15.24 | 18.83 | 19.16 | 23.20 | 18.26 | 20.58 | 17.45 | 17.67 | 17.53 |
| Paper, Paper Products & Printing | 14.21 | 13.13 | 13.23 | 9.26 | 17.29 | 1.94 | 15.35 | 24.36 | 22.27 | 26.83 | 22.26 | 37.55 | 34.18 | 38.67 | 26.36 | 20.16 | 15.36 |
| Rubber & Plastic Products | 11.10 | 14.53 | 15.01 | 13.48 | 14.80 | 0.88 | 7.69 | 6.50 | 20.67 | 20.77 | 20.13 | 22.58 | 24.78 | 24.39 | 24.84 | 24.98 | 21.50 |
| Drugs & Pharmaceuticals | 21.09 | 28.26 | 26.05 | 38.07 | 41.12 | 5.28 | 37.42 | 47.52 | 99.84 | 122.94 | 105.06 | 109.12 | 120.60 | 128.65 | 102.57 | 100.96 | 80.35 |
| Petroleum, Coal Products & Nuclear Fuels | 201.58 | 179.11 | 256.54 | 523.19 | 714.69 | 25.31 | 34.85 | 69.81 | 290.85 | 590.54 | 417.35 | 798.39 | 260.65 | 676.48 | 974.64 | 163.46 | 168.36 |
| Manufacture of Cement & Cement Products | 69.54 | 33.66 | 57.07 | 23.81 | 29.99 | 1.09 | 22.10 | 23.61 | 7.55 | 10.42 | 12.75 | 54.75 | 41.91 | 59.35 | 42.09 | 31.75 | 4.85 |
| Iron & Steel | 36.94 | 23.69 | 30.47 | 26.22 | 35.69 | 5.34 | 17.64 | 33.66 | 49.95 | 65.27 | 57.35 | 88.15 | 63.55 | 76.00 | 81.77 | 76.16 | 45.42 |
| Heavy Engineering | 7.86 | 12.14 | 28.96 | 39.22 | 16.34 | 1.79 | 14.24 | 24.06 | 19.07 | 62.73 | 57.04 | 125.63 | 75.12 | 69.53 | 43.22 | 48.06 | 39.47 |
| Electrical and Electronic Goods | 24.61 | 13.20 | 14.85 | 14.23 | 13.89 | 4.15 | 19.01 | 13.78 | 28.09 | 31.56 | 25.00 | 44.47 | 51.94 | 38.23 | 24.87 | 31.89 | 32.22 |
| Vehicles, Vehicle Parts & Transport Equipments | 14.61 | 13.75 | 13.46 | 21.65 | 25.34 | 2.83 | 49.15 | 29.21 | 26.71 | 40.55 | 32.20 | 40.78 | 38.89 | 49.63 | 52.14 | 59.75 | 51.60 |
| Construction | 92.53 | 50.90 | 18.07 | 33.19 | 36.49 | 2.17 | 129.14 | 76.08 | 115.40 | 99.62 | 121.63 | 228.17 | 132.76 | 77.54 | 59.62 | 76.88 | 67.37 |

Source: Authors' Own Computation.

