Pakistan: Possibilities for Manufactured Exports

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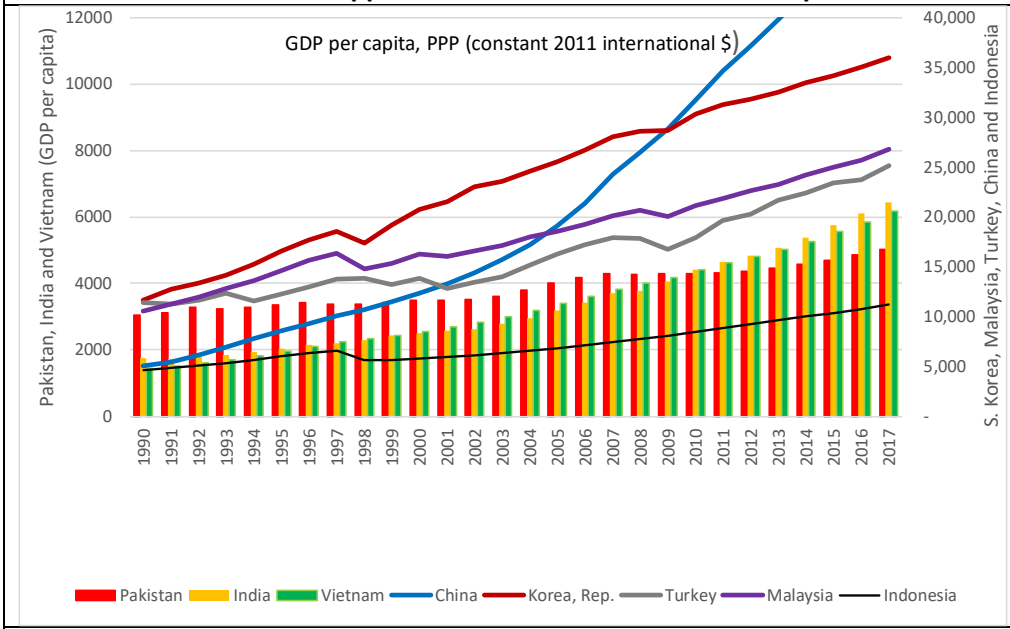
I. Introduction

Pakistan's manufacturing sector is currently dominated by the traditional Textiles and Garments subsectors which have been virtually unchanged since the 1990s. This Note argues that with timely and appropriate policies, manufacturing can become a game-changer for the Pakistani economy. We first identify subsector-specific opportunities for enabling the manufacturing sector to scale up and play a dynamic role in driving growth, creating better-paying jobs and helping the country to graduate to the next income-level. Constructed from a variety of technical concepts including the Product Space, our framework identifies new manufacturing opportunities for diversification in (i) modern export subsectors; and (ii) import-competing subsectors that should focus first on expanding the domestic manufacturing sector, and through learning-by-doing, become globally competitive and spawn new exports. The emphasis is on the short to medium term in which the scope for diversification will be limited by available technological capabilities. A comparative perspective indicates that several countries that were similar but less prosperous than Pakistan in the 1990s have successfully leveraged a modern and diversified manufacturing sector to achieve a higher income status. Pakistan has an opportunity to do the same.

Figure 1: From being more prosperous than China, India and Vietnam in 1990, Pakistan's income level dropped to the bottom of the list of comparators in 2017



Source: World Development Indicators, 2017, World Bank Group.

In 1990, Pakistan's income level measured in 2011 PPP dollars was significantly higher than the income levels of three comparators (Figure 1). India was only 57 percent, China only 49 percent and Vietnam only 47 percent as rich as Pakistan (in 2011 PPP). Just 25 years later, in 2017, China was three times

more prosperous than Pakistan, India's income level was 27 percent and Vietnam's income level 22 percent higher than Pakistan. Pakistan's per capita growth has been the lowest for the past 40 years, when compared to the peer countries in Figure 1 (DFID Pakistan, 2018).

While there are a number of reasons to explain Pakistan's disappointing growth performance, the minimal contribution of manufacturing is unmistakable. Exports, which were the engine of growth in the East Asian comparators such as South Korea, Malaysia, China, Indonesia and Vietnam, did not play a similar role in Pakistan. Since the late 1980s, the share of exports of goods and services in the economies of these countries remained above 30 percent of GDP for long periods, often reaching over 80 percent in Vietnam and Malaysia (WDI, World Bank 2017). In Vietnam which was the poorest comparator in 1990 (Figure 1), the share of exports of goods and services escalated from an average of 10 percent of GDP in the 1980s to 86 percent in 2010-17. In China, exports averaged 28 percent of GDP in the 2000s before contracting to 23 percent in 2010-17 when it began shifting aggregate demand to domestic consumption. Even in India which did not pursue export-oriented growth and is little known for its performance in manufacturing, the share of exports ranged from 18 to 22 percent in 2000-17. In contrast, in Pakistan, the average share of exports in GDP dropped from a peak of 14 percent in the 2000s to 12 percent in 2010-17. In 2017, their share was only 8 percent of GDP.

Of course, manufacturing is not the only viable path to economic growth. Services are an equally viable option. While IT exports have been a key driver of growth in India, Pakistan is a net importer of services (State Bank of Pakistan 2018).[1] In 2017-18, its total exports of Telecommunications and IT services was about USD 555 million compared to its goods exports of about USD 24 billion (State Bank of Pakistan 2018). In the medium term, expanding the size of the technically skilled workforce for exports of IT or other modern services is a daunting challenge. While Pakistan should not delay these investments, it should also not forgo the opportunity to foster exports of manufactured products in the short term. Indeed, there are many low hanging fruits that can be harvested right away in the manufacturing sector.

The remainder of this Note identifies potential manufacturing subsectors and their constraints using a robust methodology. The recommended sectors have relatively stable prices, a large foreign and domestic demand, are relatively less skill- intensive, have strong employment potential and can be operated by both small and medium enterprises (SMEs), and large firms, i.e., they support inclusive growth. Section II begins with a snapshot of Pakistan's large-scale manufacturing industries, exports and imports, and makes the case for manufacturing. Where relevant, it highlights the contrast in the manufacturing performance of Pakistan's comparators, underscoring its untapped potential. Section III discusses the data and methodology, and introduces a framework for identifying Pakistan's manufactured export potential. Section IV applies the framework of section III to identify traditional and non-traditional export opportunities. The relatively small size of the domestic manufacturing sector and the large range of manufactured imports jointly present a case for import replacement which is also analysed in section IV. Section V discusses the constraints to manufacturing from the perspective of local

