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**Working Paper**

## Does access to finance facilitates the firm's ability to export? Experience from Asia-Pacific countries

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## Does Access to Finance Facilitates the Firm's Ability to Export?

Experience from Asia-  
Pacific Countries



Durairaj Kumarasamy

Prakash Singh

ASIA-PACIFIC RESEARCH AND TRAINING NETWORK ON TRADE

# Working Paper

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## **Does Access to Finance Facilitates the Firm's Ability to Export?**

### **Experience from Asia-Pacific Countries**

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## **Abstract**

Financial development plays an important role in the structure of the trade balance and promoting economic development. Trade literature suggests that differences in economies' endowments of labour, land, physical capital and technology explain the dynamics and patterns of international trade flows. More recent literature argues that it is the heterogeneity in productivity of firms which mainly accounts for the decision and survival in the international markets. Given the growing importance of Global Value Chains and Regional Production Networks in the emerging economies, financial development is essential to support credit facilities for the traders and provide hassle free transactions. In this context, this study attempts to examine the impact of access to finance on firms' export decisions in the Asia-Pacific countries. In particular, we have studied whether financial development and institutional quality that support financial access promote international trade. The study found that access to finance plays a significant role in promoting firm's ability to export. Unlike institutional quality, financial development indicators positively interact with access to finance to promote firm's ability to export. The study also found that infrastructure bottlenecks negatively affect firms' export decisions.

**Keywords:** Financial development, Trade, Access to finance, Institutional quality, Trade costs

**JEL:** D22, F14, O16, O53

## Contents

1. Introduction .....	1
2. Related literature.....	2
3. Data and methodology .....	6
3.1. Data .....	6
3.2. Methodology.....	7
3.3. Empirical model .....	8
4. Result and discussion .....	12
4.1. Descriptive statistics.....	12
4.2. The impact of access to finance on firms' ability to export.....	12
4.3. Role of financial development on firms' ability to export .....	17
4.4. Do institutional factors matter for firms' ability to export?.....	20
4.5. Effect of trade costs on firms' ability to export .....	22
5. Conclusion .....	25
References .....	26

### Figures

Figure 1: Access to finance and export decision.....	16
Figure 2: Financial development and export decision .....	19
Figure 3: Institution and export decision.....	20
Figure 4: Trade costs and export decisions .....	23

### Tables

Table 1: Summary statistics .....	14
Table 2: Access to finance and firms' ability to export .....	15
Table 3: Access to finance, financial development and ability to export .....	18
Table 4: Access to finance, institutional indicators and firms' ability to export.....	21
Table 5: Access to finance, trade cost and firms' ability to export.....	24

# 1. Introduction

For the past two decades, Asia-Pacific countries have shown significant improvements in trade performance. In particular, the contribution of trade in Global Value Chains (GVCs) and Regional Production Networks (RPNs) has reached 75 to 80 per cent despite the global financial crisis (ESCAP, 2015). Given global competitiveness, Asia-Pacific countries face two major challenges: on one hand, existing firms essentially require additional capital to move up the value chain. Since access to capital is limited, firms are held at low value-added stages of the supply chain and restricted from utilizing profitable opportunities. On the other hand, new firms entering the export market require additional investment, as a large part of this investment is sunk and upfront in nature.<sup>1</sup> Thus firms that have financial constraints would find it difficult to enter and remain sustainable in the export market. Several studies find that international trade is driven by financial development (see, for instance, Beck, 2003; Svaleryd and Vlachos, 2005; Manova, 2006; Becker and Greenberg, 2007; Manova, 2008). Some studies, however, find that the demand for a well-developed financial sector is higher in countries with industrial structures that heavily rely on external finance (see for instance Huang and Temple, 2005; Klein and Olivei, 2008; Baltagi et al., 2009; Do and Levchenko, 2007). In line with the recent and growing literature on the relationship between financial development and international trade, we attempt to examine how access to finance facilitates the firms' decisions on entering the export market in developing Asia-Pacific countries. Additionally, we will examine the role of financial development and institutional quality on firms' exporting decisions. We also examine the relative importance of access to finance with respect to trade costs.

The study predicts that a well-developed financial system, at a country level, would reduce information asymmetry and uncover untapped savings which would improve infrastructure development, and encourage a conducive business environment. At a firm level, it would also lower the cost of borrowing and improve access to external finance. Hence, addressing the role of financial development in international trade would enable the policy makers to formulate and adopt new policies for increasing industrial competitiveness in the international market, as well as improving job opportunities, thereby stimulating economic growth in a more equitable society.

The rest of the paper is organized as follows: Section 2 reviews the earlier studies related to the study area, Section 3 provides data source, methodology and variable description,

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<sup>1</sup> These upfront investment includes market search, development of distribution networks etc. and they are sunk as they are non-recoverable in nature.

Section 4 provides the empirical results and discussions, and Section 5 contains a summary and policy implications of our findings.

## **2. Related literature**

Given the importance of international trade in economic growth, studies have tried to understand the dynamics of international trade and sources of comparative advantage in trade. One branch of existing trade literature suggests that endowment of labour, land, physical capital, and technological difference across countries explains the dynamics of international trade flows. Another branch argues that it is the heterogeneity in productivity that mainly accounts for entry decisions and survival in the international market (Kletzer and Bardhan, 1987 and Baldwin, 1989). Using the Heckscher-Ohlin framework, Kletzer and Bardhan compared two international trade models with the same factor endowments. However, in one of the models they introduced external finance for working capital and showed that credit market restrictions determine the country's specialisation for the sector. For instance, countries with less credit market restrictions specialize in sectors that use more of external finance and the countries with higher levels of credit market restrictions specialize in sectors that do not require working capital or external finance. Therefore, they argued, financial development could lead to a comparative advantage in industries that rely on external finance and that in turn could explain the variance in trade structures across the countries. On the other hand, the Baldwin (1989) model was based on the risk-diversification function of a financial market consisting of two countries, two sectors, and one factor where the demand for one sector is subject to demand shocks and the other is not. He argued that the country with a financially developed market can diversify risk and thus specialize in producing a risky good with relatively lower risk premiums. Following Kletzer and Bardhan (1987), Beck (2002) investigated the relationship between financial development and international trade by building both a theoretical model and an empirical model to test his hypothesis. He found that countries with better developed financial systems have higher export share and trade balances in manufactured goods. Thus development in financial sectors enables technological advantages in the production of goods in manufacturing sectors.

Several empirical studies on the financial development and international trade link have emerged at both firm-levels and country or sectoral levels. Greenaway et al., 2007, Muuls, 2008, Berman and Hericourt, 2008, Bellone et al., 2010; Berman and Hericourt, 2010; Amiti and Weinstein, 2011; Minetti and Zhu, 2011 are among those who focus on firm-level data.



Financial development brings comparative advantage to firms through different sources. One prominent channel is reducing liquidity constraint. Financial development would be more beneficial to exporting firms, as they tend to face higher liquidity constraints and require more external finance. Financial sector development through reform would reduce the credit constraints, and in turn will sprout investment and so, all firms with productivity above a certain level become exporters (Melitz, 2003). Besides, weak and inefficient financial institutions increase liquidity constraints in domestic markets and prevent a subset of productive firms to enter the export market (Chaney, 2005). Using a dataset on export transactions at the firm level for the Belgian manufacturing sector, Muul (2008) investigated the effect of credit constraints on export behaviour. Study results suggested that firms with higher productivity levels and lower credit constraints are more likely to be exporting. Therefore, the theoretical model predicts that financial development will strengthen production and trade.

Interestingly, while examining differences in credit constraints faced by Chinese firms exclusively selling in domestic markets vis a vis firms operating in export markets, Feenstra et al., (2014) found that higher trade costs for exporters (measured in terms of time to export) places more financial constraints on exporters compared to domestic firms. Similarly, Greenaway et al., (2007) argued that the relationship between finance and firm export runs from export to finance rather than as claimed by other studies that it runs from finance to export.

