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WPS6341

Policy Research Working Paper 6341

Determinants of Export Growth at the Extensive and Intensive Margins

Evidence from Product and Firm-Level Data for Pakistan

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The World Bank
Poverty Reduction and Economic Management Network
International Trade Department
January 2013

Policy Research Working Paper 6341

Abstract

As globalization progresses and investment is mobile, it is ever more important for policy makers to understand drivers of growth and exports at the micro-level: Which products are being produced and exported? Which firms populate the domestic economy? Are they successful in exporting? How are firms affected by exogenous shocks and policy intervention? Through the use of descriptive statistics and econometric analysis, this paper assesses the trade competitiveness of Pakistan using micro-data. The case of Pakistan is interesting since the country's recent trade policy has reverted to a protectionist path since the mid-2000s and trade performance is stagnating, as indicated by a decrease in its trade-to-gross domestic product ratio over the past decade and low levels of sophistication of exports. The main findings of the paper are the following. Like many other countries, Pakistan posts a high concentration of exports in the hands of a limited number of large exporters. The dominance of few exporters has increased over time and it seems associated with the changes in trade policy. Low rates of product innovation and experimentation and a low ability of the Pakistani export sector to enter into new higher growth sectors are other features emerging from the data. All in all, the mediocre performance seems to be associated with internal problems with trade-related incentives, business environment, and governance, in addition to the well-known external constraints.

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Produced by the Research Support Team

Determinants of export growth at the extensive and intensive margins: Evidence from product and firm-level data for Pakistan

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JEL Codes: D22, F10, F13, F14, F15
Keywords: Trade competitiveness, Exports growth; Extensive and Intensive margins
Sector Board: Economic Policy

[1] Both authors are from the International Trade Department of the World Bank. We want to thank Jose R Lopez Calix, Thomas Farole, J Daniel Reyes, Megha Mukin, Eric Manes, Nihal Pitigala, Florencia Pilacci, David Rosenblatt, David Gould and Paul Brenton for invaluable comments and inputs provided. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent

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1. Introduction

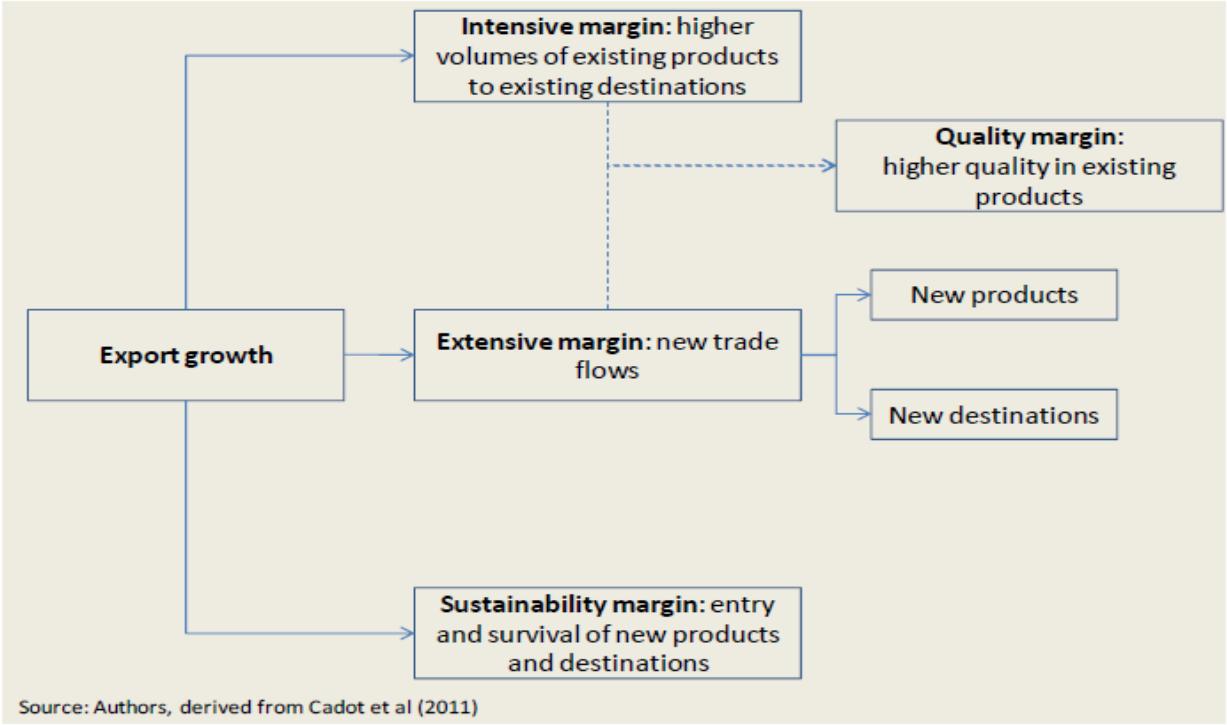
Trade and export performance of Pakistan in the last 15-20 years has not been positive, as documented in several reports (Planning Commission, 2011, World Bank 2007, Manes 2010, Lahore University 2009). Given that trade is a key driver of growth and development – most, if not all, success stories in growth accelerations worldwide have an outward-looking strategy; analyzing in detail and understanding the reason for this performance is an integral part of the growth and development agenda for Pakistan.

This paper presents a comprehensive and detailed analysis of trade and specially exports performance in Pakistan in the last ten years. The analysis of trade outcomes is intended to guide a systematic generation of hypotheses about Pakistan's export performance, prospects, and challenges. Following Reis and Farole (2012), the analysis uses the decomposition of the margins of trade growth as a framework for exploring trade competitiveness. Specifically, in this note we will review four main dimensions on which Pakistan's country's trade competitiveness performance can be determined: 1.) the ***level, growth, and market share*** performance of existing exports (the "intensive margin") of exports as well as *market share* performance; 2.) ***diversification*** of products and markets (the "extensive margin"); 3.) the ***quality and sophistication*** of exports (the "quality margin"); 4) dimension – the ***entry and survival*** of new exporters (the "sustainability margin").

The principal source for the analysis is the UN COMTRADE database available through the World Integrated Trade Solutions (WITS) platform[2]. For the entry and survival analysis (sustainability margin) we use firm-level data, based on a customs transactions database for the period 2001-2010. Throughout this note, the performance of Pakistan's exports is compared to a number of "peer" countries, selected based on factors including: location, similarity in country characteristics (level of income, size, geography, sectoral structure), and their presence as competitors to Pakistan's exporters in key markets. Due to lack of data availability, not all countries are included across all indicators. Peer countries for comparison using aggregate flows are China, India, Vietnam and Indonesia. In the case of firm level analysis, data availability is more limited, but we were still able to select middle income countries like Bulgaria, Colombia, Peru and South Africa.

[2] Unless stated otherwise, COMTRADE is the data source for the graphs and figures, with authors' calculation. Export information is obtained from mirror data.

Figure 1
Decomposition of export growth– a framework for measuring trade competitiveness



This paper is organized in three main sections: using aggregate data, section 2 presents the evolution of the trade performance in Pakistan, as a comprehensive analysis of the export growth, diversification and sophistication at national level and compared with peer countries. In the third section a detailed analysis at firm level focusing on entry, exit and survival of companies is conducted. This is followed by an attempt to identify the factors that may determine the export performance, which is carried out through an econometric exercise. Finally, the main conclusions are presented.

2. Trade and export performance: Growth, diversification and sophistication

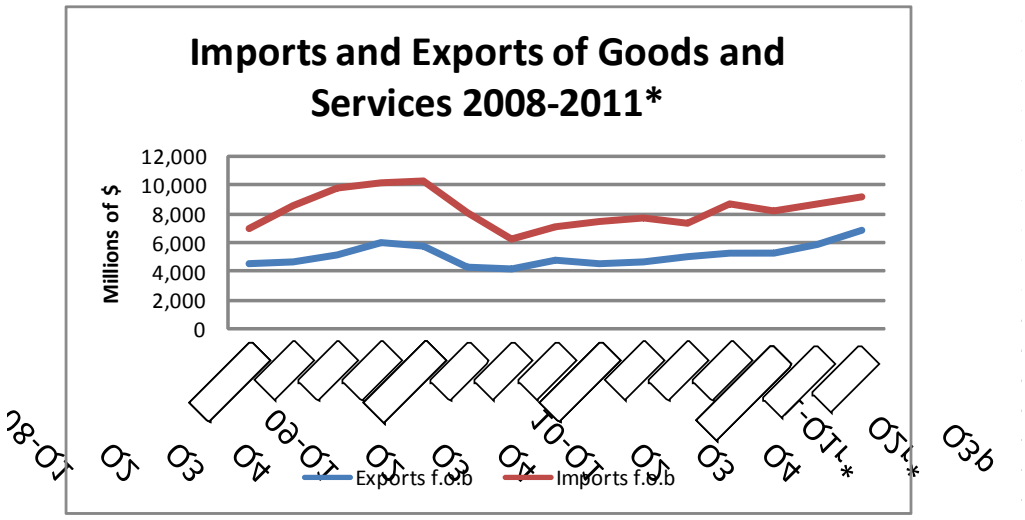
2.1 Orientation and growth

Pakistan's exports have grown in the last 30 years above world's exports growth but much below the accumulated growth of exports of South Asian peers. Specifically, Pakistan's exports grew 10-fold in 30 years, much less than the 25-fold observed in the rest of South Asia. During this period of time, the most intense growth of Pakistan's exports was observed at the end of the 1980s and at beginning of the 1990s. The most recent period, however, is associated with a deceleration of export growth. Looking at quarterly data since 2008, it is apparent the

contraction of both exports and imports during the financial crisis and the recovery of both flows that started on the third quarter of 2009. While both imports and exports have been growing at the margin exports have rebounded at a slightly faster pace. The main products leading this recovery have been rice, textiles like men's shirts of cotton, women's apparel, petroleum oil and bed and bathroom linen, as well as cotton yarn.

Figure 2
Export growth





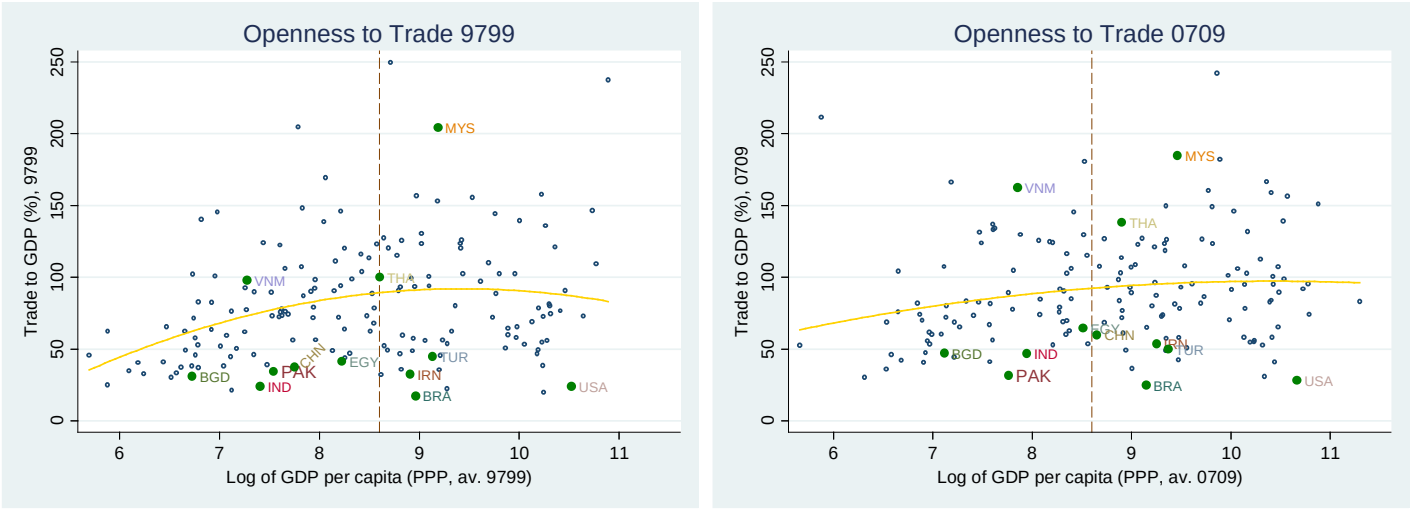
Source: Pakistan's Central Bank. *2011 Quarterly revision.

Pakistan's recent trade performance is one of stagnation, as indicated by a decrease in its trade-to-GDP ratio over the last decade. At the same time peer countries have leapfrogged with high growth rates. [3] Pakistan's position below the predicted line indicates that it "under-trades"

[3] The trade-to-GDP ratio is one of the most basic indicators of openness to foreign trade and economic integration. It weighs the combined importance of exports and imports of goods and services in an economy. The ratio gives an

compared to smaller countries at comparable levels of per-capita income.[4] This is the case for all other populous countries it is compared with in graphs below. What is striking, however, is that Pakistan's average trade-to-GDP ratio for the period 2007-09 was smaller than what it was a decade earlier (1997-99), in contrast to the shares of its peers. In 1997-99, Pakistan's trade-to-GDP ratio was as high as China's, and much higher than India's. Ten years on, shares of both China and India almost doubled while Pakistan's fell.

Figure 3
Openness to trade



Source: Authors' calculations based on data from WDI.

Table 1
Export Composition by Market
– Selected Economies-

Region	2009		CAGR(%)*	
	Exports (US$ '000)	% of Total	00-07	00-09
EU	4,416,240	31.1	10.3	-7.0
USA	3,345,885	23.6	7.3	-6.4
CHINA	1,632,546	11.5	7.5	-3.1
BRAZIL-RUSSIA-INDIA	588,617	4.1	21.1	1.0
TURKEY	618,949	4.4	30.6	7.9
REST OF WORLD	3,596,671	25.3	13.7	-9.8
Total	14,198,908	100	10.7	-6.3

* Compound average growth rate

Source: COMTRADE

indication of the dependence of domestic producers on foreign demand and of domestic consumers and producers on foreign supply. There is a concave relationship between trade openness and per capita income: countries tend to trade more as incomes rise, but at a decreasing rate.

[4] An OLS regression (using cross-country data from WDI) of trade/GDP on the log of per capita income (PPP current $), its squared value, cost of exporting (using a sub-indicator from Doing Business 2008-2010) and population, gives a predicted trade share of 65 percent. The actual trade share of less than 32 percent is therefore extremely low.

Geographically, the EU and the US represent the most important destinations of Pakistan's exports. The US and European markets absorb 31 percent and 23 percent of Pakistan's total exports. China represents the third most important destinations, with an 11.5 percent share. UAE, Afghanistan, Oman and Turkey have recently become important destinations.

From a sectoral[5] point of view, Pakistan's exports are dominated by labor-intensive light manufacturing -- textiles, clothing, footwear and leather. This group's share in exports in 2007-09 was 65 percent. The second most important export sector was the agrifood sector with slightly more than 11 percent of total exports. Despite the geo-political and security difficulties posed by the war on terror, all sectors of Pakistani exports appear to have seen a healthy growth during the period 1999-2007. Almost all sectors experienced double-digit annual export growth, with extractive industries, metals, and chemicals growing above 20 percentage points annually. During 2007-09, years coinciding with the financial crisis, however, the manufacturing sectors, especially the textiles and apparel industries saw a drop in demand and annual growth was much slower in all sectors except machinery, electronics and transportation equipment, possibly partly sustained by the vitality of the electronics sector globally.

Table 2
Composition and Growth of Exports by Sector

Sectors	Value (US$ '000), 1997-99	Share (%), 1997-99	Value (US$ '000), 2007-09	Share (%), 2007-09	CAGR (%) 1999-07	CAGR* (%) 2007-09	RCA 1999-07	RCA 2007-09
Textiles, apparel, leather, footwear (HS 41-42, 50-65)	5860275	81.25	11400000	65.44	9.16	-3.05	9.77	11.59
Agriculture, meat and dairy, seafood (HS 1-10, 12-14)	530182	7.35	1980391	11.38	10.94	3.45	2.86	1.89
Extractive industries (HS 25-27, 68-71)	106941	1.48	1650572	9.49	30.58	20.63	0.18	0.42
Other industries (HS 37, 43, 49, 66-67, 90-97)	315141	4.37	739045	4.25	11.22	-1.34	0.63	0.74
Iron, steel, and other metals (HS 26, 72-83)	68640	0.95	552095	3.17	26.89	-1.55	0.16	0.36
Food,	227851	3.16	455360	2.62	3.24	19.40	0.47	0.49

[5] The sectoral classification follows Hanson (2010). Export values reflect mirror data in Comtrade.

beverages, tobacco, wood, paper (HS 11, 15-24, 44-48)								
Chemicals, plastics, rubber (HS 28-36, 38-40)	42172	0.58	394995	2.27	20.32	11.49	0.08	0.20
Machinery, electronics, transportation equipment (HS 84-89)	61309	0.85	227942	1.31	11.37	14.10	0.04	0.06

Source: Authors' calculations based on data from Comtrade.

