The role of Financial Access and Financial Development on Firm's Exportability: Empirical Evidence from Asia-Pacific[*]

Durairaj Kumarasamy[†]
Prakash Singh[‡]

Abstract

This study attempts to examine how access to finance and financial development affects firm's ability to export in Asia–Pacific countries. Using firm level data from World Bank Enterprises Survey, we found that access to finance plays an important role in promoting the firm's ability to export. In addition, development in financial sector translates into a higher likelihood of firm entering into export market. The effect of financial development is more prominent in terms of reach of the banking sector. We also found that interplay between access to finance, financial development and location reduces the negative effect of location on firm's ability to export. The study suggests that improvement in access to finance and financial development (increase in reach of banking sector), firms operating away from capital or main cities would find export market entry easier. The study supports that strengthening financial development would encourage firm's exportability, and also emphasises the need of access to finance to facilitate the firm's exporting activities for remotely located places.

Keywords: Access to Finance, Exports, Financial Development, International Trade,
JEL: D22, F14, O16, O53

[*] Authors acknowledge the support of ARTNeT, UNESCAP, Bangkok. The authors are also grateful to the ARTNeT Secretariat for helpful comments and guidance on an earlier draft of this paper and for technical support in disseminating this paper. We thank Prof. Vigneswara Swamy for his critical inputs. We also thank Prof. Prabir De for his constant encouragement. Any errors that remain are the sole responsibility of the authors. Usual disclaimers apply.

[†] ASEAN-India Centre (AIC), Research and Information System for Developing Countries (RIS), New Delhi, India. Email: doorai_raj@yahoo.co.in.

[‡] Institute of Economic Growth (IEG), New Delhi, India Email: prakash.archa@gmail.com.

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1. Introduction

Export has indispensable contribution to economic growth. Increase in export raises income level, efficient allocation of resources, greater capacity utilization, exploitation of scale and technological improvement in response to greater competition from abroad (Burney, 1996). This in turn has prompted adoption of export promotion strategy in several developing countries to boost economic growth which includes policy support to encourage non–exporters to enter foreign markets and also facilitate the existing exports to expand the export potential. In a global competitive market, firms face huge challenges to accommodate with competitive prices and technological changes that has lead the firms to invest heavily in research and development, marketing research, product development, advertising and investment in fixed capital equipment to make production for foreign markets (Hur et al. 2006). Thus, exporting firms depends more on external finance to meet liquidity needs.[1]

Access to financial instruments enables the firm to boost its export competitiveness, by allowing them to overcome the liquidity problems associated with export activities. Several studies support that financial development reduces firm's borrowing costs, thereby enabling the firms to indulge in export activities (e.g., Beck, 2002; 2003; Manova, 2013; Svaleryd and Vlachos, 2005). Studies also highlighted that financial constraint is potentially an important cost to international trade in a financially underdeveloped country (Manova, 2013). Therefore, well-developed financial markets and strong banking institutions are crucial for firms' financial ability for their exporting activities.

Access to finance is still a major problem at the firm level in several developing countries (Beck, 2002), especially, in developing Asia where the financial system remains far below the standard of industrial country. Further, the effect of financial crisis transmitted to developing Asia has affected the credit disbursement. However, the decline in trade finance is more pronounced in countries with less developed financial sectors (Liston and McNeil, 2013). As a result, these countries have made extensive post crisis policy intervention to improve the financial health and performance of banking system (Estrada at. al., 2010), so that lending environment can be improved.

[1] Up to 90 per cent of world trade has been estimated to rely on some form of trade finance (Auboin, 2009).

Trade performance in Asia Pacific countries has shown significant improvement for the past two decades. Particularly, the contribution of trade in global value chain and regional production network has reached to 75 to 80 per cent despite the global financial crisis (ESCAP, 2015). It has become the largest trading region with a share of 37 per cent of world trade and almost half of total trade happens within region (UN-ESCAP, 2014). Asia Pacific countries have taken several policy measures in the region to facilitate trade[2], however, firms having financial constraints would face difficulty to enter and sustain in the export market. For instance, given the global competitiveness, the existing firms essentially require additional capital to move up in the value chain, as limited access to capital, holds firm at low value-added stages of the supply chain and restricts from utilizing profitable opportunities. Besides, firms newly entering to export market require additional investment, as a large part of this investment is sunk and upfront in nature. Considering the challenges to face financial constraints to promote exports, it is worth to investigate, whether accessibility of finance and the financial development do help in promoting firms to entry into export market in Asia Pacific countries.

A few studies have examined the effect of access to finance on firm exportability for developing countries and of the available studies, very few are based on survey data. There is also dearth of studies for Asia–Pacific region. Using World Bank Enterprises Survey (WBES) data, this study attempts to investigate how access to finance and financial development determine the firms exporting decision in Asia Pacific countries. Besides, we have also examined, whether access to finance and financial development could eliminate the location effect, as half of the small and medium size firms operates away from capital or large cities in the Asia Pacific region. Several studies have measured the access to finance drawn from balance sheet data that could not clearly indicate the productive channel of investment and also has critical endogeneity and biased in measurement issues (Bellone et al., 2010). Therefore, we have considered, access to finance derived from the proportion of investment and working capital funded by formal finance. This measure helps to map sources of finance to its uses. In addition, we have addressed the endogeneity issue by using several instruments for access to finance and tested for robustness using Instrumental variable bivariate probit regression method.

