

**Packing Credit as a Substitute to Short-Term Bank Loan:
Analysis of Indian Export Sectors**

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and

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Abstract

*We argue that **packing credit** plays more important role to influence export growth compared to short term bank loan in India. Although short term **bank loan** or **working capital loan** has received enormous attention in the concerned literature as an important source of required liquidity. From the per capita uses point of view packing credit stands way ahead of working capital loan in the economy, it is significantly lower in the exporting industry despite it being relatively cheaper source of fund. Notably, the reverse is true for the agricultural sector. Given this seemingly contradictory backdrop, we have empirically examined the effectiveness of conducive impact of packing credit as a boosting factor of the growth of Indian exports across her various sectors and sub-sectors. Findings of panel analysis during 2002-3 to 20012-13 suggests that the growth of the former is more influential than the short term bank loan in determining the growth of India's export. Among the other factors, we find Indian export is highly sensitive to the change in **world demand** while, **advance payment against exchange bills** also plays a supportive role towards a smooth conversion of the pre-shipment credit facility. However, we observe some partial evidence favoring real effective exchange rate (**REER**) to induce India's export.*

Key Words: Packing Credit, Short-term Demand Loan or Working Capital Loan, Cost of Fund, Interest Subvention in Pre-shipment Credit, Export Growth.

JEL Classifications: G210, F1

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Packing Credit as a Substitute to Short Term Bank Loan: Analysis of Indian Export Sectors

1. Introduction

Packing credit is an important component of corporate finance in many countries. In India, likewise, corporate sectors may avail *packing credit* or *pre-shipment credit*¹ at a subsidized rate.² The primary motive towards offering export credit facility at a lower cost, was to provide working capital to exporters at an internationally compatible rate.³ This enables the firms not only to meet their credit requirement but helps them to set price of their products more competitive in the international market. So, the availability of such pre-shipment credit is expected to have an obvious positive bearing on her export growth in the long run. However, the share of packing credit outstanding as a ratio of total bank credit outstanding remains relatively low over the period and, surprisingly, it has experienced even a continuous drop from 5% in 2001-02 to 2% in 2010-11 without showing any sign of improvement in the subsequent years (Table 1A, Appendix). On the contrary, the outstanding amount of *short term bank loan* or *bank loan*,⁴ as a ratio of total bank credit outstanding was as high as 16% in the year 2012-13. This might be the reason why packing credit fails to draw considerable attention in academic research. However, it may be wide of the mark if we compare the utilization of per capita⁵ packing credit with the same of bank loan as the number of accounts differ substantially between the two. Yet, it has gone unnoticed in the existing literature that the per capita packing credit outstanding is much higher (and most often is three to

¹ According to the definition given by Reserve Bank of India (RBI), packing credit refers to the loan or advances availed from banks by the exporter for financing the purchase, processing, manufacturing or packing of goods prior to shipment and/or working capital 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 confirmed purchase order. LC is a non-fund based credit facility provided by the bank of importer. Irrevocable means the terms and conditions of the payment cannot be changed without the consent of all the parties involved in trade transactions. The details of the payment method are discussed in section 3.

² Although export credit facility was introduced way back in 1967, interest subvention scheme on rupee export credit was introduced in 2007 in India to reduce cost of credit for the exporters. It is available for pre-shipment credit for 180 days and post-shipment credit for 90 days. It was steadily expanded and the rate of interest subvention went up to 3% with effect from (w.e.f.) August 1, 2013. This subsidy is offered upfront on quarterly basis to the exporter. For further details, interested reader(s) may look at <https://rbi.org.in/scripts/NotificationUser.aspx?Id=3855&Mode=0>

³ Interest rates applicable for all tenors of Rupee export credit advances are at or above Base Rate under the Base Rate System, applicable w.e.f. July 1, 2010.

⁴ In this study we use the term *short term bank loan* and *working capital loan* alternatively. It is popularly known as *demand loan* which, as is indicated in the text, is a short term loan.

⁵ In this study, we use per capita to represent per account.

four times more) to the per capita bank loan outstanding.⁶ For example, bank loan outstanding was only Rupees 1.03 Million per capita while that for packing credit it was Rupees 23.81 Million per capita in 2011-12.⁷ (Figure 1A). Also, given the subsidy, disbursed amount of packing credit is likely to be higher compared to bank loan at the lower interest rate bracket. In this context, our preliminary analysis shows that in 2012-13, 51.5% of the total packing credit has been disbursed compared to 28.8% of the total bank loan in the bracket of below 10% interest rates (Table 2A, Appendix).

In the above backdrop, we examine the percentage share of utilization of packing credit to the sanctioned amount. Furthermore, utilization pattern of pre-shipment credit and the short term bank loan in agricultural sector and industry precludes our analytical framework. Most often, rather, it is the banks' risk appetite and the credit worthiness of the borrower which play important determining role in disbursing credit. Also, to some extent the purpose of bringing down the cost and there by setting the price at an internationally competitive rate is widely deceived because of the high processing charge by the banking system. With this processing fees and the credit ratings most often the average packing credit lending rate to the small and medium industry falls within 11-12%.⁸ In this context, our preliminary analysis finds that despite the availability of *packing credit* at a lower cost, its outstanding amount as a percentage of sanctioned limit has shown a significant fall over time and aggravated after the initiation of the US crisis in 2007 (Table 1A). This is something eccentric since the main objective of subvention scheme was to reduce the cost of fund and making product competitive in the international market. It may be indicative, however, that the effect of the falling demand in the world market has led to the accumulation of inventory, which aggravates dipping demand for pre-shipment loan.

Nonetheless, the apparent conflict between the fact that packing credit being indeed a lower cost fund and yet its falling utilization (to its sanctioned limit) raises an obvious question on

⁶ Packing credit is availed only by the exporting firm, while working capital loan is accessible to any production unit. Consequently, total number of accounts availing packing credit is likely to be far lesser than its counterpart for working capital loan. So, it would be more rationale if one compares *per capita* outstanding packing credit with that of working capital loan, unlike the commonly referred way in the conventional literature considering packing credit as a ratio of total bank credit! We have precisely made an attempt in this direction.