There are also several studies that examined the role of financial development on export decisions. Using data for 5000 firms from nine developing countries, Berman and Hericourt (2010) found that financial development disproportionally increases the probability of exporting in more productive firms. Likewise, Jaud and Kukenova (2011) showed that agri-food products need more external finance to survive longer in export markets and are more dependent on the countries' financial development. Alvarez and Lopez (2014) examined whether access to finance has positive effects on the probability of exporting in Chilean manufacturing firms based on firm-level data for the period 1995 to 2002. The study utilizes information on firms' access to banking debt and changes in the real exchange rate (RER) to examine the causal effects of finance on exporting. Results of the study suggest that RER depreciations increase the probability of exporting for firms with access to banking finance and especially for firms in industries with higher financial needs and thus argues for the positive effects of access to finance on firm export probability.

Besides, financial development has a direct relationship to trade. It also works as an intermediary for institutional environments and trade, though institutional development has a

direct association with international trade (see, e.g., Grossman and Helpman 2003; Antra`s 2005; Levchenko 2007; Nunn 2007). Institutional quality can affect comparative advantage and international specialization (North 1990). Antra and Foley (2011) provide a theoretical framework to understand the linkages between institutions, finance and trade and suggest that finance may be a key channel through which institutions can better drive trade performance. Therefore, understanding the role of bank credit for export activity has become even more crucial after the global financial crisis of 2008: trade fell much more than global demand, suggesting that compared to domestic sale, export is a credit intensive activity. In addition, size, ownership, and age are other important determinant of firm exportability (Roberts and Tybout, 1997; Bernard and Wagner, 2001; Bernard and Jensen, 2004).

The role of productivity in explaining firms' export market entries and performances stem from the fact that export market participation requires higher levels of competition and productive firms find competitive edges over non-productive firms (Feenstra, 1997). As entry into export markets requires a higher sunk cost, firms which are more productive are able to absorb the sunk cost shock better than firms which are less productive. Even though productivity heterogeneity could explain variation in export market entry decisions, not all the variation could be explained.

This unexplained variation along with higher demands of sunk costs highlights the role of finance.<sup>2</sup> Firms engaged in export markets incur additional variable costs in comparison to firms operating in domestic markets. Cross-border shipping and delivery usually takes 30–90 days longer to complete than domestic orders (Djankov et al., 2010) which further intensifies the working capital requirements of exporters relative to those of non-exporters. Now, in order to meet these financial requirements, firms must rely on access to external finance. This dependence on external finance is exhibited by the size of lending for financing of international trade.<sup>3</sup>

In addition to investment and sunk cost requirements for export market entries, theoretical literature also identifies channels through which finance generates positive effects. Financial intermediaries are considered to be effective in promoting entrepreneurs who are either engaged or would likely to be engaged in productive activities. It also helps in accumulation of human capital (Jacoby, 1994). In order to maximize firm value, financial intermediaries

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<sup>2</sup> Sunk costs primarily includes cost involved in searching new market (potential market), investment incurred for capacity building and product customisation to meet the requirement of new market. Additionally, shipment, freight, and cost linked with goods damages in transportation. Further, it includes cost of paper work required to get export clearance, duties, and risk cover of market friction on new and culturally different market.

<sup>3</sup> As reported in Manova (2012), the volume of financial activities linked to trade is equal to 10–12 trillion in 2008 and According to the estimates of Auboin (2009) up to 90 per cent of world trade has been estimated to rely on some form of trade finance.

place pressure on managers by monitoring them (Stiglitz and Weiss, 1983 and Myers and Majluf, 1984). Finally, a well-functioning financial market amends information asymmetry and provides incentives to undertake risky yet high return projects (Aghion et al., 1999).

Moreover, an association with financial development in the country, is also knitted with an institutional environment structure which leads to information asymmetry, credit rationing, and government subsidy. Well-developed financial markets will act as a stimulant for firms to actively and aggressively carry out plans towards international markets. Any such policy stimulant which improves a firm's access to external finance would add to the firm's export market operational strategy.

Ju and Wei (2011) illustrate that financial institutions and factors both affect productivity differentials among firms, depending upon the quality of the institutions.<sup>4</sup> In high quality institutions the equilibrium output and prices are determined by factor endowments only, and thus finance does not contribute anything to the comparative advantage (ability to produce a particular good or service at a lower marginal and opportunity cost) of the firm. On the contrary, in a country with low quality institutions, financial institutions can be a source of comparative advantage. In this case, the changes in factor endowments (such as an infusion of capital) might not affect equilibrium outputs or prices at the margin. Entry into export markets requires investment (sunk cost), and since these investments are paid upfront firms which have access to finance more easily will outperform those that struggle to gain finance. Financial development as whole, and access to finance in particular, is crucial for any export market entry decision.

Susanto et. al., (2011) empirically investigates the link between financial development and trade flows in agriculture and manufacturing for several groups of countries. Using the gravity model with an augmented financial development variable, and using fixed effects vector decomposition (FEVD) to accommodate time invariant variables, has shown that there is a positive relationship between financial development and bilateral trade for the manufacturing sector with relatively large economies of scale, while there is less impact for the agricultural sector. Additionally, the impacts of financial development vary across economies and also between regions. The study find that the impact of financial development on both agriculture and manufacturing exports from developing countries of Asia, Latin America, MENA and SSA is greater than in developed countries. The reason given for the differentiated effect of financial development is that due to full liberalisation, financial development has peaked and so the effect can be very marginal.

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<sup>4</sup> Institution in this context is defined as competitiveness of the financial intermediary sector, the quality of corporate governance and the level of property rights protection.

The results have implications for policy reform in the financial sector as well. The linkages established by this study are of particular importance given the strong relationship between production and trade in most developing countries, and provide a solid empirical foundation for pursuing financial reform policies oriented towards improving access to finance or reducing liquidity or financial constraints in other ways. Improving access to finance-oriented policy interventions will stimulate production and trade activities which in-turn helps tackle the problem of growth, inequality and poverty.

### **3. Data and methodology**

#### **3.1. Data**

For the analysis, we used both firm level as well country level information. World Bank Enterprise Survey (WBES) data is the source of firm level information, while country level information is drawn from world development indicators. World Bank, jointly with *International Financial Statistics* (IFS), started working to collect information at the enterprise level to improve the productivity and business environment (bureaucratic, tax, administration and legal) for better firm operation in developing countries. The enterprise survey data collected is based on firms' experience and perceptions. The first wave of the survey happened between 2002 to 2006 and involved enterprise level information drawn for around 71000 enterprises. The second wave, which is still ongoing, involved firm level data collected for over 1.4 lakhs enterprises. Combining these waves allowed us to collect data from a longer time period. The questions asked to the enterprises were not the same in both waves and so only variables present in both waves were used. Asia-Pacific countries were selected dependent on data availability, thus not all countries in the region were included. Those included for analysis are as follows: Afghanistan, Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Viet Nam. In total around 54000 firms were surveyed in these countries.

The survey data is based on simple stratified random sampling with weighting given to the size of the economy and the share of different sectors in the economy and location. Enterprise size, by number of workers, is also a useful criterion so that smaller enterprises get proper representation. Firms operating in sectors under government price regulation and prudential supervision such as banking, electric power, rail transport and water and waste water, were not included in the sample. Most of the existing firm level dataset provides information related to listed firms and not about unorganised and small sized firm. To bypass this problem World Bank led enterprise surveys instruments the sampling design of the survey so as to allow for proper representation.

The survey data contains enterprise level information from different factions such as organizational and operational structure; managerial and human capital and balance sheet side. WBES data also provides qualitative information which is linked to business environments firms are facing at a micro level. Information collected in the survey is standardized so as to maintain comparability of enterprise level information across countries.