Our study finds that in addition to size, age, foreign ownership and productivity, firm's having access to finance has higher likelihood of entering export market. Development of

[2] Refer for example, Chapter 4 on Asia-Pacific Trade and Investment Report (2015)

financial access stimulates the firm's decision to enter into export market. Interestingly, we found that reach of banking sector, increases the probability of export decision for firms located away from capital or main cities.

The remaining paper is organized as follows: Section 2 reviews the earlier studies related to the study area. Section 3 deals with theoretical underpinning and section 4 offers details on data source, methodology and variable description. Section 5 provides the empirical results and discussions. Section 6 presents robustness check and finally section 7 put forward the conclusion and the policy implications of our findings.

2. Previous Literature

Present paper broadly relates to the theoretical literature on effect of financial development in aggregate and financial constraint in particular on firm investment decision and subsequently their growth (Fazzari et al., 1988). More specifically, the study is linked with literature on impact of financial factors of firm export (Chaney 2005; Manova 2013). In one of the earliest work on the topic, Kletzer and Bardhan (1987) using the Heckscher–Ohlin framework compared two international trade models with the same factor endowments. However, in one of the model they introduced the external finance for working capital and showed that credit market restrictions determine the country's specialisation for sectors which depends more on external finance. For instance, country with better financial intermediation specializes in the sectors that rely extensively on external finance, whereas, country with repressed financial sector specializes in the sectors which are less dependent on external finance. Therefore, they argued that financial development favours industries which rely heavily on external finance and that in turn, financial development could explain the variance in the trade structure across the countries. On the other hand, Baldwin (1989) argues that as financial development helps in diversifying risk, country with developed financial market tend to specialize in producing goods which are risky with relatively lower risk premiums. Following Kletzer and Bardhan (1987), Beck (2002) analysed the role of financial development in international trade and suggests that developed financial system spurs export share and trade balance for manufactured goods. Berman and Hericourt (2010) found that financial development disproportionally increases the probability of export decision of more productive firms.

With extended Melitz (2003) model, Chaney (2005) suggests that financial constraint has bearing on firm export decision. Using a dataset on export transactions at the firm level for the Belgian manufacturing sector, Muûls (2008) put forward that firm having higher

productivity level and lower credit constraint are more likely to be exporter. Bellone et al. (2010) taking panel data of French firm reveals that financial constraint reduces firm export market participation. Similarly, Manova (2013) reveals the importance of financial constraint in firm's export decision.

On the contrary, Feenstra et al. (2014) found that higher trade cost for exporters (measured in terms of time to export) makes exporters more financially constrained compared to domestic firms. On the similar note, Greenaway et al. (2007) advocates that the relationship between finance and firm export, the causal direction runs from export to finance rather that as claimed by other studies that it runs from finance to export. Bridges and Guariglia (2008) also provide similar result. Whereas, Stiebale (2011) recommends that financial constraint and firm export are not correlated. Recently, Alvarez and Lopez (2014) assessing the impact of access to finance on exporting decision of Chilean manufacturing firms found that access to finance is more important for firms in industries which are more dependent on external finance. Thus, literature is unable to bring clear picture about the relationship between financial constraint and firm export decision, hence, further verification is needed.

3. Theoretical Underpinnings

One body of literature suggests that financial friction affects investment decision (Stiglitz and Weiss 1981; Fazzari et al. 1988). Export market entry decision requires additional investment in terms of market search, building distribution networks, additional staff, promotion, product modification etc. Hence, firm needs to incur sizable fixed cost in order to enter into export market and this fixed cost has to be paid upfront (Chaney 2005; Manova 2013). Thus, firm intended to enter export market requires higher liquidity and hence need additional external finance. In addition to fixed cost requirement, additional source of financial constraint is firm's inability to pledge information to the financer. Furthermore, it is even more difficult for the financer to verify the information provided to the firm. This makes financing further difficult. Limited access to external finance limits there scale of operation (size of sales, number of products and number of destination etc.) (Secchi, et. al., 2012). Further, in contrast to domestic firms, firms engaged in export market also require additional variable cost. Given that, cross–border shipping and delivery usually take 30–90 days longer to complete than domestic orders (Djankov, et. al. 2010), which further intensifies working capital requirements of exporters' relative to those of non–exporters. Now, in order to meet these financial requirements firm has to rely on external finance; which is costly in comparison to internal finance. This dependence of firm on external finance is exhibited by the size of

lending for financing of international trade.[3] Thus, firm's inability to access external finance, particularly, formal finance is crucial for their export market entry decision.

Hypothesis 1: *Financially constrained firms are less likely to enter into export market.*

As exporting firm tend to face higher liquidity constraint and require more of external finance, development of financial sector is also important in improving the access to finance for firms. Financial sector development by reducing credit constraints will sprout investment and all the firms with productivity above threshold level will choose to become exporters (Melitz 2003). Besides, weak and inefficient financial institution increases the liquidity constraint in the domestic market and prevents a subset of productive firm to enter the export market (Chaney 2005). Financial intermediaries are considered to be effective in promoting entrepreneurs who are either engaged or would likely to be engaged in more productive activities. It also helps in accumulation of human capital (Jacoby 1994). Financial friction due to underdeveloped financial sector proves to be critical for export promotion at enterprise level in particular and country level in general.