**Table 2: Descriptive Statistics on PC and BL (2002-03 to 2018-19)**

| | BL Per Account (in Million INR) | | | | PC Per Account (in Million INR) | | | |
|---|---|---|---|---|---|---|---|---|
| | **Mean** | **Median** | **Skewness** | **Kurtosis** | **Mean** | **Median** | **Skewness** | **Kurtosis** |
| Agriculture | 0.41 | 0.52 | 4.09 | **16.83** | 10.15 | 14.52 | -0.52 | -1.15 |
| Mining & Quarrying | 21.93 | 23.87 | 1.44 | **2.21** | 20.50 | 22.80 | 0.70 | **1.21** |
| Rice Mills, Flour & Dal Mills | 6.19 | 5.76 | 3.57 | **13.70** | 56.83 | 64.98 | 0.60 | **1.49** |
| Sugar | 78.37 | 77.81 | 0.92 | **0.37** | 97.06 | 117.27 | 0.59 | -0.80 |
| Edible Oils & Vanaspati | 21.63 | 21.15 | 3.02 | **10.48** | 46.77 | 50.91 | 0.10 | -1.42 |
| Beverage & Tobacco | 35.65 | 37.66 | 0.14 | **0.32** | 45.20 | 47.64 | 1.43 | **3.77** |
| Cotton Textiles | 6.80 | 6.72 | 0.36 | -1.74 | 13.99 | 15.79 | -1.50 | **3.83** |
| Paper, Paper Products & Printing | 15.41 | 17.04 | -0.40 | -0.01 | 17.64 | 18.90 | 0.27 | -0.21 |
| Rubber & Plastic Products | 9.71 | 13.17 | -0.17 | -1.49 | 14.08 | 17.57 | -0.76 | -0.27 |
| Drugs & Pharmaceuticals | 36.41 | 37.73 | 0.46 | **1.61** | 55.23 | 67.79 | -0.09 | -1.72 |
| Petroleum, Coal Products & Nuclear Fuels | 88.74 | 91.27 | 1.18 | -0.21 | 249.88 | 258.60 | 0.68 | -0.64 |
| Manufacture of Cement & Cement Products | 19.24 | 21.87 | 0.22 | -0.98 | 21.58 | 26.90 | 0.33 | -0.91 |
| Iron & Steel | 34.47 | 37.64 | 1.38 | **2.48** | 40.09 | 42.75 | 0.10 | -1.05 |
| Heavy Engineering | 21.35 | 20.60 | 2.91 | **10.04** | 28.00 | 34.09 | 1.27 | **2.13** |
| Electrical and Electronic Goods | 17.64 | 22.14 | -0.43 | -0.94 | 21.68 | 24.74 | 0.50 | -0.07 |
| Vehicles, Vehicle Parts & Transport Equipment | 23.61 | 25.75 | 0.28 | -0.92 | 27.33 | 30.70 | -0.14 | -1.00 |
| Construction | 26.89 | 27.05 | 2.45 | **6.86** | 60.98 | 76.48 | 1.04 | **2.18** |

Source: Authors' own computation.

**Table 3: Sector Wise Correlation (2002-03 to 2018-19)**

| | BL &Exp | PC &Exp | BL &PC |
|---|---|---|---|
| Agriculture | 0.91*** | 0.84*** | 0.73*** |
| Beverage & Tobacco | 0.88*** | 0.68*** | 0.58** |
| Construction | 0.17 | -0.02 | 0.83*** |
| Cotton & Textile | 0.60** | 0.88*** | 0.72*** |
| Drugs and Pharma | 0.86*** | 0.94*** | 0.87*** |
| Edible Oil | 0.95*** | 0.92*** | 0.94*** |
| Electrical and Electronic Goods | 0.79*** | 0.85*** | 0.65*** |
| Engineering | -0.03 | 0.67*** | 0.00 |
| Iron and Steel | 0.65*** | 0.76*** | 0.75*** |
| Cement | 0.71*** | 0.02 | 0.38 |
| Mining and Quarrying | -0.01 | 0.37 | 0.13 |
| Paper | 0.55*** | 0.61*** | 0.89*** |
| Petroleum and Petro Products | 0.56** | 0.58** | 0.28 |
| Rice | 0.78*** | 0.94*** | 0.76*** |
| Rubber | 0.73*** | 0.9*** | 0.56** |
| Sugar | 0.77*** | 0.6** | 0.66*** |
| Vehicle | 0.73*** | 0.46* | 0.73*** |

Source: Authors' own estimation.
Note: Note: *, ** and *** imply significance at the 10%, 5% and 1% level respectively.