[1] http://www.sbp.org.pk/departments/stats/Notice/Rev-Study-External-Sector.pdf

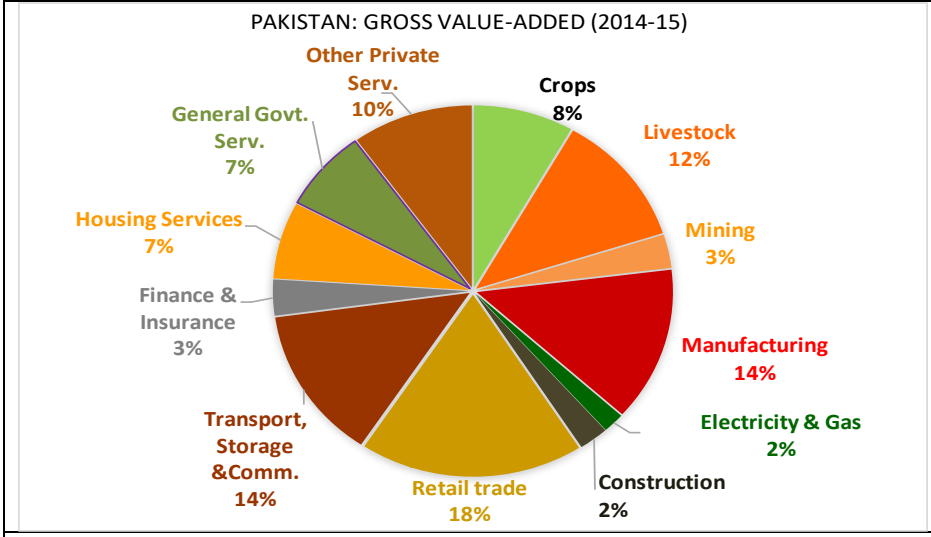
and foreign firms operating in Pakistan. The section VI we discuss why jumpstarting or scaling up manufacturing will require attention to specific sectoral policies in Pakistan. The last section concludes.

II. Snapshot of manufacturing and trade in Pakistan

A. Domestic manufacturing sector

Manufacturing does not seem to play a central role in Pakistan's domestic market. Its overall share was only about 11 percent of GDP in 2017-18 (WDI 2017). According to the Pakistan Bureau of Statistics, in 2014-15, manufacturing's share was higher at 14 percent of GDP and the sector was dominated by large-scale manufacturing which accounted for almost 11 of GDP (Figure 2).

Figure 2: Composition of GDP in Pakistan - manufacturing is only slightly larger than the livestock sector



Source: Pakistan Bureau of Statistics, 2018.

While the large-scale manufacturing sector is comprised of many types of industries, Textiles and Food & Beverages jointly account for almost 47 percent of the sector's manufacturing output (Table 1). These are Pakistan's traditional manufacturing sectors whose stronghold has not weakened over time to make space for more modern manufacturing sectors such as engineering or chemicals. In 2017 and 2018, the largest subsector was Textiles with a share of a 30 percent of large-scale manufacturing composed of mostly cloth and yarn. While it also generated over 55 percent of total exports, Textiles was not a driver of growth. In fact, it grew at less than 1 percent per annum, comparing poorly with the lacklustre average manufacturing growth rate of 6 percent per annum (Pakistan Bureau of Statistics, 2018).

The shares of all other notable subsectors within the large-scale manufacturing sector pale in comparison to Textiles and Food & Beverages. With shares ranging between 5 – 8 percent, they are Coke and Petroleum, Iron and Steel, Pharmaceuticals, Non-Metallic Mineral products, Automobiles and Fertilizers. Only Automobiles and Iron and Steel recorded double digit growth rates in 2017 and 2018.

However, neither of these contribute to manufactured exports. In fact, both subsectors are net importers. The Leather Products and Footwear subsectors jointly generate less than 2 percent of large-scale manufacturing output and about 4 percent of the sector's manufactured exports. In 2017-18, both subsectors recorded negative double-digit growth rates. Given the employment potential of these sectors and the fact that they have strong potential for higher value-addition in Pakistan's livestock sector, this is a worrisome trend for the sector's competitiveness.

Table 1: Pakistan's Large Firm Manufacturing Sector – role in the economy and exports

	Share of Large-Scale Manuf. (%)	May-July Growth rate (%) FY17	May-July Growth rate (%) FY18	Share of exports FY18	Share of imports FY18
Textiles	29.74	0.8	0.4	55.1%	8.2%
Food, Beverages &Tobacco	17.59	11.4	6.1	19.8%	9.6%
Coke & Petroleum Products	7.84	2.7	13.5	2.4%	23.7%
Pharmaceuticals	5.15	9.4	1.6	1.1%	
Chemicals	2.44	-2.4	-0.7	4.6%	16.8%
Automobiles	6.56	12.3	18.0		6.4%
Iron & Steel Products	7.67	20.0	22.0		
Fertilizers	6.31	1.8	-9.9		
Electronics	2.79	20.1	36.0		
Leather Products	1.22	-18.2	-10.4	4.0%	
Footwear	0.66	-27.0	-0.6	0.4%	
Paper & Board	3.29	11.0	8.3		1.1%
Engineering Products	0.57	4.6	7.0	1.0%	15.2%
Rubber Products	0.37	0.1	6.3	2.3%	0.6%
Non-Metalic Mineral Products	7.63	5.8	11.9	0.9%	
Wood Products	0.84	-94.2	-36.3	0.0%	0.4%
Other				8.5%	18.1%
Total	100.00			100.0%	100.0%
Overall Growth		6.0	6.0		

Source: Pakistan Bureau of Statistics, 2018

With consistently double-digit growth rates (20 – 36 percent) in 2017 and 2018, although from a small base, Pakistan's Electronics subsector offers promise as a growth driver. While the sector produces less than 3 percent of total large-scale manufacturing output, the experience of comparable countries suggests that if this sector is scaled up, it could have valuable spillovers for the Engineering Products and the Automobiles subsectors.

B. Current exports and imports

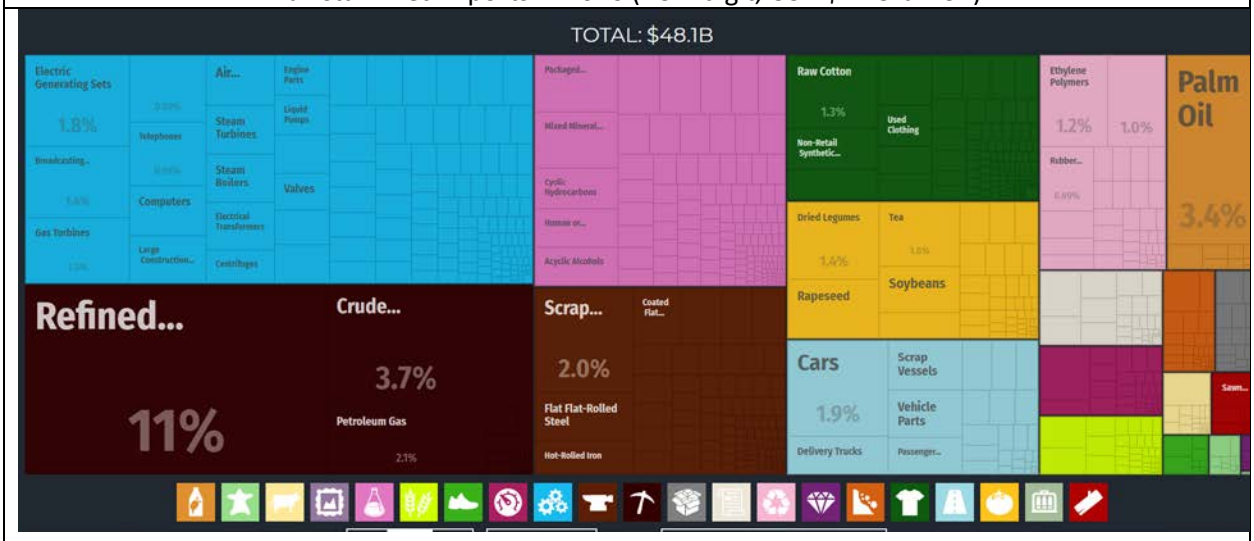
Pakistan's exports are heavily concentrated in one traditional manufacturing sector. In 2016, cotton garments accounted for almost 55 – 60 percent of total exports (Figure 3). The unprocessed agricultural products sector comprised mostly of rice (7.4 percent) was a distant second. Besides these two low-tech sectors, most other sectors had a share of less than 5 percent in total exports and were dispersed across a wide range of products from leather to sporting goods to medical instruments. The negligible size and

low-tech features of non-traditional exports excluding Textiles and Garments is a direct constraint to scaling up rapidly.

