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The Influence of Industry Financial Composition on the Exports of Pakistan

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Abstract: *I determine the influence of the industry financial composition on the export flow between Pakistan and its trading partners. The importing countries are split according to their OECD membership status and their level of banking credit. The degree of financial dependence and asset tangibility of an industry can determine the ability of firms to obtain external finance and fund international trading activities. On the other hand, the level of financial development and exogenous shocks to the banking credit of the importing country is likely to impact the influence of the industry-level financial composition on the exports from Pakistan.*

1. Introduction

Financial markets play a significant role in the promotion of exporting activities. Exporters generate substantial revenue for an economy and they contribute through product development, import of foreign technology and employment of skilled workers[2]. As exporters demand a larger workforce and pay higher wages than their counterparts, they are likely to increase the welfare of workers within their country as their expansion reallocates labor from the least productive firms that do not export to the most productive firms that do export. The financial markets, by facilitating firms that seek external finance to fund investment activities, aid exporters to generate profits and contribute to the development of an economy. The industry-level factors that may determine the ability of firms to access financial markets include variables such as financial dependence and the asset tangibility of firms. As exporters pay large fixed costs to sell their products to foreign markets, the ability to seek external funds for investment activities is likely to influence the decision of firms to participate in international trading activities and contribute to aggregate export flow. In this

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[2] Bernard et al. (2007) determines the characteristics of the exporters. Bustos (2011) discusses the role of exporters in upgrading the technology installed within their facilities.

paper, I consider the relationship between industry-level factors of financial composition, such as financial dependence and asset tangibility, and exporting activities.

Apart from the sources of finance available within the domestic market, exporters may take advantage of lower costs to finance production through bank loans from foreign lenders as well as selling on credit to buyers in other economies that offer greater profit than that available from selling to domestic consumers. Eichengreen and Hausmann (1999) hypothesize that firms in weaker financial markets with a history of inflation and currency depreciation may neither be able to borrow abroad nor seek long-term loans domestically in their domestic currency. Therefore, such firms will seek foreign loans to finance large investments. Keloharju and Niskanen (2001), Cowan (2006) and Brown et al. (2009) suggest that firms that generate revenues in foreign currencies are likely to accumulate loans in foreign currencies, particularly if the interest rate differential between the domestic currency and the foreign currencies is large. The foreign financial markets with greater levels of financial development may allow their debtors, foreign and domestic, to accumulate a larger volume of loans as the debtors have greater confidence in the viability of the foreign financial markets to readily finance its investment activities[3.] Additionally, the exporters may sell more to foreign customers that are able to finance their investments and purchases at lower financial costs than the domestic customers. However, apart from the relatively greater quantities demanded, the importers may demand inputs of better quality which may be produced with further investments in machinery and equipment and in more expensive varieties of inputs than that which is required for products sold to domestic consumers. This may compel the exporters to hold greater values of inventory and seek external finance to increase their exporting activities. Therefore, the strength of the foreign financial market, based on the level of financial development, influences the growth of investment and export flow originating from the exporting country across industries as varying degrees of financial dependence and asset tangibility determines the ability of firms to access financial markets. The study of the effect of financial factors on international trading patterns is the focal point of this paper.

Episodes of financial uncertainty that reduce the availability of funds for the borrowers may also influence the financial factors that determine the export flow to their trading patterns. Producers within industries that depend on finance from external funds are likely to be sensitive to the shortage of availability of finance necessary to fund their production. An expectation in the failure of financial institutions to honor deposits may lead to considerable financial distress that could culminate in instances of bank runs by borrowers, bank liquidation and output loss. Such shocks to the economy can be interpreted as episodes of banking crises,

[3] First, in the Annual Report released by the State Bank of Pakistan, the external debt and liabilities of the private as well as public sector enterprises, at US $5.1bn, constituted approximately 8.6 percent of the total external debt and liabilities accumulated by Pakistan, at US $59.8bn in 2013. Second, the external debt and liabilities of private and public sector enterprises were approximately 46.4 percent of the total international reserves held by SBP and scheduled banks in Pakistan. Third, the external debt and liabilities constituted approximately 18 percent of the total advances made by the public and private sector enterprises in Pakistan, at US $27.6bn (converted using PK Rs 100 = 1 US Dollar). Between 1980 and 2006, the data borrowed from the World Bank's World Development Indicators suggest (based on the author's calculations) that the proportion of the long-term external debt by the private sector peaked at 17 percent, in 1998, of the total domestic credit provided by banks to the private sector. The same data suggests the average for the time period to be at 7.8 percent. The aforementioned numbers point to the importance of the foreign financial markets for the business enterprises in Pakistan.

where financial distress is often accompanied by significant policy intervention from the central bank in order to control for the negative consequences[4]. In this paper, I undertake a study to determine whether episodes of banking crises faced by an importing partner and its level of financial depth is likely to impact the influence of industry financial composition on the export flow from Pakistan, a country that exhibits less developed financial markets than the financial markets within its advanced and developed trading partners but has never itself faced a banking crisis.

This paper is organized as follows. After I discuss the literature on the relationship between international trading activities and access to financial markets in the next sub-section, I discuss the empirical methodology in Section 2. This is followed by a description of the data in Section 3. I analyze the results in Section 4 and I conclude the paper in Section 5.

2. Literature Review

The exporting firms are better performing firms than their counterparts that sell only to the domestic market. Clerides et al. (1998), Bernard and Jensen (1999), Melitz (2003), Eaton et al. (2007), Bernard et al. (2007), Das et al. (2007) and Manova (2013) suggest that exporters require substantial fixed costs to enter production and sell their products to foreign markets. For instance, Das et al. (2007) find that the average entry cost for exporters in Colombia ranges from US $344,000 to US $430,000. The large fixed costs incurred by the exporters are likely to increase the expectation for higher profits for exporters relative to the non-exporters. These fixed costs imply that exporters are not only different than non-exporters in terms of firm characteristic, but may also require greater sources of financing, both internal and external, than their counterparts to setup production and sell their products[5]. The seminal paper of Myers and Majluf (1984) points out that the better performing firms, such as the exporting firms, are likely to prefer internal funds (i.e., retained earnings) to finance their investment needs and will only seek external financing if the internal funds are not sufficient. The need for external financing of a firm can be determined by its degree of financial dependence, which is calculated as the fraction of capital expenditure financed by external funds instead of internal sources of finance, such as cash flow. Rajan and Zingales (1998) relate economic growth with financial dependence under different conditions of financial development and determine that industries which rely more on external sources of finance tend to grow disproportionately faster in countries that have financially developed markets. Becker and Greenberg (2003) incorporate export flow into the model of Rajan and Zingales (1998) and suggest that well-developed financial systems play an important role to promote exports as large up-front fixed costs required for exports are easier to finance. In addition, Beck (2002) establishes a strong link between financial development and export flow. I focus on the relationship between export flow and industry financial characteristics as I vary the development of financial markets in the importing country in order to determine

[4] A banking crisis occurs when investors expect asset prices to fall and fear a run on the banks. A banking crisis is characterized by a decline in the confidence of the investors, who will sell off their assets and withdraw their savings from the financial institutions. The fall in savings will lead to a shortage of loanable funds supplied by the banking system.

[5] Melitz (2003), Chaney (2013), and Manova (2013) develop models that define the differences in the characteristics of the exporters and the non-exporters.

whether financially dependent industries generate greater exports to importing countries with different levels of development in their financial markets.

Asset tangibility plays an important role to determine the access to finance for firms. It indicates the level of collateralizable assets owned by firms that can be pledged in order to reduce the risk of default. Asset tangibility measures the proportion of net property, plant and equipment in the total assets of a firm. Braun (2003) incorporates the level of asset tangibility into the Rajan and Zingales (1998) model as it determines whether countries with lower levels of financial development are likely to be characterized by investments in industries that have a higher proportion of tangible assets to total assets. The degree of asset tangibility within an industry can influence the ability of a lender to seize tangible assets in case of default payments by the borrowers. Almeida and Campello (2007) link financial dependence of a firm with its asset tangibility and suggest that firms with lower asset tangibility are more likely to be financially constrained. In other words, firms with higher levels of asset tangibility will have greater access to finance. Manova (2008) correlates liberalization of equity markets with the development of financial markets and finds that developed financial markets are likely to promote growth of firms in industries with lower levels of asset tangibility. On the other hand, Besedes et al (2012) suggest that higher asset tangibility can imply greater risk for firms, particularly in their initial years, as it may potentially increase the size of collateral that can be seized by lenders due to failure of repayment of loans by the borrowers. Therefore, borrowers with too much collateral may avoid borrowing from financial institutions if they fear their assets will be seized by the lender in case of default payments.