Hypothesis 2: *Financial development is instrumental in firm export decision.*

Based on above discussion and hypothesis, this study estimates the role of access to finance and financial development in promoting firm export decision.

4. Data and Methodology

4.1. Data

For the analysis, we have used both firm level as well country level information. World Bank Enterprise Survey (WBES) data is the source of firm level information. We have combined two different waves of WBES data to have longer time span.[4] It is important to note that WBES data is pooled cross section data and not a panel data. As all the questions asked to the enterprise were not exactly same in both the waves, thus, we have considered only those variables which are common across the waves. The study focuses on Asia–Pacific countries, depending on data availability, we have included 16 countries for the analysis, namely, Afghanistan, Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam. Total firms

[3] As reported in Chor and 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% of world trade has been estimated to rely on some form of trade finance.

[4] The first wave of the survey happened during 2002 to 2006 year and enterprise level information was drawn for around 71,000 enterprises. In the second wave, which is still ongoing data is collected for more than 140 thousand enterprise.

surveyed in these countries are around 54,000. Information collected in the survey is standardized so as to maintain comparability of enterprise level information across the countries. 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, which are collected from World Development Indicator (WDI).[5]

4.2 Methodology

Present study intends to examine the factors which are responsible for the firms' decision on export market entry in general and analyzing the role of access to finance and financial development in particular. The decision of the firm to enter or not to enter export market is unobservable directly from the data, hence, we have constructed this variable from the WBES survey data based on, percentage share of both direct and indirect export in total sales.

Let $P_j^*$is the benefit 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. The benchmark equation can be specified as:

$$P_{jsc}^* = \alpha_0 + \alpha_1 X_j + \alpha_2 Y_i + \varepsilon_j \qquad (1)$$

Where, X_j represents array of firm level factors or internal attributes, Y_i is list of factors outside the firm i.e. industry level characteristic's, country level attributes, location, sector etc. ε_j is the random error term. The dependent variable $P_j^*$is not observed since it is latent variable. Hence following probit model is defined:

$$P_j = \begin{cases} 1 \; for \; P_j^* > 0 \\ 0 \; for \; P_j^* \leq 0 \end{cases} \qquad (2)$$

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

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

4.3 Empirical Model:

[5] Online version of WDI has been used for data collation.

As the firms export decision is determined by both internal and external factors, in our empirical model, we have considered firm age, size, productivity, ownership and access to finance as internal factors and financial development and location as external factors. The empirical model to estimate firm export decisions is as follows:

$$Exporter_i = \alpha_0 + \alpha_1 Age_i + \alpha_2 Size_i + \alpha_3 Productivity_i + \alpha_4 Foreign_i + \alpha_5 Access\ Finance_i + \alpha_6 Location_i + \alpha_7 Z_i + \varepsilon_i \quad (4)$$

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

Age of the firm is measured as log of difference in survey year in the country and year of firm inception. Roberts and Tybout (1997) suggest that age increases the firms' propensity to take export decision. They argued that experience and familiarity with the production process comes with age and hence older firms are more efficient than younger firms. Besides, inefficient firms tend to exit the market in short time, whereas, efficient firms could survive for long and can take decision to enter export market. On the contrary, it is also possible that younger firms are more competitive and can adopt efficient production process which could further increase the likelihood of export decision for the younger firms. Several studies have shown mixed results; Ottaviano and Martincus (2011) find insignificant relation between the older and younger firms, Alvarez and Lopez (2005) reported negative relationship, though the effect is very small and Duefias-Caparas (2006) presents mixed results, some sectors (clothing) hold positive relation and some sectors (such as electronics and food processing sectors) hold negative relations. Therefore, the coefficient of age can have both the sign in the estimated empirical model.

Size of the firm is a categorical variable (with small-0, medium-1 and large-2 categories). Firms having less than 20 workers including permanent and temporary (temporary worker is adjusted for number of days worked in the year to total day in the year) are classified as small firm (0). Firm having 20-99 workers are classified as medium sized firms (1) and large firm (2) are those who have 100 and more workers. Base category is small firms.

Several theoretical and empirical studies reveal that firm size is one of the important predictor of their export decision and also increases the likelihood of export decision. Firm size provides sufficient cushion to absorb the sunk cost due to economies of scale effect and

facilitates the firm to enter export market (Roberts and Tybout, 1997). Some studies argued that increase in firm size makes firm productive and reduce the marginal cost of production which in turn would promote firm exportability (Bernard and Jensen, 2004; Ottaviano and Martincus, 2011). Therefore, we expect the coefficient of firm size to be positive.

Firm *productivity* is measured as log of capacity utilization of the firm. Capacity utilization of the firm is defined as the percentage by which firm can exploit their input capacity. Literature pertaining to what determines firm export decision suggests that firms which are highly profitable tend to choose export market. As with productivity firm is likely to enjoy more profitability, hence, firm productivity will have positive effect on firm exportability (Roberts and Tybout, 1997). Thus, we expect productivity will have positive coefficient.

To capture the effect of ownership (foreign vs. domestic) we have included dummy variable *Foreign*. It takes values 0 and 1. *Foreign* is defined as 1 if the foreign holding in the firm is equal to or more than 10 percent otherwise it is 0. The reference category is domestic firm (*Foreign*=0). Existing literature considers ownership as one of the instrumental variable which governs firms export market entry decision (Bernard and Jensen, 2004; Greenaway et al., 2007). Foreign owned firms usually have better access to information related to foreign market. Additionally, foreign owned firms tend to have superior resources (human, technological etc.) and stronger business relationship, coupled with advantage of distribution networks, facilitates their exporting decision.