⁷ However, number of packing credit users increases by more than three times between 2011-2012 and 2012-2013 while the total value of the accounts dropped by 65%, which causes a sudden fall in the per capita packing credit outstanding as shown in the Figure 1.

⁸ A sample survey of the exporters (as a part of a Project on Impact Assessment Study of Interest Subvention Scheme of DGFT) suggests that mostly exporters are dissatisfied with the ultimate cost even after the implementation of interest subvention scheme as the range of interest cost with the pressing fees does not fall below 11-12%.

effectiveness of this type of loan to boost India's export growth and may, therefore, be an important issue to study. Making this subsidized credit to the attainment of the needy sectors may be a long pending issue to be addressed which might enhance India's export to a larger extent.

Surprisingly, however, it has failed to draw considerable attention in academia for long time. Instead, it was trade credit which received enormous importance in the conventional literature. It is often referred as one of the alternative sources of raising capital (Peterson and Rajan, 1997; Daneilson and Scott, 2004; Vaidya, 2011) while Ono (2001) examined the possible substitute or complementary relationship, whatever it may be, between *bank credit* and *trade credit*. It is widely argued in the literature, say for instance by Peterson and Rajan (1997), that firms use more *supplier's credit* (which is only one of two forms of *trade credit*, i.e., *buyers' and suppliers' credit*) when they don't have access to credit through financial institutions. However, there exist substantial variations in terms and definitions of *trade credit* in the literature (Vaidya, 2011). Important point to note in this regard is that the theory of international trade financing clearly indicates that trade credit is made available for financing import and can be extended directly by overseas supplier, banks or financial institutions (RBI, 2014).⁹ So, trade credit is considered to be a tool to finance international imports while packing credit is solely a support to finance export. So, it would be more rationale to compare the favorable impact of the packing credit to alternatively available short term bank loan in explaining India's export growth. There is hardly any study, to the best of our knowledge, which examines it.

Given this backdrop, we would like to examine the role of packing credit in promoting export growth considering different sectors like Engineering, Textiles, Chemicals and Chemical Products, Petro and Crude, Gems and Jewelry, IT and Communication, etc. We propose to analyze India's export sensitivity to per capita packing credit utilization against bank loan utilization. Having a declining trend in usage of the former (as a ratio of its sanctioned limit), despite of its low cost, might help us to understand (a) the impact of enhancing the availability of such relatively less costly fund in financing export; and (b) the importance of continuing such subvention schemes in advancing export growth in India.

The paper unfolds as follows. Section 2 discusses the exiting theories in financing international trade and justifies our position to emphasize more on *packing credit* despite widely acknowledged *trade credit* in the concerned literature. Section 3 describes analytical framework

⁹ Interested reader(s) may look at https://www.rbi.org.in/scripts/BS_ViewMasCirculardetails.aspx?id=8101#S57 for further details in this regard.

and the operational aspect of international trade finance, while Section 4 discusses on methodology and data used in our study. Empirical findings of our study have been reported in Section 5 and Section 6 concludes.

2. Theory of Credit in Financing International Trade

A firm may depend on many sources, including banks, for finance to maintain even its day-to-day production activity. Danielson and Scott (2004) argued that *trade credit* is one such source, if it fails to arrange funds from banks. Auboin (2009) emphasized more on financial intermediaries since these were at the epicenter of the global crisis and argued that financial constraints could be particularly important for firms engaged in international trade. It is almost unanimously accepted that in the aftermath of recent US crisis, lack of reliance across banks and countries led to severe paucity of liquidity for the corporate and financial institutions in both domestic as well as international fronts. Consequently, there was an adverse impact on the supply chain and financial integration across banking sector and market economy has triggered the spillover effect (Sanati, 2013). Reports of the International Chamber of Commerce (ICC) acknowledge that despite hike in the cost of trade finance products (e.g., *LC* and *standby LC*¹⁰) and services, demand for such products has increased across the globe since traders opted for more secure products and payment methods (ICC (2010, 2011)). On the other side, low economic outlook in turn led to a slowdown in global demand, in general and for imports, in particular. These led to sharp and sudden collapse of international trade in (the last quarter of) 2008 and World Trade Organization's (WTO's) estimation shows it to be a fall of even about 12% in 2009 (ICC, 2012).

Since volume of trade transactions sometimes depends on the lines of credit extended by the foreign counterparties or their banks/financial institutions towards importing firms and these lines of credit were adjourned by and large during the crisis, annulment of orders was a predominant phenomenon which, in turn, affect the production cycle of the exporting firms. We have already noted that the convention of the use of *trade credit* is mostly related to the fact that the firms are unable to obtain funds from the financial institutions, including banks. A number of reasons have been pointed out in the literature in this connection favoring why suppliers may still be willing to arrange credit when banks are not at all interested to lend the importers, like (a)

¹⁰ Detailed discussion on different payment methods and the cycle and role of *packing credit* is reported in the next Section.

suppliers might be more *informed* about their importers than banks, *a la* Biais and Gollier (1997) and Petersen and Rajan (1997); (b) suppliers may have advantages in liquidating collateral, *a la* Mian and Smith (1992), Frank and Maksimovic (1998) and Longhofer and Santos (2003); (c) moral hazard and associated cash diversion problems may be less prominent for inter-firm relationships than that between bank(s) and firm(s), *a la* Burkart and Ellingsen (2004); (d) suppliers and their customers may have a common interest in mutual survival due to shared rents from long standing business relationships, *a la* Wilner (2000) and Cunat (2006); and so on. Thus, *trade credit* might work as a substitute to *bank loan* (that may be domestically available to the importers), in general and during the period of monetary tightening, in particular. For instance, Meltzer (1960) observed that the large liquid firms have increased the amount of *trade credit* extended during monetary tightening. Subsequent empirical works have also focused, therefore, on the financing role of *trade credit* and examined the substitutability between the two at the aggregate level. Under this conjecture, it is generally argued in the literature that simultaneous decrease in *bank loans* and increase in *trade credit* may be indicative of the fact that firms are unable to obtain finance from banks (Kashyap et al., 1993) and *trade credit* plays a vital role in this regard to mitigate firms' such financial constraints (Calomiris et al., 1995).