As credit constraints can influence exporting activities, the exporters in one industry can be disproportionately affected by the level of financial dependence of the industry. Manova (2013) determines the role of credit constraints on trade flow in industries that have different needs of external finance and possess different levels of collateralizable assets across countries that vary in the level of financial development. Chor and Manova (2012) consider the role of credit constraints on international trade during the 2008-2009 global banking crises. The effects of the global crisis are stronger in industries that require greater external financing or have fewer collateralizable assets such as imports to the United States which were significantly reduced in such industries. Using interbank rates to determine the level of tightness in the credit markets, Chor and Manova (2012) conclude that countries with higher interbank rates trade relatively less in industries that require external financing and trade relatively more in industries with greater collateralizable assets. Laeven and Valencia (2010) define an occurrence of an episode of banking crisis if there are significant signs of financial distress in the banking system followed by significant banking policies as a response to mitigate the losses due to financial distress. This definition of a banking crisis will involve initial shortages in liquidity as lending by financial institution is reduced and is reflected in the contraction of output[6]. Amiti and Weinstein (2009) determine that there is a strong effect

[6] Governments may intervene by injecting liquidity through a bank recapitalization process in order to correct the shortage of credit resulting from the banking crisis. However, borrowers that have increased their leverage substantially during the pre-crisis period may lose confidence in the financial institutions as a result of the crisis, and the lack of demand may reduce the amount of credit provided by the banking sector.

of the deterioration of the health of financial institutions on the exporting firms during a banking crisis. Further, Levhcenko et al. (2010), Cheng and Ma (2005) and Do and Levchenko (2007) determine the relationship between the banking crisis, borrowing activities of firms and the international trading activities.

The episodes of banking crises faced by importing countries may amplify the impact of the credit constraints as the buying power of the importers is likely to decrease. Braun and Larrain (2005) suggest that the impact of the shortage in liquidity and contraction in output is more severe in financially dependent industries and in industries with lower levels of tangible assets as well as in countries where poorer accounting standards are accompanied by lower levels of financial development. Dell'Ariccia et al. (2008) study the effect of banking crisis on growth in terms of value addition, capital formation and number of firms in an industry and suggest that the differential effect of a banking crisis is stronger in financially dependent industries in developing countries. Demirguc-Kunt and Detragiache (1998) determine that although weaker macroeconomic environment accompanied by low gross domestic product (GDP) growth increases the risk of a banking crisis, the cost of a banking crisis is likely to be higher in countries which have a larger share of credit to the private sector, in other words, a greater level of financial development. Further, Kroszner et al. (2006) determine that the impact of the financial crisis is stronger in financially dependent industries in developed countries as they are likely to borrow more in pre-crisis periods relative to financially dependent industries in developing countries. Furceri and Zdzienicka (2009) consider the influence of a financial crisis in the Central and Eastern European countries and find that the long-term effects of a financial crisis on the deterioration of output are stronger in the economies that have experienced 'excessive' growth in their credit markets. The borrowers within such economies may lack the capacity in the long-term to absorb financial shocks relative to borrowers in developed economies. In this paper, I attempt to determine whether the impact of the influence of the financial composition of the industries on the export flow from Pakistan varies between crisis and non-crisis periods.

Adverse shocks in the importing countries will have a negative impact on the export flow as purchasing power of consumers fall. Berman and Martin (2012) consider the effect of financial crisis in the importing countries on the exports from sub-Saharan African countries, which have many similarities to Pakistan in terms of economic development and also export of mainly low-valued labor intensive products. Berman and Martin (2012) determine that the effect of financial crisis is negative on exports from the region. In addition, they also determine that the effect on the exports from the region is significantly greater compared to other regions as exporters from sub-Saharan African countries are likely to face declining exports due to the income and the disruption effects on trade. The former takes place as the richer importing countries are less likely to import goods from sub-Saharan African countries during a crisis. The latter takes place as a result of the fall in trade which is independent from the fall in income of importing countries. Khwaja and Mian (2008) suggest that a large proportion of borrowers in Pakistan are sensitive to liquidity shocks in the financial market[7]. If shocks in the foreign financial markets affect the borrowing patterns of Pakistani exporters, it is likely to impact

[7] The liquidity shock faced by Pakistan as reported by Khwaja and Mian (2008) involves a shock induced into the economy because of political considerations and is not considered an episode of banking crisis as defined by Laeven and Valencia (2010).

the exports from Pakistan differently than when the importing country does not face a banking crisis. Mian (2006), using an extensive dataset on the Pakistani banking system that links borrower characteristics with lender characteristics at the loan-level, determines that foreign lenders are likely to finance borrowers in Pakistan that are less monitoring-intensive and have 'hard', or reliable, information about their firm characteristics[8]. In addition, Iacoviello and Minetti (2010) determine the importance of foreign lenders to domestic borrowers, particularly for the exporting firms, and foreign lenders with their larger reserves and more stringent selection of borrowers are likely to choose the better performing firms. Therefore, financial dependence of an industry that may positively influence export flow during periods when the importing country does not face a banking crisis may have limited influence in the export flow from Pakistan during periods when the importing country faces a banking crisis.

I intend to study the influence of industry financial composition on export flow from Pakistan to countries with varying levels of financial development. Although, Pakistan may have a weakly developed financial market, the level of financial development in Pakistan, is on average ranked higher than that observed in several of the sub-Saharan African countries listed in Berman and Martin (2012)[9]. Therefore, the pattern predicted for Pakistan may differ from that observed in sub-Saharan African countries as lenders in developed financial markets may lend to borrowers in Pakistan if they believe that certain industries are likely to grow as the importing country faces a banking crisis.

To the best of my knowledge, I conduct the first study on the effect of the financial composition of industries on export flow from Pakistan to its trading partners based on the level of development of financial markets in the importing countries as well as episodes of banking crisis faced by the importing country. The study is also unique as it determines the effect of industry financial composition on the export patterns originating from a developing country.

3. Empirics

In Tables 1, 2, 3 and 4, I consider the flow of exports from Pakistan to its trading partner as the dependent variable. The equation for the regressions can be stated as:

$$InExportFlow_{ijt} = \beta_1 Findep_i + \beta_2 Tang_i + \beta_3 Z_i + \alpha_j + n_j + \varepsilon_{ijt} \quad (1)$$

where $ExportFlow_{ijt}$ is the industry-level export flow from Pakistan to its trading partner, $Findep_i$ is the variable accounting for the financial dependence at the industry-level, $Tang_i$ is the asset tangibility at the industry level. I expect the sign of $Findep_i$ to positively influence export flow if borrowing from external sources promotes exporting activities. On the other

[8] Although, I assume financial mobility between countries, capital markets are assumed to be imperfect. Similar to large domestic banks, foreign lenders are likely to have transactional based lending to its borrowers, where 'hard' information on the borrowers (such as information on size of tangible assets) is generally preferred.

[9] According to the World Bank's World Development Indicators dataset, only South Africa, Zambia and Zimbabwe record greater average domestic credit provided by the banking sector (percent of GDP) than Pakistan for the specified time period, from 1980 to 2006.

hand, I expect $Tang_i$ to have a positive influence on export flow when lenders consider the importance of collateralizable assets owned by firms to be significant and a negative influence if the collateralizable assets are not important to the lender but firms are reluctant to borrow if they feel their assets may be seized. Z_i is industry-level controls such as contract intensity, capital intensity, human capital intensity, natural resource intensity, import demand elasticity, and the sum of export flow from all lower middle income countries. The variable on contract intensity is borrowed from Nunn (2007). Products that are sold in an organized exchange or are referenced price in a trade journal are likely to have lower contract intensity than those that require a contract between the buyers and the sellers. A contract between buyers and sellers across international borders will need strong institutions and legal systems within the trading countries that can protect the interests of the parties involved. I expect the contract intensity to have a negative effect on the export flow from Pakistan. Trading partners with similar levels of income per capita are likely to produce goods that involve similar intensities of labor and capital inputs in their production techniques. Consistent with the standard assumptions of the traditional Heckscher-Ohlin model on comparative advantage of trade, I assume that the technology of production across countries is identical as is the intensity at which inputs, or factor of production, are used in the production of goods. The only thing that differs across countries is the endowment of each factor of production. Therefore, the country that exports goods in a particular industry is likely to be abundant in the factor of production that is used intensively in the production of the goods[10].