**Table 4: Determinants of Exports – Threshold Static Panel Regression (2002-03-2018-19)**

| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** |
|---|---|---|---|---|---|---|
| Constant | 7.7303 | -173.8978*** | 16.3739*** | -189.1820*** | 16.7744*** | -201.3803*** |
| | (5.3755) | (35.1164) | (4.8535) | (34.1172) | (4.8622) | (34.0694) |
| ln_REER | 0.3197 | -1.9950* | -1.3800 | -3.1560*** | -1.3352 | -3.2208*** |
| | (1.1283) | (1.1665) | (1.0467) | (1.0232) | (1.0567) | (1.0274) |
| D_Sub | 4.1156*** | 0.8930 | 7.3990*** | 2.2837 | 8.0126*** | 2.1562 |
| | (1.5281) | (1.5671) | (1.2122) | (1.4206) | (1.1275) | (1.3993) |
| LRD | -1.2742** | -0.1423 | -2.5660*** | -0.7049 | -2.7945*** | -0.6591 |
| | (0.6024) | (0.6086) | (0.4781) | (0.0175) | (0.4490) | (0.5376) |
| ln_PC ($q_{it} < \gamma$) | 0.2125*** | 0.1297*** | | | | |
| | (0.0467) | (0.0482) | | | | |
| ln_PC ($q_{it} \geq \gamma$) | 0.1602*** | 0.0863* | | | | |
| | (0.0472) | (0.0476) | | | | |
| ln_BL ($q_{it} < \gamma$) | | | 0.1103** | 0.0667 | | |
| | | | (0.0502) | (0.0481) | | |
| ln_BL ($q_{it} \geq \gamma$) | | | 0.0569 | 0.0246 | | |
| | | | (0.0494) | (0.0469) | | |
| ln_Liq_Adv ($q_{it} < \gamma$) | | | | | 0.0554* | 0.0668** |
| | | | | | (0.0319) | (0.0299) |
| ln_Liq_Adv ($q_{it} \geq \gamma$) | | | | | -0.0062 | 0.0191 |
| | | | | | (0.0297) | (0.0280) |
| | | | | | | |
| Threshold Value | 15.9476** | 15.9810* | 15.9476** | 15.9810* | 15.9476*** | 15.9810* |
| | | | | | | |
| Sector Fixed Effect | Yes | Yes | Yes | Yes | Yes | Yes |
| Time Fixed Effect | No | Yes | No | Yes | No | Yes |
| | | | | | | |
| $R^2$ (Within) | 0.6141 | 0.6504 | 0.5999 | 0.6481 | 0.5919 | 0.6456 |
| $R^2$ (Between) | 0.0411 | 0.0163 | 0.0054 | 0.0011 | 0.0074 | 0.0018 |
| $R^2$ (Overall) | 0.1643 | 0.1540 | 0.1298 | 0.1366 | 0.1036 | 0.1394 |
| N | 289 | 289 | 289 | 289 | 289 | 289 |

Source: Authors' own estimation.
Note: *, ** and *** imply significance at the 10%, 5% and 1% level respectively.

## Appendix

### *Box 1: Payment Methods in International Trade*

***Advancement Payment***

Under the **prepayment** method, the exporter will not ship the goods until the buyer has remitted payment to the exporter. This is the riskiest proposal for the importers as they have to pay in advance to receive the goods. However, exporter insists for advance payment, a) if the exporter is the only seller; b) payment is doubtful from the importer whose creditworthiness is unknown; c) or when country risks are there. This method provides the supplier with the greatest degree of protection. Most buyers, however, are not willing to bear all the risks by prepaying an order in full. So, many times the advance is paid partly.

***Open Account***

This payment method is the most popular in the domain of international trade transactions. Exporter dispatches goods directly to the importer on an agreement of payment on a later date. Many often, payment is made after the goods are sold by the buyer. Open account payment method is exclusively preferred for the following reasons - a) the transaction cost is the minimum, b) there exists a long term relationship among the buyers and suppliers, c) among subsidiary-parent companies, d) high creditworthiness of the buyers. Under this payment method, exporters bear the maximum risks as the legal remedies to enforce payment is very difficult. Despite the risks involved, open account transactions are widely utilized, particularly among the industrialized countries in North America and Europe. Moreover, the risk of non-payment may be mitigated by payment guarantees taken by the exporter or by the services hired from the factors and forfeiters.