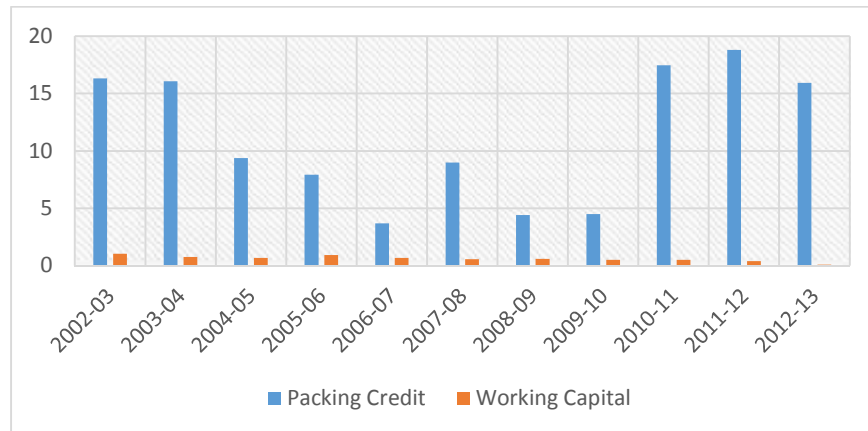
There has been an increasing interest in the economics literature knowing the role of financial intermediaries to promote economic growth. And, it is well acknowledged in this regard that the presence of an improved financial market helps accelerating economic growth and vice versa. Such growth enhancing allocative role of the financial institutions was the focus of Rajan and Zingales (1998), who observed that industrial sectors with a greater need for external finance grows disproportionately faster in countries with more developed financial markets. This is mostly because firms with financial needs in countries without adequate formal lending institutions and hardly having any well-developed stock market (that may serve as an alternative source of finance) would be more likely to fall back on *trade credit* as a source of required finance for their growth (Petersen and Rajan, 1997) or even mere survival. In the US, they found that the small firms lacking well-established banking relationships held significantly higher levels of *accounts payable*. Using longitudinal data on 37 industries spanning across 44 countries, Fisman and Love (2001) observed that firms in industries with higher rates of *accounts payable* exhibit higher rates of growth in countries with relatively weak financial institutions.

As we have already noted, the literature on international trade finance is mostly concentrated analyzing the role of *trade credit*, which plays a role in financing imports in India. Nonetheless, it may well happen that importers opt for *trade credit* even if formal sector lenders of the importers' country are willing to finance them, since *trade credit* is usually available at a relatively cheaper cost in the international market. Obviously, it can be easily understood that the *trade credit* would have more demand in the absence of formal financial institutions. Under trade credit, importers may enjoy the benefit of paying after some agreed period of time (largely known as usance period) while exporters may receive payment on the immediate basis. So, it does not really carry any effect to the financing of the production cycle of the exporter (assuming demand from the importer remains same). This is the sole reason we do not consider trade credit in our analysis while it has been widely analyzed in the existing literature. Instead, we examine the impact of *packing credit* facility extended to exporters for the production purpose and compare it with the *bank loan*. Moreover, *packing credit* would be even a better comparison with short term *bank loan* from the view point of the cost of fund to the exporters. As the Table 1 shows, the amount of *packing credit* disbursement at the lower interest rate bracket is much higher than its counterpart for short term *bank loan*. More precise picture (in the Table 2A) shows that the overall cost of the former is lesser than that for the latter. This table also reveals one staggering fact that the shift from benchmark prime lending rate (BPLR) to base rate system could not serve the sole purpose of policy maker in terms of discouraging banks for not lending at the below base rate.

3. Analytical Framework and Operational Aspects of International Trade Finance

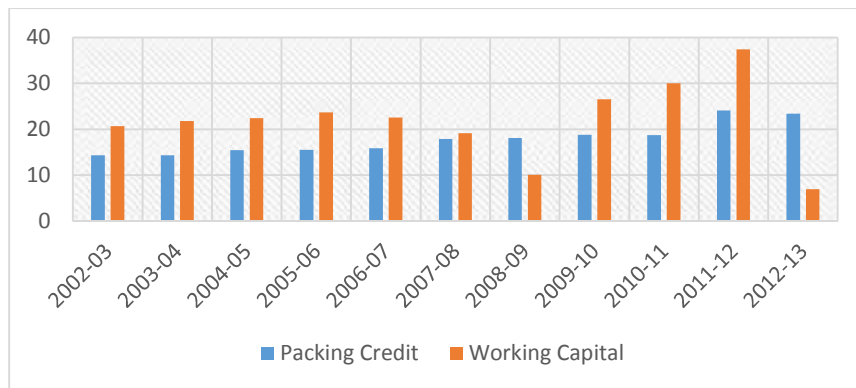
This section explains the importance of *packing credit* vis-à-vis short term *bank loan* as an important determining factor of India's overall export growth, in general and that of her two sub-sectors, namely agriculture and industry, in particular. Although per capita utilization of packing credit is significantly higher in the industrial level compared to agricultural sector. Yet, compared to per capita bank loan the utilization of packing credit is notably higher in agricultural sector while industry follows just the opposite trend. Even after the downfall in the aftermath of financial crisis, it is agricultural sector which experienced a fast recovery since 2011 while industry experienced the same path with no sharp increasing trend (Figure 1 and 2).