Pakistan is abundant in low-skilled labor, lacks natural resources and has relatively weaker institutions than many of its developed trading partners which may limit the trade of goods that require a contract between the buyers and the sellers. The signs for the correlation between export flow and the aforementioned intensities are predicted to be negative. The import demand elasticity is included in order to account for the sensitivity of the products exported by Pakistan to changes in their prices. As Pakistani manufacturers specialize in low cost products that in nature are likely to be sensitive to price competition, the import demand elasticity is expected to have a negative sign. As the composition of the factor endowments of lower middle income countries that includes Pakistan, as classified by the World Bank, are likely to be similar across the countries, the total export flow from lower middle income countries is likely to set the demand of goods produced with a certain mix of inputs in each trading partner and influence the export flow from Pakistan. This variable will have a positive effect on the export flow. To account for unobserved effects in the model, I include _j as the importing country fixed effect, _t as the time fixed effect. "ijt is the error term which is distributed as "ijt ~N (0; 1): The notations i, j and t define industry, country and year respectively. In addition, although not reported for the regressions below, the F-statistics reject the hypothesis that year and country fixed effects are zero and strongly supports their inclusion. The industries are classified according to the ISIC Revision 2. Using the export flow as the dependent variable is similar to the concept introduced in Rajan and Zingales (1998), which uses growth rate in real value added for each industry as a dependent variable. I adopt a strategy consistent to Chor and Manova (2012) and Manova (2013). The former

[10] I assume that even though labor cannot move across countries due to strict immigration laws, capital can be purchased from foreign countries in order to produce for the export market. One such example is the inflow of foreign direct investment into Pakistan.

implements US imports at the industry-level and the latter implements bilateral exports between trading partners as their dependent variables to study the correlation between international trade and financial factors. In addition, the multicollinearity that would lead to a high correlation between the independent variables used in the regressions is also not a concern as the variance inflation factor does not exceed more than 10 for the independent variables. The standard errors are clustered at the importing country-level as export flow within importing countries across the industries may be highly correlated.

The inclusion of importing country and year fixed effects can reduce issues related to the omitted variable bias that may otherwise occur as importing country and year characteristics can influence trading patterns. The imported country fixed effects will include country characteristics such as market size, distance to the market and other variables that would attract export flow from Pakistan to a particular trading partner. The year fixed effects will include variables such as accession to trade organizations (such as the WTO), trade agreements between trading partners that may reduce trade tariffs and technological changes that could increase trading opportunities between firms within trading partners. The year and importing country fixed effects allow only the variance of the industry-level variables within the importing countries for a given year to influence the industry-level export flow of Pakistan. I do not include industry-level fixed effects as my study aims to determine the impact of financial dependence and asset tangibility on export flow across industries rather than within industries.

The variables accounting for financial dependence and asset tangibility are compiled using data on US firms. The US is considered as one of the most financially developed economies; the values for the financial indicators are likely to be stable and can be adopted to create a similar ranking of industries based on the characteristics across other countries[11]. As the values are borrowed from one of the most financially developed countries and I assume that firms are free to borrow from foreign sources, it is likely that the values will reflect the ranking of the industries regardless of the financial development within the country. Therefore, the measures of financial composition reflect the optimal choice of financial leverage and asset tangibility within an industry. The assumption is that the financial factors of industries are influenced by the level of demand for products and characteristics of the industries instead of country characteristics as domestic borrowers are free to seek external funds from foreign sources, particularly the more developed countries, but not necessarily free to move certain factors of production, such as labor, between countries. This methodology is consistent with the studies of Chor and Manova (2012) and Manova (2013). Endogeneity between export flow and the independent variables is not considered a major issue in the above model as it is unlikely that trade flow between Pakistan and its trading partners is likely to have any influence on the values of the financial indicators of industries in the importing country as the export flow from Pakistan is a small percentage of total trade flow into its trading partner. Further, the financial indicators will not be affected by any shocks to

[11] In order to retain exogeneity of the variables, I exclude the United States from the list of importing countries.

the development of financial markets within Pakistan as the values are borrowed from the US data[12].

The group of countries is split on the basis of country-level indicators, such as OECD membership status, level of banking credit and whether a country faces a banking crisis during a particular year. This strategy introduces an exogenous variation as it is unlikely that industry-level financial characteristics will directly influence country-level indicators[13]. The export flow between Pakistan and an importing country is insignificant with respect to the total imports of the importing country and will not influence country-level characteristics such as the development of the financial markets and the occurrence of a banking crisis within the importing country. Even though the exports from Pakistan may significantly decline during the period the importing country faces a banking crisis, it is not likely that the decline in the export flow between Pakistan and the importing country are the cause for the banking crisis. This can be ascertained by the fact that the absolute value of correlation between industry-level and country-level indicators is less than 10 percent.

One of the major reasons for a banking crisis is the oversupply of banking credit within an economy in the period preceding the crisis. As noted in Hardy and Pazarbasioglu (1999), the domestic credit provided by the banking sector as a percentage of GDP follows a boom and bust pattern in advance of a crisis and falls during a banking crisis. Further, a banking crisis also results in lower output levels that may negatively affect GDP. With banking credit and GDP both falling, it is difficult to predict the intensity of the boom and the bust of the domestic credit provided by the banking sector as a percentage of GDP. Therefore, although the episodes of banking crisis may lower the absolute value of the domestic credit provided by the banking sector, it may be independent from the domestic credit provided by banking sector as a percentage of GDP. However, as banking crisis is related to the loss of output, it can be used as a suitable indicator for a fall in demand of exports from Pakistan as it inhibits the ability of the importing country to purchase foreign goods, particularly in industries that are relatively dependent on the financial markets. Furthermore, as discussed earlier, the effect of the banking crisis can only be exogenously related to the export flow from Pakistan and the industry financial characteristics.

4. Data

In Appendix A, I list the definition and source of each variable used in the regressions. The data on export flow is borrowed from de Sousa et al. (2012), which is listed on the CEPII website[14]. The values of financial dependence, asset tangibility, capital intensity, human capital

[12] The issues regarding the viability of the variables on the financial composition for cross-country studies as well as the use of indicators that represent the industry-level financial composition within countries other than the US are addressed in detail in research studies that consider a similar strategy such as Manova (2008), Manova (2013) and Chor and Manova (2012).

[13] Exports from Pakistan constitute a small percentage to its total GDP and exports to any single trading partner are a much smaller percentage of the total GDP of the importing countries. It is unlikely that exports by itself will influence the development of the financial markets in Pakistan as well as the development of foreign financial markets. Therefore, we can assume that the development of the foreign financial markets has an exogenous effect on the trading patterns of Pakistan.

[14] Berman and Martin (2012), Spearot (2013) and Bergstrand et al. (2013) use the "TradeProd" dataset available on the CEPII website. The data are likely to be relatively accurate as Bergstrand et al. (2013) suggest that the procedure implemented for

intensity and natural resource intensity at the industry level are listed in Braun (2003) and borrowed from Manova (2008). The data on contract intensity of each industry are borrowed from Nunn (2007) and the import demand elasticities from Nicita and Olarreaga (2006) and Kee et al. (2008). I include an industry-level variable that accounts for the cumulative exports from lower-middle income countries, a classification defined by the World Bank that includes Pakistan, to each trading partner of Pakistan.

In Appendix B, the countries are sorted according to their OECD membership status and their level of banking credit. In Appendix B, I have also listed the countries that are considered as lower-middle income countries by the World Bank.

In addition to sorting the group of countries according to their OECD membership status, countries have been split according to high, middle and low levels of banking credit[15]. Using the average banking credit, which is calculated as the mean of domestic credit provided by banking sector (percent of GDP) for the importing countries over the time period, the degree of banking credit for countries with high level of banking credit and low level of banking credit is classified with the benchmarks set at the 75th percentile (between 103.16 percent & 266.93 percent) and the 25th percentile (between -26.62 percent and 30.19 percent) of average banking credit of all importers respectively. The average banking credit observed for Pakistan (at 49.15 percent) ranks it amongst countries with middle level of banking credit. With domestic credit provided by the banking sector considered as an indicator for the level of financial depth within a country, Pakistan has a financial market that is more developed than the financial markets in countries with low level of banking credit but less developed than the financial markets with high level of banking credit. It is also important to note that the banking credit has only been included for those years for which an importing country is a trading partner of Pakistan as this will remove any variations in the level of banking credit that may occur when the country does not import goods from Pakistan.