Figure 3. Pakistan: A snapshot of exports and imports in 2015

Pakistan: Net Exports in 2016 (HS 4-digit, USD $19.8 billion)

Pakistan: Net Imports in 2016 (HS 4-digit, USD $44.9 billion)



Source: https://atlas.media.mit.edu/en/visualize/tree_map/hs92/export/pak/all/show/2016/

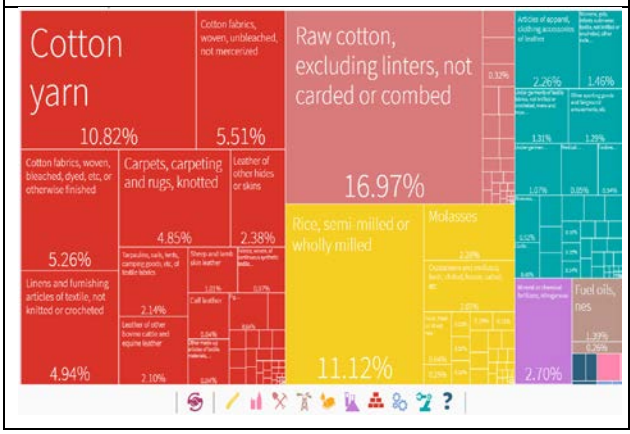
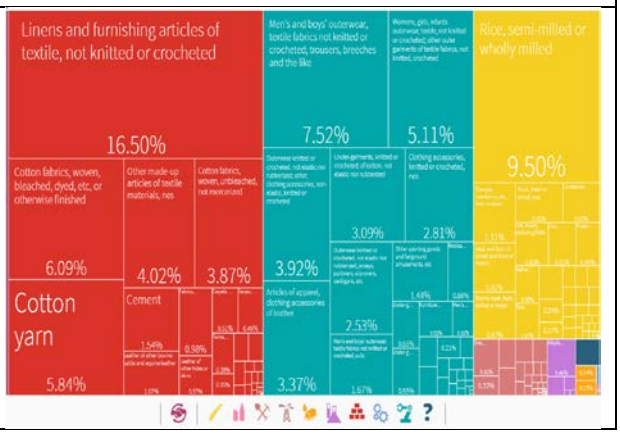
In contrast to Pakistan's exports, its import basket is well diversified (Figure 3). In 2016, the largest import sector was petroleum products. Other imports varied from raw food products such as palm oil, tea, dried legumes and soybeans to other raw agricultural commodities such as cotton and rubber. The vast range of *manufactured* imports varies from metal products, especially iron and steel products to cars to simple and complex electronics and chemical products. The production data from the Pakistan Bureau of Statistics in Table 1 indicates that while the large manufacturing sector produces a large variety of goods, except for Textiles and Food & Beverages, most lack scale and are growing slowly. If

the constraints to manufacturing are resolved, the potential for import-competing industries in the longer term is huge.

C. Progress in export diversification

There has been some export diversification in Pakistan but mostly within the cotton value chain comprised of raw cotton and various types of yarn, fabrics and garments (Figure 4). In 1985 for example, Pakistan's exports were dominated by raw cotton and yarn. By 2016, after more than 30 years, there were some signs of export diversification. The share of raw cotton declined significantly from almost 17 percent of total exports in 1985 to less than 5 percent in 2016, while the share of more sophisticated cotton products such as linens and furnishings, and garments increased dramatically. Linen and furnishings had a share of about 5 percent in 1985 but by 2016, their share had risen to 16.5 percent of total exports. While the exact share of each product depends upon the classification and level of disaggregation used to display the import data, this trend in transformation and value-addition *within* the cotton value-chain was unmistakable across all classifications.

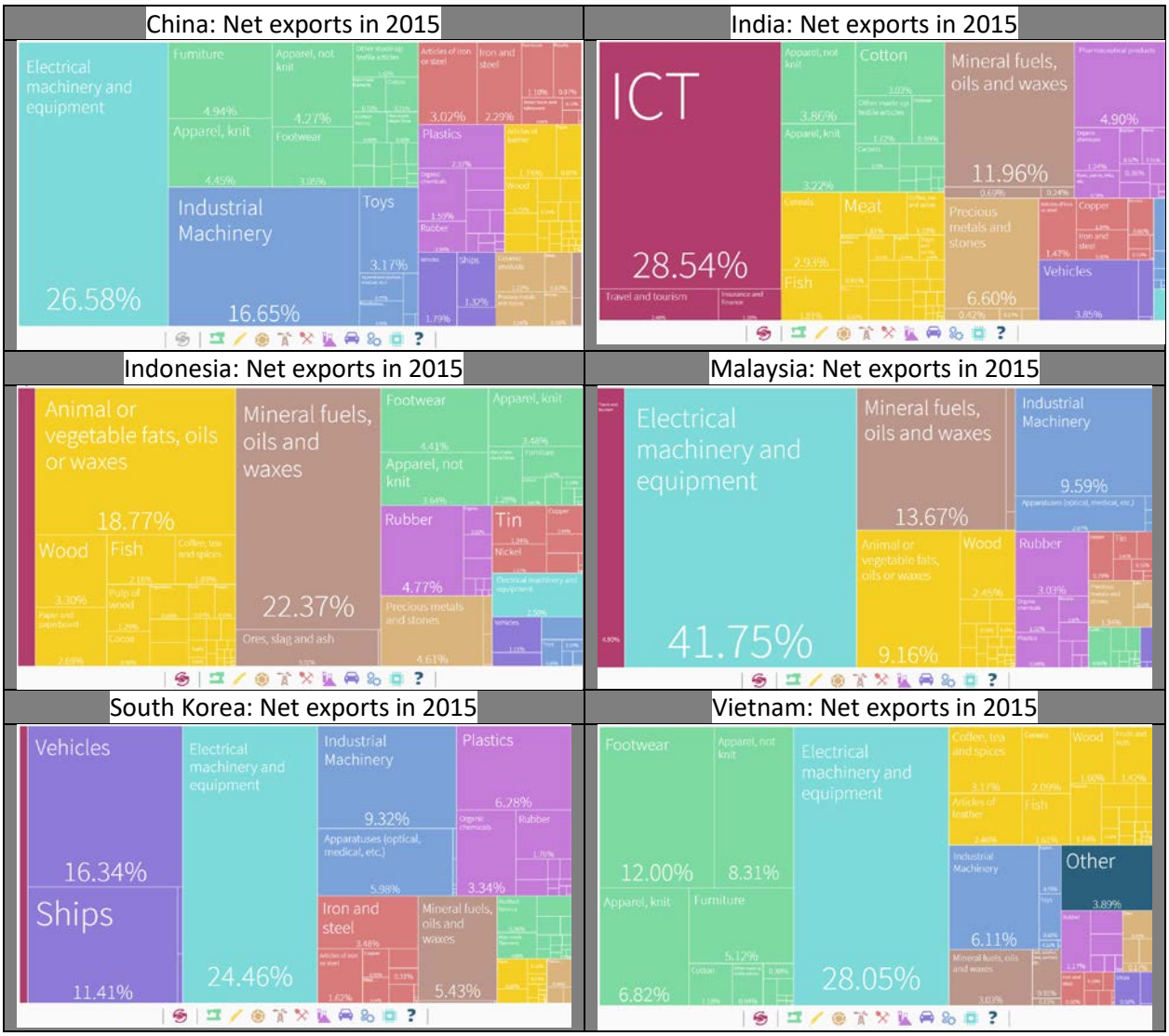
Figure 4: During the last three decades, Pakistan diversified its exports mostly within the cotton value chain from raw fiber, yarn and garments to more types of the same products.