Top Pakistan's exports products are the ones in which the country has a revealed comparative advantage (RCA)[6], like textiles, apparel, leather, footwear, agriculture products, meat and dairy and seafood. For rising products such as mineral, metals and machineries and electrics, the country has no comparative advantage in relation to the rest of the world. The export growth of these products is reflected though in increasing values of RCA. In section 3.3 there is a further analysis relating sectors and revealed comparative advantage.

2.2 **Diversification**

Diversifying exports across markets and products is important because it reduces the vulnerability of the country's export portfolio to partner-specific shocks and to extreme volatility in export prices. The recent crisis has highlighted the critical importance of diversification in reducing the risks of volatility in global demand. Evidence suggests it is not natural resource dependence per se that increases risk, but rather the concentration of exports (Lederman and Maloney, 2007).[7]

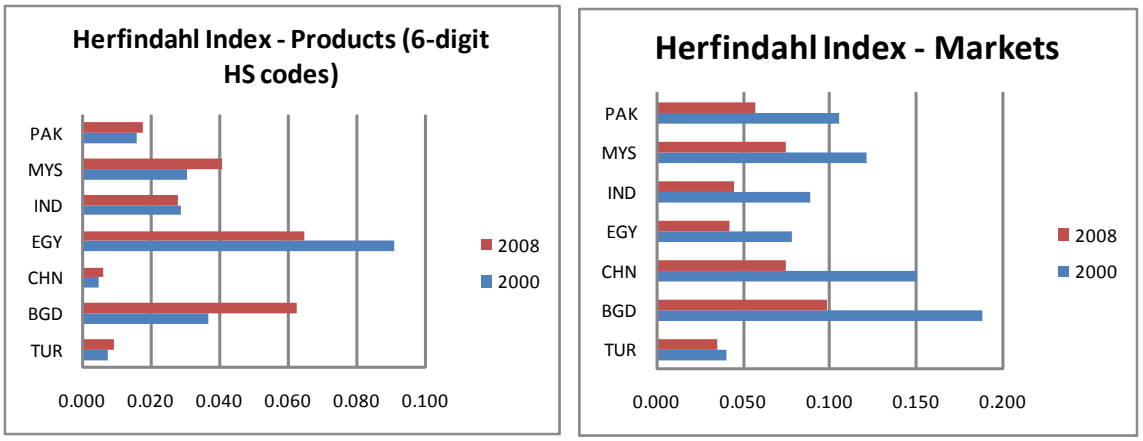
Overall, Pakistan's export bundle is relatively diversified in terms of products, but the emphasis on industrialized countries export markets makes the country too vulnerable to economic developments in these countries. As it already emerged from the analysis of Pakistan's market shares, in terms of geographical specialization, Pakistan's exports are relatively more concentrated than peer countries.

6 The RCA index is a measure for calculating the relative advantage or disadvantage of a certain country in a certain industry as evidenced by trade flows. An index above the unit indicates that a country's share of exports in that sector exceeds the global export share of the same sector. If this is the case we infer that the country has a comparative advantage in that sector. However, because high export volumes can results from subsidies or other incentives provided, included under-valued exchange rates, RCA have been argued to be a misnomer in the sense that they are a better measure of competitiveness than comparative advantage (Siggel, 2006).

7 Increasingly, services trade has also become an important source of export diversification. This dimension is not analyzed in this paper, but the reader can find some information in the policy note on reinvigorating the trade agenda in Pakistan (World Bank, forthcoming).

The Herfindahl Index measures concentration of export value at product and market level[8]. In the case of Pakistan is notable that in terms of products the country is one of the less concentrated among peer countries, with values lower than 0.02. During the period 2000-2008 Pakistan's index has slightly increased, a trend also observed in the majority of compared countries, like China, Malaysia, Bangladesh and Turkey. In terms of markets, Pakistan has diversified it destinations, showing a decrease in the value of the index. In a decade, the prominence of US and European markets in Pakistan's exports has reduced by about 9 percentage points (from 61 percent in 2000 to 54 percent in 2009). At the same time the rest of the world has become more important. There is a small increase in exports to the emerging bloc of Brazil, Russia, India and China (BRIC). At the country level, UAE, Afghanistan, Oman and Turkey have become important destinations. This path, however, was followed by all the peer countries, maintaining unchanged the country's relative position.

Figure 4
Herfindhal Index



Source: Authors' calculations

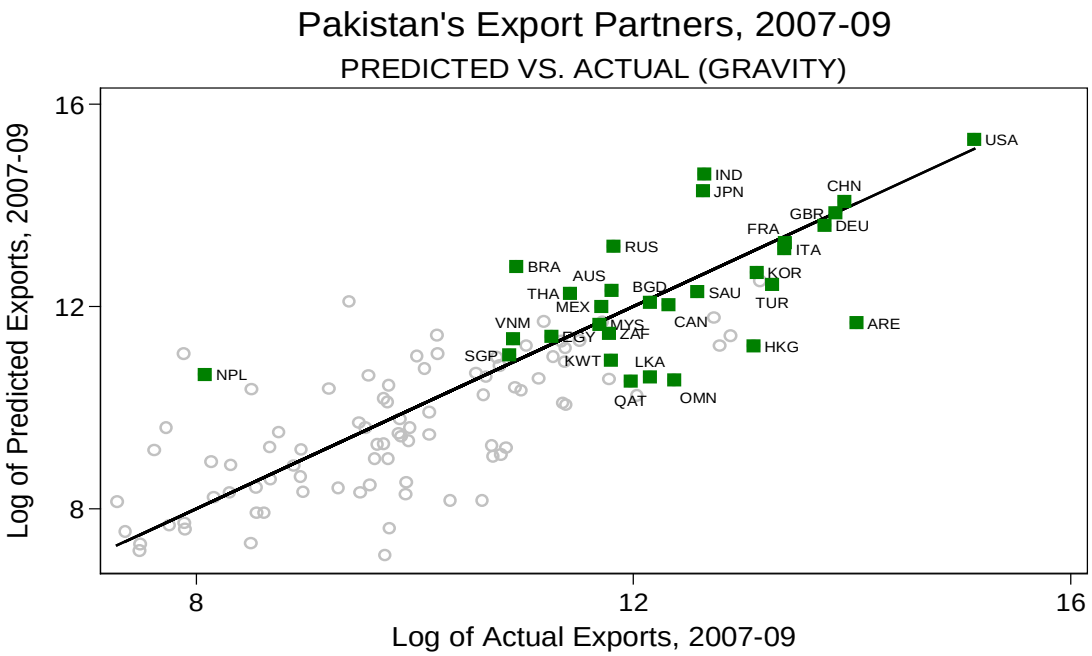
Deepening this recent trend is key, as Pakistan appears to be still under-exporting with the large and fast growing economies of the 21st century. Pakistan's exports to Japan, Brazil, Russia, and of course India with which ties are fraught with political relations, are below what could be expected, as can be seen in Figure 5 (gravity model), based on a gravity model of trade[9] that

[8] The HH index is computed as the sum of squared shares of each product (market) in total export. A country with a perfectly diversified export portfolio will have an index close to zero, whereas a country which exports only one export (market) will have a value of 1 (least diversified).

[9] We regress mirrored bilateral exports (2007-2009) on the following bilateral characteristics with trading partners: distance, contiguity, common language, colony, common colonial power, as well as log of GDP, log of GDP per capita, etc. We also incorporate three innovations. First, a measure of remoteness is computed by summing distances weighted by the share of GDP of the destination in world GDP. This is to take note of the fact that relative distances matter greatly, alongside absolute distances. Second, we control for zero trade flows with the use of Heckman sample selection correction method. When observations with non-existent bilateral trade are dropped, as OLS does, our dependent variable is not really measuring bilateral trade, but one contingent on a relationship existing. An important variable left out of the model therefore is the probability of being included in the sample, i.e. having a non-zero trade flow. To the extent that the probability of selection is correlated with GDP or distance, this has the potential to bias OLS estimates. Third, we address heterogeneity of firms, following Helpman, Melitz and Rubinstein (2008), by controlling for firm heterogeneity without using firm-level data utilizing the fact that the features of marginal

depicts countries with which Pakistan under-performs above the 45-degree line below. In South Asia, Pakistan's exports to Sri Lanka have grown in response to a bilateral trade agreement in place. Pakistan trades heavily with members of the Gulf Cooperation Council (GCC) which is explained by proximity and trade complementarities as well as from the fact that these serve as re-export bases for Pakistan's trade with a number of third countries.

Figure 5



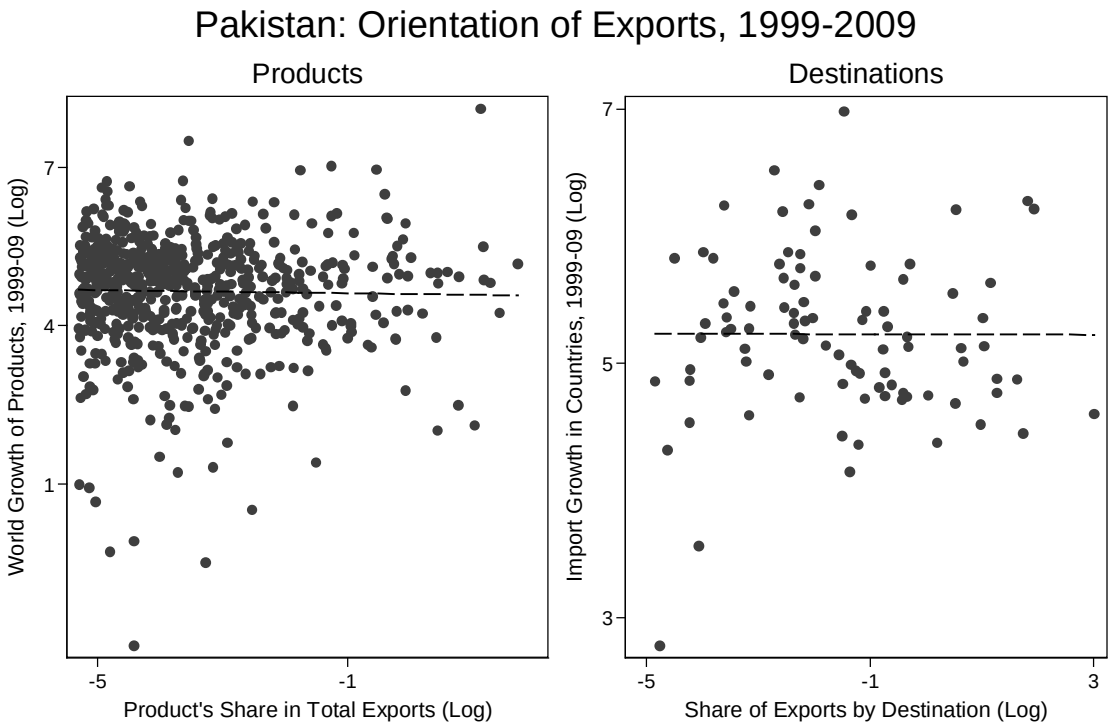
Source: Authors' calculations

Furthermore, how a country's industry is faring in international competition can be gauged by its share in strategic markets, such as those that are expanding (and importing) rapidly. Generally, there is no correlation between Pakistan's exports and their growth in the world market. Ideally, in the figure below showing world growth (on the y-axis) and the importance of such high-growing products in a country's export portfolio (x-axis), we seek a positive, upward-sloping relationship. The top exports of Pakistan -- cotton, apparel, leather -- are not growing as rapidly as other products like fruits/grain/oil seeds, cereals, chemicals, ship/boats, cement, plastics, etc. The growth orientation of products, in general, is flat. Likewise, Pakistan's top export partners are not among those that have seen the highest rates of import growth between 1999-2009, with the exception of China, and to a lesser extent Turkey. The orientation is faintly weak. For Pakistan's exports to be "pulled" by the world growth of products which it exports, this relationship would have to be stronger. In fact, Pakistan ranks really low when we compare

exporters can be inferred from the export destinations reached. With these steps, the gravity results of whether a country over-trades or under-trades with particular partners are better grounded on trade theory.

the correlation of product's shares of exports and the world growth of products across peer countries like China and Malaysia.[10]

Figure 6



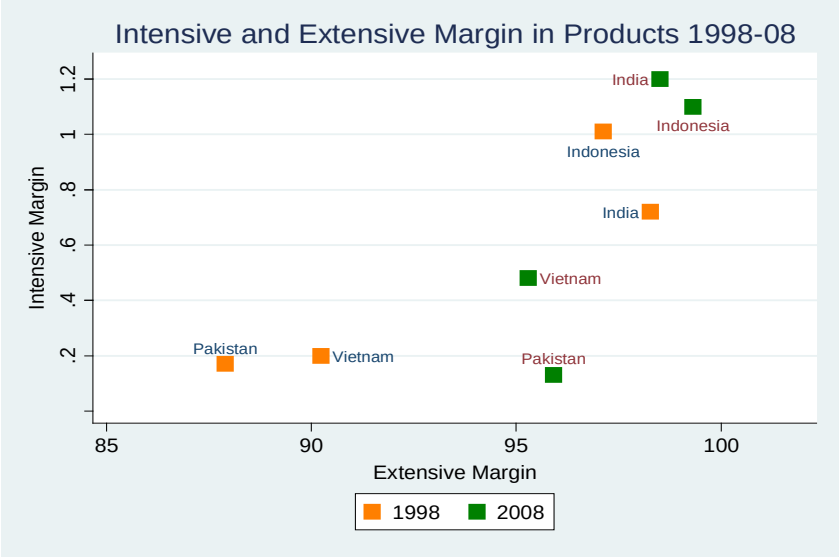
Source: Authors' calculations

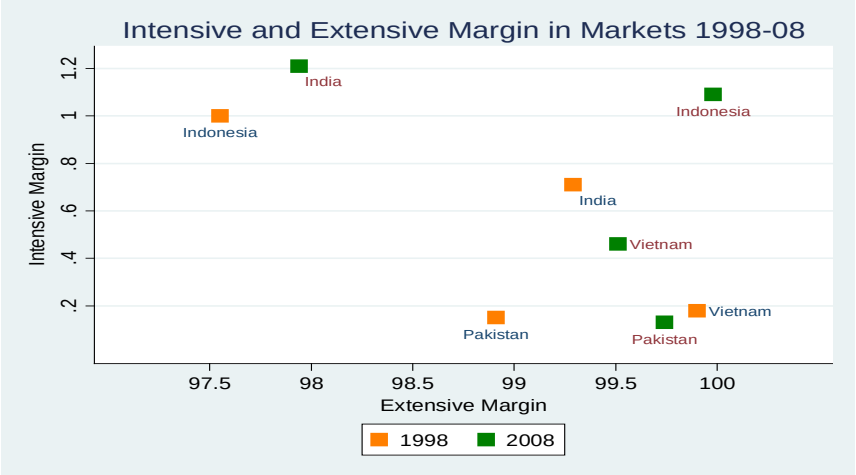
Overall, Pakistan is moving to products and markets that offer greater opportunities, yet in terms of products it is doing so less than potential competitors. The computation of the intensive margin (IM) and the extensive margin (EM) of exports following Hummels and Klenow (2005) reveals that Pakistan's share of exports in products that the rest of the world also exports (IM) has declined slightly over the last ten years, but it appears to be moving towards new exports that are economically significant (EM) (Figure 7).[11] Countries like Vietnam, India and Indonesia, however, have managed to increase their share of export in goods which the rest of the world produces too (IM) as well as the breadth of their export portfolio relative to all exportable products (EM). Extending this to analyze destinations, Pakistan's export share in countries it currently exports to (IM) has reduced slightly, but it has increased its reach to markets that cumulatively are larger relative to the world in 2008 than in 1998 (EM). In contrast, India and Vietnam have increased their existing share of exports to existing markets, but have not added major new markets to their portfolio of destinations. Indonesia has done both.

[10] The cut-off used is that the product at the HS 6-digit level must represent at least 0.5% of total exports, and the export market must receive at least 0.5% of Pakistan's total exports. The degree of correlation/orientation is sensitive to the cut-off used. If a higher threshold is used, say 1%, both correlations become even more adverse.

[11] The IM indicates how big is Pakistan in what it exports, and the EM measures how globally important is what it exports. In other words, this can be characterized as a move from being a "big fish in a small pond" to a "small fish in a big pond."