5. Results

In the results reported below, I expect the impact of the variables that determine the financial composition of an industry on export flow to be significant for exports to the countries that are relatively developed. Further, the influence of the financial factors on export flow and the ratio of exports may differ when importing countries are exposed to a banking crisis. I expect that the effect of financial dependence on export flow from Pakistan is significant during a non-crisis period and insignificant during a crisis period if the relationship between export flow and financial dependence is sensitive to the availability of credit in the destination markets. This will determine whether the relationship between financial factors and export pattern differs across countries at different levels of economic, financial development and experience a shortage of banking credit through a banking crisis. However, before I begin the discussion on the results of the regressions, I discuss the pattern of the financial factors as

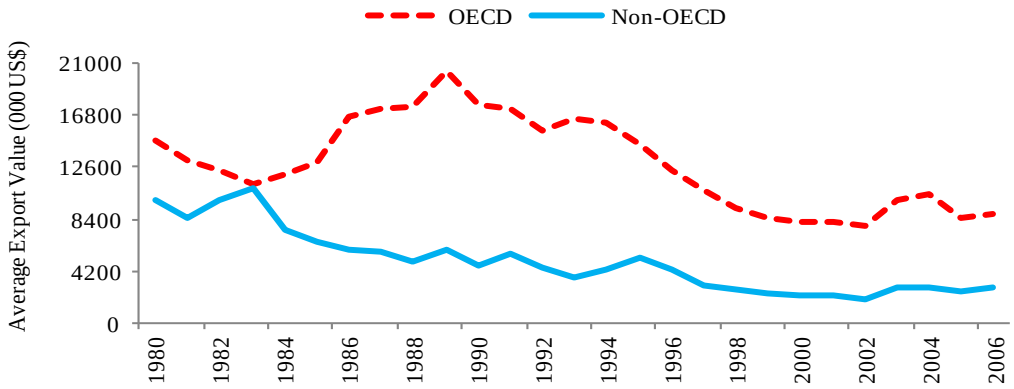
mapping the cost, insurance, freight (CIF) values reported by the importing countries to the free on board (FOB) values reported by the exporting countries is consistent.

[15] Although all OECD member countries have either high or middle level of banking credit, none of the OECD member countries have low level of banking credit. On the other hand, not all countries with high level of banking credit are OECD member countries.

well as the pattern of export flow to the importing partners based on the development of the financial markets using graphs.

In Figure 1, I observe an overall decline in the annual average real value of bilateral exports from Pakistan at the industry-level between 1980 and 2006. An increase in the number of industries that export coupled with lower growth rates in export value relative to the inflation rate in Pakistan may have attributed to this decline over time.

Figure 1: Average Bilateral Export Flow from Pakistan in Each Industry by OECD Membership Status



In Figures 2 and 3, financial dependence and asset tangibility were affected by the financial liberalization program introduced in 1988[16]. As expected, the results in Figures 2 and 3 are similar to the results for the impact of financial liberalization on the average levels of financial dependence and asset tangibility reported in Manova (2008). As the government allowed private banks to operate, loans for product development and participation in international trade may be easier to avail from banks. This subsequently aided the increase in exports in industries that are financially dependent. The volatility is greater for exports to the non-OECD countries than the exports to the OECD member countries, an indication that exporters to the former are more dependent upon the financial depth in Pakistan. A prominent decline in the asset tangibility of industries exporting to non-OECD countries around the time Pakistan experienced liberalization in its financial sector can be attributed to the presence of greater availability of sources of external financing as banks were relatively more willing to fund industries which were characterized by a lower level of asset tangibility. As the effect of the shock from financial liberalization subsided, the average financial dependence and asset tangibility of the industries exported rebounded to their original levels.

[16] The time fixed effects are included in the regressions in order to account for any variations caused by the introduction of the financial liberalization program within Pakistan.

Figure 2: Average Financial Dependence of Exports from Pakistan by OECD Membership Status

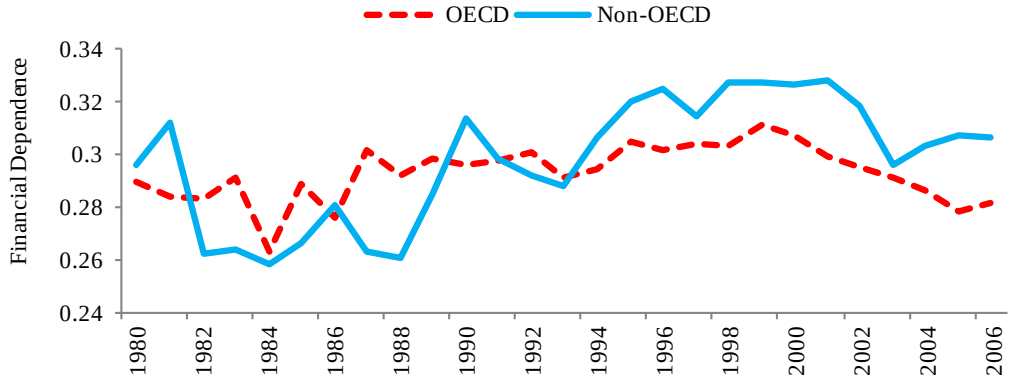
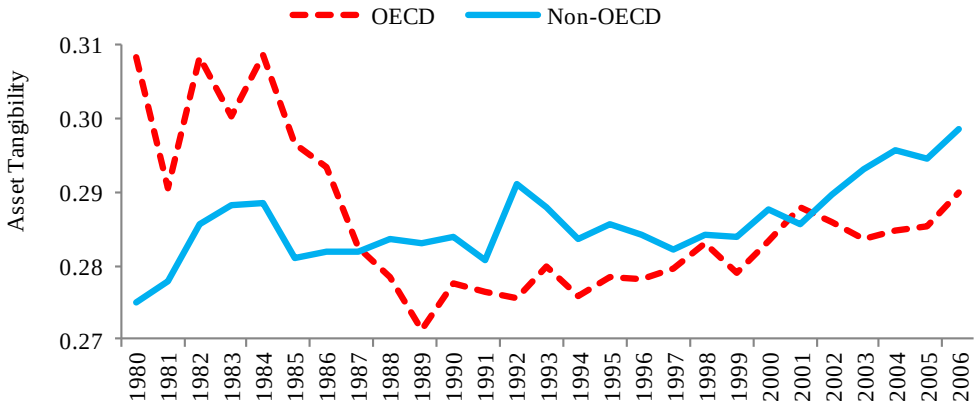


Figure 3: Average Asset Tangibility of Exports from Pakistan by OECD Membership Status



In Figures 4, 5, and 6, I observe a similar pattern to Figures 1, 2 and 3. In Figure 4, the average real value of exports to countries with high, middle and low levels of banking credit observe a similar trend as the real value of bilateral exports to OECD member and non-OECD countries respectively. Similarly, in Figures 5 and 6 there is a similar trend of the financial factors as in Figures 2 and 3. Although, the direction of the real value of bilateral exports and financial factors is similar across both OECD member and non-OECD countries as well as countries with high, middle and low levels of banking credit, the volatility in the numbers is greater in non-OECD countries and countries with middle and low levels of banking credit than OECD member countries and countries with high level of banking credit. An increase in average financial dependence and a decrease in average asset tangibility of all the industries within the country should indicate an improvement in the capability of firms to participate in international trade. Therefore, I predict that bilateral export value will be positively associated with financial dependence and negatively associated with asset tangibility.

Figure 4: Average Bilateral Export Flow from Pakistan in Each Industry by Level of Banking Credit

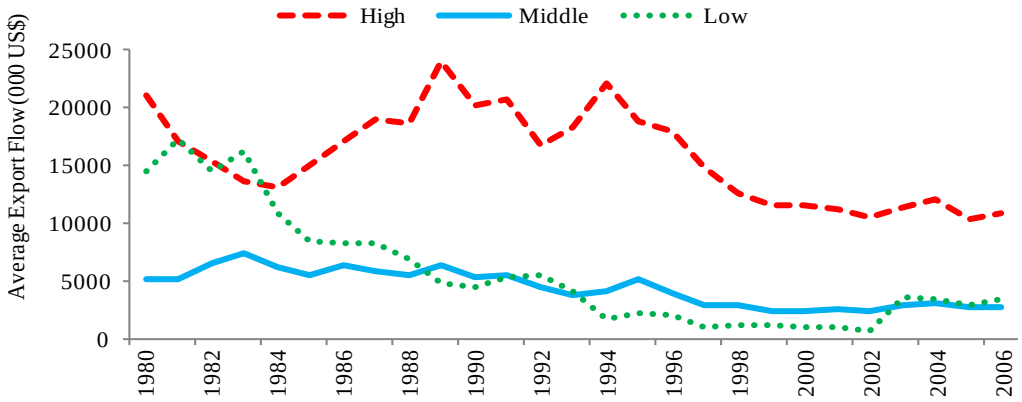


Figure 5: Average Financial Dependence of Exports from Pakistan by Level of Banking Credit