Location which is also a categorical variable is included in the model to capture effect of location (geography of firms). It takes value 0 if the firm is located in the capital or city with million plus population, 1 if the firm is operational from cities which are having less than million population. Firm located in capital city and million plus city is considered as base category. Literature suggests that firms located in capital cities or in major/bigger cities get easy access to market for both inputs and output, which reduces their marginal cost. Also, superior infrastructure availability reduces the cost which in-turn increases their probability of exporting (Elbadawi et al., 2001).

Access to finance (*Access finance*) is measured in terms of access to formal finance and access to bank finance. Both the variables are categorical in nature. *Access to finance-formal* has values 1 if more than 50 per cent of the firm's working capital or fixed asset is finance through formal sources (formal sources include government banks, private banks, non-banking financial companies etc.), otherwise it is 0. Similarly, *Access to finance-bank* has

values 1 if more than 50 per cent of the firm's working capital or fixed asset is financed through banks (government or private), otherwise 0. For both the access to finance variables, reference category is 0. Given high sunk cost, exporting requires higher level of investment. Access to finance leverages firm to meet this additional investment requirement and positively affects the firms' decision to enter into export market (Chaney 2005; Bellone et al. 2010). Following the argument, we expect that coefficient of access to finance would be positive.

Z represents year, industry and country fixed effect. Year dummies are included to control for time specific effect or shock which are common across all the firms (such as financial crisis, exchange rate trade policy agreement at world level, etc.). Again industry dummies are included to control industry specific effect. It may be possible that some industries are by design more oriented towards export market and at the same time it may be possible that some industries are more into domestic market. Further some industries are more dependent on external finance. Thus, it is necessary to control these industries biases towards export market entry. Similarly, country fixed effect is included to absorb country specific effect on firm's decision to enter into export market. Country specific bias comes as some countries promote export by formulating policy supporting exporting firms.

Further, to study analyses the role of financial development in firm export decision, respectively. Equation is extended after inclusion of financial development indicators as follows:

$$Export_i = \alpha_0 + \alpha_1 Age_i + \alpha_2 Size_i + \alpha_3 Productivity_i + \alpha_4 Foreign_i + \alpha_5 Access\ Finance_i + \alpha_6 Location_i + \alpha_7 FD_i + \alpha_8 Z_i + \varepsilon_i \quad (5)$$

Where, age, size, productivity, foreign, access finance and location are same as previous empirical model. FD_i represents array of financial development indicator. Theoretical literature advocates that financial development is skewed towards industries which are more dependent on external finance (Kletzer and Bardhan 1987). Drawing from literature we expect that financial development by reducing information asymmetry improves the overall liquidity position in the country, which in turn improves investment environment of the enterprise. Further, financial development could improve the exportability of firm by putting sufficient pressure on the managers' investment decision. Thus the combined effect would increase the likelihood of the export decision. Hence the coefficient of financial development

is expected to have positive sign in the model. We have used Market capitalization to GDP ratio, Credit to GDP ratio and Bank branches per thousand populations (*BBptp*) as a proxy to measure financial development.

5. Result and Discussion

5.1 Descriptive Statistics

Table 1, presents 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 as compared to the non-exporting ones. In terms of location, there is not much difference between the two location categories. Foreign owned firms are found to be 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 also suggests that financial development improves firm's exportability.

(Table 1 here)

5.2 The impact of access to finance on firm exportability

We have first analysed hypothesis 1 i.e. the effect of access to finance on firm exportability using equation (4) specification. Estimation results based on probit model are presented 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. We have also carried out the same set of analysis for two different measures of access to finance variable-access to finance-formal and access to finance-bank.

We have started with the effect of firm's age on their export decision captured using log of age. The coefficient of the variable age is positive and statistically significant, which implies that old aged firms are more likely to enter export market. Result on age is consistent with findings of Roberts and Tybout (1997) study that with age firms acquire technical know-how and thus, old firms are more likely to take-up export activity. We have observed positive and significant coefficient of productivity (capacity utilization) which suggests that firms with higher productivity finds export market more attractive. 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 not significantly related to firm export decision.

Does size of firm influences their exporting decision? Given that coefficient of medium and large firm size dummy is positive and increasing, it can be argued that size does influence firms export decision and result is in coherence with the findings of Levenson and Willard (2000). Further, significant positive sign with increasing coefficient size for medium and large firm suggest that with increase in size of the firm, the chances of entry in the export market increases.

(Table 2 here)

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 in small cities find it difficult to get into export market. Operation away from capital cities or big cities probably increases the production cost for firms as they do not have ready access to market, technology and infrastructure and thus it is difficult for these firms to make a break even for export market. In line of expectation, the coefficient of foreign ownership is positive and significant at one per cent. This shows that the foreign ownership and exporting are positively correlated. Results confirm the argument of Greenaway et al., (2007) and suggest that multinational firms have superior technological capabilities and are better placed against domestic firms in terms of networking which increases their odds in favour of exporting.