Pakistan: Net exports in 1985 (SITC 4-digit)	Pakistan: Net exports in 2016 (SITC 4-digit)
	

Source: http://atlas.cid.harvard.edu/explore/

Over the same period, Pakistan's comparators have made impressive progress in export diversification (Figure 5). At a comparable income level, Vietnam is one of the world's leading exporters of Garments and Footwear but it *also* exports electronics and other sophisticated manufactured products. Despite its dependence on petroleum exports, Indonesia diversified into garments as well as other sectors. India and China which share many of the same economic characteristics as Pakistan, export a large variety of manufactured products. These countries started exporting Textiles and Garments at about the same time in the 1980s but built on their experience and labor-force skills to diversify into other sectors including services like ICT.

Figure 5: Pakistan's comparators have diversified exports which range from ICT to electronics and ships.



D. Case for diversification in Manufacturing

In the case of Pakistan, the potential of manufacturing as a growth driver is underexploited and merits more attention if the country is to graduate to an upper middle-income status. In comparison to its peers, Pakistan's manufacturing sector has not undergone the structural transformation necessary to develop a diversified world-class sector in which there are natural synergies and spillovers that foster dynamism and innovation in a modern economy. Consequently, the structure of its manufactured exports has changed little in the past three-four decades (Figure 4). The typical signs of a modern economy – electronics, machinery, modern business services, automobiles and chemicals have emerged in the domestic economy but are nascent in the export sector. In its recently concluded analysis of inclusive growth, DFID Pakistan underscores that among the key focus areas is the lack of structural transformation which has stalled export diversification and industrialization and resulted in an economy that produces mostly low-value products.

There are several other compelling reasons why Pakistan needs to diversify from cotton Textiles and Garments. The primary one is the imminent threat from Chinese competition that will accelerate in Pakistan's export destination markets when the US tariffs on Chinese products become effective in January 2019. To offset reduced US demand, China's exporters of light manufactures like garments will redirect their products to non-US markets such as the EU and Asia which are Pakistan's key export destinations. In 2016, of its total exports, Pakistan exported at least 30 percent to the EU and about 35 percent to Asia. Like Pakistan, other Textiles and Garments exporters will also face fierce competition from China in these markets and seek to ramp up their cost competitiveness. Unless Pakistani firms are dynamic and can compete with other countries like Vietnam in reducing their costs, they risk losing markets in the EU and Asia to China and other global competitors. Of course, the US-China tariff war can also be an opportunity if Pakistani firms increase their cost-competitiveness enough to expand exports to the US but this will not happen either automatically or easily as all other global exporters will be seeking to do the same. Given that uncertainty in the global markets for Textiles and Garments will continue for some time, it makes sense for Pakistan to reduce market risk by diversifying in other manufactured export subsectors.

The potential of the manufacturing sector to reinforce macroeconomic stability which is fundamental for sustained growth is the second compelling reason for fostering diversification in manufacturing. In recent years, growth has been led mostly by consumption demand which makes it unsustainable. The main drivers of growth were services and agriculture. Manufacturing grew at only 6 percent per annum, (Pakistan Burau of Statistics, 2018). After sluggish growth in recent years, exports are picking up but their share in the economy is small. At the same time, high import growth resulted in a growing current account (CA) deficit which reached 4.1 percent of GDP (US$12.4 billion) in FY17, and depleted international reserves which exacerbate macroeconomic instability. In 2017, Government tried to stem the CA deficit with regulatory duties and exchange rate depreciation, but these policy levers are insufficient. Faster export growth can be a critical factor in promoting macroeconomic stability which is presently the leading economic policy challenge.[2] The CA deficit is projected to remain at an elevated level during FY19. Export diversification can play a crucial role in accelerating export growth.

Agriculture and services do not have similar potential for dampening the CA deficit which threatens macroeconomic stability. Presently, remittance inflows help in financing the CA deficit but slower growth in the GCC countries will reduce remittance flows. Recent initiatives such as new infrastructure projects related to the China-Pakistan Economic Corridor (CPEC) and improvements in energy supply are

[2] Pakistan Macro-Poverty Outlook 2017, World Bank Group. As per the Outlook, due to infrastructure projects, improved energy supply, and private consumption growth, GDP growth is projected to reach 5.5 percent in FY18. The main assumption is that oil prices will remain low, and political and security risks will be managed. However, the pressure on the current account (CA) is projected to remain elevated in FY19. While remittances will continue to partly finance the CA deficit, growth in the GCC will slowdown. Consequently, FDI, multilateral, bilateral, and private debt-creating flows are expected to be the main financing sources in the medium-term.

important but insufficient to establish macroeconomic stability. Except for petroleum, since a large proportion of Pakistan's current imports are manufactures, even modest diversification in manufacturing can help in import-substitution, boost exports and dent the CA deficit.

Third, the potential of manufacturing to create large numbers of better-paying jobs is unparalleled in countries which have a large, young and relatively less-skilled labour force such as Pakistan. Agriculture does not create large numbers of better-paying urban jobs necessary for social stability and poverty reduction. While construction services create some good jobs, they are insufficient and cannot be exported. Growth in the construction sector is also driven largely by remittance income which, given projections of a slowdown of growth in the Middle East in the future, is subject to reductions and volatility. Although almost 60 percent of Pakistan's GDP is generated by services, they are largely concentrated on wholesale and retail trade which are domestically-oriented and vary both with the level of economic growth as well as fluctuations in it – in sum, they are not a sustainable source of growth and jobs unless they are externally tradable. In the absence of skills to fuel sizeable modern services sectors such as IT, finance, insurance, telecommunications and business-support that can also be exported, most countries have leveraged a diversified manufacturing sector to achieve an emerging market status. With India's exception, the export baskets of all other comparator countries in Figure 5 are evidence of the contribution of a diversified manufacturing export basket to a country's level of economic development. Pakistan has the option to achieve a similar pattern. It has already developed a world-class garments industry. Aggressively pursuing a path of diversification through labour-intensive manufacturing will serve it even better.