Most importantly the information contained in the data is from the firm's perspective and the survey data not only contains both qualitative and quantitative information. Qualitative variables include: ownership patterns, industries to which firms belong, geographic information (capital city, million plus population city etc.), and perceptions about different barriers to operation; whereas quantitative variables include: sales, export intensity, capacity utilization, gross value addition, and total assets. Additionally, responses from interviewees provided information about different obstacles faced by firms such as: power supply, water connection, judicial system, competition, access to finance and corruption etc.

The firm level data is merged with country level data set to gauge the effect of country level variables. Country level variables include measures of financial development, variables representing institutional quality and trade costs. Country level information is culled from World Development Indicator (WDI).<sup>5</sup>

### 3.2. Methodology

The survey questionnaire asks firm about the percentage of total sales that is sold directly or indirectly in the export market. From this question we have designed our dependent variable as “*exporter*”. A firm is said to be an exporter (exporter=1) if the firm's direct or indirect sale is positive. Exporter assumes a value of 0 if the firm's direct or indirect export is 0. Thus the dependent variable is categorical in nature. Given that the dependent variable is dichotomous, the study employs a probit regression model to analyse the determinants of firms' export statuses in the Asia-Pacific region. Let  $P_j^*$  be benefits accruing to a given firm  $j$  ( $j = 1,2,3 \dots n$ ) located in country  $i$  ( $i = 1,2,3 \dots m$ ) from sales in export market sales. The benchmark equation can be specified as:

$$P_j^* = \alpha_0 + \alpha_1 X_j + \alpha_2 Y_i + \varepsilon_j \quad (1)$$

Where,  $X_j$  represents an array/vector of firm level factor or internal attributes,  $Y_i$  is a list of factors outside the firm i.e. industry level characteristics, country level attributes, location, sector etc.  $\varepsilon_j$  is the random error term. The dependent variable  $P_j^*$  is not observed since it is a

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<sup>5</sup> Online version of WDI has been used for data collation.

latent variable, rather we observe the firm's decision to enter into the export market. Hence the following probit model is defined:

$$P_j = \begin{cases} 1 & \text{for } P_j^* > 0 \\ 0 & \text{for } P_j^* \leq 0 \end{cases} \quad (2)$$

Where  $P_j$  is a binary variable with values 1 if the firm is engaged in export activities and 0 otherwise. Let  $\Phi(\cdot)$  depict the cumulative standard normal distribution function. Then the probit regression model can be represented as:

$$E(P_j|X_j, Y_i) = \Phi(\alpha_0 + \alpha_1 X_j + \alpha_2 Y_i) \quad (3)$$

### 3.3. Empirical model

As mentioned above, there are both internal and external factors which can affect firms' export decisions. With regard to internal factors we have considered firm age, size, productivity, ownership, and access to finance. External factors of interest are financial development, institutional environment, trade cost, and location. The base probit model we estimate for firm export decision is as follows:

$$\begin{aligned} \text{Exporter}_i = & \alpha_0 + \alpha_1 \text{Age}_i + \alpha_2 \text{Size}_i + \alpha_3 \text{Productivity}_i + \alpha_4 \text{Foreign}_i + \alpha_5 \text{Access Finance}_i \\ & + \alpha_6 \text{Location}_i + \alpha_7 Z_i + \varepsilon_i \end{aligned} \quad (4)$$

Where, *Exporter* is the dichotomous variable to estimate the firms export decision. A firm is said to be exporter (exporter=1) if the firm direct or indirect sale is positive, or else, exporter assumes value 0 if firm direct or indirect export is 0.

Age of the firm is measured as a log of difference in the year of survey in the country and year of firm inception. Empirical literature related to firm decisions to export considers firms' ages as one of the central determinants, however literature continues to produce conflicting findings. On one side Roberts and Tybout (1997) suggest that age increases the firms' propensity to make export decisions. Literature suggests that with age firms acquire ability and experience which enables them to get into the export market. What Roberts and Tybout (1997) argue is that experience and familiarity with the production process comes with age and thus older firms are more efficient than younger firms. Another argument suggests that age is positively related with firms' export decisions due to the tendency of inefficient firms to exit the market more quickly, and so firms that make the decision to enter the export market tend to be both older and more efficient. Conversely, it is also possible that younger firms are more competitive and can adopt production process requirements more quickly, which

in-turn could increase their likelihood of making export decisions. In line with the above argument Ottaviano and Martincus (2011) find an insignificant relationship between the two, whereas Alvarez and Lopez (2005) reported a negative relationship. Duefias-Caparas (2006) presents a mixed picture where a positive relationship is seen in some sectors (such as clothing) but not in others (such as electronics and food processing sectors). Given there is no clear consensus about the sign of the age coefficient, we argue that age can hold varying effects in the estimated empirical model.

Size of the firm is categorical variable with categories small (0), medium (1), and large (2). Small firms are defined as firms which have less than 20 total permanent and temporary workers (a temporary worker is adjusted for number of days worked in the year to total day in the year). Firms with 20-99 workers are classified as medium (1) sized firms and large (2) firm are those who have 100 or more workers. The base category is small firms. The majority of both the theoretical and empirical studies suggest that not only is size of the firm a significant predictor of their export decision, but also the likelihood of export decision increases with firm size. These studies argue that export market entry requires a sunk cost and a larger firm size provides a sufficient cushion to absorb the sunk cost due to economies of scale effect (Roberts and Tybout, 1997). Some of the studies consider that as firm size grows, so does productivity, as it reduces the marginal cost of production and the combined effect promotes firms' decisions to enter the export market (Bernard and Jensen, 2004; Ottaviano and Martincus, 2011). Based on above discussion we expect that coefficient of size will be positive.

Firm productivity is measured as log of capacity utilization of the firm. Capacity utilization is defined as the percentage by which a firm can exploit their production input capacity. Literature about the determinants of firm decisions to enter into the export market suggests that firms which are highly profitable tend to choose to enter the export market given the high entry sunk cost requirement. As productive firms are likely to enjoy more profitability, firm productivity will have a positive effect on firms' decisions regarding exports (Roberts and Tybout, 1997). Thus, we expect a positive sign for the productivity variable.

To capture the effect of foreign vs. domestic ownership we have included dummy variable ownership (*Foreign*) with values of 0 and 1. Ownership is defined as 1 if the foreign holding in the firm is more than 10 percent otherwise it is 0. The reference category is domestic firm (Ownership=0). Existing literature considers ownership as one of the instrumental variables which govern firms' export market entry decisions (Bernard and Jensen, 2004; Greenaway et al., 2007). Foreign firms or firms owned by multinational enterprises usually have better access to information related to the foreign market. Additionally, foreign-owned firms tend to

have more resources (human, technological etc.) and stronger business relationships. Superior resource access and stronger business relationships, coupled with the advantage of distribution networks facilitate foreign-owned firms' exporting decisions, hence we expect to have a positive coefficient for foreign ownership.

The location variable is included in the model to capture the effect of location on firms' export market entry decisions. Location is also a categorical variable with two categories; 0 if the firm is located in the capital or a city with a population of one million plus, or 1 if the firm is operational from cities which have a population of less than one million. Location in capital and million plus cities is considered as base category. Year, industry and country specific dummy variables are used to control for fixed effects of year, industry and country. Location theory of firms' settlements suggest that firms located in capital cities or in major cities get easier access to markets for both inputs and outputs, which reduces their marginal costs. Also firms located in capital cities have superior infrastructure availability reducing the cost, which in-turn increases their probability of exporting (Elbadawi, Mengistae and Zeufack, 2001). The expected sign of the variable location is positive.