Having established the relationship between age, size, productivity, location and foreign ownership and firm exportability, we now move on to analyse the effect of core variable, i.e., access to finance on firm's exporting decision. Column 1 and 3 of the table 2 displays the result with formal finance as measure of access to finance, whereas, column 2 and 4 exhibits the result for access to bank finance. As expected, coefficient of both the access to finance variable (formal and bank) have positive sign. Thus, result recommends that firms with access to finance (formal/bank) will have higher probability 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. Comparing the same across the different size group we have found that the effect is clearly visible for medium and large firms, whereas, for small firms the relationship is not strongly evident. 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 the results of other studies.

(Figure 1 here)

5.3 Financial development and firm exportability

After having examined hypothesis 1 we now intend to analyses the role of financial development on firm exporting decision (hypothesis 2) with specification in equation (5). Results of estimated model are presented in table 3. The coefficient of the variables indicate that even after including indicators of financial development, such as, age, size and location 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 across the models.

(Table 3 here)

With regard to effect of financial development indicators, 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 confirms the indispensable role of financial development in firm export decision. The coefficient size of stock market to GDP and credit market to GDP is small, compared to that of bank branches. 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 market on firm exportability is not captured truly. 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 due to inaccessibility.

(Figure 2 here)

Further, given that half of the small and medium sized firms are located away from capital or million plus population cities, we tried to understand the effect of access to finance and financial development on firm export through the channel of location. For this we have estimated the model by interacting location with BBptp and access to finance variable (see column 4 and 5 of table 3). The result reveals that coefficient of location and its interaction with reach of financial sector variable is significant with opposing sign, which suggest that as the reach of financial sector increases the negative effect of location diminishes. Thus with

financial sector development (reach of banking sector) and access to finance what so ever be the location of the firm, there likelihood of entering the export market would go up. Thus the result reveals that financial sector development, in general and access to finance, in particular is instrumental in firm's export decision and hence results suggest need of policy intervention to strengthen the financial market to promote export activity.

In sum, the result suggests 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 and financial development are also important determinants of firm exportability. Furthermore, the results on interaction of location with access to finance and BBptp suggest that access to finance and financial sector reach would enhance export market entry chances of firm located away from capital or big cites. 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).

6. Robustness checks

Existing literature suggest that firm export decision and financial constraint could be endogenous. Financially constrained firm find it difficult to enter into export market, and firm who enter into export market get better access to finance. Thus, there is possibility of endogeneity or reverse causality between access to finance and firms export decision. To control for potential endogeneity and also for robustness check of the result, we have used instrumental variable (IV) bivariate probit regression technique.

Both banking and non-banking financial institutions scrutinises the lenders application based on the proposal of the investment, past performance, asset holding and reliability of the firm. Therefore, for instrumenting access to finance, we have considered ISO certification, overdraft or line of credit by firm, and whether firm paid collateral for loan or not are used. ISO certification captures goodwill of the firm, as it reflects firm's pursuit in following the international standard and upgrading the technology to meet the competitive requirement. Collateral for loan acts the assurance for the lenders for granting loan at ease. Overdraft or loan by firm indicates the loan history of the firm and how effectively the firm managed to

pay the loan promptly, thus overdraft or loan improves the information availability and credit score of the enterprise[6].

The result of the estimated instrumental variable bivariate probit model is presented in table 4. Instrumental variable biprobit regression result suggests that even after controlling for endogeneity issues results are by and large same as probit model. Coefficient of the variables age, productivity, size, location and foreign ownership have not changed the sign and are statistically significant also. Measure of access to finance continues to have positive and significant coefficient. Positive and significant coefficient of access to finance variable suggest that even after correcting the problem of endogeneity access to finance plays an important role in determining firms export market entry decision. The results continued to have consistency with all the instruments used.

(Table 4 here)

Having confirmed the positive role played by access to finance in firm export decision, we next tried to examine the effect financial development on firm exportability using instruments for access to finance variable. Result of the instrument variable biprobit model is present in table 5. As expected, the coefficients of variables are consistent and are in the line of expectation. Access to finance variable is also positive and statistically meaningful. With regard to interaction of location and access to finance result again confirms the importance of financial development and access to finance in mitigating the disadvantage of location on firm export decision.

(Table 5 here)

Overall, the result confirms the positive effect of firm's age, size, foreign ownership and productivity on their export decision. Further, access to finance and financial development are found to be instrumental in increasing firm's likelihood of getting into export market. Results are also robust to different measures of firm export and access to finance. Given the significance of access to finance and financial development, the study support policy intervention which unleashes financial sector and helps banking sector to reach and operate in remote locations also.

7. Conclusion

[6] We are constraint to take from the available questionnaire information, though there may be better proxy for access to finance to use as instrumental variable.

This study aims to explore two main questions; first, how does access to finance affect firm export decision and second, whether financial development boosts firms exportability or not. Additionally, this study has explored the effect of access to finance and financial development on export decision of firm with locational disadvantage. Asia–Pacific region firms are considered prudent to test the hypothesis as these counties are following intensively export led growth model as well as their financial sector is underdeveloped. Study has used World Bank Enterprise Survey (WBES) and World Development Indicators data for testing the hypothesis.

Preliminary findings suggest that exporters are old, large, owned by foreign firms and tend to be more productive. However, in terms of location, there is not much difference between exporting and non-exporting firms. Exporting firms are found to have higher access to finance and come from more financially developed country. In the next step, we used probit and iv-probit estimation technique to empirically test the hypothesis. Overdraft or line of credit, ISO Certificate and collateral requirement are used as instrument for access to finance,

Estimation result suggest that firm's age, size, productivity and foreign ownership are important internal attributes affecting firm's exporting decision. Result regarding location indicates shift from preliminary investigation results and suggest that firm operating away from capital or million plus cities find export market entry difficult.