III. Data and Methodology

We focus exclusively on diversification opportunities in manufacturing subsectors by drawing on trade data (UN COMTRADE SITC2 4-digit). Ideally, this analysis should be conducted with production data but due to its unavailability at the level of disaggregation desired for a reasonable period (time-series), we limit our analysis to tradable subsectors, i.e. exports and imports. Information from the State Bank of Pakistan on domestic production is useful but lacks the disaggregation and coverage required for a comprehensive analysis. Ideally, as the singular focus of this Note is *manufactured products*/subsectors (used interchangeably), we should apply the formal definition of manufactured exports (World Development Indicators) which refers to SITC codes 5 – 8 excluding 68. However, given that Pakistan has a narrow export base and our objective is to identify manufacturing possibilities, we extend the scope to include selectively certain agricultural products and natural raw materials or commodities that can be processed to add value in the domestic market. In the broader search for potential exports, we also consider nascent manufacturing subsectors.

We use three technical concepts to construct a framework for our analysis. These three jointly lead to our recommendations (Table 2). In addition, we use the concept of export opportunities from Hausmann and Hidalgo Atlas of Economic Complexity (2014).

***Concept 1 - Revealed Comparative Advantage*.** We adopt a stepwise approach which applies a methodology based on the comparative advantage of a country in exporting a product.

How might policy makers determine whether their country has a comparative advantage in exporting certain products? Technically, the comparative advantage of a country can be calculated for each product it exports from its trade/export data. For example, if a country's products are being successfully exported to global markets or are competing with imports in domestic markets with no government help, the country is certain to have a comparative advantage in these products. Similarly, if, without government subsidies, an industry producing exports is attracting a growing amount of foreign direct investment (FDI), the country has a comparative advantage in those goods as well. Foreign investors have a keen sense of what countries produce that is competitive on international markets. For existing products, the concept of Revealed Comparative Advantage (RCA) can be used to pinpoint industries in which increased production could accelerate overall industrialization. This is a traditional method based on a country's trade data. The RCA based on trade data can be determined either quantitatively using the Balassa index, after Balassa (1965), or qualitatively through the inspection of detailed import data.

Accordingly, comparative advantage is calculated from RCA defined as the share of an exported product in total exports relative to the share of the same product in total world exports. An RCA greater than 1 (>1) indicates that the exporter has a comparative advantage in exporting a product; an RCA = 1 implies that the exporter has no particular advantage relative to the average country in the world in exporting the product, whereas an RCA of less than 1 (<1) indicates that the exporter is not competitive relative to the average country in the world in exporting that product.

Concept 2 – Tech code. Over time, the creation of better-paying jobs and the transition of a country from a low to a higher income status necessitates moving up the product ladder to higher-value products. We use a concept to indicate the technological complexity and sophistication level of the subsectors we recommend. This concept is the UNIDO's technology code based on Lall (2000) which classifies exports according to their technology-content as follows: PP=Primary products; RB1 and RB2 = Resource-based products with RB1 being less technologically sophisticated than RB2; LT1 and LT2 = Low-Tech 1 and 2; MT1, MT2 and MT3 = Medium-Tech; HT1 and HT2 = High-Tech. Pakistan's current exports are mostly PP, RB or LT products. We assume that the transformation from a LT exporter to a MT or HT product exporter is a longer-term process dependent on the evolution of skills and technological sophistication and several other critical factors. Consequently, in general, in the short term we do not recommend products that imply leapfrogging to MT or HT products.

Concept 3 – Product Complexity Index. Product Complexity Index (PCI), refers to the technological sophistication of a product and was designed by Hausmann and Hidalgo et al.[3] PCI ranks the diversity and sophistication of the productive know-how required to produce a product. PCI is calculated based on how many other countries can produce the product and the economic complexity of those countries explained as the variety and number of products a country produces. In effect, PCI captures the amount and sophistication of know-how required to produce a product. The range of the PCI index varies from

[3] R Hausmann, CA Hidalgo, S Bustos, M Coscia, S Chung, J Jimenez, A Simoes, M Yildirim. The Atlas of Economic Complexity. Puritan Press. Cambridge MA. (2014).

year to year. As an example, in 2015, it ranged from -2.69 to 3.6. Lower scores represent technologically simpler products exported with relative ease by many countries, while higher scores illustrate more sophisticated products, more inputs, more skills and are therefore exported by fewer countries. For example, raw cotton has a PCI of -2.3 but shirts have a PCI of -1.8. Wheat has a PCI of -1.26 compared to pasta which has a PCI of -1.06. Pakistan's current exports are relatively low PCI. Assuming the graduation from low to high PCI products involves some degree of learning-by-doing, our general approach is to avoid large leaps or jumps from low to very high PCI products. In general, we recommend a path of gradual diversification to higher PCI products with one exception. Since the overarching goal is to identify more manufacturing subsectors, we also recommend some relatively low PCI products if they have the potential to nurture new subsectors. 'Sheep and lambskin leather' are an example of relatively low PCI products we recommend given their potential to seed a leather footwear industry.

Two-step Methodology

We adopt a simple two-step framework based on RCA and other concepts to identify the potential for new manufacturing subsectors in Pakistan (Table 2). As the concept of comparative advantage is subject to measurement error, we only focus on subsectors/products (used interchangeably) in which the country had a persistent comparative advantage over at least 4 – 5 years. Using RCA to analyse export data from the 1990s until 2015, in Step One we apply a framework that disaggregates all exports into four types of export subsectors.

Table 2: Framework used to identify manufacturing subsectors for fostering diversification

Current Exports	Classics	Disappearing	Emerging	Marginals	Import -competing
RCA>1 in 1990s and 2000s	Yes	Yes	No	No	n/a
RCA>1 in 2010-15	Yes	No	Yes	No	n/a
Tech code/ sophistication (PCI)	Average -1.03	Average -0.44	Average -0.67		Select ones with Tech code and PCI consistent with current capabilities
Recommended policy approach based on RCA, Tech code and PCI	Facilitate/remove constraints	Investigate why they declined	Facilitate, nurture	Do nothing	Explore feasibility and facilitate

1. **Classics**: subsectors which have maintained their comparative advantage (RCA>1) over an extended number of years, i.e., from the 1990s to the present. These represent Pakistan's traditional exports and are its proven strength;
2. **Emerging** subsectors in which Pakistan did not have a persistent comparative advantage in the 1990s but has developed it in the 2000s. These promising new sectors should be fostered;

3. **Disappearing** subsectors in which Pakistan had a comparative advantage (RCA >1) in the 1990s but either ceased to have a comparative advantage in the 2000s or did not maintain it consistently throughout the 2000; and
4. **Marginals** are subsectors in which Pakistan neither had a comparative advantage in the 1990s nor in the 2000s. These sectors have had an RCA<1 for most years since the 1990s. They are not strong candidates for diversification until they develop an RCA>1.

In Step Two, we focus on the technological sophistication of the subsectors identified in Step One. Subsectors with a higher Tech code and PCI are recommended as they lay the path for structural transformation towards more sophisticated products within existing and new manufacturing subsectors. However, exporting technological complex products is a slow process that occurs through learning-by-doing. In the short to medium term, leapfrogging to exports of hi-tech products will not be easy. Therefore, our approach for the *short to medium term is conservative* as it recommends products in which Pakistan has a comparative advantage (Classics and Emerging) and which have sophistication levels that are not too much higher than the sophistication levels of existing exports (last row of Table 2).

An important part of our diversification strategy is to identify import-competing subsectors as, in addition to exports, they can play a fundamental role in expanding the size of a globally competitive manufacturing sector in Pakistan. While Step One is not relevant, Step Two of our framework ensures that the subsectors identified for import substitution have Tech codes and PCI scores that are not too much higher than those of the existing exports sectors which are globally competitive (last column of Table 2).