Figure 7
Intensive and Extensive Margin



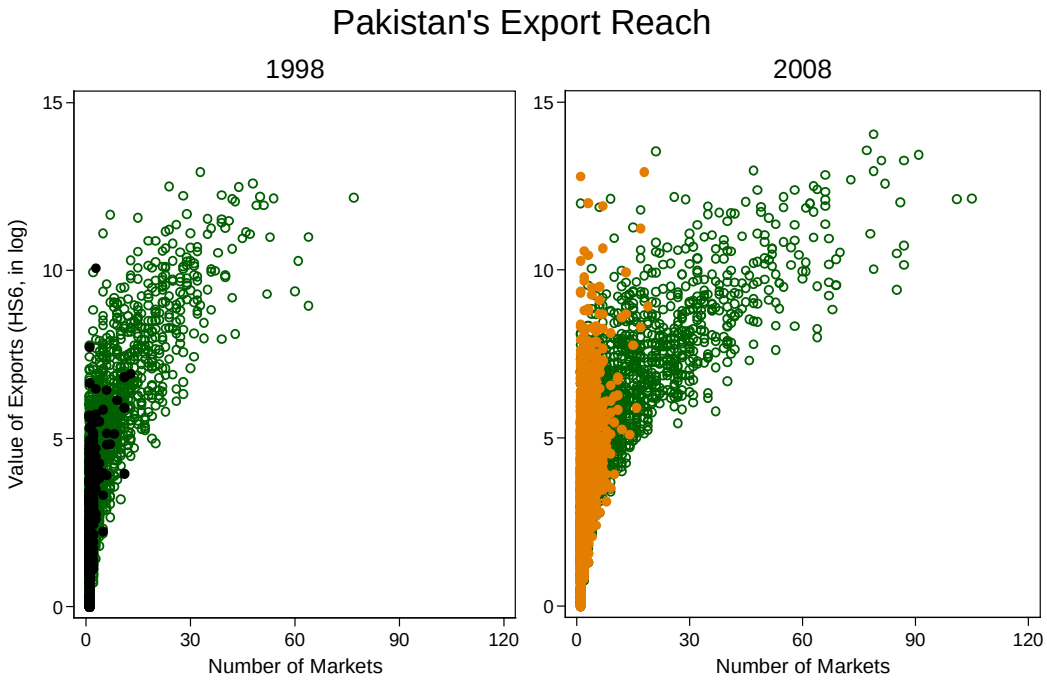


Source: Authors' calculations

Over the ten year period, 1998-2008, Pakistan has expanded the number of export markets that at least one of its products (at the HS 6-digit level) serves from less than 80 to well over 110. The total value of its existing products (in green) in the newly expanded or existing markets has also increased. The orange dots indicate products at the HS 6-digit level that were not exported in 1998 but were in 2008, which proxy for new discoveries. The black dots were products that were exported in 1998, but not in 2008, possibly indicating death or suspension. Products that disappeared did not constitute large export amounts, whereas the possibly new exports in 2008

earned large amounts, with some already seen to reach around 25 markets. Products that expanded their reach of markets include those in which Pakistan has a comparative advantage. Textiles and apparel are obvious, but a product that stands out for rapid expansion is manicure/pedicure sets belonging to the surgical industry, or products like eye and beauty make up, shampoos, medicaments or wedding and gaze with pharmaceutical substances. There are new agricultural products growing, such us rice, or agro industry like chewing gum, chocolates, biscuits, fruit juice and sauces.

Figure 8



Source: Authors' calculations

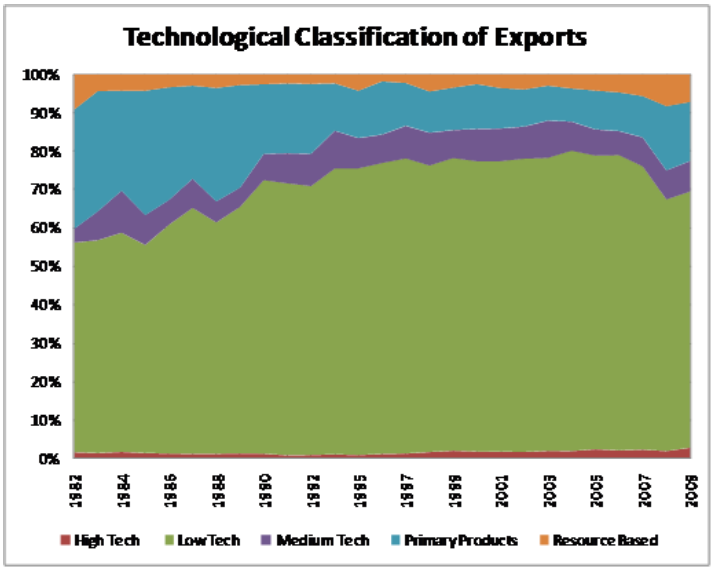
2.3. Quality and sophistication

The technological content of exports in Pakistan is low. High-tech exports constituted less than 2 percent in 2008, a share broadly unchanged in the past 25 years. This is extremely low for a country which has good educational and research institutions, and a large population. For example, Vietnam's share of high-tech exports went from 0.7 percent to 3.8 percent of total in the same period whereas India's increased from 2.8 percent to 6.2 percent. Moreover, while the majority of the country's exports (around 54 percent) was classified as low-tech already in 1985,[12] this share further increased over time, to reach 65.4 percent in 2008.[13] (Figure 9) shows

[12] Lall, S. (2000). "The technological structure and performance of developing country manufactured exports, 1985-98", Oxford Development Studies, 28(3), pp. 337–369.
[13] World Bank calculations from Comtrade data

some evidence of structural change after 2008, but the growth in technological content of exports remains small.

Figure 9
Technological content of exports



Authors' calculations

When supply is competitive, higher prices are generally associated with higher quality and greater product differentiation. One way a country can increase the absolute amount of exports percapita is to augment the quality of exports and thus the value of export per unit. One of Pakistan main challenges is the lack of product diversification indicated by the fact that ten products (4-digit Harmonized system) represent half of Pakistan's exports each year during the last decade.

Table 3
Unit values

Products	Names
6302	Bed linen, table linen, toilet linen and kitchen linen.
5205	Cotton yarn (other than sewing thread), containing 85 % or more by weight of cotton, not put up for retail sale.
1006	Rice.
6203	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear).
5209	Woven fabrics of cotton, containing 85 % or more by weight of cotton, weighing more than 200 g/m2.
5208	Woven fabrics of cotton, containing 85 % or more by weight of cotton, weighing not more than 200 g/m2.
4203	Articles of apparel and clothing accessories, of leather or of composition leather.
5513	Woven fabrics of synthetic staple fibres, containing less than 85 % by weight of such fibres, mixed mainly or solely with cotton,
2710	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included
6110	Jerseys, pullovers, cardigans, waist-coats and similar articles, knitted or crocheted.

Note: Some names are truncated to reduce clutter
Source: Comtrade

The opportunities to compete in quality are not the same for all products. On the one hand, commodities or relatively homogeneous products have not scope for quality upgrading mainly because their reference prices are set up in competitive exchanges (Rauch 1999). On the other hand, trade in differentiated products is conducive to competition in quality and, thus, to high unit values.

Pakistan main exported products is a mix of homogeneous and differentiated goods. Linens (6302), men's suits (6203), articles of leather (4203), and knitted or crocheted jerseys (6110) are differentiated goods with high variation in unit values. While a kilogram of rice, for example, cost around US $0.6 and had low volatility in prices in 2000, a kilogram of leather articles cost around US$ 5.3 and had high price volatility in the same year. This suggests that there is less quality heterogeneity within market destinations in rice than within market destinations of leather articles.

Table 4
Evolution of Main Exported products

		2000			2007			2009			CAGR (%)	CAGR (%)
Product	Unit	% of Exp	Mean UV (USD)	SD	% of Exp	Mean UV (USD)	SD	% of Exp	Mean UV (USD)	SD	00-07	07-09
6302	kg	10.5	6.5	10.7	14.3	11.5	70.2	15.4	6.8	11.9	8.6	-23.3
5205	kg	14.0	2.6	0.8	10.0	2.8	0.9	9.2	2.9	0.8	1.0	1.2
1006	kg	3.4	0.6	0.9	5.8	0.6	0.6	5.2	1.0	1.4	0.0	25.5
6203	item	3.4	8.0	5.8	4.4	42.1	295.9	5.1	19.8	69.8	26.9	-31.5
5209	kg	4.4	3.9	1.8	3.7	5.1	3.9	3.5	6.9	9.6	3.9	16.5
5208	kg	4.1	4.1	2.1	3.7	5.3	3.5	3.6	4.9	2.5	3.6	-3.6
4203	kg	5.3	19.9	11.9	3.0	30.0	75.8	3.6	29.0	30.6	6.0	-1.7
5513	kg	3.9	4.1	2.1	2.9	4.4	2.3	2.0	4.8	3.9	1.1	4.8
2710	kg	0.5	0.3	0.1	2.8	3.2	5.2	1.9	30.4	82.1	38.3	209.9
6110	item	4.5	6.9	3.9	2.7	9.9	6.4	2.5	15.8	52.1	5.3	26.0
Total exp		**54.0**			**53.3**			**52.1**				

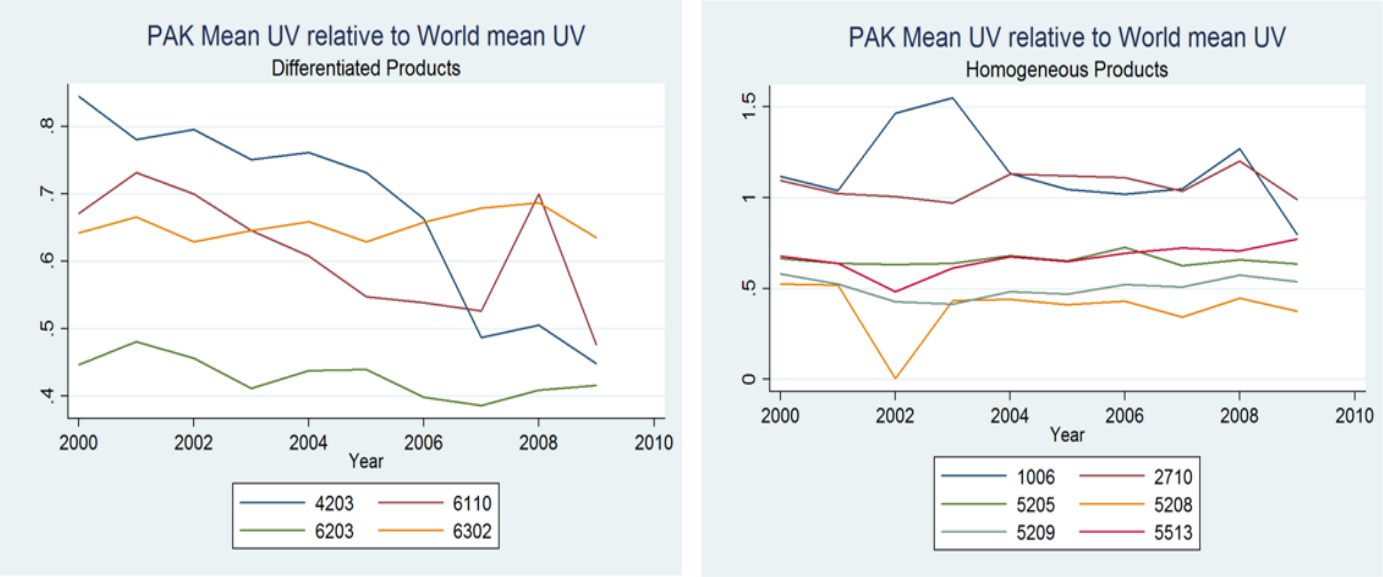
Source: Authors' calculations

Over the last decade, Pakistan has upgraded the export quality of the differentiated products. This can be seen by the increase in the mean unit value and by the increase in the standard deviations between 2000 and 2007. For some products this quality upgrading, though, has taken place at a slower pace than the average quality upgrading by world exporters. The graphs here show the ratio of Pakistan unit values to the weighted average unit value from countries exporting these products, using export value as a weight. While Pakistan relative prices has remained somehow stable for homogeneous products, the relative unit value has decreased for linens (4203) (the most important product in terms of export value) and knitted or crocheted jerseys (6110). This may hint the fact that Pakistan has not been able to adjust their production process as efficient as other main exporting countries (i.e. China) to face the phase-out of the textile and clothing (T&C) export quotas at end-December 2004.

The low level of export sophistication in Pakistan is likely to weigh negatively on the country's future economic growth. Pakistan's increase in export sophistication is modest. In 1986, the

sophistication of its export basket was higher than that of Vietnam. In 20 years, Vietnam has not only caught up, but surpassed Pakistan's achievement in upgrading exports. Measuring export sophistication (EXPY) over time gives an important indication of the relative growth in sophistication of the export basket and the degree to which this is impacting growth of per capita income. By observing the movement of EXPY indices over time, we cannot definitively say if rising export sophistication pulled up per capita incomes, or countries moved into production of more sophisticated exports after average incomes rose. However, Hausmann and Klinger (2007) have shown for a large pool of countries that export sophistication at present is a good predictor of economic growth in the future. Also in terms of sophistication, in the past two decades Pakistan export basket has not undergone as stark an improvement as its Asian peers (See Box 1 for details on the methodology).

Figure 9
Unit Values



Source: Authors' calculations

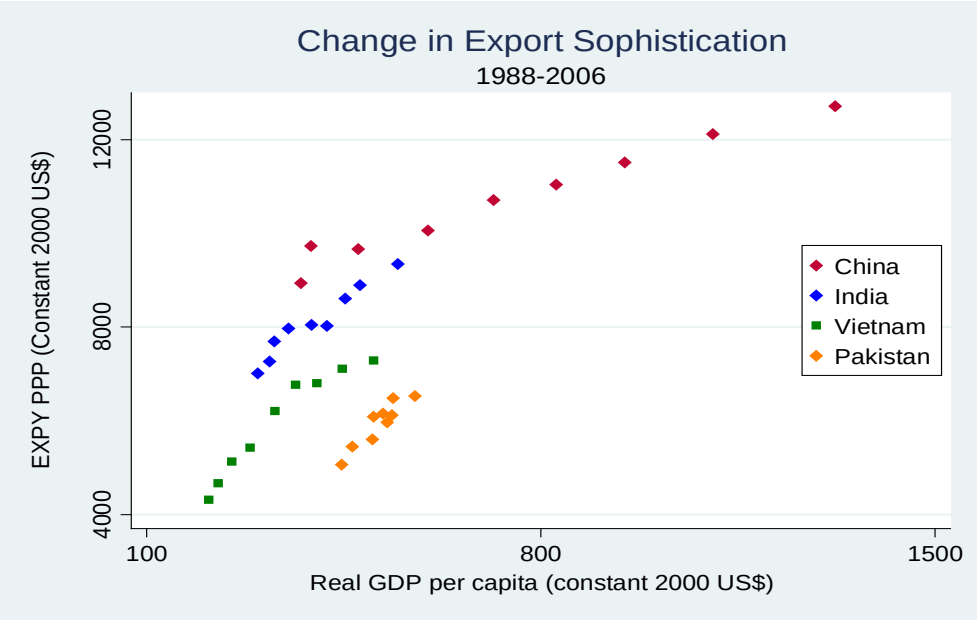
Box 1: Measuring export sophistication

Calculating export sophistication, denoted by EXPY, is a two-stage process. The first stage is to measure the income level associated with each product in the world, termed "PRODY". The PRODY of a particular product is the GDP per capita of the typical country that exports that good. Typical GDP is calculated by weighting the GDP per capita of all countries exporting the good. The weight given to each country is based on "revealed comparative advantage", defined as the share of its exports that comes from that good relative to the "average" country. The PRODY for a single product is calculated by weighting the GDP per capita of all countries exporting that product. Therefore, a product that typically makes up a large percentage of a poor country's export basket will have stronger weights towards poor countries' GDP per capita. This will be less the case for a product that makes up a small percentage of a poor country's exports but is a significant component of many rich countries' export baskets.

The second stage is to measure the income associated with a country's export basket as a whole; this is its EXPY. From the first stage, each product that a country exports will have a PRODY. The EXPY is calculated by weighting these PRODY by the share that each good contributes to total exports. If butter makes up 15 per cent of a country's exports, its PRODY will be given a weight of 0.15. Countries whose export baskets are made up of "rich-country goods" will have a higher EXPY, while export baskets made up of "poor-country goods" will have a lower EXPY.

$$PRODY_k = \sum_j \frac{\left(\frac{x_{jk}}{X_j}\right)}{\sum_j \frac{x_{jk}}{X_j}} Y_j \qquad and \qquad EXPY_i = \sum_k \left(\frac{x_{ik}}{X_i}\right) PRODY_k$$

Figure 101
Export Sophistication Change 1988-2006



Source: Authors' calculations

Another measure of export sophistication is the factor-content of exports. We utilize a new database created by UNCTAD on Revealed Factor Intensity[14] for each good at the HS 6-digit level. Pakistan's export profile is dominated by goods that are low in both human and physical capital content. The first two graphs on the top panel below plot products with human capital content on the x-axis and physical capital content on the y-axis, with bubble size representing the US dollar amount of exports in 1997 and 2007. The dashed reference lines are median values of revealed human and physical capital for exports (above US$10,000). In both time periods, Pakistan biggest export earners utilized capital way below utilized by median exportson either dimesnion.[15] This contrasts with the performance of successful exporting nations like the Republic of Korea (not shown) whose major exports are also highly intensive in using capital. In Pakistan, the picture for 2007 is more positive, of course, with the median values of capital content increasing, some major export earners using more than the median capital, and simply a greater number of exports earning more than US$10,000 (represented by each dot/bubble).