With regard to access to finance, result clearly indicates that better access to formal or bank finance improves firm chances of entering into export market. The result with respect to financial development exhibits that financial sector development translates into higher likelihood of firm entering into export market. Particularly, the effect of financial development is more prominent in terms of reach of the banking sector. Results are in agreement with the findings of Chaney (2005), Muuls (2008) and Beck (2002).

Given that nearly half of the firms are located away from capital or million plus population cities we also attempt to investigate the indirect effect of access to finance and financial development on firm export decision through firm location. Our result based on interaction variable regression highlights that access to finance and financial sector development improves the chances of exporting of firms which are located away from capital or million plus cities.

Results are robust as it stands with different measure of dependent variable and access to finance. Further, instrument variable probit model regression result also confirms the

robustness of the result. Thus results clearly document the importance of financial sector development and access to finance facilitates the firms, enter into export market.

Overall, our finding of the study strongly supports that the development of financial sectors would promote the firms engaging in export activities that in turn would contribute to economic growth for the Asia-Pacific countries. Considering that most of the Asia-Pacific countries have advantage of low cost labour and export potentials, improvement in access to finance and support from financial sector, will further enable countries manufacturing sector to move up in the value chain and increase their presence in the international market. Furthermore, given the positive impact of financial development and access to finance on exporting decision by eliminating the effect of location, makes strong case for policy intervention to further reform financial sector and improve access to finance. Findings of the study also provide scope for future studies, related to, how access to finance and financial development is linked with vertical specialization, entry and exit dynamics of firm in the export market.

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Table 1. Summary statistics

		N	Mean	SD	Min	Max
Firm age	Exporter	12683	19.12	16.66	1	183
	Non-Exporter	40938	15.93	13.41	0	156
Firm size	Exporter	12855	2.5	0.66	1	3
	Non-Exporter	40875	1.76	0.74	1	3
Capacity utilization	Exporter	11446	79.4	18.07	0	120
	Non-Exporter	26005	77.05	20.04	0	150
Location of the firm	Exporter	11032	0.44	0.5	0	1
	Non-Exporter	39073	0.45	0.5	0	1
Foreign Ownership	Exporter	12406	0.22	0.41	0	1
	Non-Exporter	41392	0.03	0.18	0	1
Access to finance-formal	Exporter	11490	0.46	0.5	0	1
	Non-Exporter	38092	0.27	0.44	0	1
Access to finance-bank	Exporter	8548	0.47	0.5	0	1
	Non-Exporter	20787	0.36	0.48	0	1
Market capitalization to GDP ratio	Exporter	9128	66.32	46.15	16.31	276.6
	Non-Exporter	31102	62.96	39.87	16.31	276.6
Credit to GDP ratio	Exporter	7147	50.86	32.22	3.82	121.35
	Non-Exporter	20813	39.58	21.67	3.82	121.35
Bank branches per thousand populations *(BBptp)*	Exporter	7990	12.83	10.71	1.54	43.88
	Non-Exporter	31947	15.34	12.21	1.54	43.88

Source: Authors calculation based on WBES data

Table 2. Access to Finance and Firm Exportability

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

Notes: Robust standard error in parentheses. Significance level: *** p<0.01, ** P<0.05, * p<0.1. All specification includes country, industry and year fixed effect.

Table 3. Access to Finance, Financial Development and Exportability

Dependent Variable-*Exporter*	(1)	(2)	(3)	(4)	(5)
Log of age	0.126***	0.083***	0.129***	0.129***	0.130***
	(0.013)	(0.017)	(0.015)	(0.015)	(0.015)
Log of capacity utilization	0.115***	0.030	0.080*	0.079*	0.080*
	(0.029)	(0.035)	(0.031)	(0.031)	(0.031)
Size (medium)	0.634***	0.559***	0.619***	0.618***	0.619***
	(0.029)	(0.037)	(0.030)	(0.030)	(0.030)
Size (large)	1.350***	1.383***	1.327***	1.326***	1.329***
	(0.031)	(0.038)	(0.032)	(0.032)	(0.032)
Location (less than 1m pop city)	-0.051*	-0.008	-0.132***	-0.231***	-0.188***
	(0.021)	(0.028)	(0.024)	(0.041)	(0.030)
Foreign firm	0.915***	0.892***	0.863***	0.867***	0.861***
	(0.037)	(0.042)	(0.042)	(0.024)	(0.035)
Access to finance-formal *(AF)*	0.184***	0.046	0.208***	0.209***	0.132***
	(0.021)	(0.029)	(0.024)	(0.042)	(0.042)
Market Capitalization to GDP	0.004***	-	-	-	-
	(0.001)				
Credit to GDP	-	0.005***	-	-	-
		(0.001)			
Bank Branch per thousand population (*BBptp*)	-	-	0.365***	0.362***	0.376***
			(0.102)	(0.102)	(0.102)
Location**BBptp*	-	-	-	0.007**	-
				(0.002)	
Location**AF*	-	-	-	-	0.139**
					(0.045)
Constant	-2.737***	-1.969***	-3.081***	-3.061***	-3.102***
	(0.146)	(0.167)	(0.341)	(0.341)	(0.341)
Pseudo-R^2	0.224	0.259	0.241	0.242	0.242
Observation	23759	14447	21872	21872	21872

Notes: Robust standard error in parentheses. Significance level: *** p<0.01, ** P<0.05, * p<0.1. All specification includes country, industry and year fixed effect.