Access to finance is measured in terms of both access to formal finance and access to bank finance. Both finance variables are categorical in nature. Access to finance has a value of 1 if more than 50 percent of the firm's working capital or fixed assets is financed through formal sources (these include government banks, private banks, non-banking financial companies, etc.), or of 0 if otherwise. Similarly, bank finance has a value of 1 if more than 50 percent of the firm working capital or fixed asset is financed through banks (government or private), or 0 if otherwise. For both the reference category for the access to finance variable is 0. Exporting is costly due to the sunk cost involved, thus exporting requires a higher level of investment. Access to finance leverages firms to meet the additional investment requirements and positively affects the firms' decisions to enter the export market (Chaney, 2005; Bellone et al., 2008). Given the positive effect of access to finance on firms' export decisions, we expect that the coefficient of access to finance would be positive.

Z represents year, industry and country fixed effect. Year dummy variables are included to control for the time specific effect or shock which is common across all firms (such as financial crisis, exchange rate trade policy agreement at world level etc.). Again, industry dummy variables are included to control industry specific effects. It is possible that some industries are more oriented towards export markets, and at the same time it is also possible that some industries are more oriented towards the domestic market. It is necessary to control these industries' biases towards export market entry. Similarly, country fixed effects are included to absorb country specific effects on firm decisions to enter the export market.



Country specific biases come as some countries promote exporting by formulating policy supporting exporting firms.

Further we analyse the role of external factors such as financial development, institutional environment and trade costs in firms' export decisions respectively. The extended probit model after inclusion of these external factors is as follows:

$$\begin{aligned}
 Export_i = & \alpha_0 + \alpha_1 Age_i + \alpha_2 Size_i + \alpha_3 Productivity_i + \alpha_4 Foreign_i + \alpha_5 Access Finance_i \\
 & + \alpha_6 Location_i + \alpha_8 X_i + \alpha_7 Z_i + \varepsilon_i
 \end{aligned}
 \tag{5}$$

Wherein,  $X$  is array of external factors such as financial development, institutional environment and trade cost measures. Theoretical literature suggests that financial development disproportionally helps industries which are more dependent on external finance (Kletzer and Bardhan, 1987). By reducing the information asymmetry, financial development reduces the liquidity constraint of the firms. This in-turn enables firms to make more investments which further increases the likelihood of making export decisions. Hence the coefficient of financial development is expected to have a positive sign.

Differences in institutional quality and the effect on growth rate of countries has drawn attention from economic and other social science researchers. In recent years studies have started arguing that these differences affect growth directly as well as through other channels. It is found that countries with better functioning institutions flourish more than those without. In terms of effect of institutions on firm exports, Meon and Sekkat (2008) and Levchenko (2009) suggest that an improvement in institutional quality would result in an increase of exports. Thus firms operating in countries with superior institutional environments would find it easier to enter the export market. It is expected that the coefficient of institutional quality would have a positive sign. To measure the level of institutional quality we have constructed index using principal component analysis with following indicator: voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law and control of corruption. Cross country data for institutional quality is drawn from worldwide governance indicator.

Recent developments in trade theory suggest that trade liberalization leads to an increase in the number of exporters rather than an increase in export volume for each firm (Venables, 1994). According to ESCAP (2014), inefficient regulations and delay in customs procedures are hurdles in the trade. This indicates that a reduction in trade costs will enable more and more firms to enter the export market. Thus, the higher the trade cost faced by firms, the

lower the likelihood of firm exporting. Therefore, the expected sign of the trade cost variable is negative.

## **4. Result and discussion**

### **4.1. Descriptive statistics**

Table 1, present the summary statistics of the variables for exporting and non-exporting firms. Mean of age for exporting and non-exporting firms suggest that exporting firms are older. Similarly, mean of size advocates that exporting firms are larger than non-exporting firms. On comparing mean value of productivity we found that exporting firms are more productive compare to the non-exporting ones. In terms of location there is not much difference, even then exporting firm are found to be operating from capital city or million plus population city. Summary statistics of ownership also highlights that foreign owned firm are more export oriented. With regard to both access to formal and bank finance non-exporting firms have less access to finance vis a vis exporting firms. High mean value of financial development for exporting firms suggests financial development helps export decision of firms. Similarly, difference in mean value of institutional index suggests that better institutional environment increases export participation of firms. Likewise, non-exporting firms are subject to higher trade cost in contrast to the exporting firms.

### **4.2. The impact of access to finance on firms' ability to export**

This section estimates the probit model using Equation (3), to study the internal factors determining firms export decision. The results are given in table 2. We used two set of dependent variables, first; with the percentage of total export (including direct and indirect) to total sales (column (1) and (2)) and second; share of total export to total sales greater than 10 per cent (column (3) and (4) of table 2) to test the sensitivity of the estimation results. The result suggests that age, size, productivity and location follow expected signs and are statistically significant and thus these variables are found to follow the theoretical expectations and empirical evidence. The coefficient of age is positive and statistically significant, which suggest that old aged firms are more likely to enter in the export market. Result on age is consistent with findings of Roberts and Tybout (1997) study which argues that with age firms acquires technical know-how which enables firms to enter into export market. Coefficients are not only of same sign but are also statistically significant for both the access to finance variables.

Coefficient of productivity suggests that productivity is having positive and significant effect on firms' exportability. The result is consistent with Roberts and Tybout (1997) findings but

contrary to the results of Greenaway et al., (2007) and Bellone et al., (2010) who found productivity was not significantly related to firm export decision. Given that coefficient of medium and large firm size dummy is positive and increasing, it suggests that chances of entry in the export market increases with firm size with large firm being most likely to take the leap.

**Table 1: Summary statistics**

	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
	Non-Exporter					Exporter				
Firm age	40938	15.93	13.41	0.00	156.00	12683	19.12	16.66	1.00	183.00
Firm size	40875	1.76	0.74	1.00	3.00	12855	2.50	0.66	1.00	3.00
Capacity utilization	26005	77.05	20.04	0.00	150.00	11446	79.40	18.07	0.00	120.00
Location of the firm	39073	0.45	0.50	0.00	1.00	11032	0.44	0.50	0.00	1.00
Foreign Ownership	41392	0.03	0.18	0.00	1.00	12406	0.22	0.41	0.00	1.00
Access to formal finance	38092	0.27	0.44	0.00	1.00	11490	0.46	0.50	0.00	1.00
Access to bank finance	20787	0.36	0.48	0.00	1.00	8548	0.47	0.50	0.00	1.00
Market capitalization to GDP ratio	31102	62.96	39.87	16.31	276.60	9128	66.32	46.15	16.31	276.60
Credit to GDP ratio	20813	39.58	21.67	3.82	121.35	7147	50.86	32.22	3.82	121.35
Bank branches per thousand populations ( <i>BBptp</i> )	31947	15.34	12.21	1.54	43.88	7990	12.83	10.71	1.54	43.88
Institutional index ( <i>Instit</i> )	41823	-0.38	0.41	-1.65	0.96	12873	-0.25	0.48	-1.65	0.96
Export day delay	38276	20.18	9.10	0.00	90.00	12601	6.99	10.18	0.00	190.00
Investment Freedom	41521	37.94	11.78	10.00	70.00	12892	39.92	12.00	10.00	70.00
Trade Freedom	41175	58.24	17.83	0.00	78.60	12866	58.73	17.53	0.00	78.60
Port Quality	25388	3.70	0.59	2.40	4.90	5885	3.63	0.66	2.40	4.90