IV. Identifying Potential Exports

An application of the framework presented in Table 2 in the preceding section shows that since the 1990s, the stronghold of Pakistan's traditional exports or Classics which comprise about 75 percent of total merchandise exports has remained firm (Table 3). While the absence of structural transformation and the associated dynamism, innovation and diversification in manufactured exports has persisted since the 1980s (Figure 4), our framework indicates a small and promising trend in recent years. Since 2010, a few Emerging subsectors have appeared and consistently maintained their comparative advantage. While they accounted for only about 6 – 7 percent of total exports between 2010-15, the Emerging champions can be a stepping stone to diversification in the manufacturing sector. They reflect new firm activity in the domestic market and hold good promise.

Table 3: Application of the identification framework to Pakistan's export sector

	1990s	2000s	2010-2014	2015
	RCA>1	RCA>1	RCA>1	RCA>1
Classics	Yes	Yes	Yes (73%)	Yes (75%)
Emerging	No	Sporadic	Yes (7%)	Yes (6%)
Marginals	No	No	No (20%)	No (18%)
Disappearing	Yes	Sporadic	No (0.44%)	No (0.55%)

Source: COMTRADE, Author's calculations.

The remaining 18 – 20 percent of the exports are composed of Marginal subsectors in which Pakistan never became globally competitive. Typically, the list of Marginal exports is long and the explanation for their presence unclear. They merit an investigation to understand why some firms can export them and others not. The share of Disappearing export subsectors in which Pakistan had a consistent comparative advantage in the 1990s but sporadically or none in the 2000s and onwards, is negligible.

What are the new opportunities for manufactured exports and manufacturing more broadly in Pakistan? To answer this question, we examine below in detail the contents of the Classics, Emerging, and Disappearing quadrants listed in Table 3.

A. Manufacturing Opportunities in Traditional Export Sectors

Between 2010 and 2015, Pakistan's traditional exports or Classics were concentrated firmly in the Textiles and Garments subsectors whose joint share increased from 58 percent in 2010-14 to 62 percent of total exports in 2015 (Table 4). In contrast to the 1980s when there was transformation from low to higher value-added products within the Textiles and garments subsectors (Table 3), the composition of the Classics after 2010 does not reflect a trend of persistent innovation towards sophisticated products with higher PCI scores. For example, although firms were exporting both high PCI products such as Clothing Accessories with leather trims (PCI of -0.4) and low PCI products such as Women's and Girls Outerwear (PCI of -1.34) since the 1990s, the export shares of both products in 2010 and 2015 were similar. Until as recently as 2010, there was a remarkable lack of dynamism and sophistication in Pakistan's flagship export subsector - Textiles and Garments. Its products were rated low-tech or LT1 and had low PCI scores that ranged between -1.8 and -0.4. The absence of diversification since the 1990s is also confirmed by the small shares of non-Textiles and Garments Classics such as Leather Products and Processed Foods. Their export shares and sophistication levels both remained small since the 1990s.

Three distinct 'Other manufactured products' were the only Pakistani Classics with a higher level of sophistication in 2015 (Table 4). In comparison to Textiles, Garments and Leather which are LT1, both Sporting goods and Cutlery had a slightly higher Tech rating of LT2, and PCI scores of -0.14 and -0.21. Medical Instruments and Appliances were the only medium-tech subsector with a MT2 rating and a positive PCI score of 0.42. At around 3 percent, the joint share of these products was stagnant between

2010 and 2015. It will be helpful for policymakers to investigate reasons for the lack of dynamism in these non-Textile and Garments sectors. Why haven't they grown?

We extended the definition of manufactured exports to search for PP or RB products that undergo some level of processing and found some agroprocessed foods such as semi- or milled Rice, Crustaceans, and Dried Fruits. However, these subsectors have low levels of sophistication. In Table 4, we have included two subsectors related with Building and Monumental Stones. These are natural resource-based subsectors with RB tech codes but involve industrial processing and hold promise for diversification.

Table 4. Pakistan's Traditional exports – manufactured Classics in which it had a comparative advantage since the 1990s

SITC code		Tech code	PCI rank	RCA>1 1990s	RCA>1 2010-15	Export Share Percent (%)		Average annual exports (Millions of USD)	
	Processed Food Products					**2010-14**	**2015**	**2010-14**	**2015**
	Rice	PP	-1.27	Yes	Yes	6.98	6.17	1691	1457
360	Crustaceans and molluscs, fresh, chilled, frozen, salted, etc	PP	-1.76	Yes	Yes	0.44	0.49	106	116
579	Fruit, fresh or dried, nes	PP	-1.28	Yes	Yes	0.65	0.75	158	177
	Other high-value agro products	RB1	-1.46	Yes	Yes	0.63	0.57	153	134
	Total agricultural products		*(-1.3 - -1.5)*			***8.70***	***7.98***	***2107***	***1885***
	Leather								
	Leather - bovine/sheep/lamb/other	LT1	-1.05	Yes	Yes	2.16	1.90	523	448
	Other materials of animal origin	PP	-1.15	Yes	Yes	0.24	0.16	57	38
	Total raw materials from animals		*(-1.05 - -1.15)*			***2.40***	***2.06***	***580***	***487***
	Natural raw materials								
2731	Building and monumental stones, roughly squared/split	PP	-0.80	Yes	Yes	0.77	0.54	186	129
2879	Ores and concentrates of other non-ferrous base metals	RB2	-1.95	Yes	Yes	0.53	0.38	273	90
	Total natural raw materials		*(-0.8 - -1.9)*			***1.31***	***0.93***	***460***	***219***
	Cotton value chain								
	Cotton - raw, carded/combed, waste etc.	PP	-1.84	Yes	Yes	1.65	0.78	400	185
	Yarn-cotton and synthetic fibres	LT1	-1.28	Yes	Yes	8.90	7.66	2156	1810
	Fabrics - cotton and synthetic, lace	LT1	-1.34	Yes	Yes	11.18	10.60	2707	2504
6584	Linens and furnishing articles of textiles, not knitted	LT1	-0.94	Yes	Yes	11.97	13.11	2897	3098
	Carpets, Kelem, Schumacks, other rugs	LT1	-1.19	Yes	Yes	0.69	0.57	168	133
	Bags, sacks, tarpaulins, tents, other textile materials	LT1	-1.78	Yes	Yes	2.80	3.22	678	761
	Total Cotton products (not garments)		*(-0.9 - -1.8)*			***37.19***	***35.94***	***9005***	***8491***
	Garments								
	Men's and boys outerwear - trousers,jerseys	LT1	-1.01	Yes	Yes	9.08	12.23	2199	2889
	Womens, girls, infants outerwear	LT1	-1.34	Yes	Yes	3.51	4.79	851	1131
	Mens & boys undergarments of textiles - shirts	LT1	-0.86	Yes	Yes	2.82	2.76	684	653
	Clothing accessories of textile and leather	LT1	-0.43	Yes	Yes	5.28	5.77	1278	1363
	Total garments		*(-0.4 - -1.3)*			***20.70***	***25.55***	***5011***	***6035***
	Other manufactured products								
8720	Medical instruments and appliances, nes	MT3	0.43	Yes	Yes	1.11	1.41	3	334
8947	Other sporting goods and fairground amusements, etc	LT2	-0.14	Yes	Yes	1.13	1.35	1	318
6613	Building and monumental stone, worked, and articles thereof	RB2	-0.80	Yes	Yes	0.77	0.54	29	129
6960	Cutlery	LT2	-0.21	Yes	Yes	0.30	0.32	26	76
	Total - other manufactured products		*(0.4 - -0.8)*			***3.32***	***3.62***	***59***	***856***
	Total Classics	Average PCI -1.03				**73.62**	**76.08**	**17,222**	**17,973**

Source: COMTRADE, SITC2 – 4 digits; Authors calculations.