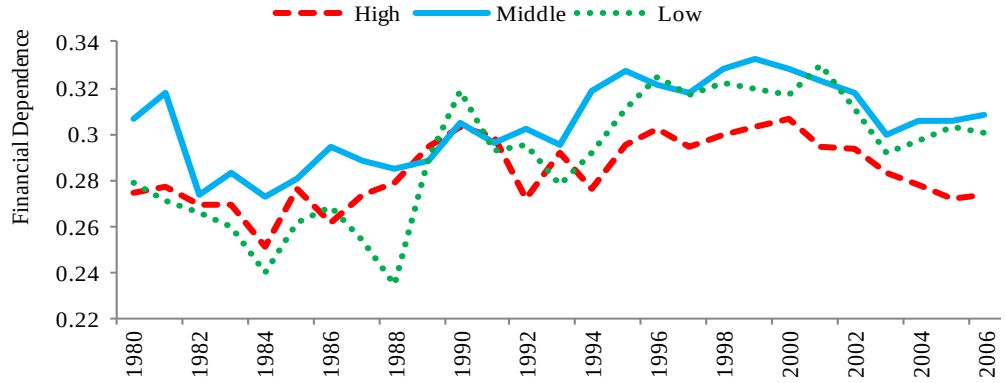
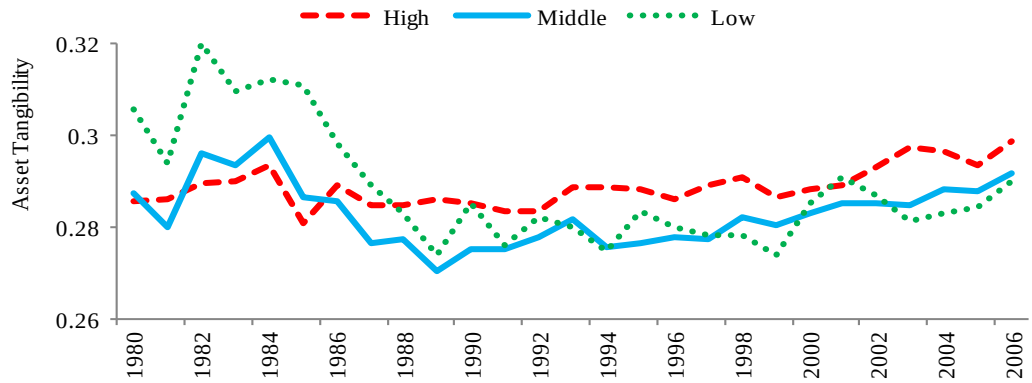


Figure 6: Average Asset Tangibility of Exports from Pakistan by Level of Banking Credit



In Appendix C, I sort the industries according to the size of the export flow originating from Pakistan. The top five exporting industries by export value for Pakistan are the manufacture of textiles, wearing apparel, food industries, leather, and petroleum products.

In Appendix D (Figure D1), the export flow from Pakistan falls when the importing country faces a banking crisis. The average of the bilateral exports from Pakistan is more than 30 percent greater during the periods when importing countries are not facing a banking crisis against the periods when importing countries are facing a banking crisis. The results hold across all categories of countries, regardless of OECD membership status and banking credit. In Appendix D (Figure D2) and Appendix D (Figure D3), the industry-level composition of exports based on the financial characteristics, although small, increases in financial dependence and decreases in asset tangibility for periods when an importing country faces a banking crisis. The average financial dependence and asset tangibility are calculated on the basis of the number of industries that export during a period. This may result in a lower average when the number of industries that export is higher because of the demand-side effects. During a banking crisis, the decline in domestic output in financially dependent industries and in industries with lower asset tangibility may generate import demand within these industries in countries that do not face a banking crisis to fulfill the lack of domestic production. This may result in an increase in average financial dependence and a decrease in asset tangibility at the industry-level. This direction in the average financial dependence and asset tangibility across the level of financial development of importing countries explains that the pattern of the financial composition of exporting industries from Pakistan to importing countries with different levels of financial development and their experience of financial crisis. However, Appendix D (Figure D2) and Appendix D (Figure D3) do not explain the intensity at which each industry exports to each importing partner during a particular period.[17] The intensity of exports in the financially-dependent industries may be higher during periods when the importing countries do not face a banking crisis even if the average of the financial dependence of the number of industries that participate is lower. Firms may not drop their trading partners in industries where financial dependence is higher and asset tangibility is lower during periods of banking crisis, but may instead continue to export to them at a lower intensity. The results presented next will explain the influence of the financial composition of the industries on the intensity of the export flow to the various trading partners.

In Table 1, the bilateral export flow from Pakistan is positively associated with financial dependence for the pooled set of countries, OECD member and non-OECD countries at 1 percent level, 10 percent level, and 5 percent level of significance respectively. It is also positively associated with asset tangibility within the set of OECD member countries at 5 percent level of significance. As lenders are likely to provide loans to exporters that belong to industries with a greater proportion of tangible assets or with 'hard' information, export flow to OECD member countries is likely to increase as the asset tangibility of such industries increases. Contract intensity is negatively associated with bilateral exports but significant at 1 percent level for all three set of countries. This may imply that importers within all set of countries are likely to import goods from Pakistan that are available in a spot market rather than the goods that require a contractual agreement between the importers and the exporters. The weaker legal framework characterized in Pakistan can result in trade in the less contract-intensive industries.

[17] The fall in export flow to importing countries that face a banking crisis coupled with the increase in average financial dependence and the decrease in average asset tangibility may suggest that the more financially dependent industries and the industries with lower asset tangibility may continue to export even if the export flow from these industries is minimal.

Capital intensity is negative and significant at 5 percent level and 1 percent level within pooled countries and OECD member countries respectively. Human capital intensity and natural resource intensity negatively influence the export flow at 1 percent level of significance. Import demand elasticity is negative and significant at 1 percent level within OECD member countries but at 5 percent level with the pooled set of countries and non-OECD countries. The negative relationship for the aforementioned variables suggests that the exports from Pakistan are likely to be labor intensive, particularly to OECD member countries. It also suggests that the products require a lower proportion of skilled workers and the products are sensitive to changes in the price. Further, the products exported from Pakistan are not likely to be natural resources. Lastly, the sum of exports from lower middle income countries is likely to be positive and significant at 1 percent level within all the set of countries. This indicates that the value of sum of exports from lower middle income countries is positively associated with export flow from Pakistan, proving the complementary nature of exports from lower-middle income countries and export flow from Pakistan.

Table 1: The Effects of Financial Characteristics on Export Flow from Pakistan by OECD Membership Status of Importing Countries

Dep. variable: export flow (ln)	**Pooled**	**OECD member**	**Non-OECD**
Financial dependence	0.32***	0.36*	0.34**
	(0.11)	(0.20)	(0.13)
Asset tangibility	-0.42	1.60**	-0.87
	(0.44)	(0.61)	(0.54)
Contract intensity	-1.92***	-1.45***	-2.40***
	(0.21)	(0.33)	(0.26)
Capital intensity	-6.58**	-22.82***	-1.23
	(2.98)	(4.35)	(3.19)
Human capital intensity	-1.87***	-1.32***	-1.76***
	(0.16)	(0.24)	(0.18)
Natural resource intensity	-1.44***	-1.38***	-1.50***
	(0.10)	(0.17)	(0.13)
Import demand elasticity	-0.09**	-0.33***	-0.07**
	(0.03)	(0.07)	(0.03)
Sum of exports from lower middle	0.67***	0.93***	0.55***
income economies (ln)	(0.04)	(0.03)	(0.05)
Constant	1.49***	-1.48**	2.16***
	(0.32)	(0.58)	(0.41)
Observations	31044	10452	20125
R-squared	0.45	0.51	0.41

Robust clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1, Includes importer and year fixed effects, Export flow and sum of exports have been adjusted at 2005 CPI

In Table 2, financial dependence has a positive influence on the export flow that is significant at 1 percent level within countries with middle level of banking credit.[18] Asset

[18] The OECD member countries have either high level of banking credit or medium level of banking credit. The significance of financial dependence within countries with medium level of banking credit along with the lack of significance in countries with

Table 2: The Effects of Financial Characteristics on Export Flow from Pakistan by Banking Credit of Importing Countries

Average banking credit level:	**High**	**Middle**	**Low**
Dep. variable: export flow (ln)			
Financial dependence	0.02	0.50***	0.16
	(0.22)	(0.18)	(0.18)
Asset tangibility	1.06	-1.14	0.46
	(0.80)	(0.71)	(0.79)
Contract intensity	-1.81***	-2.03***	-2.02***
	(0.43)	(0.26)	(0.42)
Capital intensity	-18.20***	-4.11	-3.37
	(4.55)	(4.92)	(4.35)
Human capital intensity	-1.20***	-1.97***	-1.87***
	(0.16)	(0.24)	(0.30)
Natural resource intensity	-1.74***	-1.09***	-1.87***
	(0.20)	(0.14)	(0.17)
Import demand elasticity	-0.35***	-0.06**	-0.24***
	(0.08)	(0.03)	(0.08)
Sum of exports from lower middle	0.92***	0.57***	0.64***
income economies (ln)	(0.04)	(0.06)	(0.06)
Constant	0.42	2.90***	2.43***
	(0.64)	(0.71)	(0.56)
Observations	8,289	14,966	7,299
R-squared	0.51	0.37	0.51