Table 4: Regression Results of IV estimation: Access to Finance and Exportability[#]

	(1)	(2)	(3)
Access to finance-formal	0.247***	0.168*	0.256***
	(0.045)	(0.089)	(0.028)
Log of age	0.109***	0.108***	0.109***
	(0.012)	(0.012)	(0.012)
Log of capacity utilization	0.115***	0.113***	0.115***
	(0.028)	(0.028)	(0.028)
Size (medium)	0.605***	0.610***	0.604***
	(0.027)	(0.028)	(0.027)
Size (large)	1.331***	1.343***	1.330***
	(0.029)	(0.031)	(0.028)
Location (less than 1m pop city)	-0.096***	-0.089***	-0.096***
	(0.022)	(0.022)	(0.021)
Foreign firm	0.883***	0.880***	0.883***
	(0.034)	(0.034)	(0.034)
Constant	-5.862***	-7.772***	-6.964
	(0.369)	(0.242)	(6.896)
Instrumental variable	Overdraft or line of credit	ISO certificate	Collateral requirement
First stage coefficient	0.864***	0.067*	0.282***
	(0.022)-	(0.028)-	(0.031)-
Identification test			
Under identification test:			
Kleibergen–Paap rk LM statistic	1463.597	12.712	79.839
Weak identification test:			
Cragg–Donald Wald F statistic	1605.095	13.183	83.999
Kleibergen–Paap rk Wald F statistic	1646.525	12.703	80.809
Number of Observations	28809	28872	28821
Wald chi^2	12075.17	10716.35	7718.95

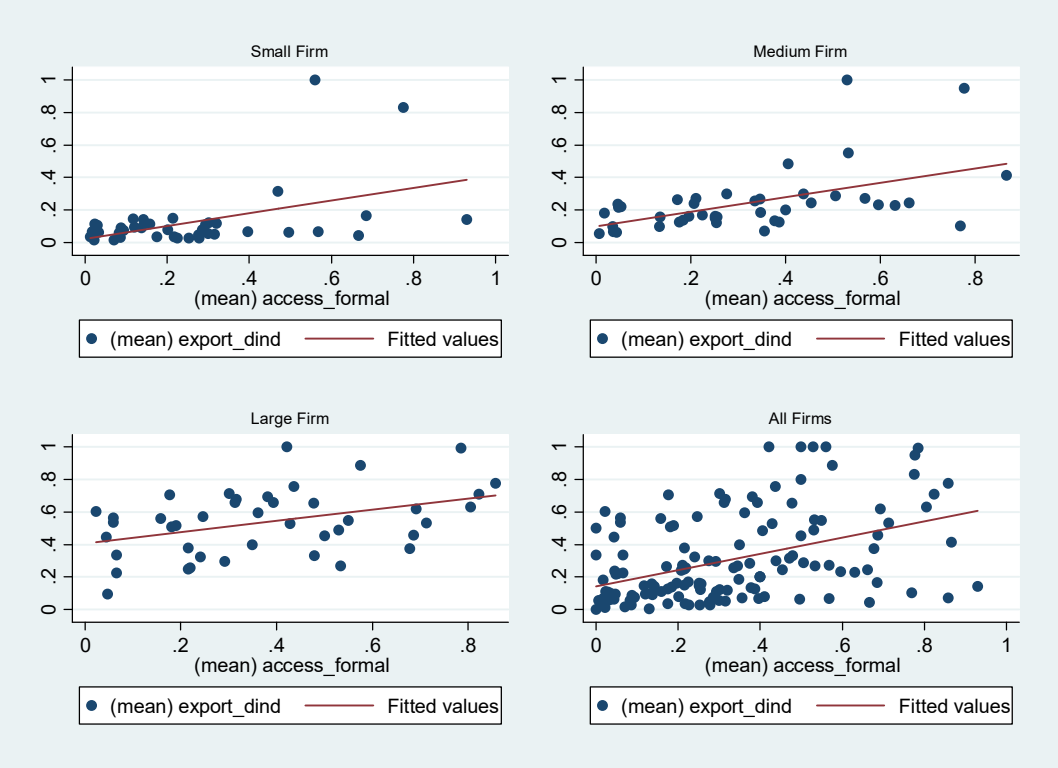
Notes: # - Results shows Second stage regression analysis with exporter as dependent variable. Robust standard error in parentheses. Significance level: *** p<0.01, ** P<0.05, * p<0.1. All specification includes industry and year fixed effect.