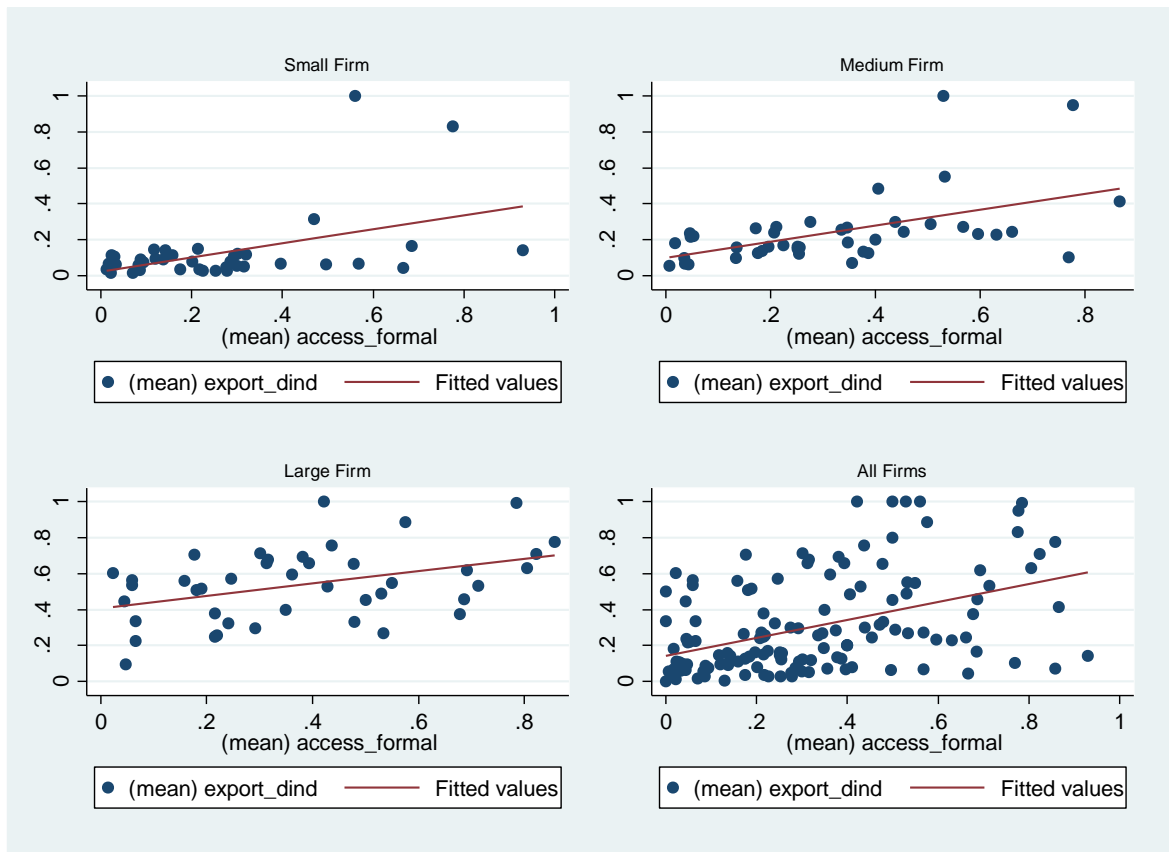
**Table 2: Access to finance and firms' ability to export**

	(1)	(2)	(3)	(4)
Log of age	0.122 <sup>***</sup> (0.014)	0.108 <sup>***</sup> (0.012)	0.063 <sup>***</sup> (0.015)	0.054 <sup>***</sup> (0.013)
Log of capacity utilization	0.129 <sup>***</sup> (0.034)	0.113 <sup>***</sup> (0.028)	0.144 <sup>***</sup> (0.036)	0.128 <sup>***</sup> (0.030)
Size (Medium)	0.606 <sup>***</sup> (0.034)	0.610 <sup>***</sup> (0.027)	0.577 <sup>***</sup> (0.037)	0.593 <sup>***</sup> (0.029)
Size (Large)	1.358 <sup>***</sup> (0.036)	1.343 <sup>***</sup> (0.028)	1.243 <sup>***</sup> (0.038)	1.246 <sup>***</sup> (0.030)
Location (less than million pop city)	-0.073 <sup>**</sup> (0.026)	-0.089 <sup>***</sup> (0.021)	-0.052 <sup>**</sup> (0.027)	-0.069 <sup>**</sup> (0.022)
Foreign Owned	0.862 <sup>***</sup> (0.041)	0.880 <sup>***</sup> (0.034)	0.793 <sup>***</sup> (0.040)	0.813 <sup>***</sup> (0.033)
Access Formal Finance	-	0.169 <sup>***</sup> (0.020)	-	0.115 <sup>***</sup> (0.021)
Access Bank Finance	0.059 <sup>**</sup> (0.023)	-	0.022 <sup>**</sup> (0.024)	-
Constant	-4.962 <sup>***</sup> (0.622)	-6.178 <sup>***</sup> (0.291)	-0.521 (0.985)	-1.802 <sup>**</sup> (0.669)
Pseudo-R <sup>2</sup>	0.238	0.243	0.234	0.236
Observation	19039	28787	19039	28784
Country Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes

Note: \*\*, \* and \*\*\* represents level of significance at 10, 5 and 1 percent respectively. Standard errors are in parentheses. Probit regression includes Country, Industry and year fixed effect.

Column 1 and 2 of the table 2 displays the result with bank finance as proxy of access to finance, whereas, column 3 and 4 exhibits the result for access to formal finance. Both the access to finance variable (formal and bank) have positive coefficient. The estimates suggest that firms with access to finance (formal/bank) have higher chances of entering export market. It is also clearly depicted in Figure 1 that the access to finance increases the number of firms in the export market across the different size group but the effect is much clearly visible for medium and large firms. Whereas, small firms find difficult to enter export market and also face more financial constraint compare to medium and large firms. Thus result reveals the importance of access to finance in firm export decision. Access to finance would not only reduce the fixed cost involved in export decision but it also smoothens the production friction mainly due to delay in payment from buyers and thus find support for the Chaney (2005); Bellone et al., (2010) and others study results.

**Figure 1: Access to finance and export decision**



Source: Based on authors calculations using WBES data

Looking at the coefficient of variable location we find that it is consistently negative and statistically significant. Negative coefficient of the variable implies that firms operating away from capital or million plus population cities find it difficult to join export market. The negative effect of location thus suggests that firms operating in remote cities, incur higher fixed cost of exporting and thus would probably require intervention from government to make their break into export market. The coefficient of foreign ownership is positive and significant at one per cent level. This shows that the foreign ownership and exporting is positively correlated. Results confirms the argument of Greenaway et al., (2007) and suggest that multinational firms have superior technological capabilities and are better placed against domestic firm in terms of networking which increases their odds in favour of exporting.

In nutshell, estimation results suggest that age, size, productivity, ownership and access to finance are important internal attributes of the firm which are responsible for the firm export decision. Location is one factor which is external in nature but equally important for firms export decision. Result are consistent, in terms of change in dependent variable (between column 1 and 2 and column 3 and 4) and also change in proxy for measuring access to finance variable, which reflects the robustness of the results.

### **4.3. Role of financial development on firms' ability to export**

In this section, we extended the above estimated model by including the external factors in Equation (4). Particularly, we examined whether the indicators of financial development affect firms' exporting decision or not. Financial development disproportionately helps industries which are more dependent on external finance (Kletzer and Bardhan, 1987). It reduces the liquidity constraint of the firms by reducing information asymmetry, which enables the firm to take investment decisions and thus increases the likelihood of firm's export decisions. Therefore, better the financial development, higher would be the chance for the firm to exploit export market.

We used several indicators for financial development namely, credit to GDP ratio, market capitalization to GDP ratio and Bank Branch per thousand population (*BBptp*), to analyse the effect of financial development on firm export decision across different size group and overall. The results are presented in table 3 suggests that even after including indicators of financial development age, size and location are continue to have expected signs and statistical property. Similarly, the coefficient of foreign ownership is positive and significant at one per cent level and it is consistent in all the models.

The result reveals that the coefficient of market capitalization to GDP ratio is positive and significant at one per cent level. Similarly, the coefficient of other indicators of financial development is also positive and statistically significant. Thus result suggests that financial development is indispensable for firm export decision. The coefficient of stock market to GDP and credit market to GDP are small, this may be because, except China and India, the other Asia-Pacific countries in the sample are not having well developed capital market. Therefore, the impact of development of capital markets is not capturing their influence on firm exportability. It is also illustrated in figure 2 that the firms operating in financially developed countries are better off in entering export market in contrast to the firms operational in less developed financial market. Besides, small firm are not able to make use of financial development compared to medium and large firms.