Figure 1: Per capita Packing Credit Outstanding in Agricultural Sector



Note: Monetary Figure is in Rupees Million;
Source: Author's Own Compilation using RBI database.

Figure 2: Per capita Packing Credit and Bank loan Outstanding in the Industrial Sector



Note: Monetary Figure is in Rupees Million;
Source: Author's Own Compilation using RBI database.

On the contrary, the dipping utilization of packing credit against its sanctioned limit and the falling trend in per capita utilization imply that the industry is unable to reap the opportunity of low cost fund to the maximum possible extent! It does not sound economic and may be having four possible explanations to depict: (a) lack of awareness among the exporters; (b) lack of awareness among bankers who may be taking a directive role to their clients; (c) procedural complications; and (d) accumulation of inventory. Of course, the credit worthiness or the risk profile of the respective sectors is one of the main evaluation criteria to get credit from banks at a

lower cost. However, this may also be revealing the fact that the benefit of this lower cost fund has limited reach to the needy sectors! In this context, it may be striking that banks are also lending at below 6% level. At this level, compared to bank loan, however the packing credit is significantly higher and it has gone up increasingly since 2009-10. It is obvious that small and medium scale corporate will not be eligible for such loan and very likely that only the large corporate is entitled to qualify for this unusual low cost of fund (Table 1).

Table 1: Packing Credit vs. Bank Loan Disbursements at the Respective Interest Bracket¹¹

Year	<i>Packing Credit Outstanding at the Respective Interest Rate as a Ratio of Total Packing Credit (Includes All Range of Interest Rate) (in %)</i>	<i>Bank Loan Outstanding at the Respective Interest Rate Bracket as a Ratio of Total Bank Loan (Includes All Range of Interest Rate) (in %)</i>
For Interest Rate of Below 6%		
2014	30.0	1.3
2013	32.8	1.6
2012	23.7	2.7
2011	18.0	3.3
2010	7.8	15.8
2009	8.0	2.0
For Interest Rate between 6 to 10%		
2008	42.2	8.6
2007	45.0	8.8
2006	45.9	11.8
2005	32.8	5.1
2004	32.7	2.5
<i>Note: Approximated upto One Decimal Point;</i>		
<i>Source: Author's Own Compilation using RBI database.</i>		

Anyway, the general reduction in utilization limit is very sharp in most cases, particularly between 2008 and 2009. This could be due to the adverse impact of global crisis which might dominate the benefits of the subvention schemes. The same has also been observed for *bank loan*. To be specific, *bank loan* as a proportion of its sanctioned limit has experienced a very sharp cut, from 81 to 38%, during this period (Table 1A). This may be a reflection of general reluctance of exporters (in these sectors) to drawdown even subsidized bank credit, probably because of sluggish global demand and/or procedural hassles! However, this utilization scenario for the agriculture

¹¹ There was no *packing credit* disbursement at the interest rate of less than 6% prior to March, 2008.

sector remain almost stagnant, experienced only a slight increment from 56% in 2003 to 64% in 2013, although it fluctuates drastically in both directions during the intermediate years (Table 3A).

In table 2, we classify a few sub-sectors according to their usage of per capita packing credit over time. This may allow policy makers to (i) target the subvention scheme to these sectors for better export growth and (ii) investigate problems with the other sectors in usage of packing credit. An extra-ordinary feature of the petro-products sub-group is that the deployment of per capita packing credit is always very high, except the immediate aftermath effect of financial crisis. It was even as high as Rs 714.69 million per capita in 2006-07. Although, this incomparable trend is obvious given the scale of operation.¹² Also, at the advent of financial crisis, the persistent non-reliance among and across banks had made the cost of credit high. Even then the exceptional recovery for two sectors, viz., the group of Petroleum, Coal Products and Nuclear Fuels (in goods) and IT and Communication (in services), portrays the preference of banking sector in its lending portfolio (Table 3A).

Among the sectors which are under interest subvention scheme, Textile shows most unimpressive usage pattern which sometimes even go below that in the agriculture sector! However, it is also striking that most of the other sectors have not shown any significant pick up as an effect of interest subvention. Instead, they show stagnant usage with intermittent fluctuations in both directions. It may have two possible explanations: (a) financial crisis may led to a change in the preference of payment method which make concerned parties favoring *advance payment* method, which obviously would reduce the demand for packing credit and (b) highly elastic world demand for Indian export might continue to be sluggish that had an adverse impact on the production cycle of the exporting firms.

Table 2: Per capita Packing Credit Outstanding across Different Sectors/Sub-Sectors of the Indian Economy

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Agriculture Sector	16.32	16.07	9.38	7.94	3.70	8.98	4.42	4.50	17.46	18.79	15.92

¹² It may be noted that Petro products and IT and Communications are not under the interest subvention scheme.

Food Manufacturing and Processing	21.74	22.38	21.18	14.93	15.83	15.71	17.12	18.46	27.69	37.12	31.96
Textile	8.72	9.20	8.89	9.17	9.14	10.36	8.63	8.62	9.37	10.19	9.39
Chemicals and Chemical Products	22.52	24.92	25.77	28.86	28.34	33.48	50.00	38.00	61.41	68.29	64.81
Petro and Petro Products	201.58	179.11	256.54	523.19	714.69	253.05	34.85	69.81	290.85	590.54	417.35
Engineering	15.70	13.60	17.85	17.74	14.81	23.08	38.10	62.64	19.75	28.22	26.35
G&J	-	-	-	-	-	-	50.00	38.00	39.67	58.14	69.29
IT & Services	-	-	-	-	-	-	24.84	104.00	117.85	521.31	205.43

Note:

1. Monetary Figure is in Rupees Million;

2. Agriculture Sector represents both direct and indirect credit

3. Petro and petro products along with IT and Services are not under the Interest Subvention Scheme

Source: Author's Own Compilation using RBI database.