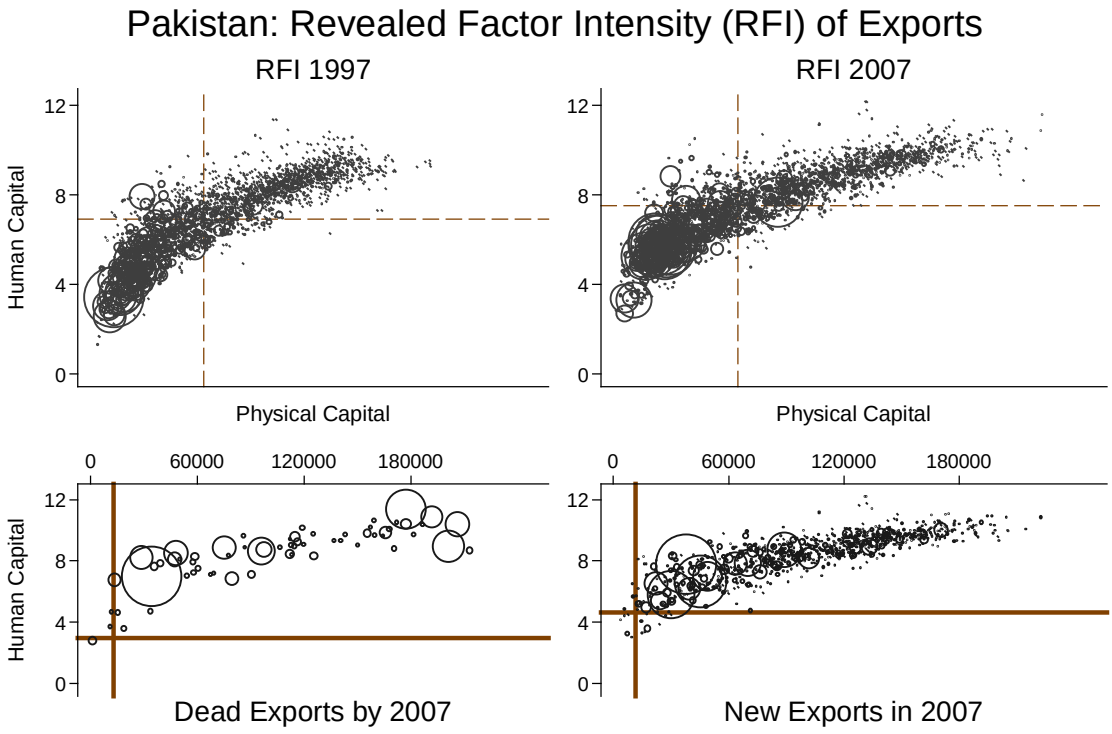
The two graphs on the bottom panel reflect exports relative to the national endowment points. Between 1997 and 2007, Pakistan's human capital increased from 2.97 to 4.66, but physical capital (per worker) dropped from 12838 to 11614.5. To explain why a country's exports cannot be sustained, one of several areas to investigate is whether the exports that die represent attempts to produce goods that require a different mix of factor endowments than available in the economy. If a nation's endowment point is represented by the intersection of its average stock of physical and human capital, we can see how far or close to the average endowment point are factor intensities of exports.There are several big export earners that existed in 1997 but not in 2007 that embody much more capital than the national average. At the same time, the majority of "new" exports that were active in 2007, but not a decade earlier, are also moderately capital-intensive. It can be hypothesized that, all else equal, ambitious ventures that defy a country's comparative advantage probably have a higher rate of failure. However, success of exports depends on an array of factors, including search and information costs related to the business of exporting, exchange rate volatility, among others.[16]

[14] Database available at http://r0.unctad.org/ditc/tab/index.shtm The indices are computed by weighting the factor endowments of all countries exporting a particular product; weights are derived from a modified version of the Revealed Comparative Advantage (RCA). Goods that are predominantly exported by countries rich in human capital are revealed to be intensive in human capital. See Cadot et al. (2009).

[15] The quadrants are formed by lines corresponding to the *medians* of capital intensity and log of export values for Pakistan.

[16] For example, Easterly et al. (2009) discuss the role of fortuity in a random product being a "hit" in a certain destination leading to substantial growth, imitation and concentration of a few successful export items at a given time.

Figure 112



Source: Authors' calculations based on data from UNCTAD.

The product-space analysis indicates what merchandise goods Pakistan exports competitively, and whether the portfolio has undergone a structural transformation over the past decades. Using the tools pioneered by Hidalgo et al. (2007), the product space maps indicate all tradable products at the SITC 4-digit level, with the black dots representing exports in which Pakistan has a Revealed Comparative Advantage (RCA). The hypothesis is that firms that build up competence in producing a certain good can redeploy their human, physical and institutional capital more easily if they seek to produce goods that are "nearby" those that they are producing already. This is predicated on the idea that structural transformations are not smooth movements along a continuum but a messy process beset by market failures. When such market failures are binding, it is harder for firms to hop longer distances without government coordination and support.

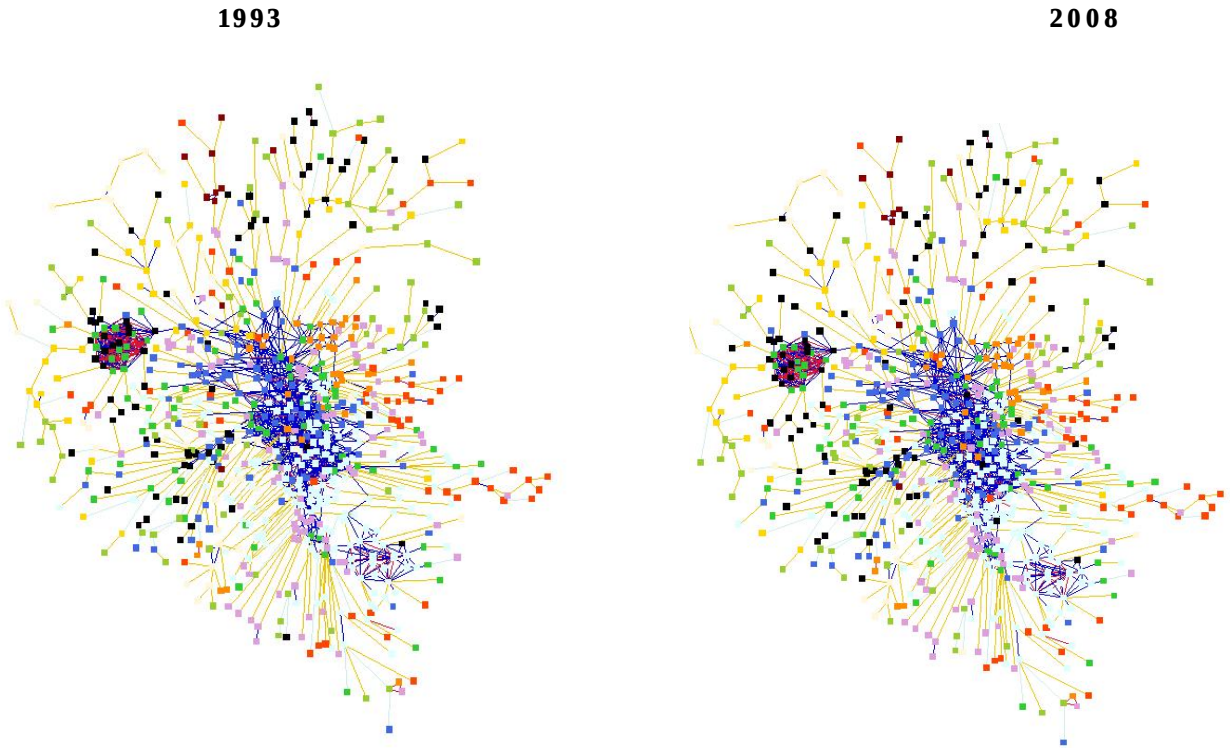
In the analogy of Hidalgo et al. (2007) the product/dots are trees that group themselves to form dense and sparse parts of a forest. Location of firms in the denser parts of the forest creates more opportunities for technological upgrading and structural transformation because market failures are less binding when firms have to make smaller adjustments to move to produce "nearby" goods requiring similar capacities. The center of the product-space, for example, is quite dense with better connectedness among industries related to metallurgy, vehicles, machinery, etc. To the bottom right of the product-space lie the more sophisticated electronics and chemical industries. The scattered industries on the upper half are largely agricultural and resource-based. Countries that succeed in transforming themselves over time from producing unprocessed natural or agricultural goods and labor-intensive manufactures (such as footwear

and garments) to more sophisticated manufactured products like machinery and chemicals tend to see higher rates of economic growth.

The cluster on the top where Pakistan had several products in both years with RCA (greater than 1) represents garments. It has also performed well in textiles, which incidentally is closer to industries that are more capital-intensive and generally produced by rich countries. Between 1993 and 2008, while Pakistan has increased the number of agricultural and labor-intensive products that it had comparative advantage in, it has not had a major breakthrough in more sophisticated products.

Figures below classify Pakistan's exports (valued above US$10,000) into four categories. The first is a group of products that Pakistan has consistently been competitive in. There were 103 products with an RCA greater than 1 in both 1993 and 2008. These are mainly textiles and garment items such as linen, cotton, curtains, carpets, men's coats, and leather clothing. Next figure shows some of the top products from this category with at least 0.5 percent in Pakistan's total exports in 2008. On the product space map, the textile cluster comes closest to the denser, high-value manufacturing industries. There is no Pakistani export (with RCA >1) firmly embedded in this part of the product space.

Figure 12
Product Space



Source: Authors' calculations

There were 38 major products that did not have an RCA greater than 1 in 1993, but did in 2008. Next figure shows some of these "emerging" products with at least 0.2 percent share of national exports in 2008.[17] This includes potentially high-value exports like beddings and mattresses, frozen fish, jewelry, cement and metal waste. The shipping-dependent heavier products are likely to be more competitive in regional markets.

The third category is of "marginal" products that Pakistan exported both in 1993 and 2008, but with an RCA of less than 1. There were more than 400 of such marginal exports. Next figure illustrates a few of these with national export share in 2008 of at least 0.05 percent. With external facilitation, some of these products could be upgraded and made more competitive. They include vacuum pumps, chemicals (acids), wheeled tractors, telecom parts, food processing machines, and indicate that Pakistan has installed capacity to move readily into fairly sophisticated manufacturing industries. Why it has not succeeded in becoming a major player in any of these products would be one major point of policy enquiry.

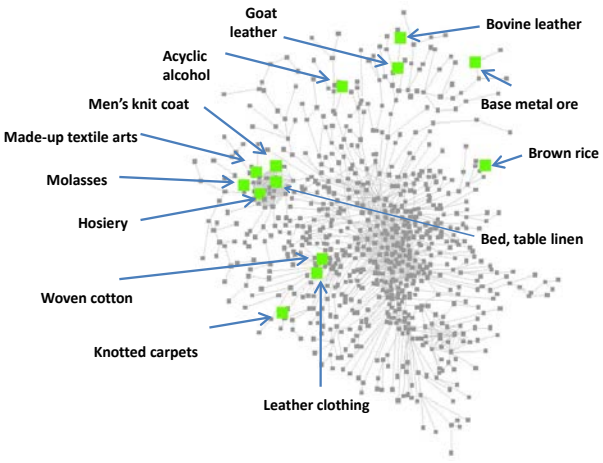
The fourth category includes goods that were competitive in 1993 but no longer in 2008. There were over 20 major products in that category. In the next figure, three of them which had an export share of at least 0.05 percent in 1993 are illustrated. They include textile and garment products that were no longer able to withstand competition from countries producing similar items.

Overall, on the sophistication front, Pakistan presents a picture of inadequate upgrading into higher-value exports over time. The textile industry is dominant, and given that it is more capital intensive than apparel, Pakistan is better placed to move laterally into more sophisticated manufacturing activities requiring a similar mix of skills and endowment, e.g. from cotton-based textiles to man-made fibers and fabric.

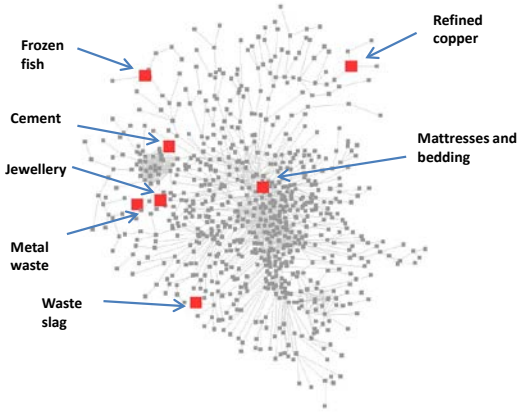
[17] Note that the product space maps consist of 775 products, whereas medium to large sized countries typically produce more than this number. Several products that Pakistan exports cannot be mapped on the product space

Figure 13
Competitive and emerging products

Competitive products, 1993-2008



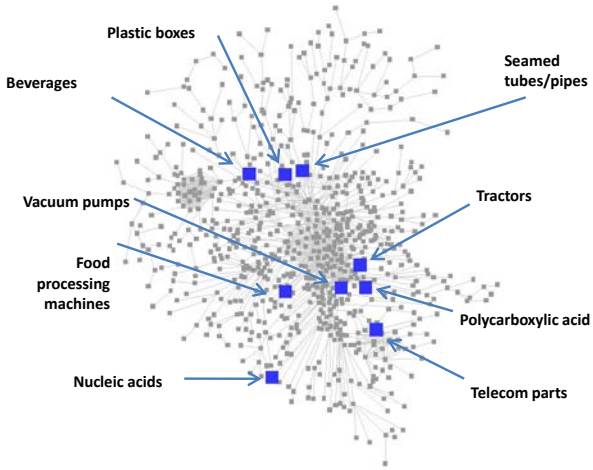
Emerging products, 1993-2008



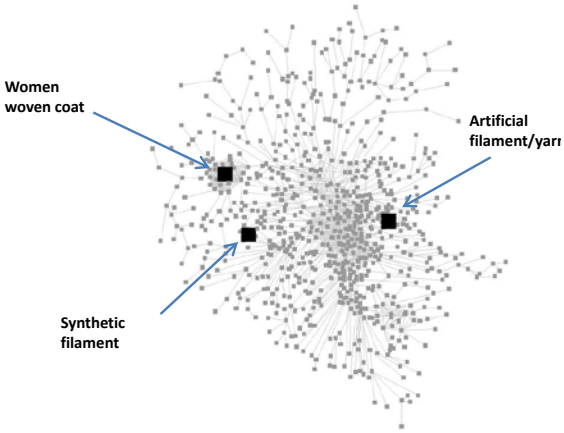
Source: Authors' calculations

Figure 14
Marginal and declining products

Marginal products, 1993-2008



Declining products, 1993-2008



Source: Authors' calculations

3. Entry, exit and survival of firms

The main aim of this section is to provide an understanding of the dynamics of export behaviour for firms in Pakistan in the 2002-2010 period. It will examine how export values are distributed across destination countries, sectors and products, and will describe the entry, exit and survival of exporting firms in these markets over time[18].

There are two aspects of churning within exporting – the extensive margin and the intensive margin. The extensive margin refers to the entry and exit of new firms, new products and new markets. The intensive margin refers to the survival of firms and products and deepening in existing markets. There is considerable debate about the relative impact of each margin – some authors (Hummels and Klenow 2005) conclude that the extensive margin is the primary avenue for export growth, while others (Helpman, Melitz and Rubinstein 2008) have found that the intensive margin plays the dominant role.