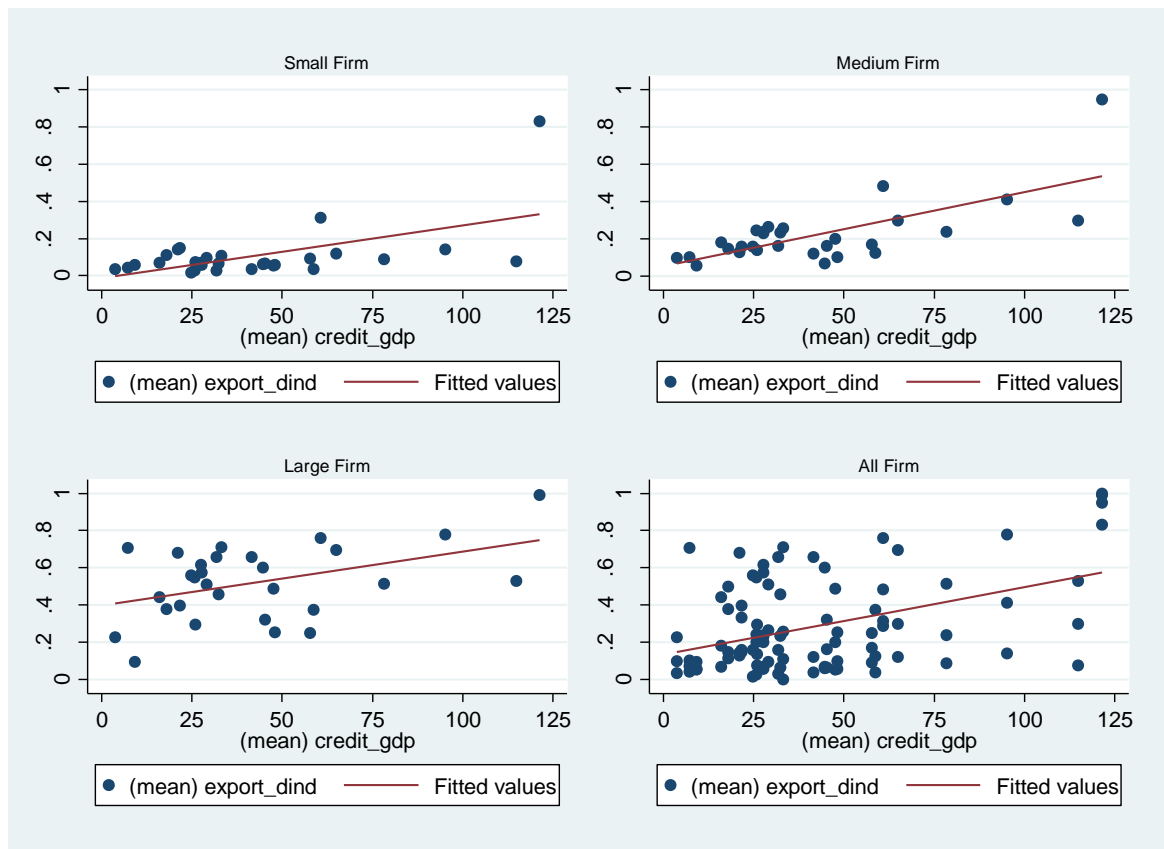
**Table 3: Access to finance, financial development and ability to export**

Dependent Variable- <i>Exporter</i>	(1)	(2)	(3)	(4)
Log of age	0.126*** (0.013)	0.083*** (0.017)	0.129*** (0.015)	0.130*** (0.015)
Log of capacity utilization	0.115*** (0.029)	0.030 (0.035)	0.079* (0.031)	0.080 (0.031)
Size (medium)	0.634*** (0.029)	0.559*** (0.037)	0.618*** (0.030)	0.619*** (0.030)
Size_(large)	1.350*** (0.031)	1.383*** (0.038)	1.326*** (0.032)	1.329*** (0.032)
Location (less than 1m pop city)	-0.051* (0.021)	-0.008 (0.028)	-0.231*** (0.041)	-0.188*** (0.030)
Foreign firm	0.915*** (0.021)	0.892*** (0.029)	0.867*** (0.024)	0.861*** (0.035)
Access to finance ( <i>AF</i> )	0.184*** (0.037)	0.046 (0.042)	0.209*** (0.042)	0.132*** (0.042)
Market Capitalization to GDP	0.004*** (0.001)	-	-	-
Credit to GDP	-	0.005*** (0.001)	-	-
Bank Branch per thousand population( <i>BBptp</i> )	-	-	0.362*** (0.102)	0.376*** (0.102)
Location* <i>BBptp</i>	-	-	0.007** (0.002)	-
Location* <i>AF</i>	-	-	-	0.139** (0.045)
Constant	-2.737*** (0.146)	-1.969*** (0.167)	-3.061*** (0.341)	-3.102*** (0.341)
Pseudo-R <sup>2</sup>	0.224	0.259	0.242	0.242
Observation	23759	14447	21872	21872
Country Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes

Note: \*, \*\* and \*\*\* represents level of significance at 10, 5 and 1 percent respectively. Standard errors are in parentheses.



**Figure 2: Financial development and export decision**



Source: Based on authors calculations using WBES data

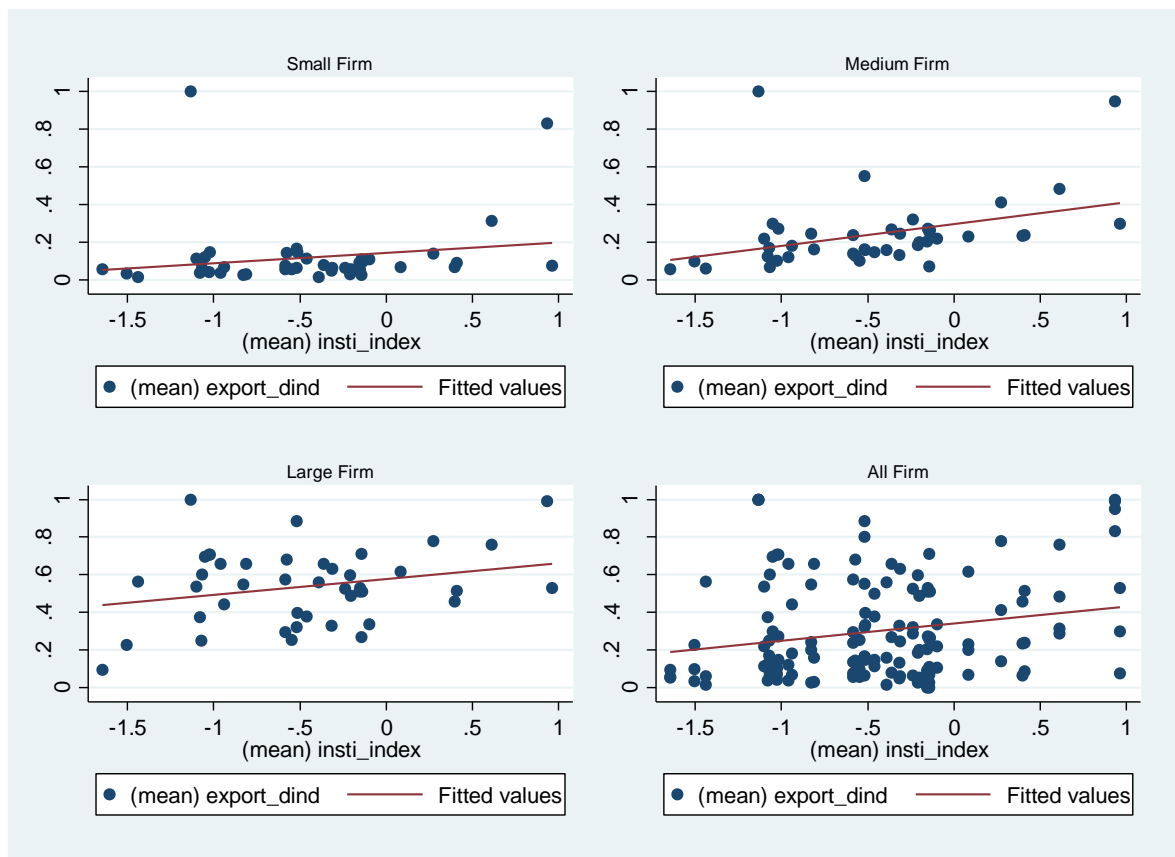
Unlike credit to GDP ratio, the coefficient of bank branch per thousand population is positive and statistically significant. To know the consistency of this result, we further estimated the model with interaction of locational with access to finance and BBptp. Coefficient of location and its interaction with reach of financial sector variable is significant with opposing sign, this suggest that as the reach of financial sector increases the negative effect of location diminishes. Thus with financial sector development (increases in banking sector presence in remote areas) what so ever the location of the firm, their likelihood of entering the export market would go up. Similarly, with access to finance the effect of location on firm export decision diminishes.