It may be noted that packing credit may not at all be required, if advance payment in full amount is available for the exporters. In fact, there are four types of payments involved in international trade: (a) *advance payment*—as the very name suggests, importers are likely to pay in advance to the exporters and this is the safest payment method for an exporter where importer takes the whole risk of non-performance by the exporter, if any; (b) *open account transaction*—importer receives goods much before the payment is made and exporter bears the entire risk of not receiving the payment, if any; (c) *documentary collection*—banks are involved as a collecting and remitting agent, however, without having any obligation to the other party for possible non-payment or non-receiving the goods as per the contract of sale; and (d) *documentary credit or letter of credit (LC)*—bank undertakes the payment obligation as well on behalf of the importer under the condition of documentary compliance.

Let's demonstrate an example for an ease of understanding, where an Indian exporter sells her product to a customer from, say, England. Under the contract of sale importer would provide a confirmed purchase order to Indian exporter, if the payment method adopted is either *open*

account or documentary collection. Alternatively, if the payment method adopted is *documentary credit* type, the importer would request to her bank or the issuing bank, (usually located in England for this example) to open a *LC* in favor of the Indian seller. On the basis of the confirmed order or this *LC* exporter may approach the bank for *packing credit* or *pre-shipment credit*. This credit facility is available to the exporter either in Indian Rupee or in foreign currency facility. However, interest subvention is available only for the credit disbursed in Indian Rupee.

After the shipment of the goods the outstanding pre-shipment credit is converted to post-shipment credit. It may also happen that exporter is short of sanctioned limit for post shipment credit. In such case exporter can also avail advance granted against *bill of exchange*. There may be two types of *bills of exchange* (or *draft*) involved with international trade finance: (a) *document against payment (DP Bill*, which is also known as *SIGHT Bill*) that involves immediate payment for having the necessary documents released for shipment; and (b) *document against acceptance (DA Bill*, which is also known as *USANCE Bill*) means importer may accept that the payment to be made after a few days, e.g., 30 days or 60 days or 90 days. This time limit is settled mostly through mutual negotiation and/or discussion between the two trade partners.

4. Data and Methodology

Financing aspect of *international trade* is mostly an unexplored area in academic research, particularly due to lack of availability of comprehensive and consistent set of statistics. And, that again for the area being too operational and there exists extensive diversity in related concepts and activities! Moreover, collecting data in export-import financing directly from exporters and importers seems to be not practicable at all. The company/firm level balance sheet data available at CMIE-Prowess or Ace Equity databases even sometimes lack consistency over periods! For instance, the buyers' and suppliers' credit, bank loan and packing credit (both in Indian Rupee and foreign currency) related information available at the CMIE database is not consistent at all. Information on the method through which exporters receive their payments is not also available and as of now there is no systematic database exists. Of course, some macro level time series data are available in ICC's annual report on total use of each of these payment methods for the world as a whole and sometimes even across countries. With an 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 packing credit and bank loan are extracted from Handbook of Statistical Returns published by RBI. On the other hand, although each individual bank has to compulsorily report pre- and post-shipment credit disbursement information to RBI, it is not publicly available from the RBI. For that, despite examining the sector specific banks disbursement of packing credit and understanding its gap between demand and supply is of considerable interest, unfortunately, however, it is not possible to study at all! Also, there is no database available on payment method for individual countries. It may be noted that advance payment method (which is different than the variable namely, advance payment against bill of exchange has been considered for our analysis) is one of the important factors for determining the requirement of pre-shipment credit as a whole. However, there is no database which provides data on payment method whether it is at sectoral level or at individual level. So, we could not use this variable in our analysis.

We first calculate per capita use of packing credit for each industrial sector for 2011 through 2013 and subsequently choose the subsectors to be studied. To be specific, if any of such sub-sector's usage of per capita packing credit is consistently more than the overall of the concerned sector we select it for our analysis. For example, per capita packing credit in textile is 9.37, 10.19 and 9.39 (rupees million) in 2011, 2012 and 2013 respectively. So, we select only cotton industry as the sub-sector which is consistently using packing credit more than the respective overall of the textile sector during these three years. Conversely, for agriculture sector as the data is available in two subgroups: direct and indirect finance, we consider overall amount of per capita packing credit.

However, despite fulfilling the criterion that we have chosen to select the sectors/sub-sectors (as shown in the Table 4A in Appendix) for our analyses, we can't take into account the Gems and Jewelry and IT & Telecommunication sectors (due to lack of data availability before 2008) and woods and wood products and leather and leather products (due to lack in consistency in available information). An exposition of the variables we have taken for analysis is shown below:

E : Value of total export (in Rs billion);

P : Ratio of per capita packing credit outstanding to that of short-term bank loan outstanding;

W : Total import of consistently the top nine¹³ destination countries of India's export during the period of our study as a ratio of their combined GDP;

A : Advance payment against exchange bill. It is to facilitate credit to the export customers when their available limit for post-shipment finance is fully utilized. Since each case of pre-shipment finance is eventually converted to post-shipment finance, it may be considered as overdue if the available limit is fully utilized. This advance payment helps the customer for not paying the high interest cost for overdue bill.

REER: India's real effective exchange rate.¹⁴

To be specific, we conceptualize our population regression equation to be of the following form:¹⁵

$$\ln(E_{it}) = \alpha + \beta_1 \ln(P_{it}) + \beta_2 \ln(W_{it}) + \beta_3 \ln(A_{it-1}) + \beta_4 \ln(R_{it}) + u_{it} \dots (1)$$

which we would like to estimate using both the standard fixed effect (FE) and random effect (RE) panel data regression models. Since our study is over different (exporting) sectors of the Indian economy, in view of wide diversity within a sector as well as across them, both intra- and inter-sectoral variations are likely to be there and, therefore, RE model seems to be a preferred one. However, as is already mentioned, we would run both FE as well as RE models for the robustness check and would like to examine relative suitability for our data through *Hausman Test* (to test the null hypothesis that difference in coefficients are not systematic and if the null hypothesis is rejected then we use fixed effect model).¹⁶ A specific point to note on the random disturbance term u_{it} in equation (1) is that $u_{it} = \mu_i + v_{it}$ with $\mu_i \neq 0$ for the RE model whereas for FE, $\mu_i = 0$ and

¹³ These nine countries are China, Germany, Hong Kong, Italy, Japan, Singapore, UAE, the USA and the UK.