Table 5: Regression Results of IV estimation:
Access to Finance, Financial Development and Exportability[#]

	(1)	(2)	(3)	(4)	(5)	(6)
Log of Age	0.129***	0.131***	0.129***	0.130***	0.129***	0.130***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Log of Capacity Utilization	0.083**	0.084**	0.079*	0.079*	0.082**	0.082**
	(0.031)	(0.031)	(0.032)	(0.032)	(0.031)	(0.031)
Size (Medium)	0.610***	0.609***	0.618***	0.623***	0.610***	0.612***
	(0.030)	(0.030)	(0.037)	(0.036)	(0.030)	(0.030)
Size (Large)	1.308***	1.307***	1.324***	1.335***	1.308***	1.312***
	(0.033)	(0.033)	(0.053)	(0.051)	(0.032)	(0.032)
Foreign Firm	0.873***	0.868***	0.867***	0.858***	0.872***	0.866***
	(0.042)	(0.042)	(0.046)	(0.047)	(0.042)	(0.042)
Location (less than 1m pop city)	-0.243***	-0.209***	-0.232***	-0.185***	-0.242***	-0.193***
	(0.041)	(0.031)	(0.049)	(0.035)	(0.041)	(0.030)
Access to finance-formal	0.326***	0.264***	0.217	0.083	0.321***	0.246***
	(0.052)	(0.055)	(0.285)	(0.297)	(0.033)	(0.042)
Bank Branch per thousand population(BBptp)	0.400***	0.424***	0.365*	0.360*	0.400***	0.412***
	(0.104)	(0.104)	(0.148)	(0.145)	(0.103)	(0.103)
Location*BBptp	0.007**		0.007**		0.007**	
	(0.002)		(0.002)		(0.002)	
Location* Access finance-formal		0.160***		0.142**		0.128**
		(0.045)		(0.047)		(0.045)
Constant	-3.166***	-3.234***	-3.069***	-3.055***	-3.167***	-3.203***
	(0.345)	(0.344)	(0.451)	(0.451)	(0.343)	(0.342)
Instrumental variable	Overdraft or line of credit	Overdraft or line of credit	ISO certificate	ISO certificate	collateral	collateral
First stage coefficient of instrumental variable	0.957***	0.958***	0.067	0.059	0.220***	0.220***
	(0.026)	(0.026)	(0.055)	(0.056)	(0.041)	(0.041)
Under identification test:						
Kleibergen–Paap rk LM statistic	1259.362	739.814	8.935	14.208	28.677	6.343
Weak identification test:						
Cragg–Donald Wald F statistic	1392.097	781.398	9.480	14.665	29.627	6.420
Kleibergen–Paap rk Wald F statistic	1437.093	783.406	8.922	14.182	28.926	6.318
N	21883	21883	22090	22090	21933	21933
Wald chi2	9540.217	9587.907	8646.673	8636.193	6369.567	6376.854

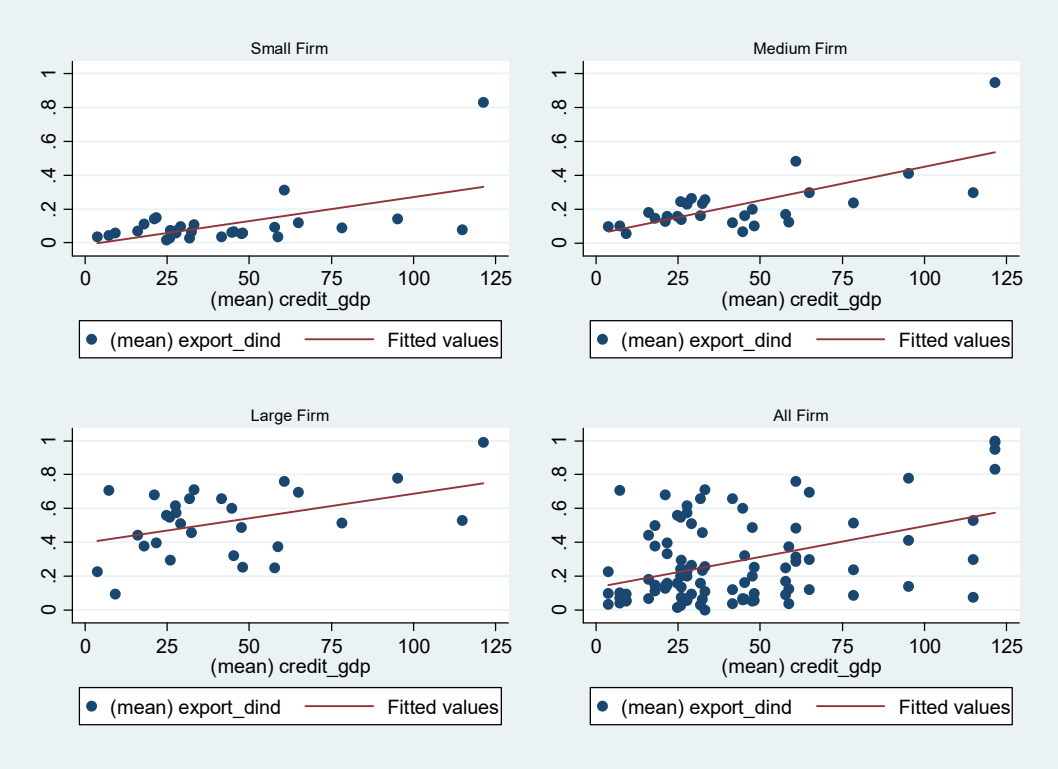
Notes: # - Results shows Second stage regression analysis with exporter as dependent variable. Robust standard error in parentheses. Significance level: *** p<0.01, ** P<0.05, * p<0.1. All specification includes industry and year fixed effect.

Figure 1: Access to finance and firm's export decision



Source: Based on authors calculations using WBES data

Figure 2: Financial development and firm's export decision



Source: Based on authors calculations using WBES data