In sum, the result reveals that financial sector development is instrumental in firm international trade decision but the effect is very marginal. Though, it helps the firms to access to finance even for locational disadvantageous firms, that in turn facilitate to make export decision, but, marginal effect of financial development reflects the underdevelopment of financial sector in Asia Pacific countries. Thus results suggest that there is a need of policy intervention to strengthen the financial market.

#### 4.4. Do institutional factors matter for firms' ability to export?

The previous section clearly suggests that access to finance and financial development improves the chances of firm entry into export market, however, it failed to completely eliminate the downside effect of location. This limiting effect of access to finance and financial development raises question on the role of institutional quality in the Asia Pacific countries to strengthen the financial market, which in turn would promote their export market entry directly or through financial intermediaries (improving access to finance). Figure 3 illustrates the effect of institutional development on firm export decision, which is positive but not effective. For small firm group the effect is even smaller. This can be attributed to the fact that most of the Asia Pacific countries are developing countries, which are consistently improving the institutional quality through several policy measures.

**Figure 3: Institution and export decision**



Source: Based on authors calculations using WBES data

To understand the effect and possible channel through which institutional quality would affect firm export decision we re-estimate the model with institutional quality index, its interaction with access to finance and location as additional variable (see table 4 for result).

**Table 4: Access to finance, institutional indicators and firms' ability to export**

Dependent Variable- <i>Exporter</i>	(1)	(2)	(3)	(4)
Log of age	0.112 <sup>***</sup> (0.012)	0.112 <sup>***</sup> (0.012)	0.113 <sup>***</sup> (0.012)	0.113 <sup>***</sup> (0.012)
Log of capacity utilization	0.108 <sup>***</sup> (0.029)	0.108 <sup>***</sup> (0.029)	0.109 <sup>***</sup> (0.029)	0.108 <sup>***</sup> (0.029)
Location (less than 1m pop city)	-0.088 <sup>***</sup> (0.022)	-0.088 <sup>***</sup> (0.022)	0.006 (0.025)	0.000 (0.0)
Size (medium)	0.608 <sup>***</sup> (0.028)	0.608 <sup>***</sup> (0.028)	0.610 <sup>***</sup> (0.028)	0.610 <sup>***</sup> (0.028)
Size (large)	1.343 <sup>***</sup> (0.029)	1.342 <sup>***</sup> (0.029)	1.341 <sup>***</sup> (0.029)	1.343 <sup>***</sup> (0.029)
Foreign	0.879 <sup>***</sup> (0.035)	0.879 <sup>***</sup> (0.035)	0.875 <sup>***</sup> (0.035)	0.875 <sup>***</sup> (0.035)
Access formal	0.168 <sup>***</sup> (0.020)	0.166 <sup>***</sup> (0.024)	0.168 <sup>***</sup> (0.020)	0.112 <sup>***</sup> (0.030)
Log of institutional index	0.797 <sup>***</sup> (0.242)	0.799 <sup>***</sup> (0.242)	0.633 <sup>**</sup> (0.243)	0.597 <sup>**</sup> (0.243)
Access formal * log of institution		-0.005 (0.026)		
Location* log of institution			0.196 <sup>***</sup> (0.027)	0.171 <sup>***</sup> (0.029)
Access formal* location				0.134 <sup>***</sup> (0.039)
Access formal* location* log of institution				0.010 (0.010)
Constant	-1.228 <sup>***</sup> (0.180)	-1.228 <sup>***</sup> (0.180)	-1.284 <sup>***</sup> (0.180)	-1.265 <sup>***</sup> (0.180)
Pseudo-R <sup>2</sup>	0.238	0.238	0.239	0.240
Observation	27392	27392	27392	27392
Country Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes

Note: \*,\*\* and \*\*\* represents level of significance at 10, 5 and 1 percent respectively. Standard errors are in parentheses.

Table 4 results reveal that the coefficients of age, size, productivity, ownership and access to finance variable are consistent with the results in table 2 and table 3. Coefficients of these variables not only continued to have the expected sign but are also statistically significant. This suggests that these variables are important factors to determine firm export decision. The coefficient of institutional index is positive and statistically significant at one per cent level, thus suggest that firms' operating in countries with better institutional environment finds easier to enter into export market. In other words, probability of firm exportability increases with level of institutional development in the respective country. However, the interaction effect of access to finance and institutional quality is found to be positive but insignificant. The results clearly reveal that the policy measures taken for institutional development are not well designed to address the financial developmental issues. To understand how effective the institutional quality across the location of the firms, we included

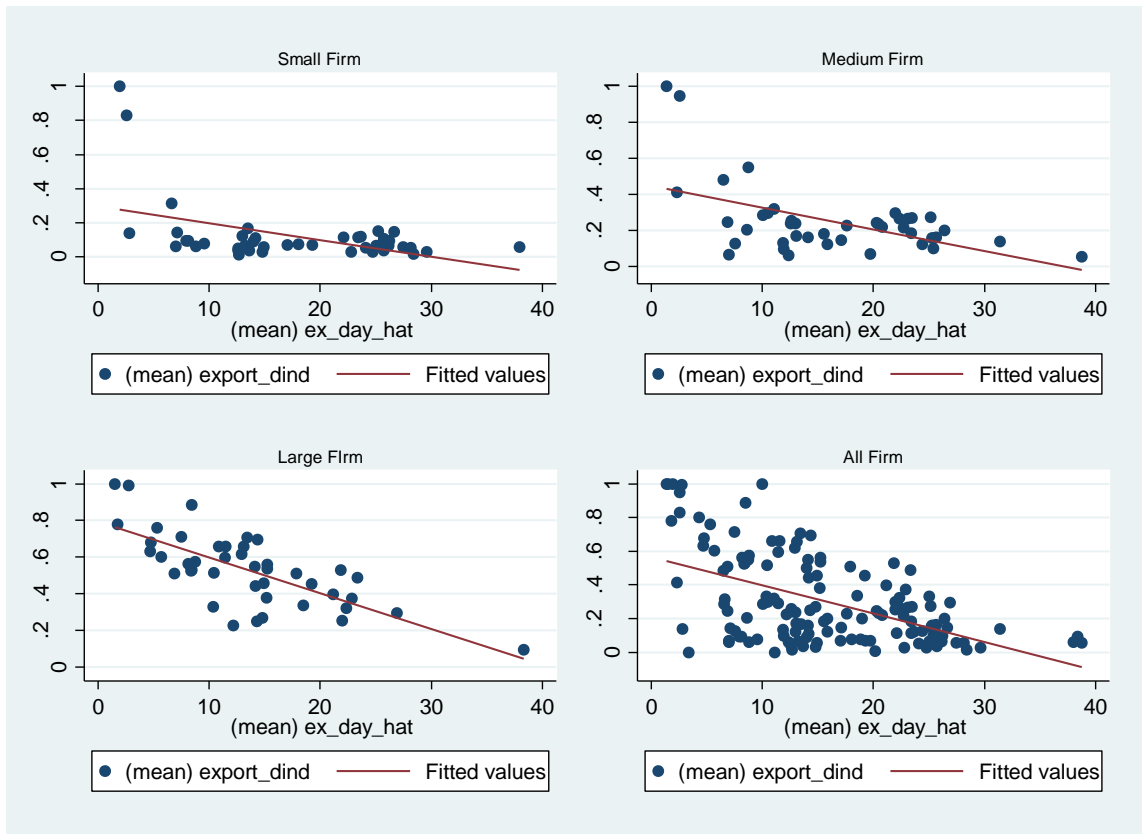
the interaction effect of institutional index with locations in column (3). The result reveals that institutional quality limits the locational disadvantage firms have with respect to their export market entry decision. Taking into account, the three-way interaction terms does not alter the results on the positive impact of institution on firm exportability (column 4). Institutional factors does have positive interaction with locations, however, effective institutional design is required to improve the access to finance by strengthening the financial institution which would enable remotely located firm to enter export market.