Robust clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1, Includes importer and year fixed effects, Export flow and sum of exports have been adjusted at 2005 CPI, High is Greater than 75th percentile, Middle is between 75th and 25th percentile and Low is less than 25th percentile of average banking credit

tangibility is not significant for any set of countries. Although, the level of financial development may be similar to that of Pakistan within the countries with middle level of banking credit, there are several countries within this group of countries that have better developed financial markets relative to Pakistan. It is likely that Pakistani exporters in financially dependent industries will seek trading relationships with the importers in the more developed financial markets within the range of countries with middle level of banking credit.[19] The importers in countries with middle level of banking credit may have better understanding of the financial markets that are similar to their own country and generate demand for exports from financially dependent industries in such countries. It is also likely that the domestic production is less concentrated within industries that are financially dependent

high level of banking credit and the relative levels of financial dependence of the export flow to countries with high and middle level of banking credit as observed in Figure 5 suggest that the importers in the countries with middle level of banking credit are being influenced by the financial composition of the industries than the importers in the other countries. As Pakistan has several major trading partners that feature amongst its top ten export destinations in countries with high levels of banking credit, the demand originating from such countries could be more diversified across industries and lower the significance of the financial dependence variable.

[19] It is important to note that Pakistan is a major exporter in the textile industry and the value it generates from textile exports contributes significantly to the total export value from Pakistan. As the financial dependence of the textile industry is higher than several other industries and several of the countries with middle level of banking credit may be importing textile products from Pakistan, it is likely that financial dependence has a significant influence on the export value, particularly if the exports to this group of countries is not diversified relative to the other groups of countries.

in such countries. The significant effect of financial dependence on export flow within the OECD member countries but not within the countries with high level of banking credit suggests that economic development apart from the level of financial development in the importing countries may influence the ability of firms to generate external finance to participate in the export market.

Contract intensity is negative and significant at 1 percent level within all set of countries. Capital intensity is negative and significant at 1 percent level for countries with high level of banking credit. Human capital intensity and natural resource intensity are negative and significant at 1 percent level for all set of countries, while import demand elasticity is negative and significant at 1 percent level within countries with high and low levels of banking credit but significant at 5 percent level for countries with middle level of banking credit. Sum of exports from middle lower income level countries is positive and significant at 1 percent level within all set of countries.

Table 3: The Effects of Financial Characteristics on Export Flow from Pakistan by OECD Membership Status and Banking Crisis of Importing Countries

	Pooled		**OECD member**		**Non-OECD**	
Banking crisis:	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**
Dep. variable: export flow (ln)						
Financial dependence	0.32***	0.40	0.43**	-0.62	0.32**	0.76**
	(0.11)	(0.32)	(0.19)	(0.50)	(0.13)	(0.37)
Asset tangibility	-0.24	-3.70***	1.78***	-1.16	-0.65	-4.77***
	(0.43)	(1.15)	(0.61)	(1.44)	(0.53)	(1.44)
Contract intensity	-1.89***	-2.89***	-1.50***	-0.55	-2.32***	-3.92***
	(0.21)	(0.57)	(0.33)	(0.76)	(0.26)	(0.61)
Capital intensity	-7.00**	-5.15	-23.84***	-6.97	-1.43	-2.84
	(2.98)	(6.17)	(4.06)	(10.17)	(3.20)	(7.28)
Human capital intensity	-1.83***	-1.98***	-1.25***	-2.42***	-1.73***	-1.70***
	(0.15)	(0.32)	(0.24)	(0.62)	(0.18)	(0.35)
Natural resource intensity	-1.47***	-0.86***	-1.41***	-0.77	-1.52***	-0.95***
	(0.10)	(0.26)	(0.16)	(0.58)	(0.13)	(0.27)
Import demand elasticity	-0.08**	-0.76***	-0.30***	-0.69*	-0.07**	-0.74***
	(0.03)	(0.20)	(0.06)	(0.33)	(0.03)	(0.25)
Sum of exports from lower middle	0.69***	0.53***	0.95***	0.77***	0.56***	0.45***
income countries	(0.04)	(0.06)	(0.03)	(0.07)	(0.05)	(0.06)
Constant	1.31***	2.68**	-1.15*	2.84**	2.80***	4.89***
	(0.32)	(1.24)	(0.60)	(1.07)	(0.56)	(1.12)
Observations	29,022	2,022	9,884	568	18,676	1,449
R-squared	0.46	0.38	0.52	0.44	0.42	0.37

Robust clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1, Includes importer and year fixed effects, Export flow and sum of exports have been adjusted to 2005 CPI

In Table 3, financial dependence is positive and significant at 1 percent level and 5 percent level within the pooled set of countries and OECD member countries respectively

that are not facing a banking crisis. Financial dependence is positive and significant at 5 percent level for non-OECD countries, regardless of whether a country faces a crisis.[20] Larger lenders are likely to lend to exporters in financially dependent industries that export to OECD member countries as such industries are likely to experience greater growth in revenue than exporters to other countries. As financially dependent industries experience a larger number of exporters and a higher growth rate in exports, they may export to non-OECD member countries. However, exporters that are sensitive to financial friction are not likely to export to OECD member countries that face a banking crisis.[21] Credit supply from lenders that would normally contribute to lending in industries with potentially higher growth rates is constrained during this period. In addition, the lack of demand for imports of intermediate manufactured goods used to produce consumer goods in financially dependent industries will also reduce exports in such industries. On the other hand, the exports to non-OECD countries may be a result of the surplus export revenue generated by exporting to OECD member countries that may allow firms in financially dependent industries in Pakistan to export to non-OECD countries even if the non-OECD countries face a banking crisis. Therefore, we may observe a positive and significant relationship of financial dependence even during periods of banking crisis.

Asset tangibility is negative and significant at 1 percent level for the pooled set of countries and non-OECD countries facing a banking crisis but is positive and significant at 1 percent level for OECD member countries not facing a banking crisis. Levchenko et al. (2010) determine a negative and significant effect of asset tangibility on U.S. imports for the period between the second quarters of 2008 and 2009 and the results can closely relate to the imports to other developed financial markets. It is likely that in developed economies, trade in intangible industries will be domestic and between other developed OECD member countries that can more easily support the financing requirements of industries with a higher proportion of intangible assets. Consequently, this trading pattern may reduce the demand of imports from Pakistan within such industries. Aghion et al. (2008) show that R&D investments as a ratio of total investments tend to fall during the period when the country faces a credit crunch but does not necessarily increase proportionally during non banking crisis periods. Further, Booth et al. (2001) suggest that long-term debt is likely to be positively associated with asset tangibility but short-term debt is likely to be negatively associated. As exporting activities may constitute long-term financing, this can explain the positive effect of asset tangibility on export flow within OECD member countries during the non-crisis period. On the other hand, in less developed countries with weaker property rights, collateral can be seized by relatively powerful lenders in case of default payments and this may exacerbate during a credit

[20] Pakistan belongs within the range of countries with middle-level of banking credit (between 25th and 75th percentile). Although, it can be assumed that Pakistan is less financially developed than the majority of the trading partners within the middle level of banking credit countries, it can also be assumed that the majority of the non-OECD countries belong within the range of countries with middle and low levels of banking credit. There are only a few non-OECD countries with a high level of banking credit. Therefore, it is likely that Pakistan has similar or greater financial depth relative to other non-OECD countries.

[21] Due to the hysteresis in the export market, some firms may continue to export in the financially-dependent industries during the periods of banking crisis in the importing countries but the volume of exports may not be as high as during the non-crisis period.

crunch.[22] When OECD member countries face a banking crisis, financial dependence and asset tangibility at the industry-level do not significantly influence the value of export flow from Pakistan. Therefore, this pattern can indicate that exports from Pakistan are likely to occur in any industry regardless of financial dependence and asset tangibility of industries as OECD members may face a credit crunch that limits the ability of firms to generate revenue from export sales in financially-dependent industries.