¹⁴ Concerned nominal effective exchange rate (NEER) is calculated as geometric weighted average of bilateral exchange rates of domestic currency in terms of foreign currency. Hence, real exchange rate can be defined as the weighted average of bilateral NEER that have been adjusted for relative price levels. The exchange rate (e) of a currency, e.g., Indian Rupee, is expressed as the number of units of currency numeraire, i.e., special drawing rights (SDR) here (since SDR of International Monetary Fund (IMF), as a basket of important currencies, is usually considered to be a numeraire) per Indian Rupee. A rise in e thus represents an appreciation of Indian Rupee and vice versa. One may look at the RBI (2005) for methodological details on calculation of such effective exchange rates.

¹⁵ The other important variables that may affect export of a country include GDP (of both current as well as lagged period), other commercial papers used in the financial system, subvention dummy (of both intercept as well as slope types), etc. However, since our primary objective is to compare packing credit as an alternative to working capital loan, we concentrate mostly on FINANCIAL variables. Nonetheless, we have also tried these variables to explain our dependent variable, although results are not much convincing and, that is why, we do not report those here. However, such results are with us and can be readily made available on demand.

¹⁶ One may look, for instance, at Green (2002) for more details on this test.

v_{it} is an idiosyncratic noise. The cross-sectional subscript $i = 1, 2, \dots, 17$ stands for the sectors and sub-sectors we have included in our analysis and time series subscript $t = 1, 2, \dots, 11$ stands for the years 2002-03 through 2012-13. In the usual way, significance of β_1 coefficient in equation (1) above implies that the export growth is significantly influenced by the *PCBL* variable. An important clarification, however, worth mentioning here is that since *PCBL* is a ratio variable, its sign would indicate relative importance of the two variables considered to form this ratio. To be specific, a positive (negative) β_1 implies that packing credit (bank loan) is more influential for export growth than bank loan (packing credit).

To take a proxy for the demand for India's export abroad, we have considered *WrldDD*, duly normalized by corresponding GDP. World demand is calculated as the sum of imports of individual destination countries consistently holding more than 40% share in India's total exports during the period of analysis. Considering imports of India's major export partners as a proxy for world demand already have been marked as an improvement over the use of the less accurate real world income as deliberated in previous econometric research (Roy, 2009) and is expected to have a positive (pulling) effect on export. On the other hand, since an increase in *REER* implies appreciation of Indian Rupee, it is supposed to negatively affect her export.

We have also checked the robustness of our analysis by running linear dynamic panel estimation, results of which along with those using conventional panel data regression methods are shown in the Table 3. *World demand* is a very important factor for determining the production cycle of the exporting firms. It may happen that the fall in import demand in the economy leads to accumulation of inventories which may in turn reduce the production and consequently the demand for credit. This may have some negative impact on the export in the next production cycle. Similarly, *REER* may have negative impact on the production cycle of the exporter with a lag.

5. Empirical Findings

We have estimated the population regression equation (1) following FE, RE and dynamic panel regression model using the statistical software STATA and our estimation results are shown in the Table 3. Although the estimated coefficient values differ across the models marginally, the important feature of our results is that the direction of effect of all the explanatory variables we have considered on the explained variable is consistent throughout! And, those again corroborate the theoretically desired results. To be specific, growths in both *Advpayment* and *WrldDD* have

significant positive influence on export growth. However, although the sign of the estimated coefficient of *REER* is *negative*, as is conceptually likely, it is insignificant in all three alternative cases!¹⁷ This may be due to inelastic relationship which effectively indicates that Indian export is not influenced by the appreciation of *REER* even with some lag impact. For the *PCWC*, although both *packing credit* and *bank loan* may be important determinants of export, growth of the former has been relatively more influential (of nearly 13 to 19 percentage point more) than that of the latter to affect India's export growth. Notably, this finding indicates relative importance of packing credit over bank loan in explaining export growth, even when our preliminary analysis at the industrial level reveals comparatively lesser usage of per capita packing credit. Therefore, Indian export industry is likely to gain by extending its usage of packing credit and lowering the cost further by considering the diverse need of different sub-sectors.

Point to be noted here is that high significance of *constant* term is a matter of concern for all the three models we have tested, which implies that there could be some other economic and/or financial variables missing from the model whose contribution on India's export are likely to be significant. Unfortunately, however, we have not seen any *international trade finance* literature to discuss any of such possible variable(s) and, thus, we keep this task as a future research agenda. However, we have tested few more variables, which have been used in other related literature and reported in the footnote 15 above.

Although the results of FE and RE models are almost the same, as we have noted earlier, we have checked the relative suitability between these two models for our data set, through Hausman test, and we observe that the RE model is a better fit in this regard. To be specific, we have the associated t^2 value (with 4 degrees of freedom) to be very low, 0.68 with *p* value being 0.95. Therefore, we *can't reject* the null hypothesis and conclude that FE is the preferred model in our analysis. The linear dynamic panel regression results, as is observed from the Table 3, establish the robustness of our estimated models.

¹⁷ Of course, it is significant in other two cases as well, only if we allow probability of Type I error to be little bit more, to 16%. Since it is beyond the conventionally acknowledged maximum value of 10%, we treat them to be *not significant*!