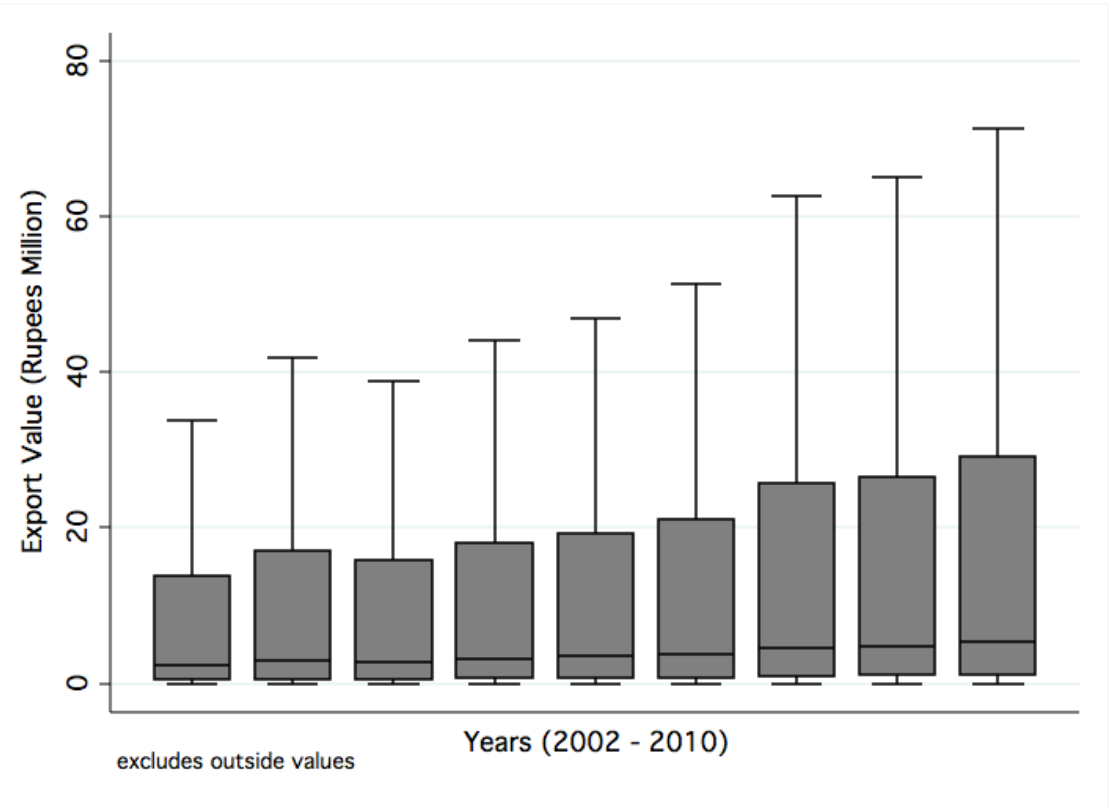
In this part of the paper the focus will be on identifying what part of dynamism in exporting is driven by what kind of churning. Indeed our definition of dynamic firm relations will encompass two main aspects: (1) establishing new products and markets, and (2) survival and persistence of these relationships. The first aspect looks at the entry of firms into exporting new products and/or exporting to new destination countries. The second aspect studies how long these relationships last over time, i.e. how existing firms continue to export. The first channel is associated with performance at the extensive margin, and the second channel with performance at the intensive margin. In other words, in this paper dynamic firms or firm relations are defined as those relations that are newly established and which continue to survive and continue to grow.

3.1 Distribution of exports

The first thing to notice about exports from Pakistan is that the value of exports is skewed towards large exporters (see Figure 16). If export values were normally distributed the line (median) would be in the middle of the box, the ends of which specify the 25th and 75th percentiles, and the whiskers (5th and 95th percentile) would be equidistant from the box. The box plot depicts that export values are positively skewed – the median is pulled to the lower end of the box and the 95th percentile is stretched away from the box. Indeed, the skewness of the data seems to increase over time. This indicates that exports are skewed towards fewer larger firms in the data.

[18] By sector we refer to the Harmonised System (HS) 2-digit industry classification, while by product refers to the HS 8-digit industry classification, unless otherwise specified. Since we are focussing only on exporters from Pakistan, the term Country will be used interchangeably with destination, in both cases referring to the destination country.

Figure 156
Distribution of Export Values (by Year)



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Another way to see the data is by seeing the contribution of export values by the top exporters. Table 5 summarizes the share of exports by the top 1%, 5%, 10% and bottom 80% of exporters, across different years. Export values are skewed towards the largest exporters that account for anything between 38 to 45 percentage points of the total export value in a given year. On the other hand, the bottom 80% of exporters account for only 5-7.5 percentage points of total export value. Indeed the differences between the top percentiles and the bottom percentiles exist no matter what way the data are spliced.

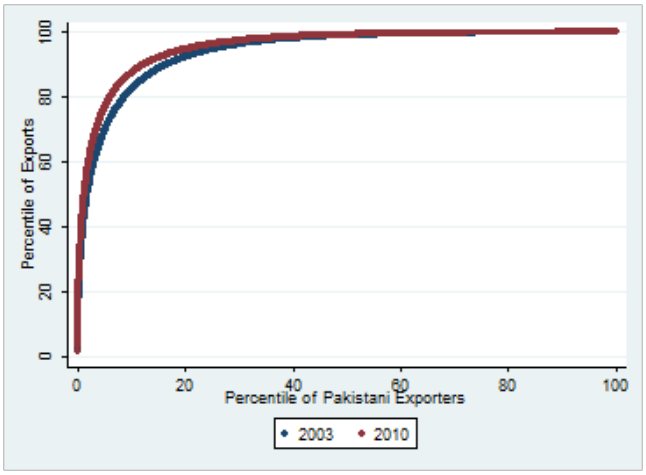
The concentration however has not changed much over time (see Table 5 and Figure 17), which plots the percentile of exports against the percentile of exporters for different years. Concentration across Pakistani exporters is almost unchanged between 2003 and 2010

Table 5
Distribution of Export Values

Year	Top 1%	Top 5%	Top 10%	Bottom 80%
2002	40.30	70.60	83.08	7.37
2003	38.59	69.43	82.28	7.66
2004	41.05	72.79	84.92	6.40
2005	41.66	73.39	85.23	6.24
2006	42.99	73.74	85.57	6.14
2007	42.31	73.53	85.49	6.11
2008	42.42	74.26	86.23	5.66
2009	43.18	74.79	86.33	5.70
2010	45.27	76.51	87.36	5.26

Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Figure 167
Concentration of exports across exporters



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Concentration of exports in the hands of few large exporters is a feature affecting exports from most countries worldwide. Indeed concentration in Pakistan is lower than in many other countries worldwide. Although some countries such as Great Britain and Italy have more even distributions, Pakistan's concentration of exports across firms is lower than in many other industrialized countries, such as Belgium, France, Germany and Norway where the top 10% exporters account for a share of exports of 90% or more. The concentration in Pakistan is also

lower than in countries at a similar level of development, including Bulgaria, Colombia, Ecuador, Peru and South Africa (Figure 18).

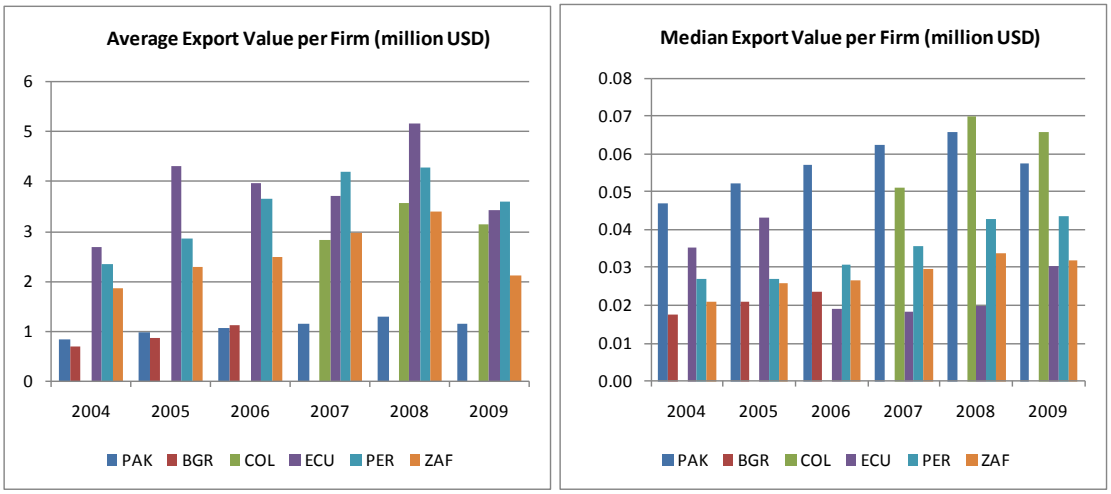
Figure 18
Herfindahl index and share of top 1%, 5% and 10% of exporters



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

It appears that the lower concentration of exports in Pakistan is due to a very large presence of small exporters. Indeed, while the average size of exporters in Pakistan is lower than in countries such as Bulgaria, Colombia, Ecuador, Peru and South Africa the median is higher, suggesting that there are more important non-linearities in the distribution of exports in Pakistan than in the distribution of exports in comparable countries, with large exporters determining the bulk of exports (see Figure 19).

Figure 19
Average and Median Export Value per Firm



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Like in most countries worldwide, not only do top exporters in Pakistan account for a large proportion of export values, on average, they also export more products to more destination countries – see Table 6. The total number of firms, destinations, sectors and products in the database are summarized by each year in the first few rows. The data is then broken down by averages for all firms, the top 1%, 5%, 10% and bottom 80% of exporters. On average, the top 1% firms export between 21 and 50 products and to 20 destinations, while the corresponding figures for the lowest 80% of firms are 2-4 products and 1-2 destinations. Exports are highly skewed towards particular countries – for instance, 5 countries (US, UAE, UK, Germany and China) account for about half of total export values in 2003, and 20 countries account for over 80% of total export values.

Table 6
Export Market by Percentiles

Year	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Number of:	**Total Number**								
Firms	14,747	14,701	14,730	14,565	14,696	15,076	15,358	15,676	15,925
Destinations	203	212	220	219	216	209	208	202	205
Sectors	98	98	97	97	97	99	98	98	98
Products	2470	3043	4068	4361	3843	4726	4329	4523	4422
	Average for all Exporters								
Destinations	2.9	3.0	3.1	3.2	3.3	3.3	3.2	3.2	3.3
Sectors	2.5	2.6	3.2	3.1	2.9	3.0	2.7	2.7	2.6
Products	3.8	4.3	5.8	6.3	5.6	6.5	5.8	5.6	5.5
	Average for Top 1% Exporters								
Destinations	19.6	19.3	20.7	20.2	21.3	21.6	19.8	20.2	20.8
Sectors	7.8	7.4	10.0	9.3	6.5	5.4	4.9	5.1	4.8
Products	26.6	27.5	47.3	49.5	33.2	29.2	22.8	23.1	21.2
	Average for Top 5% Exporters								
Destinations	11.9	12.7	13.1	13.4	13.4	13.2	12.8	13.0	12.8
Sectors	6.0	5.7	7.9	7.0	5.1	4.6	4.3	4.7	4.6
Products	16.4	16.7	27.6	28.5	19.6	18.6	15.4	16.7	15.8
	Average for Top 10% Exporters								
Destinations	9.4	9.7	10.3	10.6	10.7	10.6	10.2	10.1	10.2
Sectors	5.4	5.2	7.0	6.2	4.7	4.4	4.0	4.2	4.2
Products	12.8	13.3	21.0	21.6	15.8	16.0	13.5	14.0	13.6
	Average for Bottom 80% Exporters								
Destinations	1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2
Sectors	2.0	2.2	2.6	2.6	2.5	2.8	2.4	2.4	2.4
Products	2.4	2.9	3.5	3.9	4.0	4.9	4.4	4.1	4.1

Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Export values are not just skewed towards particular firms and countries; they are also skewed in terms of the range of participation across products and countries.

Table 7 cross tabulates two aspects of firms' exporting behavior – by number of products and countries. The top half of the table provides the percentage counts of firms – for instance, firms that sell one product to one country account for 32.38% of the total number of firms in the census in 2002, while firms that export more than 11 products to more than 11 countries account for just 1.86% of the census of firms. What is striking is the lower half of the table, which summarizes the percentage of export values accounted for by the given classification of firms. For instance, in line with the example above, firms that export one product to a single country account for 1.15% of total export value in 2002, while firms that export more than 11 products to over 11 countries account for more than 50% of the total export value. This is an additional strong indication that only a few firms are active in several markets at the same time, but that these few firms account for the lion's share of exports. Indeed, compared to peer countries, Pakistan appears to have a low average number of products per exporter but a high average number of destinations per exporter (Figure 20). Taken together, these results suggest that like many other countries Pakistan posts a high concentration of exports in the hands of a limited number of large exporters. The dominance of few exporters may however have drawbacks in terms of product innovation and experimentation. The fact that firms tend to export only few products each may be a symptom of market distortions due to the dominant position of few firms. We will investigate this issue further in the following paragraphs.

Table 7
Export behaviour: Countries & Products (2002)

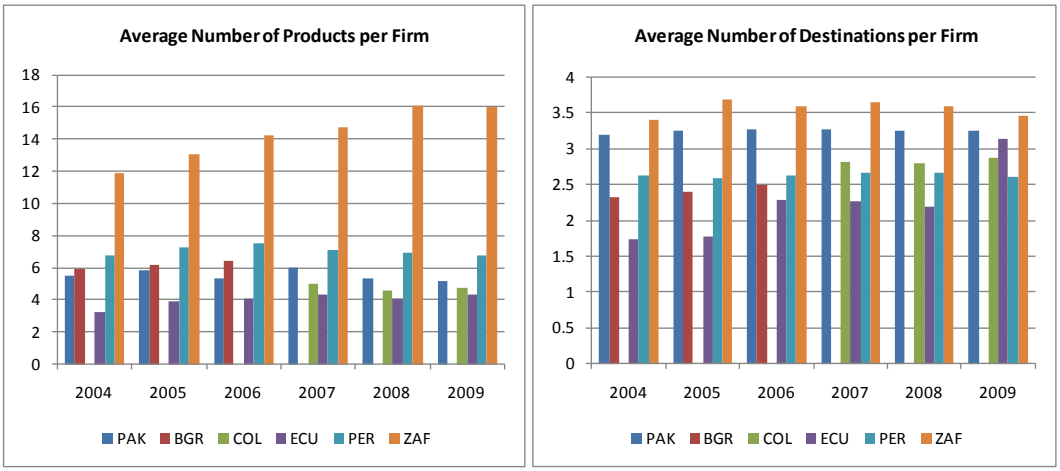
% of Counts	**Number of Countries**				
No. of Products	*1*	*2 to 5*	*6 to 10*	*11 and above*	***Total***
1	32.38	3.69	0.09	0.02	36.18
2 to 5	17.47	24.07	2.62	0.56	44.73
6 to 10	1.43	6.79	3.08	1.27	12.57
11 and above	0.18	1.89	2.06	2.40	6.52
Total	51.28	34.55	5.79	1.86	100.00

% of Value	**Number of Countries**				
No. of Products	*1*	*2 to 5*	*6 to 10*	*11 and above*	***Total***
1	1.15	0.86	0.11	0.03	2.15

2 to 5	2.80	10.03	2.87	1.94	17.65
6 to 10	1.02	7.98	6.15	7.01	22.16
11 and above	0.37	7.00	9.53	41.14	58.04
Total	5.35	25.86	18.67	50.11	100.00

Source: Authors' calculations based on data from Comtrade.

Figure 170
Product vs. geographical portfolios



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Statistics about high-performing exporters, the so called "gazelles", may be seen as consistent with the above assessment. Indeed, when exploring the characteristics of high-performing exporters, i.e. firms with an annual growth rate of at least 75% for four consecutive years (between 2001 and 2010), interesting patterns are established. It is clear that firms that perform consistently well over this period share a few common characteristics, depending on their size. Those with smaller export values tend to, on average, concentrate growth in a few products (at the HS8 digit level) but are well diversified in terms of destination markets. In addition, the relatively smaller top-performers also export mostly to other South Asian countries. The larger top-performing firms, on the other hand, seem to diversify their exports across more countries and away from South Asia. They also seem to, on average, export more products over the high-growth period.

The next two sections will explore the entry, exit and survival of new exporters using firm and transaction-level data. Studying rates of entry and exit will provide an assessment of the dynamics of firm movements in and out of markets, whether destination or product. On the other hand, survival rates will provide an overview of how well exporters are able to continue and deepen their trade relations across new markets.

3.2 Extensive margin

Table 8 summarizes the rates of entry and exit of firms into the census of exporters. There is significant churning of exporters in the data – anywhere between 16 to 37 percent of firms exit, and another 19 to 37 percent enter each year. While there seems to be significant destruction and creation of exporters in the data, the net effect of the number of firms seems to be marginal. Moreover, entry and exit rates are lower than in countries at a comparable level of development (Figure 21).