Contract intensity is negative and significant at 1 percent level for all set of countries except when OECD member countries are facing a banking crisis, for which the variable is insignificant. Capital intensity is negative and significant at 5 percent and 1 percent level respectively for pooled and OECD member countries not facing a banking crisis. Human capital intensity is negative and significant at 1 percent level for all set of countries regardless of whether they face a banking crisis. Natural resource intensity is negative and significant at 1 percent level across all set of countries except for OECD member countries facing a banking crisis. Income demand elasticity is negative and significant between 1 percent level and 10 percent level across all set of countries and the sum of exports from lower-middle income countries is positive and significant at 1 percent level across all set of countries. Therefore, we can predict that all variables except for capital intensity is likely to influence export flow, either negatively of positively across all set of countries. However, when OECD countries face a banking crisis, the only variables that have influence are human capital intensity, import demand elasticity and sum of exports from lower middle income countries. This could indicate that the product characteristics of goods imported differ when developed importing countries face a banking crisis than the when they do not face a banking crisis.

In Table 4, financial dependence positively and significantly influences export flow at 1 percent level for countries with a middle level of banking credit that do not face a banking crisis. Asset tangibility negatively and significantly influences export flow within countries with high level of banking credit at 10 percent level and within countries with a middle level of banking credit at 5 percent level that face a banking crisis. The effect of financial dependence and asset tangibility is consistent with Rajan and Zingales (1998) and Levchenko et al. (2010). The former predicts growth in financially dependent industries as banking credit increases and the latter, as discussed earlier, reveals that the imports into the U.S. are negatively impacted by asset tangibility during a banking crisis. In this paper, I observe that the financial markets of the importing countries with similar levels of financial development as the exporting countries are likely to play an important in role in defining the trade patterns based on the financial composition of the industries. Importers within countries with middle level of banking credit that do not face a banking crisis are likely to increase export flow from financially dependent industries within Pakistan. However, when such countries face a banking crisis, the credit crunch within their financial markets may influence a negative relationship between asset tangibility and export flow. Contract intensity negatively and significantly influences export flow at 1 percent level for all set of countries except for

[22] The onset of a banking crisis creates an output loss and lowers the supply of banking credit. As there has been no reported banking crisis in Pakistan during the sample period, I can assume that Pakistan as an exporting country has faced neither an output loss nor a credit crunch to the degree faced by the importing country when it experiences a banking crisis. Therefore, the export flow from Pakistan is affected but not the domestic production.

within countries with high and low levels of banking credit facing a banking crisis, which is significant at 10 percent level and 5 percent level respectively. Interestingly, I do not observe a negative effect of financial dependence that significantly influences the export flow from Pakistan. This would suggest that a decrease in financial dependence across industries is not likely to generate greater export flow under any environment that influences the availability of banking credit in the importing countries.

Table 4: The Effects of Financial Characteristics on Export Flow from Pakistan by Banking Credit and Banking Crisis of Importing Countries

Average banking credit level:	**High**		**Middle**		**Low**	
Banking crisis:	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**
Dep. variable: export flow (ln)						
Financial dependence	0.06	-0.36	0.51***	0.5	0.15	0.69
	(0.20)	(0.83)	(0.18)	(0.40)	(0.18)	(0.46)
Asset tangibility	1.27	-3.21*	-0.95	-3.70**	0.54	-1.64
	(0.79)	(1.68)	(0.71)	(1.63)	(0.77)	(3.58)
Contract intensity	-1.73***	-3.49*	-2.03***	-2.65***	-2.02***	-2.49**
	(0.42)	(1.71)	(0.27)	(0.60)	(0.42)	(1.20)
Capital intensity	-19.01***	-4.95	-4.5	-4.93	-3.43	-17.52
	(4.38)	(6.68)	(4.99)	(8.71)	(4.3)	(16.23)
Human capital intensity	-1.14***	-2.08***	-1.92***	-2.11***	-1.86***	-0.79
	(0.17)	(0.41)	(0.24)	(0.43)	(0.3)	(0.89)
Natural resource intensity	-1.77***	-1.18**	-1.10***	-0.67*	-1.88***	-2.10***
	(0.20)	(0.48)	(0.14)	(0.37)	(0.16)	(0.61)
Import demand elasticity	-0.31***	-0.86**	-0.06**	-0.72**	-0.23***	-1.10**
	(0.09)	(0.31)	(0.03)	(0.29)	(0.07)	(0.53)
Sum of exports from lower middle	0.93***	0.74***	0.58***	0.49***	0.65***	0.51***
income economies (ln)	(0.04)	(0.06)	(0.06)	(0.08)	(0.05)	(0.10)
Constant	0.15	3.24*	2.63***	2.87**	1.98***	5.32***
	(0.57)	(1.47)	(0.71)	(1.18)	(0.59)	(1.04)
Observations	7,862	427	13,686	1,280	6,984	315
R-squared	0.51	0.48	0.38	0.34	0.52	0.44

Robust clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1, Includes importer and year fixed effects, Export flow and sum of exports have been adjusted at 2005 CPI, High is Greater than 75th percentile, Middle is between 75th and 25th percentile and Low is less than 25th percentile of average banking credit.

Capital intensity negatively and significantly influences export flow at 1 percent level within countries with high level of banking credit that do not face a banking crisis. Human capital intensity negatively and significantly influences export flow at 1 percent level within all sets of countries except within countries with low level of banking credit not facing a banking crisis, for which it is insignificant. Natural resource intensity negatively and significantly influences export flow at 1 percent level within countries with low level of banking credit regardless of them facing a banking crisis, and within countries with high and middle levels of banking credit not facing a banking crisis. This variable negatively influences export flow within countries with high level of banking credit facing a banking crisis at 5 percent level and within countries with middle level of banking credit facing a banking crisis at 10 percent

level. Income elasticity demand negatively and significantly influences export flow at 1 percent level within countries with high and low levels of banking credit not facing a banking crisis and significantly influences export flow at 5 percent level within the remaining groups of countries. Sum of exports from lower middle income countries positively and significantly influences export flow at 1 percent level within all groups of countries.

6. Conclusion

The positive influence of financial dependence and the negative influence of asset tangibility on the export value indicate that exports are likely to increase with financial dependence of an industry but decrease with its level of asset tangibility. On the other hand, a positive impact of asset tangibility on export flow suggests that lenders prefer collateral. Firms in industries that rely on external sources of finance may generate greater export value but the role of asset tangibility depends upon the availability of funds. The negative influence of asset tangibility when the importing country faces a banking crisis points to growth in export value in industries that are likely to have 'soft' information. Lenders are willing to fund borrowers with a lower proportion of tangible assets when the importing country faces a banking crisis as the lack of domestically produced products may increase demand of products from countries that do not face a banking crisis. On the other hand, the positive influence of asset tangibility on export flow suggests that exporters require collateral to finance international trading activities.

Exporters to the more developed financial markets, as suggested by their OECD membership status, are likely to record greater export value in industries that are financially dependent and have higher asset tangibility as they seek access to finance from deeper financial markets. However, during periods of banking crises, Pakistani exporters have an opportunity to trade with importers in industries with lower asset tangibility as either Pakistani exporters may trade less with importers they believe may have their assets seized during periods of negative financial shocks or the Pakistani exporters may fill a vacuum that is a result of the lack of production in industries with lower levels of tangible assets.

I suggest to the policymakers that, given the level of development of the financial market in Pakistan compared to other developing financial markets, they should promote exports in financially dependent industries and there is no negative relationship observed between financial dependence and export flow. In addition, countries that face a banking crisis are likely to import products in industries that have relatively lower values of asset tangibility. Pakistani exporters may take advantage of the credit provided by the importers in the developed financial markets. The development of the financial markets can allow for diversification of exports to more trading partners within this group of countries. Therefore, it is highly imperative for Pakistan to promote production in financially dependent industries and improve the level of development of its financial market.

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Appendix A: Description of Variables

Variable	Definition	Source
Export flow	Bilateral export flow at 3 digit ISIC level	De Sousa et al. (2012)
Financial dependence	Ratio of capital expenditures less cash flow from operations to capital expenditures for a median firm in an industry	Manova (2008)
Asset tangibility	Ratio of net property, plant and equipment to total book value of assets for a median firm in an industry	Manova (2008)
Contract intensity	Fraction of inputs neither sold on an exchange nor reference priced	Nunn (2007)
Capital intensity	Median of gross capital formation to value added ratio for each industry	Braun (2003)
Human capital intensity	Industry's mean wage over that of the whole manufacturing sector	Braun (2003)
Natural resource intensity	If industry includes the use of minerals and fossil fuels, timber, non-timber forest benefits, cropland, and pastureland as main input	Braun (2003)
Import demand elasticity	Constructed with a GDP function, using import and domestic prices of n good and import shares of n good in GDP.	Nicita and Olarreaga (2006) and Kee et al. (2008)
Sum of exports from lower middle income countries	Sum of bilateral export flow at 3 digit ISIC level from lower middle income countries	De Sousa et al. (2012)
Banking credit	Domestic credit by banking sector (percent of GDP) to all sectors except Central Government	World Development Indicators (2012)
Banking crisis	Two conditions need to be met: a) significant signs of distress in the banking system through bank runs, liquidation and losses, and b) significant policy intervention in response to the distress.	Laeven and Valencia (2010)

Note: Financial dependence, asset tangibility, capital intensity, human capital intensity and natural resource intensity are defined at 3 digit ISIC Rev 2 and are borrowed from US data.