Recommendations

a) Continue to foster growth in all the Classics as they are crucial for the manufactured exports sector.

b) Adopt a twin-forked strategy that focuses on (i) diversification from Textiles, Garments and Leather in other manufacturing subsectors, and (ii) innovation to propel the production of more sophisticated products within all the Classics. In the medium term, this should increase the shares of the higher PCI and LT2 and MT1 and MT2 products even within the Classics export sectors.

c) Explore why exports of more sophisticated Classics such as Medical Instruments and Appliances, or Sporting Goods and Cutlery or even Clothing accessories which have a higher PCI have not gained a larger market share. Pakistan has been exporting them with a consistent comparative advantage since the 1990s. Policies should focus on removing the constraints to these subsectors as they create better paying jobs and can foster diversification in the manufacturing subsector.

d) The Agroprocessed food subsectors have remained small despite Pakistan's comparative advantage in agriculture. Policies should focus on constraints to more value-addition/processing in the food sector which is an important source of better-paying jobs in rural areas as well as diversification in manufacturing. Examples include fruit juices and prepared food exports.

B. New Manufactured Export Possibilities in Nascent Subsectors - Emerging Champions

Pakistan's Emerging manufactured exports subsectors indicate some potential for diversification as they have consistently maintained a comparative advantage (RCA>1) since 2010. Pakistan did not have a comparative advantage in these subsectors in the 1990s and 2000s (Table 5). Between 2010 and 2015, the share of these nascent exports subsectors was small and stagnant at about 6 – 7 percent of total exports which suggests weak dynamism to propel their growth. Compared to the Classics, a positive characteristic of the Emerging subsectors is that on average, they are substantially more sophisticated with an average PCI score of -0.67. While about one-third (about 1.3 percent of total exports) of the Emerging subsectors are still low-tech LT1 Garments, Textiles and Leather products, their average PCI score is much higher.

Two types of manufacturing clusters are notable among Pakistan's Emerging exports (Table 5). The first set labelled Processed Raw Materials comprises of the Rubber, Base metals and Cement subsectors which are in their early stages of development and export reclaimed or scrap materials but have critical potential for valuable downstream manufacturing industries that are fundamental for a modern manufacturing sector consistent with Pakistan's income level. The second cluster is the Chemicals, Plastics and Medical Furniture subsector which is equally fundamental for an emerging market economy and accounted for about 50 percent of total Emerging exports in 2010-15 (US $634 – 776 million per annum). The Plastics and Chemicals subsectors were all MT2 with high PCI scores of -0.8 to 0.29. Pakistan's current imports of these products are large.

Table 5. Pakistan: Emerging exports in which it did not have a persistent comparative advantage in the 1990s and 2000s but has maintained it since 2010.

Product Code	Product Description	Tech	PCI	RCA>1 1990s	RCA>1 2010-15	Export Share (%)		Exports (Millions USD)	
						2010-14	2015	2010-14 (Annual Avg.)	2015
	Processed raw materials								
2332	Reclaimed rubber, waste/scrap	RB1	-0.67	No	Yes	0.02	0.02	5	6
2882	Other non-ferrous base metal waste & scrap	RB2	-0.63	No	Yes	0.81	0.38	197	89
6612	Cement	RB2	-1.20	No	Yes	1.10	0.91	266	216
	Total processed raw materials					***1.94***	***1.31***	***469***	***310***
	Yarn, fabrics, carpets etc.								
6517	Yarn of regenerated fibres, monofil/strip	LT1	-0.13	No	Yes	0.06	0.02	15	4
6583	Travelling rugs/blankets (non electric)	LT1	-0.99	No	Yes	0.15	0.19	37	45
6596	Carpets, rugs, mats of other textile materials	LT1	-0.30	No	Yes	0.07	0.08	16	19
6545	Fabrics woven of jute/other textile bast fibres	LT1	-1.68	No	Yes	0.01	0.00	2	0
6552	Knits not elastic or non-synthetic fibres	LT1	-0.24	No	Yes	0.23	0.19	56	46
	Total carpets, yarn and non-cotton fabrics					0.52	0.48	***126***	***114***
	Leather								
6118	Leather, specially dressed or finished, nes	LT1	-0.34	No	Yes	0.04	0.04	10	10
6112	Composition leather, in slabs, sheets or rolls	LT1	-0.13	No	Yes	0.01	0.01	2	2
	Total leather materials					***0.05***	***0.05***	***12***	***12***
	Garments								
8463	Under-garments knitted/croch of synth fibres	LT1	-1.08	No	Yes	0.24	0.31	58	74
8421	Men's and boys' outerwear of textile fabrics - Overcoats/other coats	LT1	-0.92	No	Yes	0.03	0.03	8	6
8422	Men's and boys' outerwear of textile fabrics - suits	LT1	-1.07	No	Yes	0.06	0.10	16	23
8424	Men's and boys' outerwear - jackets/blazers	LT1	-1.00	No	Yes	0.07	0.11	17	26
8464	Under-garments, knitted/crocheted not elastic or rubberized	LT1	-1.56	No	Yes	0.03	0.05	6	11
8482	Clothing accessories of plastic/rubber	LT1	0.22	No	Yes	0.13	0.17	32	40
	Total garments					***0.56***	***0.76***	***136***	***180***
	Plastics, chemicals & furniture								
8212	Furniture for medical, surgical, dental or veterinary practice	LT2	-0.73	No	Yes	0.64	0.62	156	146
5121	Acyclic alcohols, and their derivatives	MT2	-0.43	No	Yes	1.33	1.33	323	315
5823	Alkyds and other polyesters	MT2	0.29	No	Yes	0.87	0.55	210	129
5852	Other artificial plastic materials, nes	MT2	-0.82	No	Yes	0.36	0.19	87	44
	Total plastics, chemicals, furniture					***3.20***	***2.68***	***776***	***634***
	TOTAL Emerging Exports	***Avg. PCI -0.67***				**6.90**	**6.08**	**1518**	**1250**

Source: COMTRADE, SITC2 – 4 digits; Authors calculations.

Recommendations

Since in contrast to its comparators, the manufacturing sector in Pakistan has been stunted both in terms of its size in the domestic economy as well as exports, it will be useful for its policymakers to foster the nascent manufacturing subsectors that have, despite underlying constraints, managed to gain comparative advantage. A discrete twin-forked strategy is recommended.

- Foster diversification in the Emerging champions in the modern manufacturing subsectors - Chemicals, Plastics and Medical Furniture, as well as the processed raw materials subsectors (Rubber, base metal scrap and cement).
- Facilitate innovation so that firms can diversify in more technologically complex products in the Emerging Textiles, Garments and Leather subsectors. Examples: Composition Leather, Knits, Clothing Accessories. These Emerging subsectors have higher PCI scores than the Classics.