Table 3: Estimated Results of All Kinds, i.e., FE, RE and Linear Dynamic Panel Regressions

	FE Model		RE Model		Liner Dynamic Panel Model	
Explanatory Variable	Estimated Coefficient	P Value	Estimated Coefficient	P Value	Estimated Coefficient	P Value
<i>PCWC</i>	0.186	0.002	0.180	0.002	0.130	0.008
<i>Advpayment</i>	0.039	0.046	0.039	0.046	0.054	0.000
<i>WrldDD</i>	3.431	0.000	3.445	0.000	3.354	0.000
<i>REER</i>	- 1.597	0.158	- 1.628	0.148	- 1.877	0.017
<i>Constant</i>	36.031	0.000	36.003	0.000	33.257	0.000
Other Related Features						
No. of Observation	17×11 = 187		17×11 = 187		17×11 = 187	
No. of Instruments	---		---		98	
σ_{μ}	1.669		1.700		Instruments for Differenced Equation—GMM Type: L(2). <i>PCWC</i> ; L(2). <i>Advpayment</i> ; L(2). <i>WrldDD</i> ; L(2). <i>REER</i>	
σ_{ν}	0.499		0.499			
ρ (i.e., Fraction of Total Variance due to μ_i 's)	0.918		0.921			
Test of μ_i 's = 0 for all i	$F(16, 166) = 118.67$	0.000	---		---	
R^2	Within	0.507		0.507		Instrument for Level Equation Standard: <i>Constant</i>
	Between	0.022		0.022		
	Overall	0.047		0.048		
	Correlation (μ_i 's, Xb) = - 0.080	---		Correlation (μ_i 's, Xb) = 0 (Assumed)	---	
Overall Fit	$F(4, 166) = 42.61$	0.000	Wald $t^2_{(4)} = 170.54$	0.000	Wald $t^2_{(4)} = 249.09$	0.000

Approximated upto three decimal points.

6. Conclusion

In this study we intend to look into the importance of packing credit for promoting export growth mostly for three reasons: 1) packing credit is provided to the exporters at a subsidized rate as government has introduced interest subvention upfront for some select sector, since 2007 2) despite its relatively lower cost, over time it has experienced falling outstanding amount to its sanctioned limit and 3) so far, it has not received much importance in mainstream academia

although we found that the per capita use of short term bank loan is much lower than that of packing credit for an exporting industry. For instance, per capita short term loan outstanding was Rupees 1.03 Million while that for packing credit was Rupees 23.81 Million in 2011-12. Also, we argue that packing credit may be considered as the most important source of required liquidity for an exporting industry instead trade credit, which is a mere source of financing imports to India. In this regard we discussed the operational aspects of the use of packing credit as a substitute to the bank loan, explaining why we don't bother much about trade credit as a determining factor for growth of her exports across different sectors and sub-sectors.

Our preliminary analysis of sectoral uses of per capita packing credit reveals that petro and petro products and the IT and communication which are not under interest subvention scheme uses packing credit much more than those sectors which are eligible for interest subvention. Among the sectors under subvention scheme the per capita uses is impressive in chemical and chemical products. On the apparent contrary, all the sectors experience a sharp fall in the uses of packing credit as a percentage to the respective sanctioned limit! IT and communication sector is the only exception in this regard and successfully using almost entire amounts of the available fund, e.g., 94 and 91% in 2011-12 and 2012-13 respectively.

Also, it may be interesting to know that the disbursement of packing credit is much higher at the interest bracket of below 6% while we find there is some significant amount of disbursement happening for short term bank loan also at this interest bracket. It may be treated as the failure of policy intention to some extent to move from BPLR to base rate. The higher uses of per capita packing credit compared to short term bank loan in the agricultural sector reveals that this sector is able to captivate the primary benefit of interest subvention while industry is still depending more on the short term bank loan. In this backdrop, we have empirically examined the effectiveness of packing credit, both as an alternative cheaper source compared to short term bank loan and as an advancing factor of the growth of Indian exports. Our finding is the obvious one that the growth of packing credit is more influential than bank loan loan in determining the growth of India's export.

Among the other variables we have considered, advance payment against bill of exchange plays a supportive role towards a smooth conversion of the pre-shipment credit facility. Also, world demand plays a significant role to pull-up India's export. The seemingly contrasting fact that the various sectors of the Indian economy experience a sharp fall in the uses of packing credit

as a percentage to the respective sanctioned limit may be explained using this *world demand* variable. To clarify, it might happen that the fall in import demand in the economy due to the global turmoil since 2007-08 leads to accumulation of inventories which may in turn reduce the production and consequently the demand for credit. This may have some negative impact on the export in the next production cycle which makes producers even unable to utilize the credit they have been provided to its maximum possible extent. However, we do not find any significant instantaneous impact of the exchange rate appreciation on the export growth of India.

For the econometric technicalities point of view, although Hausman test suggests that the random effect model is relatively better fit for our data, the two sets of results almost coincide to each other. This also supports the robustness of our analyses and findings therefrom. Parallel to our standard fixed and random effect panel data regressions, in view of the fact that there may be some lagged impact of the variables considered on India's export growth we also examine the robustness of our finding through running dynamic panel analysis. We observe that such result corroborates our earlier results obtained through usual panel data analyses, which indicate the robustness of our results. However, although impact of *REER* on India's export was significant neither in fixed effect nor in random effect regression, we observe it to have a very strong significant impact on the same in our dynamic panel analysis. Needless to say, our results are observed to be in line of the theoretically desired directions.

Our findings have important policy conclusion as well. We observe that the packing credit utilization pattern has experienced a very high spike in some sectors, although distributed unevenly and, therefore, it may not be able to very effectively serve all those export sectors which are really in need of credit. In any case, given the fact that export growth is significantly determined by the packing credit utilization, it may reduce the exporters' dependence on relatively more expensive bank loan and effectively make their products internationally more competitive, provided that the policy makers can successfully encourage the indigent sectors to use it to the maximum possible.