***Documentary Collection***

It is a payment system in which banks channelize the documents between exporter and importer without taking any undertaking for making payment to the exporter in case of default of importer. However, as the documents are processed through banking channels and bill of exchange are involved, this payment method provides better protection to the exporter, compared to open account payment methods. All collection process is related to one financial document; bill of exchange or drafts. Documentary collection is having the following advantages; a) legal enforcement against nonpayment is possible because of draft b) exporter's bank acts as seller's agent, c) buyer's bank acts as buyer's agent, c) governed by the ICC rules, popularly known as *Uniform Rules for Collections – URC 522*, d) from the buyer's point of view payment is made only after the goods have been received.

***Documentary Credit or Letter of Credit***

A letter of Credit (LC) is a payment instrument issued by importer's bank on behalf of the importer promising to pay the exporter upon presentation of documents in compliance with the terms stipulated therein. In effect, the importer's bank undertakes payment obligations on behalf of the importer, however, conditional to documentary compliance. It is important to note that the issuing bank is obligated to honor drawings under the LC regardless of the buyer's ability or willingness to pay. However, under LC, banks deal only in documents. For any falsification of documents, banks are not held responsible. Also, if the goods exported are not of the agreed quality, then banks can't be held responsible. After the advance payment method, this is the safest payment method in the international trade transaction. It may also be noted that being the most expensive payment method, LC is not a desirable payment method in case exporter and importer are known to each other for long, due to the high cost involved in the transaction. Moreover, legal enforcement on non-payment is feasible as LC involves a bill of exchange or drafts. LC transactions are governed by *Uniforms Rules for Documentary Credit Practices* or UCP 600.

To avail the packing credit from the bank, many a time, an exporter may request for an LC undertaking from an importer's bank (as an assurance of payment) to eliminate counterparty risk. In international trade, LC could be opened either with immediate payment option (sight bill) or with a considerable time gap between the shipment made and the payment received for it from the importer (usance bill).

### *Box 2: Financial Documents in Documentary Collection and Documentary Credit or LC*

An exporter may be paid based on sight draft or usance draft. There are two types of *bills of exchange* (or *draft*) involved in international trade: (a) *documents against payment* (*DP Bill*, which is also known as *SIGHT Bill*) and (b) *document against acceptance* (*DA Bill*, which is also known as *USANCE Bill*).

***Documents against Payment***

It involves immediate payment by the importer on the sight of the documents. Under this payment method, after shipment of the goods, exporter collects all the documents, for example, invoice, bill of lading or transport documents, certificate of origin, insurance certificate, bill of entry, etc., within 21 banking days. After collecting the documents exporter submits these documents to his/her bank. Exporters bank then sends the documents to importer's bank. Importer's bank informs the importer on the receipt of the documents. So, the importer pays to the bank immediately and gets the necessary documents released for claiming the shipment.

***Documents against Acceptance***

Under this bill of exchange, the whole process remains the same as described above, until importer's bank shows the documents to the importer. Documents implies that the importer may accept that the payment to be made after a few days, e.g., 30, 60 or 90 days and so on and therefore, the bank leases documents to the importer. This time limit is settled mostly through mutual negotiation and/or discussion between the two trade partners (Sanati, 2017).

***Packing Credit: Source of Financing Export***

According to the RBI (2014), PC refers to the loan or advances availed from banks by an exporter for financing the purchase, processing, manufacturing or packaging of goods before shipment and/or working account expenses towards rendering of services (RBI, 2014). It is mainly provided against the irrevocable letter of credit (LC) opened in favor of exporter or some other person by the overseas buyer against a confirmed purchase order. LC is a non-fund based credit facility provided by the bank of the importer. Irrevocability signifies that the terms and conditions of the payment cannot be changed without the consent of all the parties involved in trade transactions.

***Trade Credit – Source of Financing Import***

According to RBI (2007), trade credit refers to credits extended for imports directly by the overseas supplier, bank and financial institution for the maturity of fewer than three years. Depending on the source of finance, such trade credits include suppliers' credit or buyers' credit. Suppliers' credit can be provided only against the LC while buyers' credit can be provided against any other documents.

### *Box 3: Distinction between Packing Credit and Trade Credit*

***Packing Credit: Source of Financing Export***

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