#### **4.5. Effect of trade costs on firms' ability to export**

Several trade theories argue that trade cost is one of the important factor which determines firm export decision. Countries are promoting trade liberalization and engaging in inter regional and intra-regional trade agreements to facilitate trade by reducing tariff and non-tariff barriers. Besides, countries bring several policy measures to improve the infrastructure and logistics services such as improving the port quality, computerizing custom clearance, and so on. Figure 4 shows the effectiveness of trade cost on firm export activities for size wise groups and overall. The figure clearly depicts the inverse relationship between time to clear the custom and firm export activities. Particularly, it is more prominent for large firms. In this context, this section attempts to examine the relative importance of access to finance and trade costs on firm export activities.

In this section we try to empirically evaluate the role of trade cost on firm export decision. To estimate the impact of trade costs on firms' ability to export, we used array of proxy variables, such as export delay, investment freedom, trade freedom and port quality and the results are presented in table 5. Consistent with theoretical expectation and empirical result in the previous section, age, productivity, foreign ownership and location continue to have positive and statistically significant coefficient. Effect of access to formal finance is also positive and significant at 5 per cent level in all the models.

**Figure 4: Trade costs and export decisions**



Source: Based on authors calculations using WBES data

Trade cost variables in all the models are with expected sign and statistically significant, except for the case of column 4, which includes port quality. For instance, in column (1), number of days required to clear custom coefficient is negative and statistically significant, suggesting that as the number of days to clear custom increases the likelihood of exportability decreases. In column (2) and column (3) the coefficients of investment freedom and trade freedom are positive and statistically significant at one per cent level. Positive coefficients of these variables suggest that with increase in the freedom to trade, investment freedom firms find it easier to join export market. In column (4), though the coefficient of port quality is positive, it is insignificant. Thus, the result calls for trade facilitation measures in the Asia-Pacific countries such as: paperless trade, improving the quality of port services, reducing trade costs and boosting competitiveness. Table 5 clearly shows that both trade costs and financial costs are important determinant factors for the firm export activities.

**Table 5: Access to finance, trade cost and firms' ability to export**

Dependent Variable is <i>Exporter</i>	(1)	(2)	(3)	(4)
Log of age	0.185 <sup>***</sup> (0.016)	0.101 <sup>***</sup> (0.012)	0.101 <sup>***</sup> (0.012)	0.110 <sup>***</sup> (0.017)
Log of capacity utilization	0.203 <sup>***</sup> (0.040)	0.099 <sup>***</sup> (0.027)	0.111 <sup>***</sup> (0.027)	0.054 (0.034)
Size (Medium)	0.453 <sup>***</sup> (0.030)	0.619 <sup>***</sup> (0.027)	0.634 <sup>***</sup> (0.027)	0.631 <sup>***</sup> (0.035)
Size (Large)	0.979 <sup>**</sup> (0.033)	1.343 <sup>**</sup> (0.028)	1.354 <sup>**</sup> (0.028)	1.340 <sup>**</sup> (0.036)
Foreign Owned	0.642 <sup>***</sup> (0.047)	0.916 <sup>***</sup> (0.033)	0.892 <sup>***</sup> (0.033)	0.925 <sup>***</sup> (0.049)
Access Formal Finance	0.076 <sup>**</sup> (0.027)	0.165 <sup>***</sup> (0.020)	0.192 <sup>***</sup> (0.020)	0.271 <sup>***</sup> (0.027)
Location (less than million pop city)	0.056 <sup>*</sup> (0.024)	-0.077 <sup>***</sup> (0.019)	-0.089 <sup>***</sup> (0.019)	-0.166 <sup>***</sup> (0.026)
Log of export day	-1.400 <sup>**</sup> (0.028)			
Investment freedom		0.011 <sup>***</sup> (0.001)		
Trade freedom			0.015 <sup>***</sup> (0.002)	
Port quality				0.025 (0.036)
Constant	0.941 <sup>***</sup> (0.209)	-2.693 <sup>***</sup> (0.141)	-2.972 <sup>***</sup> (0.161)	-2.123 <sup>***</sup> (0.218)
Pseudo-R <sup>2</sup>	0.559	0.234	0.233	0.201
Observation	28468	28681	28574	16933
Country Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes

Note: \*, \*\* and \*\*\* represents level of significance at 10, 5 and 1 percent respectively. Standard errors are in parentheses.

In sum, the results suggest that age, size, productivity, location and foreign ownership are internal factors which are strongly related with firm export decision. These results confirm the findings of the previous studies (Robert and Taibout, 1997). In addition, access to finance is also one important attribute which determines firm probability of joining export market. Home countries with lower trade costs encourage their firms to export. Furthermore, the results on access to finance, institutional quality and their interaction with location suggest that financial sector development is more favorable to firm exportability in countries with high-quality institutions even if the firm locates away from cities. These results support previous empirical work on the relationship between finance and trade (Kletzer and Bardhan, 1987; Beck, 2002; Berman and Hericourt, 2010; Bellone et al., 2010). Location, financial development, institutional quality and trade costs are some of the other important determinants of firm's export decisions, though these being external to the firm. Results obtained for these variables suggest that firms operating in cities, and have access to well-developed financial system, have higher likelihood of entering export market. Similarly, superior institutional

environment in a country is positively related with the chances of firm export decision. Given that the relationship between finance and trade depends on the quality of institutions, financial and infrastructure development, present study supports strengthening of both financial as well as institutional environment.

## **5. Conclusion**

This study attempts to examine the impact of access to finance on firms' exporting decisions in the Asia-Pacific countries. We have also studied the role of financial development and institutional quality on firms' ability to export. We used World Bank Enterprise Survey (WBES) data for firm level information and World Development Indicators (WDI) for financial development and institutional quality variables. Using the probit regression model, the study found that access to finance plays a significant role in promoting firms to export. Furthermore, financial development has a positive and marginal effect on firms' export decisions. The interaction of location with indicators of financial development reveals that financial development reduces the location disadvantage of firms when making export decisions. The study also shows that the institutional index encourages firms to export, even if the firm is away from a capital or million plus population city. However, institutional factors do not improve the export decisions of remotely located firms with access to finance, thus confirming the lacuna in institutional design in promoting financial accessibility at the firm level. We found that trade costs and access to finance are instrumental in firms' export decisions. The study supports that Asia-Pacific countries should focus on strengthening both financial as well as institutional environments, building better infrastructure development for reducing trade costs, and thereby, encouraging firms to export.

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