Table 8
Export Entry and Exit

Year	Exits	Entries	Net Entry	% Exits	% Entries	% Net Entries
2003	5,481	5,435	-46	37.3	37.0	-0.3
2004	4,368	4,397	29	29.7	29.9	0.2
2005	3,798	3,633	-165	26.1	24.9	-1.1
2006	3,497	3,628	131	23.8	24.7	0.9
2007	2,870	3,250	380	19.0	21.6	2.5
2008	2,775	3,057	282	18.1	19.9	1.8
2009	2,664	2,982	318	17.0	19.0	2.0
2010	2,597	2,846	249	16.3	17.9	1.6

Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

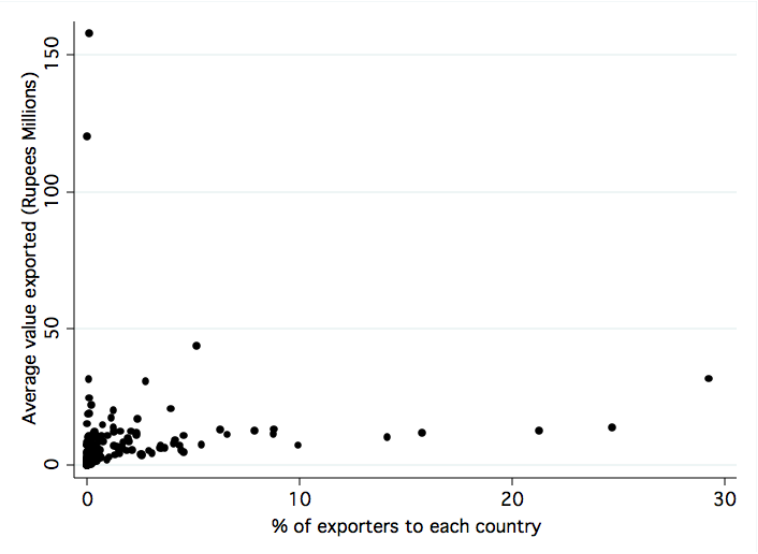
Figure 181
Entry and exit rates in Pakistan and in peer countries



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Interesting insights emerge when looking at the products and sector that see the most churning in the data, i.e. the most popular new products exported by new firms. Table 7 classifies the sectoral distribution of new products (i.e. at the HS8 digit-level) by new firms, by the number of new products introduced and the value of new exports generated, respectively. It is clear that there is some concordance between those sectors that saw the introduction of new products and those that saw a large increase in export value owing to the introduction of these products. For instance, looking at the top ten sectors arranged in this way, it is clear that some HS2-digit sectors, such as nuclear reactors, boilers, machinery and mechanical appliances etc. (84), electrical machinery and equipment, telecommunications equipment etc (85), organic chemicals (29), and live animals (01), experience both entry of new products and export values. In other sectors, such as tanning and dyeing extracts (32), inorganic chemicals, compounds of precious metals etc (28), optical, photographic and other precision equipment (90), and iron and steel (72), new products were introduced but they did not necessarily contribute very highly to export values. It is also possible that certain types of markets might be more difficult to break into. For instance Figure 22 compares the average value of exports with the percentage of exporters that export to a given country. The graph shows that most countries account for a small share of total exports, and that, on average, these firms also seem to export smaller values. There are only a few countries where firms with large export values are able to break into.

Figure 192
Destination popularity and Export Values (2002)



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

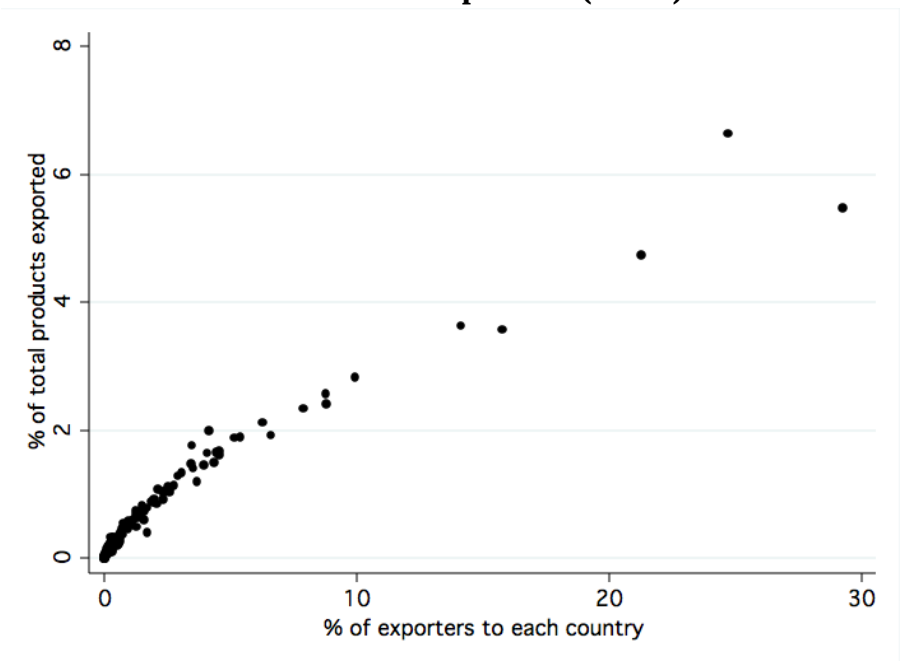
To compare exports by country and products, see Figure 23 where the percentage of exporters to each country is plotted against that country's share of total products exported. There is a strong positive correlation between the two, indicating that countries that are more popular destinations also account for a larger proportion of product shares.

Thus there seems to be some evidence that some destinations are popular with smaller exporters, while others seem more difficult to reach, and that more popular destinations also

account for more products and exporters. This suggests that country-specific entry costs may determine the export strategies of firms. To understand better firms' behaviour on the extensive margin, it would therefore be pertinent to understand how churning in markets is associated with types of firms and destination countries.

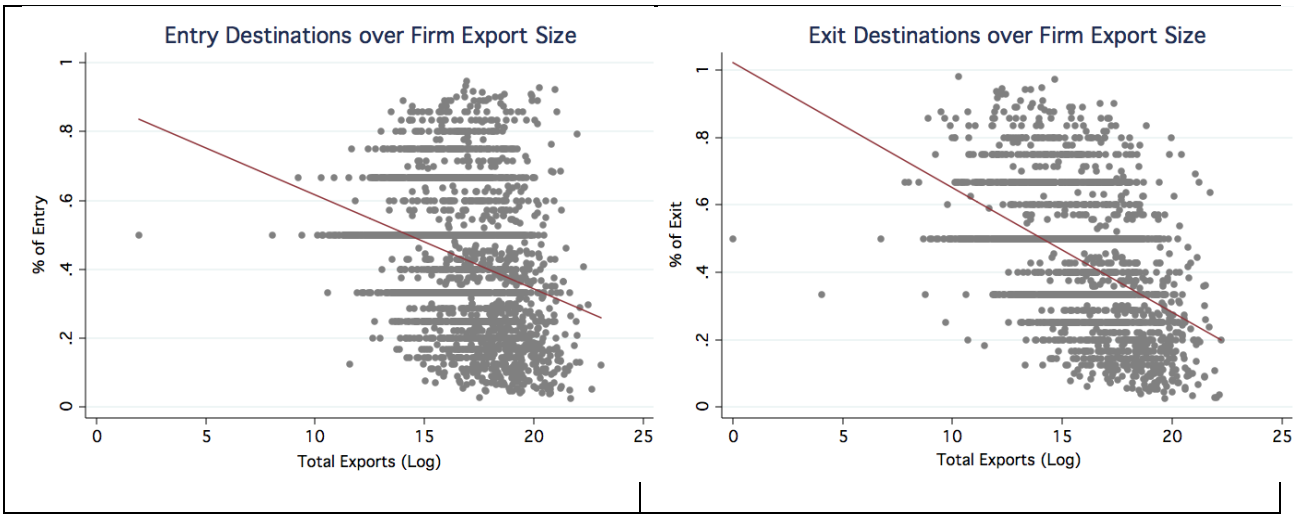
In Figure 24, we plot the share of destinations entered and exited relative to the export value of the firm, by each firm. It is clear that the larger the firm the smaller the fraction of export destinations that the firm enters or exits, indicating that much of the churning in the market is taking place at the lower end of the export value size distribution.

Figure 203
Products and Exporters (2002)



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

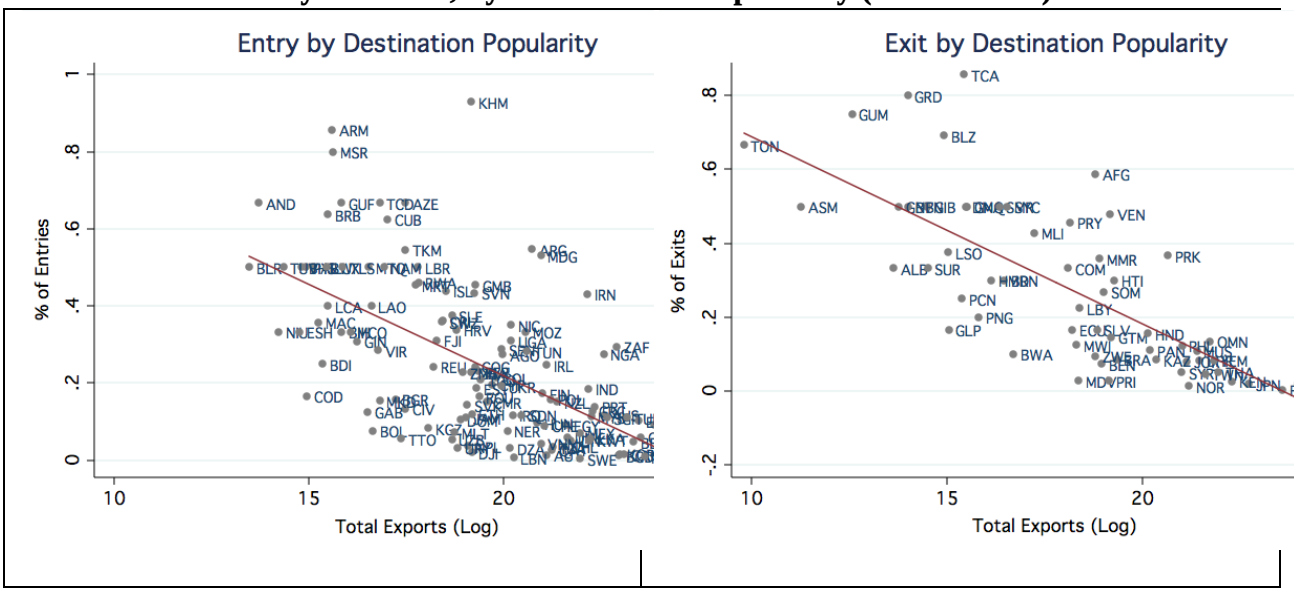
Figure 214
Entry and Exit, by Firm Size (2002-2003)



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Another way to see this relationship is to focus on the destination countries. The fraction of entries and exits are lower in larger export markets – in other words, most of the churning (i.e. high entries and exits of firms) seems to be taking place in smaller destinations by export size, which are presumably those where entry costs are highest for Pakistani firms (Figure 25).

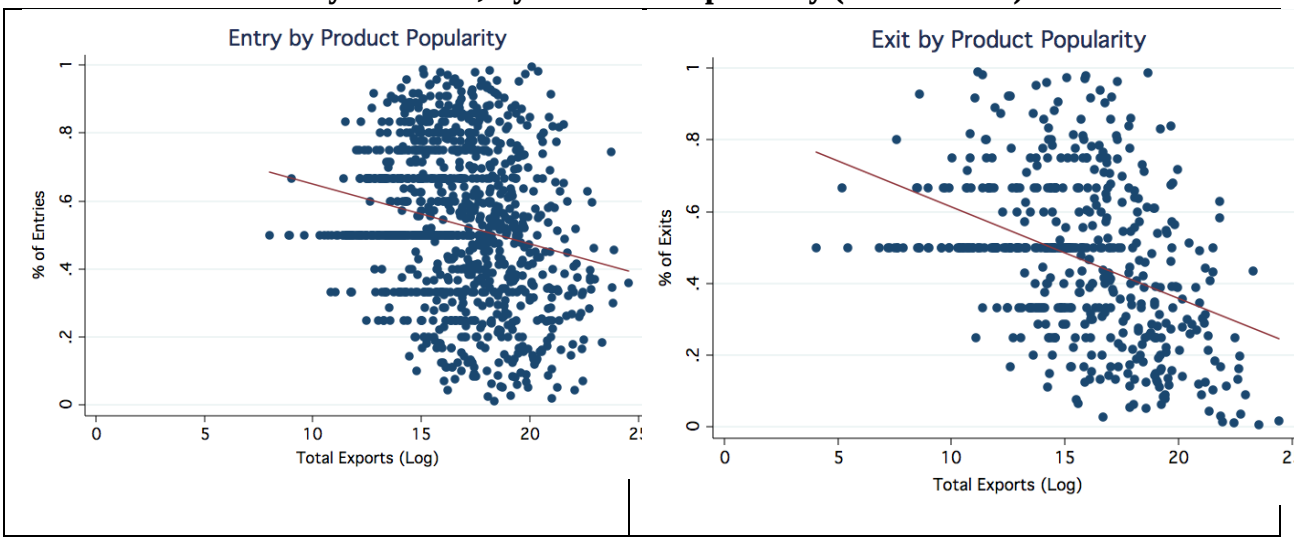
Figure 225
Entry and Exit, by Destination Popularity (2002-2003)



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Studying the same relationship across product categories, we find a similar result – the fraction of entries and exits are lower for products with higher export values. Thus, churning seems to be taking place in products with smaller average export size (Figure 26).

Figure 236
Entry and Exit, by Product Popularity (2002-2003)



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

On the basis of the above, we can conclude that entry and exit is more frequent for smaller firms, for smaller destination countries and for smaller products by export size. There could be two phenomena driving these results. First, these results may be indicating that larger exporters (defined in terms of firms or number of destinations reached or number of products exported)

are less likely to switch export strategies and that their success is mainly determined by developments at the intensive margin. Second, the above results may also indicate that export values become larger the more continuous the interaction, whether within particular destination countries or within product categories. The first option suggests that determinants of developments at the intensive margin, including a macro-economic environment conducive to stability and growth is important to ensure good export performance. The latter option, on the other hand, suggests that survival and/or deepening of exporting relationships is also likely to be important as a determinant of export performance.

3.3 Intensive margin

In line with the conclusions of the preceding sections, this section will concentrate on describing the intensive margin of exporting for firms in Pakistan, i.e. measuring the extent to which exporters are able to survive over time and whether survival is associated with particular characteristics. The section will also quantify the contributions to export growth by each of the margins.

Table 9
Survival Rates by Cohort

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
2002	14,747									14,747
2003	63%	5,435								14,701
2004	49%	57%	4,397							14,730
2005	42%	44%	55%	3,633						14,565
2006	36%	36%	41%	54%	3,628					14,696
2007	33%	32%	36%	42%	66%	3,250				15,076
2008	30%	28%	32%	36%	53%	57%	3,057			15,358
2009	28%	26%	29%	32%	46%	45%	56%	2,982		15,676
2010	26%	24%	27%	29%	41%	40%	44%	58%	2,846	15,925

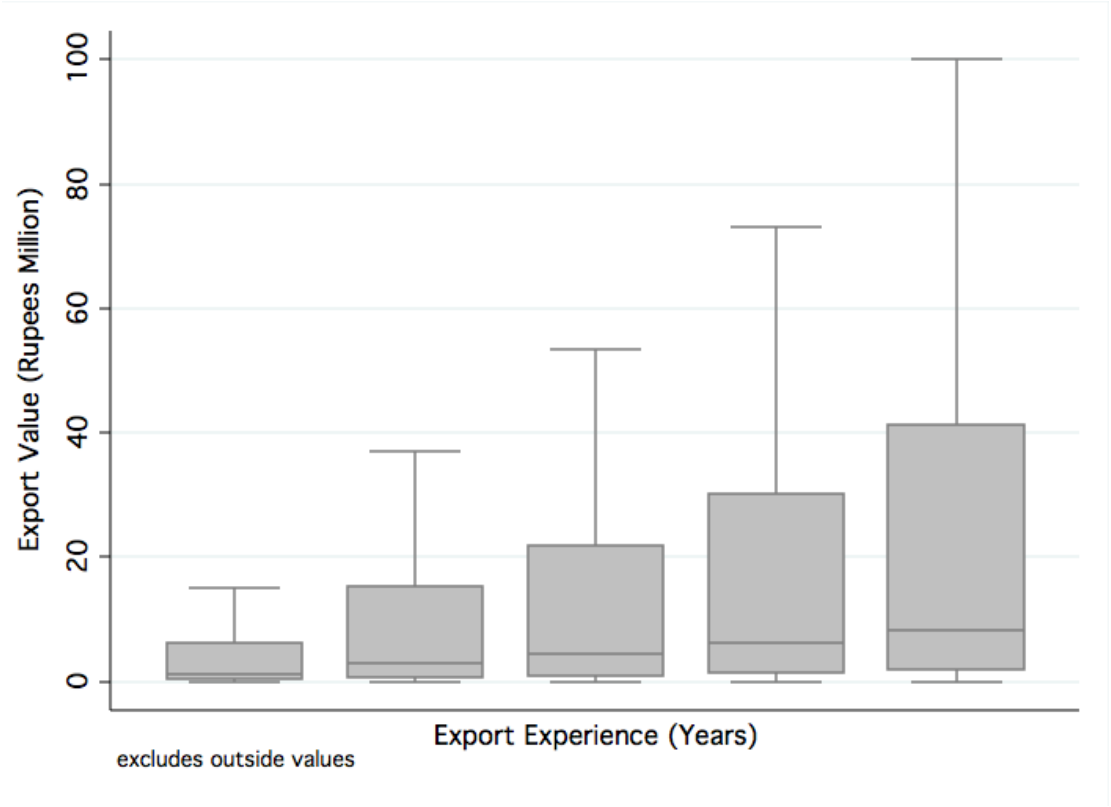
Notes: The top of each row provides the count of new exporters entering the market in the given year. The last column provides the sum total of exporters in each year.

Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Table 9 summarizes the rates of survival by cohort. For instance, in 2003, 5,435 exporters start exporting. By 2004, only 57% of the original cohort manages to survive, i.e. 43% of firms exit the market and no longer export. After 7 years, i.e. by 2010, 24% of the original cohort still

continues to export.[19] We find that the value of exports varies significantly with continued participation in markets – see Figure 27. Although the average value of exports rises marginally with increasing years of experience, it is clear that there is increasing divergence between the top 25% and the bottom 25% of the exporters. This seems to suggest that new entrants test new markets with smaller shipments, which then increase over time as firms gain more experience. It also seems to suggest that not all firms are able to equally increase their export values over time and that some firms are much more successful in doing so than others. Unfortunately our data – which are limited to customs values of exports – do not allow investigating the firm-specific determinants of success/failure of firms' export growth.

Figure 27
Distribution of Export Values (By Years of Experience)



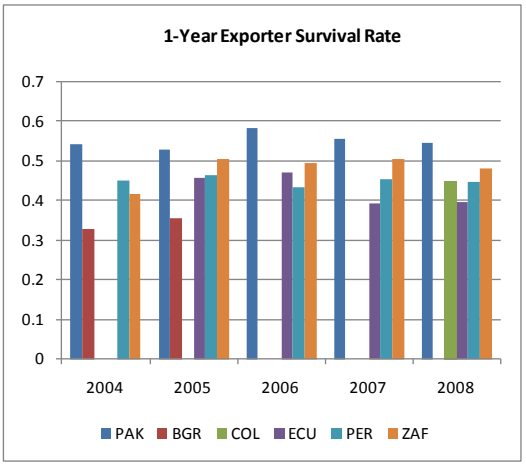
Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Although the survival rates of Pakistan's firm into exporting seem low, a comparison with those of exporters from other middle income countries for which these data are available shows that, after one year of export activity, the persistence of Pakistan's firms into exporting is higher than in other middle-income countries (Figure 28). At face value, this may be considered a positive fact. Yet, a full assessment would require assessing if persistence of export relationships is associated with strong export growth. At the extensive margin, this is achieved by a vibrant domestic economy able to generate domestic competition and therefore to efficiently select the

[19] It should be noted that data relative to 2002, the starting year of our dataset, do not refer to new exporters as in the following years, but to all firms active in exporting at that date. This is due to the fact that we cannot distinguish between new entrants and incumbent exporters for the first year of data.

highest growth firms and products (Melitz, 2003). Pakistan's performance in this respect is considerably deteriorating over time. The rates of survival after 2004 increased. At the same time, the number of new exporters each year steadily decreased. These two results together are a potentially worrisome signal of a decrease in firm dynamism, whereby the greater persistence in export relationships is due to less competition in the domestic market. This may contribute to explain why Pakistan's export performance in the past decade was positive but more moderate than the one of other Asian economies.

Figure 28
Survival rates after 1 year of export activity



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

To investigate further, whether the lower dynamism of firms' exports has had a detrimental effect on export growth, the next sub-section will decompose the year-on-year contribution of the extensive and the intensive margin to aggregate export growth.

Exports growth is computed using the mid-point growth rate (Davis and Haltiwanger 1992 as applied to firm-level exports by Bricogne et al 2011). The main advantage of this approach is that it allows the computation of the contribution of the extensive and the intensive margin to export growth. Other methodologies only allow a static assessment of the extensive margin (Hummels and Klenow 2005).

Table 11 that provides the decomposition reads as follows. In each of the columns the average annual growth relative to the indicated period is reported. The aggregate figure for all trade flows is reported in the last row. The remainder of the table reports the contribution to aggregate growth by each of the margins. For example, looking at annual growth over the year 2002-2003, the first row indicates that export growth due to entry of new firms into exporting equaled 9.3%. Since the corresponding loss in export growth due to the exit of firms equaled 7.8%, the net contribution of firm churning was 1.5%.

The next set of rows accounts for the decision of existing exporters to enter new foreign markets (country entry) or to exit existing foreign markets (country exit). In this case entry into new markets accounted for 9.8% of export growth over 2002-2003, which was partially offset by

exits (8.1%), leading to a net contribution of the destination country margin equal to 1.7%. The new set of rows then depicts decisions regarding entry, exit and net contribution to the growth rate by sectors – i.e. at the HS2-digit level. Between 2002 and 2003, existing exporters contributed to growth (5.4%) by entering new sectors, but this contribution was more than offset (19.9%) by exits so that the net contribution to growth was negative by 14.6 percentage points. The same logic is applied when studying the net contributions of individual products, i.e. at the HS8-digit level, wherein the net contribution equaled 0.2% between 2002 and 2003.

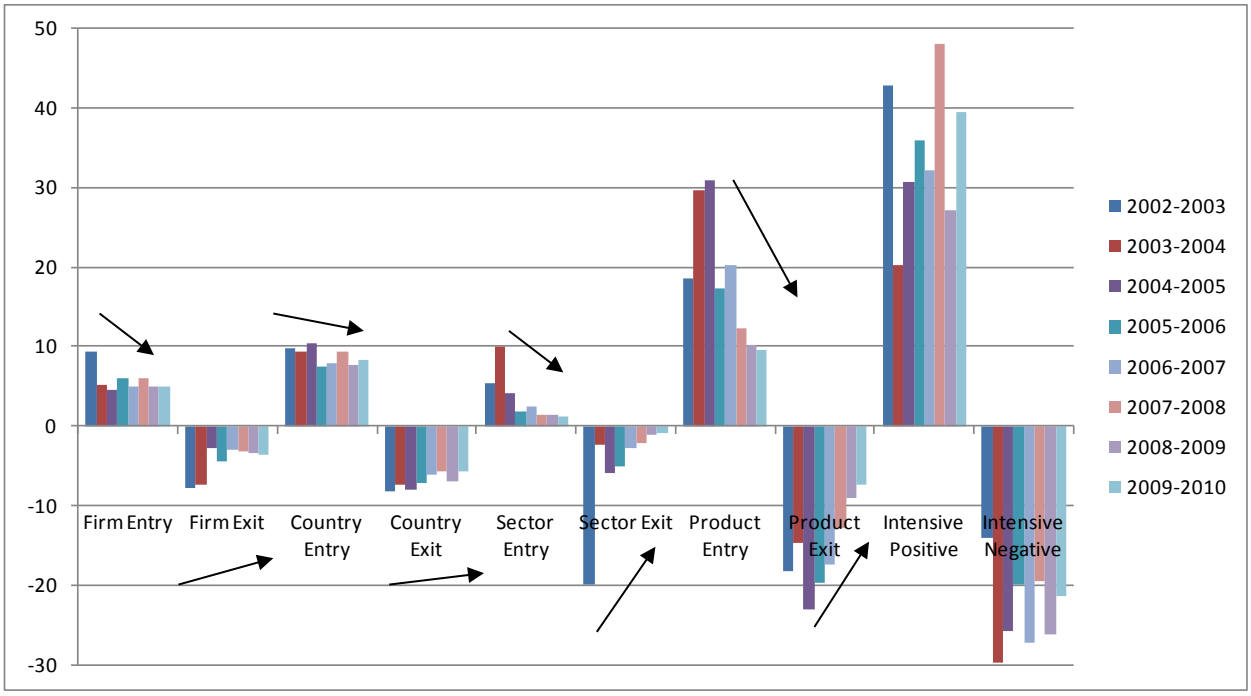
The sum of the net contribution of firm, destination country, sector and product extensive margin gives the overall extensive margin, which posted a contraction of 11.2% in exports from Pakistan over the period under analysis. In the same vein, the intensive margin illustrates the contribution of expanding the value of exports versus that of reducing it. The difference between these two dimensions equals the intensive margin, which was of 28.8% between 2002 and 2003.

Table 10
The Margins of Export, Annual Export Growth

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Firm Entry	9.3	5.1	4.6	6	5	6	4.9	4.9
Firm Exit	-7.8	-7.3	-2.8	-4.4	-3	-3.2	-3.4	-3.5
Net Firm	**1.5**	**-2.2**	**1.8**	**1.6**	**1.9**	**2.8**	**1.5**	**1.4**
Country Entry	9.8	9.4	10.4	7.4	7.9	9.4	7.6	8.4
Country Exit	-8.1	-7.3	-7.9	-7.2	-6.1	-5.7	-7	-5.7
Net Country	**1.7**	**2.1**	**2.5**	**0.2**	**1.8**	**3.7**	**0.6**	**2.6**
Sector Entry	5.4	10	4.2	1.9	2.4	1.5	1.5	1.3
Sector Exit	-19.9	-2.4	-5.9	-5	-2.8	-2.1	-1.1	-0.9
Net Sector	**-14.6**	**7.6**	**-1.7**	**-3.1**	**-0.5**	**-0.5**	**0.4**	**0.4**
Product Entry	18.5	29.6	31	17.4	20.3	12.4	10.3	9.5
Product Exit	-18.3	-14.6	-23	-19.8	-17.4	-12.9	-9.1	-7.4
Net Product	**0.2**	**15**	**8**	**-2.4**	**2.9**	**-0.5**	**1.2**	**2**
Net Extensive	**-11.2**	**22.5**	**10.5**	**-3.7**	**6.1**	**5.5**	**3.7**	**6.5**
Intensive Positive	42.9	20.2	30.8	35.9	32.1	48	27.2	39.4
Intensive Negative	-14	-29.8	-25.8	-20	-27.2	-19.6	-26.1	-21.4
Net Intensive	**28.8**	**-9.6**	**5**	**16**	**4.9**	**28.4**	**1.1**	**17.9**
Total	**17.6**	**12.9**	**15.4**	**12.3**	**11**	**33.9**	**4.8**	**24.4**

Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

Figure 29
The Margins of Export, Annual Export Growth



Source: Authors' calculations based on data from the Exporter Dynamics Database (World Bank).

The key results of the decomposition along export margins are intriguing as it can be grasped easily by the visual inspection of Figure 29, which plots in a chart the results from the export growth decomposition in Table 12. Firm churning, i.e. entries and exits of firms from exporting activity and their entry and exit from markets and products, seems to be associated with a positive selection effect: new entrants more than offset the loss in exports by exiting firms. This is a largely expected result, in particular for developing countries. Several papers have indeed demonstrated that export growth in developing countries takes place mostly at the extensive margin, as the reallocation of resources from less to more efficient firms and products is a main engine. Yet, a closer inspection to the various sub-components of the extensive margin suggests that performance has been rather disappointing.

Churning along the destination-country margin, i.e. entries and exits of incumbent exporters from specific destination markets was relatively stable over the 2002-2010 period. While there was evidence of exits over the same period of time, the net effect on the export growth rate was positive (21.1%). This notwithstanding, the performance is far from positive given the focus of Pakistan's trade policy on bilateral and regional agreements. Despite the various agreements entered into force in this period of time, the contribution of the country-extensive margin to export growth did not increase, showing that bilateral and regional agreements have hardly proven superior to the previous preference for multilateral and unilateral trade liberalization.[20]

[20] A World Bank policy note specifically investigates the impact of Preferential Trade Agreements on Pakistan's export growth (World Bank, forthcoming).

Developments were even more disappointing in terms of export growth generated by the remaining sub-components of the extensive margin, i.e. new firms starting to export, existing exporters expanding into new HS2 sectors and existing exporters increasing their product offer within a sector. The firm, sector and product margins of export growth are particularly important when looking at export dynamism and at its domestic determinants. While the ability to enter new markets is partly driven by entry costs and infrastructure in the destination markets and can be steered by trade policy measures, the ability to produce new exporters and their ability to innovate in terms of products or to venture in new sectors rests primarily on the ability of the domestic economy to generate growth and to allocate efficiently resources by means of a well-functioning macroeconomic environment and structural improvements. Turning to the results of the export growth decomposition, churning, and the associated positive effect on export growth, is clearly underperforming at the product and sector extensive margin. This is signaled by the fact that the contribution of this margin to export growth is much lower than the contribution of the net expansion of firms into new destinations (net country extensive margin). This is the case because the fixed costs of entry into a new market are higher than the fixed costs of expanding the product range (Arkolakis and Muendler, 2011). Therefore, the stronger economies of scale from expanding the product range should translate in higher export growth contributions for the product extensive margin than for the market extensive margin.

The performance of export growth along the firm, product and sector extensive margin has furthermore deteriorated over time. Pakistani firms were quite dynamic along these margins of export at the beginning of the 2000's decade. However, since 2004 their export growth premium decreased considerably. More specifically, it appears that the Pakistani export sector lost the capacity to select high export growth sectors and products within sectors. This is clearly visible from the trends over time for the following components of the extensive margin: export growth generated by the decision of exporters to expand their product range and to start exporting in a different sector of activity. Interestingly, less domestic competitive pressure also translates in a heightened persistence of export relationships. However, it should be noted that the net effect is negative, leading to a lower contribution of these margins to export growth.

Meanwhile the firm extensive margin shows a level drop in 2003-2004 but stabilizes thereafter. These developments are visible in terms of both entries and exits into the exporting activity. Although the net contribution of the firm extensive margin to export growth remains broadly stable over time, it is really the steep fall in the contribution of the product and sector margins that we should focus on. They are a clear indicator that, since 2004, the ability of firms to innovate and select high growth products is greatly diminished. This fact, associated with the lower numbers of firms entering the export activity and with the increasing survival rates, suggests that a "hold-up" problem may be at play, whereby the current policy set up is protecting incumbent exporters at the expenses of aggregate productivity and overall export growth. Since year 2004 corresponded to a change in the trade policy strategy of Pakistan, whereby increasing complexity was introduced in the system, a separate policy note (World Bank, forthcoming) focuses specifically on the topic.

Finally, the performance of the intensive margin has been varied, with some years of very good performance and some years of low export growth, possibly reflecting developments in the macro-economic environment and in foreign demand.

Turning to the crisis period 2007-2009, which saw a large fall in consumer demand in developed and emerging countries, and a subsequent fall in world trade, the decomposition analysis indicates that although the net effect of firm churning continued to remain positive, on average fewer firms entered and exited the market and the period was associated with less churning. This result is true no matter what dimension of export decomposition is studied – in short, entries and exits by new firms, existing firms in new countries, sectors and products, all fell over the recession years. In addition, data for the latest period available (2009-2010) seems to indicate that Pakistani exporters are yet to recover from the effects of the recession years and that their performance continues to be less dynamic than in the pre-recession period.

Remarkably, however, although the extensive margin of exports has seen a fall over the recession years, the contribution of the intensive margin to export growths has rebounded nicely and has even grown. Valuation effects linked to the cycle of commodities markets and the spectacular fall and recovery in foreign demand are likely contributors of these developments.

4. Determinants of firms export growth at the intensive and extensive margins

The remainder of this paper will concentrate on exploring econometrically the key leads from the descriptive analysis, with a particular focus on identifying the factors that may determine the extensive and the intensive margin of export growth. In other words, the main interest lies in teasing out the effect of factors that might be external to Pakistani firms, such as changes in demand from foreign markets, or exchange rate movements, and of other factors, such as market concentration and existing performance, that could have a direct impact on the probability of new exports and of survival.

Our baseline equation regresses the mid-point growth rate of exports at the firm-destination-product-year level, which we used for the export growth decomposition of Table 6, on measures that track developments in foreign demand, firm characteristics, and changes in a number of measures of export costs over the period 2002-2010. The regression is carried out by means of ordinary least squares (OLS).

$$mpgr_{ickt} = \beta_0 + \beta_1 \Delta\left(netimport_{ck_6t}\right) + [\![\beta_2 \Delta(exchange\ rate)]\!]_{ct}) + \beta_3 PTA\ dummy_{ct} +$$
$$+\beta_4 [\![\Delta(tariff)]\!]_{ck_6t}\right) + \beta_5 \frac{[\![\Delta\left(customs_{days}\right)]\!]_{ct}\right)}{\ln\left(distance_{mkd,c}\right)} + \beta_6 [\![\Delta(sd(tariff)]\!]_{ck_4t}\right) +$$
$$\phi_{k_2t} + \varepsilon_{ickt}$$

Our dependent variable, the mid-point growth rate of firm i exports is constructed as in Bricongne et al, 2011, to which the reader is referred for a definition. It has three dimensions: year t, 8-digit HS product k, and destination c. It is computed from export flows in Pakistan's Rupees. We observe the export performance of all firms that exported at least once over the period of reference. This is possible because the mid-point growth rate allows computing rates also for entries and exits. We explain the change in exports with the following variables.

First, we include a measure that tracks developments in foreign demand. The term $\Delta(netimport_{ck_6t})$ is the log difference in overall demand in each destination country for imports in the product. We compute this demand as product-specific net imports, where Pakistan's exports have been subtracted from the total imports of each destination country. This procedure allows avoiding endogeneity problems. We also include the log difference in bilateral nominal exchange rates expressed as number of rupees by one unit of the foreign currency. Finally, we add a PTA dummy which is equal to one in country-year combinations for which Pakistan has preferential trade agreements.