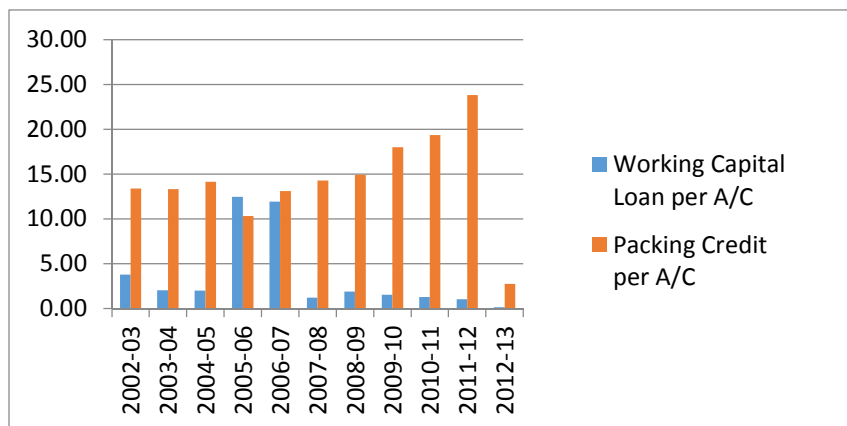
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Appendix:

Figure 1A: Per Capita Packing Credit vs. Per Capita Bank loan



Note: Monetary Figure is in Rupees Million;
Source: Author's Own Compilation using RBI database.

Table 1A: Bank loan and Packing Credit as a Percentage of Total Bank Credit and the Respective Sanctioned Limit

Year	Amount Outstanding as a % of Total Bank Credit		Amount outstanding as a % of Sanctioned Limit	
	Bank loan	Packing Credit	Bank loan	Packing Credit
2001-02	11	5	88	74
2002-03	12	5	80	75
2003-04	13	4	87	72
2004-05	11	4	80	67
2005-06	10	3	79	63
2006-07	09	3	87	65
2007-08	10	3	81	66
2008-09	13	3	76	50
2009-10	11	3	81	43
2010-11	13	2	38	29
2011-12	10	2	60	29

2012-13	16	2	70	32
<i>Note: Approximated upto One Decimal Point;</i>				
Source: Author's Own Compilation using RBI database.				

Table 2A: Packing Credit and Bank loan Loan at Below 10% Interest Rate Bracket

	Packing Credit	Bank loan Loan
2013	51.5%	28.8%
2012	35.3%	17.1%
2011	46.1%	44.0%
2010	68.5%	56.0%
2009	54.3%	33.3%
2008	42.2%	8.8%
2007	45.0%	8.8%
2006	45.9%	11.9%
2005	32.8%	5.2%
2004	32.7%	2.6%
<i>Note: Approximated upto One Decimal Point;</i>		
<i>Source: Author's Own Compilation using RBI database.</i>		

Table 3A: Sector-wise Utilization Pattern of Packing Credit to the Sanctioned Limits (in %)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Agriculture	56	46	80	70	82	80	50	54	52	42	64
Industry	75	72	66	62	63	64	49	41	28	28	31
Mining and Quarrying	65	69	72	47	60	73	38	61	43	53	53
Food Manufacturing & Processing	70	66	64	72	70	68	45	52	31	36	32
Cotton	76	68	65	68	68	66	54	52	28	24	20
Jute & Other Nature Fiber	79	75	73	73	66	74	81	48	74	56	70
Handloom Textile and Khadi	82	88	81	89	81	89	77	76	24	47	55

Paper, Paper Products & Printing	60	73	74	69	80	89	62	20	24	12	59
Woods and Wood Products	-	-	-	-	-	-	70	71	71	79	72
Leather & Leather Products	87	82	77	83	90	90	45	59	17	18	22
Gems and Jewelry	-	-	-	-	-	-	69	45	46	39	35
Rubber & Plastic Products	76	80	81	80	79	76	71	57	56	61	28
Chemicals & Chemical Products	78	72	67	50	63	66	48	46	38	42	46
Petroleum, Coal Products & Nuclear Fuels	88	95	90	69	61	30	32	31	56	69	82
Manufacture of Cement & Cement Products	101	32	37	43	27	25	47	69	22	52	63
Basic Metals & Metal Products	77	72	48	42	37	62	54	28	45	22	45
Engineering	62	75	63	64	68	71	71	43	40	57	44
Professional and other Services	69	82	81	46	71	82	56	63	26	39	27
IT & Communication	-	-	-	-	-	-	53	48	68	94	91

Note: Approximated upto One Decimal Point;

Source: Author's Own Compilation using RBI database

Table 4A: Selected Sectors

No	Industry	Sub-Category
1.	Agriculture	Agriculture
2.	Minning and Quarrying	Minning and Quarrying
3.	Food Manufacturing and Processing	(a) Rice Mills, Flour & Dal Mills
		(b) Sugar
		(c) Edible Oils & Vanaspati
4.	Beverage & Tobacco	Beverage & Tobacco
5.	Textiles	Cotton Textiles
6.	Paper, Paper Products & Printing	Paper, Paper Products & Printing
7.	Woods and Wood Products	Woods and Wood Products

8.	Leather & Leather Products	Leather & Leather Products
9.	Gems and Jewellery	Gems and Jewellery
10.	Rubber and Plastic Products	Rubber and Plastic Products
11.	Chemicals & Chemical Products	Drugs & Pharmaceuticals
12.	Petroleum, Coal Products & Nuclear Fuels	Petroleum, Coal Products & Nuclear Fuels
13.	Manufacture of Cement & Cement Products	Manufacture of Cement & Cement Products
14.	Basic Metals & Metal Products	Iron and steel
15.	Engineering	Heavy Engineering
16.	Vehicles, Vehicle Parts & Transport Equipment	Vehicles, Vehicle Parts & Transport Equipment
17.	Electricity, Gas & Water	Electricity Generation & Transmission
18.	Construction	Construction
19.	PROFESSIONAL AND OTHER SERVICES	IT and Telecommunications