Appendix B

B-1: OECD Member Countries: Australia, Austria, Belgium-Luxemburg, Canada, Czech Republic (member since 1995), Denmark, Finland, France, Germany, Greece, Hungary (member since 1996), Iceland, Ireland, Italy, Japan, Mexico (member since 1994), Netherlands, New Zealand, Norway, Poland (member since 1996), Portugal, Republic of Korea (member since 1996), Slovakia (member since 2000), Spain, Sweden, Switzerland, Turkey, and United Kingdom.

List of Lower-Middle Income Countries (as Defined by the World Bank): Albania, Armenia, Belize, Bhutan, Bolivia, Cameroon, Cape Verde, Congo, Rep., Cote d'Ivoire, Djibouti, Egypt, Arab Rep., El Salvador, Fiji, Georgia, Ghana, Guatemala, Guyana, Honduras, India, Indonesia, Iraq, Kiribati, Kosovo, Lao PDR, Lesotho, Marshall Islands, Micronesia, Fed. Sts., Moldova, Mongolia, Morocco, Nicaragua, Nigeria, Pakistan, Papua New Guinea, Paraguay, Philippines, Samoa, Sao Tome and Principe, Senegal, Solomon Islands, Sri Lanka, Sudan, Swaziland, Syrian Arab Republic, Timor-Leste, Tonga, Ukraine, Uzbekistan, Vanuatu, Vietnam, West Bank and Gaza, Yemen, Rep. Zambia.

B-2: Sorting Countries According to Average Level of Banking Credit from 1980 to 2006. (High is greater than 75th percentile, Middle is between 25th and 75th percentile and Low is less than or equal to 25th percentile).

High Level of Banking Credit Countries: Austria, Canada, China, Cyprus, Eritrea, France, Germany, Guyana, Hong Kong, Japan, Lebanon, Liberia, Malaysia, Malta, Netherlands, Portugal, Saint Kitts and Nevis, South Africa, Spain, Sweden, Switzerland, Thailand, and United Kingdom.

Middle Level of Banking Credit Countries: Albania, Algeria, Argentina, Aruba, Australia, Bahamas, Bangladesh, Barbados, Belgium-Luxemburg, Belize, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Cape Verde, Chile, Colombia, Costa Rica, Croatia, Czech Republic, Djibouti, Denmark, Dominican Republic, Egypt, El Salvador, Estonia, Ethiopia, Fiji, Finland, Greece, Grenada, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Jordan, Kenya, Kuwait, Latvia, Macao, Maldives, Mauritania, Mauritius, Mexico, Moldova, Morocco, Myanmar, Nepal, New Zealand, Nicaragua, Norway, Panama, Philippines, Poland, Republic of Korea, Qatar, Saint Lucia, Saint Vincent and the Grenadines, Seychelles, Sierra Leone, Singapore, Slovak Republic, Slovenia, Sri Lanka, Syria, Trinidad and Tobago, Tonga, Tunisia, Turkey, Uruguay, Vietnam, Vanautu, Zambia, and Zimbabwe.

Low Level of Banking Credit Countries: Afghanistan, Angola, Armenia, Azerbaijan, Bahrain, Belarus, Benin, Bhutan, Brunei Darussalam, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Comoros, Cote D' Ivoire, Dem. Republic of Congo, Ecuador, Equatorial Guinea, Fed. States of Micronesia, Gabon, Gambia, Georgia, Ghana, Guinea, Guinea-Bissau, Iraq, Kazakhastan, Kyrgyz Republic, Laos, Libya, Lithuania, Macedonia, Madagascar, Malawi, Mali, Mongolia, Mozambique, Niger, Nigeria, Oman, Papua New Guinea, Paraguay, Peru, Republic of Congo, Romania, Russia, Rwanda, Samoa, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Solomon Islands, Sudan, Tajikistan, Tanzania, Timor Portuguese, Togo, Turkmenistan, Uganda, Ukraine, United Arab Emirates, Venezuela, and Yemen.

Appendix C: Ranking of Cumulative Bilateral Exports from Pakistan by Industry (1980-2006) Adjusted for 2005 CPI

Ranking	ISIC Rev 2	Sector Description	Ranking	ISIC Rev 2	Sector Description
1	321	Manufacture of textiles	14	369	Manufacture of other non-metallic mineral products
2	322	Manufacture of wearing apparel, except footwear	15	383	Manufacture of electrical machinery apparatus, appliances and supplies
3	311	Food manufacturing	16	372	Non-ferrous metal basic industries
4	323	Manufacture of leather and products of leather	17	356	Manufacture of plastic products not elsewhere classified
5	353	Petroleum refineries	18	313	Beverage industries
6	351	Manufacture of industrial chemicals	19	314	Tobacco manufactures
7	384	Manufacture of transport equipment	20	355	Manufacture of rubber products
8	385	Manufacture of professional and scientific equipment	21	342	Printing, publishing and allied industries
9	324	Manufacture of footwear	22	341	Manufacture of paper and paper products
10	382	Manufacture of machinery except electrical	23	362	Manufacture of glass and glass products
11	381	Manufacture of fabricated metal products	24	361	Manufacture of pottery, china and earthenware
12	352	Manufacture of other chemical products	25	332	Manufacture of furniture and fixtures
13	371	Iron and steel basic industries	26	331	Manufacture of wood and wood and cork products

Appendix D

Figure D1: Export Flow and Banking Crisis Status of Importing Countries

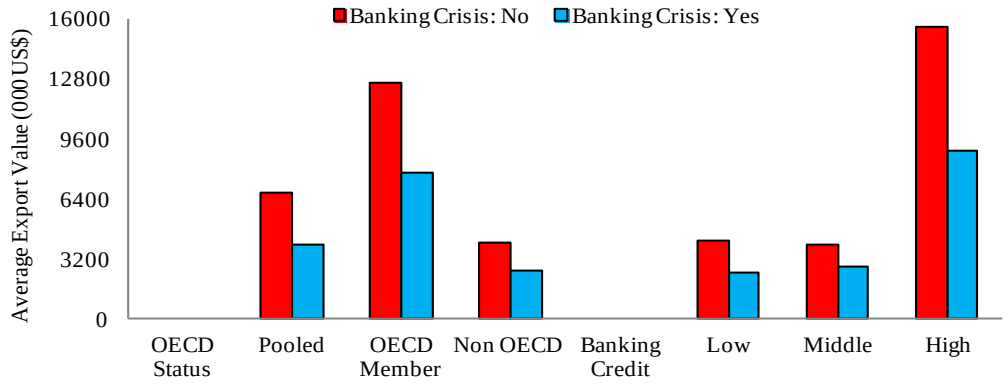

Figure D2: Industry Financial Dependence of Exports and Banking Crisis Status of Importing Countries

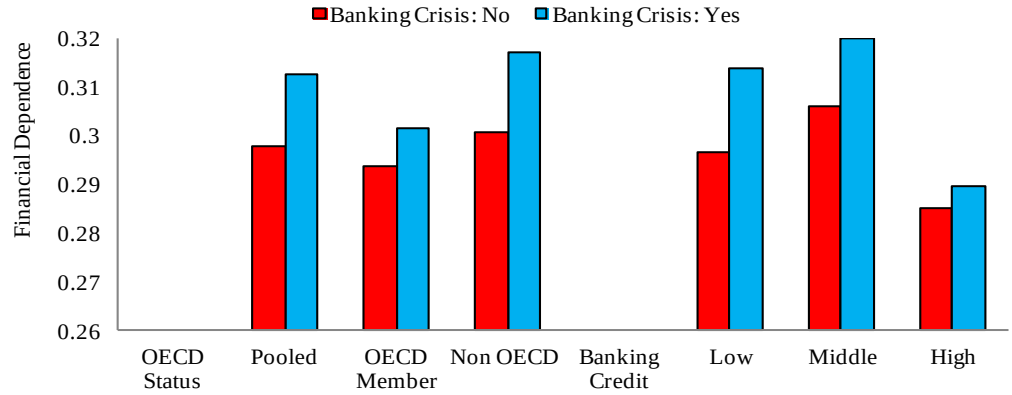

Figure D3: Industry Asset Tangibility of Exports and Banking Crisis Status of Importing Countries