Second and turning to trade policy determinants, we document the impact of changes in variable and fixed export costs on firm-level export growth. We use two separate measures: the first one is the log difference in the standard deviation of tariff rates within sector-country bins [$\Delta(sd(tariff)_{ck_4t})$]. A sector is a 4 digits HS code and this measure captures the effect of the complexity of the tariff regime in the destination country. We assume that the complexity of the tariff system is a source of important information costs for a firm willing to enter the market, and thus a proxy for fixed costs to export. As a control, we complement this measure with the log difference in the tariff level [$\Delta(tariff_{ck_6t})$].[21] Second, we propose a novel measure of changes in the entry fixed cost to export. We track the change in sum of the number of days it takes to fulfill customs procedures to export from Pakistan and to import in the destination country where the trade transaction is directed. In order to take into account non-linearities in trade costs, we deflate this measure by distance between Pakistan and the partner country.[22] The underlying idea is that changes in trade costs in further away countries should have less of an impact on the export decisions of Pakistani firms than corresponding changes in neighboring countries. We assume that a reduction in the number of days needed for clearing merchandise at the customs is correlated with a more general effort of a country to simplify import procedures (and/or an effort from the Pakistani authorities to expedite the movement of products across borders) and thereby reduce the fixed costs of entry to world markets. We obtain country specific data on the number of calendar days to import (export) from the World Bank Doing Business database.[23]

Finally we add time-varying 2-digit HS fixed effects to the specification (ϕ_{k_2t}). These act as sectoral deflators, controlling for any time-varying sectoral determinants, including any sector

[21] Source for the tariff data: Market Access Map, Market Analysis Tools, International Trade Centre, www.intracen.org/marketanalysis.

[22] Specifically, our measure of fixed cost to export between Pakistan and country c between year t+1 and year t is defined as $\frac{\Delta(customs_days_{ct})}{\ln(distance_{mkd,c})} = \frac{\ln(days_exp_{mkd,t+1}+days_imp_{c,t+1})-\ln(days_exp_{mkd,t}+days_imp_{c,t})}{\ln(dist_{mkd,c})}$

[23] The time for exporting (importing) is recorded in calendar days. The trading across borders methodology defines this variable as *"The time necessarily to comply with all procedures required to export (import) goods. The time calculation for a procedure starts from the moment it is initiated and runs until it is completed. If a procedure can be accelerated for an additional cost and is available to all trading companies, the fastest legal procedure is chosen. Fast-track procedures applying to firms located in an export processing zone are not taken into account because they are not available to all trading companies. Ocean transport time is not included. It is assumed that neither the exporter nor the importer wastes time and that each commits to completing each remaining procedure without delay. Procedures that can be completed in parallel are measured as simultaneous. The waiting time between procedures—for example, during unloading of the cargo—is included in the measure."*

specific shocks and changing composition effects or sectoral differences in the degree of integration in global value chains. Standard errors are clustered at 6-digit HS level.

Results are reported across 7 columns in Table 11, with the first column presenting our baseline estimation and subsequent columns including interactions of the extensive margin with our measures of export costs. In the base specification (column 1) we find a negative a significant correlation between changes in the distance-weighted number of days needed to clear customs and firm-level export growth. While this is only a partial measure of the actual fixed costs Pakistani exporters face, we assume that a reduction in the distance-weighted number of days for customs handling is likely to be correlated with a more general effort to reduce costs affecting firms both at the origin and at the destination ports. Specifically, a 1% reduction in the number of days needed for customs procedures leads to a increase in firm export growth of almost 20%. This relationship significance is however below the 10% threshold. The non significance of the effect could, nevertheless, be the result of aggregation effects of the intensive and the extensive margins of trade. This is an hypothesis that we will investigate in the next paragraphs. Before turning to the differences between extensive and intensive margin of trade, we look however at the remaining coefficients in the baseline estimation. We find that the tariff complexity and exchange rate appreciations have a strong, negative and significant effect on export growth while the tariff level does not emerge as a significantly important determinant of export growth. Indeed, a 1% increase in tariff complexity leads to a 12.5% decrease in firm export growth and a 1% increase in the value of the rupee relative to the currency of the importer leads to a 8.1% decrease in firm export growth, signaling a relatively strong elasticity of export to price changes. This may indicate that Pakistani firms specialize in relatively homogeneous goods, where the price is determined more by the overall market conditions than by the features of the exported goods. Finally, the PTA control variable is positive and significant, but the effect is very small. A 1% increase in PTA engagement leads to a 1.5% increase in firm export growth. The reaction of firm's export growth to demand helps putting all the above results in context. It shows that a 1% increase in demand for imports by trade partners leads to a 3.7% increase firm export growth.

Turning to the impact of changes in trade costs on the extensive margin of trade, column 2 adds a net extensive margin dummy that is equal to 1 if there is an entry (or an exit) of an export relationship at the firm-product-country-year level. As presented in Table 11, the impact of the net extensive margin is positively correlated with export growth. In specifications reported in columns 3 to 7, we interact this dummy with our measures of changes in trade costs. We find that the number of days it takes to deliver a product has a significant and negatively correlated effect on the net extensive margin. These results are, of course, in line with the predictions from standard models of firm-heterogeneity where a reduction in the fixed export market entry cost generates entry of new firms (Melitz 2003) as well as changes in the optimal range of products within exporting firms (Bernard at al. 2011). By contrast we find that the complexity of the tariff regime is not meaningfully associated with firm-level export growth at any margin.

Column 6 presented our specification with all interaction terms. We confirm that trade liberalization in export costs matters greatly at the extensive margin and that change in the distance-weighted number of days for customs handling is the most important cost affecting export growth in Pakistan. By contrast, we find that the impact of this variable at the intensive margin is significant and positive, confirming the evidence from the descriptive analysis above,

namely that incumbent exporters benefit from their insider status in existing markets-products. Tariffs show up insignificant at both margins of trade.

Table 11
Firm-Level Export Growth and the Role of Export Costs along the Margins of Trade

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	gr_rupees	gr_rupees	gr_rupees	gr_rupees	gr_rupees	gr_rupees
foreign demand, log-change (ldnet_imp)	0.0371***	0.0291***	0.0297***	0.0291***	-0.0514**	-0.0462*
	(0.00703)	(0.00701)	(0.00699)	(0.00701)	(0.0240)	(0.0245)
# days customs procedures, change	-0.198	-0.0372	13.23***	-0.0371	-0.0149	13.23***
	(0.352)	(0.358)	(1.120)	(0.358)	(0.356)	(1.118)
mfn tariff rate	0.0317	-0.0446	-0.0489	-0.0437	-0.0454	-0.0455
	(0.0472)	(0.0501)	(0.0501)	(0.0507)	(0.0502)	(0.0508)
complexity tariff regime (sd_mfn_hs4)	-0.125**	-0.0756	-0.0721	-0.0982	-0.0753	-0.154
	(0.0619)	(0.0505)	(0.0501)	(0.132)	(0.0504)	(0.123)
bilateral nominal exchange rate, change	0.0814***	0.0890***	0.0925***	0.0890***	0.0890***	0.0923***
	(0.00879)	(0.00882)	(0.00882)	(0.00880)	(0.00884)	(0.00884)
preferential trade agreements (PTA)	0.0151***	0.0167***	0.0162***	0.0167***	0.0170***	0.0133***
	(0.00262)	(0.00281)	(0.00288)	(0.00281)	(0.00284)	(0.00348)
Extensive margin		0.851***	1.053***	0.850***	0.839***	1.038***
		(0.0322)	(0.0330)	(0.0327)	(0.0320)	(0.0333)
Ext*change # days customs procedures			-16.49***			-16.45***
			(1.208)			(1.207)
Ext*complexity tariff regime				0.0259		0.0918
				(0.140)		(0.125)
Ext*foreign demand					0.103***	0.0969***
					(0.0309)	(0.0312)
Constant	1.978***	1.128***	0.925***	1.128***	1.133***	0.934***
	(0.00269)	(0.0325)	(0.0328)	(0.0330)	(0.0323)	(0.0331)
Observations	673687	673687	673687	673687	673687	673687
R-squared	0.022	0.059	0.066	0.059	0.059	0.066
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

*Note: Firm-country-product year level OLS regression results. Robust standard errors adjusted at the six-digit HS level are in parentheses. Time-varying sector fixed effects are for two-digit HS codes. Dependent variable is the mid-point growth rate. Regressions cover the period 2002-2010. *** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level. Coefficients for fixed effects are suppressed from table of results.*

Source: Authors' calculations

In order to disentangle the effect of trade costs along the different dimension of the extensive margin of trade, presents the estimation of our equation and decomposes the extensive margin

into three hierarchical levels discussed earlier, namely the firm extensive margin, the market extensive margin and the product extensive margin. For expositional purposes, we combine the sector and product extensive margin together in the econometric estimation. The results of the estimation are presented in Table 12. For ease of comparison column 1 present our base line specification already discussed when describing the results of Table 11. Column 2 adds three dummy variables that are mutually exclusive and represent the sub-components of the extensive margin variable estimated in column 1. The firm net extensive margin dummy receives a 1 if there is an entry (or an exit) of a firm into exporting market, we refer to this variable as net firm entry. The market net extensive margin dummy receives a 1 if an established exporter enters (exits) into (from) a market, we refer to this variable as market diversification. Finally, the product net extensive margin dummy receives a 1 if an incumbent exporter in an existing market decides to add (drop) a product, we refer to this variable as product diversification. The results presented in column 2 indicate that the positive effect found on the net extensive dummy occurs at all levels of disaggregation. The difference in the magnitude of our coefficients simply indicates the hierarchical structure imposed on the empirical model.

When focusing on the impact of changes in export cost variables on firm-entry and diversification in opposition to growth in terms of value of exports in existing export relationships, we find that a reduction in the length of custom procedures is equally important in terms of firm-entry, market and product diversification (column 3). Reductions in the tariff complexity of the destination country, on the other hand, do seem to increase firm-entry as well as product diversification, but to dampen market diversification, although their effect is not statistically significant (column 4). The lack of significance of tariff complexity in the destination country may be due to the indirect link with export growth in Pakistan. However, the sign of the coefficients suggests that the role of tariff complexity in Pakistan should be assessed, as it is likely to have qualitatively similar but quantitatively stronger effects on export performance by firms in Pakistan. Finally, the effect of the foreign demand on the extensive margin is also positive and statistically significant (column 5). When we interact all components of the extensive margin with changes in our measures of trade costs, all results are qualitatively the same, and quantitatively broadly similar (column 6).

Table 12
Firm-Level Export Growth and the Role of Export Costs along the Firm, Market and Product Export Margins of Trade

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	gr_rupees	gr_rupees	gr_rupees	gr_rupees	gr_rupees	gr_rupees
foreign demand, log-change (ldnet_imp)	0.0371***	0.0290***	0.0298***	0.0290***	-0.0509**	-0.0466*
	(0.00703)	(0.00701)	(0.00700)	(0.00702)	(0.0242)	(0.0248)
# days customs procedures, change	-0.198	0.0109	13.29***	0.0172	0.0299	13.29***
	(0.352)	(0.357)	(1.121)	(0.357)	(0.357)	(1.122)
tariff rate (hs-8 digit mfn rate)	0.0317	-0.0586	-0.0596	-0.0601	-0.0594	-0.0600
	(0.0472)	(0.0514)	(0.0513)	(0.0505)	(0.0515)	(0.0505)
complexity tariff regime (sd_mfn_hs4)	-0.125**	-0.0736	-0.0721	-0.0691	-0.0734	-0.128
	(0.0619)	(0.0505)	(0.0502)	(0.130)	(0.0504)	(0.121)
bilateral nominal exchange rate, change	0.0814***	0.0922***	0.0965***	0.0919***	0.0923***	0.0962***
	(0.00879)	(0.00883)	(0.00885)	(0.00881)	(0.00887)	(0.00887)
PTA	0.0151***	0.0157***	0.0152***	0.0157***	0.0160***	0.0195***
	(0.00262)	(0.00280)	(0.00287)	(0.00280)	(0.00283)	(0.00474)
Firm extensive margin		1.026***	1.277***	1.027***	1.014***	1.258***
		(0.0351)	(0.0367)	(0.0354)	(0.0354)	(0.0380)
Market extensive margin		0.886***	1.111***	0.884***	0.873***	1.094***
		(0.0328)	(0.0360)	(0.0333)	(0.0328)	(0.0369)
Product extensive margin		0.814***	1.001***	0.816***	0.803***	0.995***
		(0.0341)	(0.0351)	(0.0347)	(0.0337)	(0.0358)
Firm Ext*change # days customs procedures			-19.71***			-19.62***
			(1.007)			(1.011)
Mkt Ext*change # days customs procedures			-18.23***			-18.22***
			(1.078)			(1.081)
Prod Ext*change # days customs procedures			-15.52***			-15.52***
			(1.325)			(1.328)
Firm Ext*complexity tariff regime				-0.0672		0.00783
				(0.176)		(0.157)
Mkt Ext*complexity tariff regime				0.142		0.201
				(0.138)		(0.129)
Prod Ext*complexity tariff regime				-0.114		-0.0344
				(0.149)		(0.133)
Firm Ext*foreign demand					0.102***	0.0931**
					(0.0387)	(0.0395)
Mkt Ext*foreign demand					0.109***	0.107***
					(0.0352)	(0.0358)
Prod Ext*foreign demand					0.0988***	0.0940***
					(0.0303)	(0.0306)
Constant	1.978***	1.007***	0.756***	1.005***	1.049***	0.798***
	(0.00269)	(0.0361)	(0.0385)	(0.0364)	(0.0494)	(0.0541)
Observations	673687	673687	673687	673687	673687	673687
R-squared	0.022	0.060	0.067	0.060	0.060	0.067
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Source: Authors' calculations

5. Conclusions

This paper analyzed different dimensions of the trade performance in Pakistan. While the poor aggregate performance is a well-known problem faced by the Pakistan economy, this note goes beyond it by exploring other dimensions such as the sophistication and quality of its export basket, diversification, and the survival rate of its export relationships. We make use of these analyses to shed light on the most binding constraints to improve export performance in the country.

In terms of orientation and growth, Pakistan is lagging behind the peer countries, as revealed by the trade-to-GDP ratio. The concern relies in the deterioration of Pakistan's position between the 90s and 2000s. Furthermore, the export share over GDP shows a downward trend in the last years. A gravity model confirms that Pakistan is clearly under trading with emerging markets such as Brazil, India, Russia, Mexico, and principally with the neighboring India.

The analysis also showed that there are problems of quality/sophistication in the export basket of the country. The sophistication of Pakistan's export basket is low and has increased at a very slow pace, mainly when compared to China and India. The product space analysis showed that there were 103 products with an RCA greater than 1 in both 1993 and 2008. These are mainly textiles and garment items such as linen, cotton, curtains, carpets, men's coats, and leather clothing. Even worse, indications coming from the unit values of some of these products, suggest that Pakistan exporters may be facing difficulties to catch up with the quality upgrading taking place elsewhere in the world. Moreover, there is no Pakistani export (with RCA >1) firmly embedded in the denser part of the product space.

Regarding diversification, while still highly concentrated, Pakistan is showing positive signals both at products and market level. Even though the 65% of Pakistan's export value is concentrated in the textiles, apparel, leather, footwear, the share of extractive industries, metals, machinery and electronics and some agricultural products is increasing. There is some evidence of services exports, with growing rates in the period 2000-2007 over 15% average per year. But the export value of services remains low well behind the peer countries. There has been an increase at the margin in exports to the emerging bloc of Brazil, Russia, and China (BRIC), also a good sign of diversification.

The key results of the descriptive analysis suggests that, like many other countries Pakistan posts a high concentration of exports in the hands of a limited number of large exporters. The dominance of few exporters has increased over time and it seems associated with low rates of product innovation and experimentation and a low ability of the Pakistani export sector to enter into new higher growth sectors, as evidenced by the breakdown of export growth by margins. The fact that firms tend to export only few products each may be a symptom of market distortions due to the dominant position of few firms. This hypothesis is also consistent with evidence that entry and exit rates are lower than in countries at a comparable level of development and that the overall extensive margin contribution to export growth is subdued.

Export growth could be increased both by facilitating export activity and experimentation by large exporters and by reducing the sunk costs to start exporting for smaller firms or occasional exporters. The econometric exercise suggests that reduction the fixed costs and physical burdens to export may play a key role in boosting the export sector in Pakistan. A reduction of tariff complexity in Pakistan may also play an important role. Larger exporters (defined in terms of volumes of exports or number of destinations reached or number of products exported) seem reluctant to change export strategies (it is these firms that are usually most responsible for performance at the extensive sector and product margin). Their success is mainly determined by developments at the intensive margin. This and the fact that they determine the bulk of exports suggest that determinants of developments at the intensive margin, including a macro-economic environment conducive to stability and growth and incentives to innovate are important to ensure good export performance while reducing uncertainty and financing costs would spur innovation. As concerns smaller firms and exporters, the above results suggests that export values are likely to become larger the more continuous the interaction, whether within particular destination countries or within product categories. Hence, strategies helping the survival and/or deepening of exporting relationships of the smaller firms are also likely to be important as a determinant of export performance. These however should not be the result of eliminating competition domestically, but of more effective export support including learning and skill acquisition strategies.

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