C. Manufacturing Export Opportunities in Marginal and Declining Subsectors

In 2015, about 19 percent of Pakistan's total merchandise exports were generated by either the Disappearing or Marginal export subsectors (Table 3). While the Marginal exports comprise a long list of very small export values featuring zero exports in some years, the Disappearing exports category provides a few useful policy insights. Despite Pakistan's strong comparative advantage in Textiles, Garments and Leather as evident from their dominance in the overall export basket, COMTRADE data shows that Pakistan did not have a comparative advantage in a variety of sophisticated 'Women's and Infants Outerwear' garments during 2010-15 (Table 6). Although their export values were small because these subsectors have been gradually declining since the 1990s when Pakistan was competitive in them, this issue should be of concern to policy makers. Compared to the other Classic Garments subsectors (mostly Men's and Women's garments), the Women's and *Infants Outerwear*' Garments subsectors are relatively sophisticated with higher PCIs.

Table 6. Pakistan's exports – Disappearing manufactured export sectors since 2010

SITC Code	Product Description	Tech	PCI	RCA>1	RCA<1	Export Share (%)		Exports (millions USD)		Exports in Comparison Country, 2015					
				1990s	2010-15	2010-14	2015	2010-14	2015	IND	CHN	TUR	IDN	THA	VNM
350	Fish, dried, salted or in brine; smoked fish	RB1	-1.43	Yes	No	0.03	0.03	7.4	6.4				x	x	
	Garments														
8435	Womens, girls, infants outerwear of textiles - blouses	LT1	-0.81	Yes	No	0.1	0.0	20.0	9.0	x	x	x	x		x
8452	Womens, girls, infants knitted suits & dresses	LT1	-0.69	Yes	No	0.1	0.1	16.3	23.0	x	x	x	x		
8433	Womens, girls, infants outerwear of textiles - dresses	LT1	-0.53	Yes	No	0.04	0.03	10.6	8.0	x	x	x	x		
	Other light manufactures														
6594	Carpets, rugs, mats, of wool/fine animal hair	LT1	-0.09	Yes	No	0.01	0.01	2.2	3.3	x		x		x	
8310	Travel goods, handbags etc, of leather/plastics/textile/others	LT1	-0.07	Yes	No	0.2	0.3	50.9	79.9	x	x				
	TOTAL - Disappearing exports	***Avg***	***-0.44***			**0.4**	**0.5**	**107**	**130**						

The other high PCI Disappearing subsector is Leather Products – Travel goods, handbags etc. - which have a significantly higher value-addition than leather materials which Pakistan exports. Although the emergence of Composition Leather, another type of material as an Emerging export offers comfort for diversification, the loss of comparative advantage in the leather products sectors raises questions about constraints that may be hindering goods production.

Recommendations

- We frequently find exports from declining or *Disappearing* subsectors have been affected by adverse domestic policy or global circumstances. Table 6 lists exports in which Pakistan had a persistent comparative advantage in the 1990s and during 2000-04, but not during 2010-2015. Unless a clear explanation already exists, policy makers should try to understand the reasons underlying the Disappearing subsectors – why did they flourish in the past and what prompted their disappearance in recent years? Are there policy mistakes they can avoid?

- Policymakers should also investigate why certain *sophisticated* product chains in some of Pakistan's leading Garments and Leather export subsectors such as Travel bags of leather in which Pakistan enjoyed a comparative advantage in the 1990s have declined.

D. New Manufacturing Possibilities in Import-Competing industries

Import competition or the competitive production of import-substitutes offers as much if not more scope for growth and diversification in Pakistan's manufacturing sector as its exports. The discussion in subsections A – C suggests that the scope for rapid export diversification in the short to medium term may be limited on two counts. First, Pakistan's traditional exports or Classics have a narrow range and have shown no dynamism towards diversification since the 1990s; and second, while the Emerging manufactured exports seem promising, their share of 6 – 7 percent of total exports until as recently as 2015 did not suggest any trend towards accelerated growth. At best, the Emerging subsectors will grow sluggishly. It would be unrealistic to expect them to trigger transformational change in the short to medium term. Evidently, the constraints to a conducive investment climate are many and deeply entrenched in the manufacturing sector. Without a discrete strategy to scale and modernize manufacturing, the status quo is likely to prevail.

Policies to curb the growing trade deficit as well as propel manufacturing should therefore focus equally on import competing industries. This will be challenging as domestic technological capabilities to produce new products which are world-class and can compete with imports are limited both in sophistication or quality and scale. Most of Pakistan's manufactured exports fall in the low-Tech or LT1 category with an average PCI score for Classics of -1.03 and of Emerging subsectors of -0.67.[4] The overall size of the domestic manufacturing sector is only 14 percent of GDP and 55 percent of it is concentrated in Textiles and Garments, Food and Petroleum products.

In the short to medium term, the existing *scale* of the domestic manufacturing subsectors will also determine the scope for import-competition/substitution. Of course, for the longer term, appropriate investments in skills will open many pathways to a strong and diversified manufacturing sector. As an example, in 2018, Engineering/Machinery imports accounted for over 15 percent of total Pakistani imports, but the share of the corresponding domestic Engineering/Machinery-producing subsector was less than 0.6 percent of all manufacturing output in the large firms' sector (Table 1). The share of Chemicals imports was over 17 percent of total imports but the corresponding domestic subsector was less than 3 percent of the large manufacturing firms sector. We therefore recommend that in addition to a discrete focus on diversification through exports and import-substitution, policymakers adopt a discrete strategy to propel innovation in manufacturing – this is essential to build the firm capabilities necessary to scale up modern manufacturing subsectors such as Engineering/Machinery and Chemicals, as well as compete with imports in the domestic market.

[4] In 2015, the PCI ranged from -2.7 to 3.6. Lower scores represent technologically simpler products exported with relative ease by many countries, while higher scores illustrate more sophisticated products, more inputs, more skills and are therefore exported by fewer countries.

For the short to medium term, the potential import-competing industries recommended are presented in Tables 7 and 8 according to the following conservative criteria:

1. Most are low-tech LT or LT2 products. We have deliberately excluded most technologically complex subsectors such as MT1, MT2, MT3, HT1 and HT2 as we believe that technological sophistication and competitiveness is acquired through learning-by-doing.
2. Their level of sophistication defined by PCI is relatively low and consistent with the PCI of Pakistan's manufactured exports; this pre-empts aspirational picks;
3. They are well aligned and correspond to Pakistan's traditional export sectors in which it has proven comparative advantage;
4. Many have also been identified by the Product Space framework (Hausmann and Hidalgo) as export opportunities.
5. For the purposes of this Note, the **Product Space criterion** used to identify subsectors identifies a product (subsector) as a possibility for Pakistan based on the probability that other countries which exported the same products as Pakistan with a comparative advantage also exported the selected product with a comparative advantage. If a large number of countries were able to develop a comparative advantage in both products, there is a strong likelihood though no guarantee that Pakistan may be able to do the same.

Tables 7 lists the low-hanging fruit or import-competing opportunities in Pakistan's traditional subsectors (Classics) while Table 8 does the same for its nascent/non-traditional Emerging subsectors. Given its limited manufacturing experience, it is less-risky to facilitate import-substitution in traditional or nascent manufacturing subsectors where there is *already ongoing* production than jumpstarting brand new subsectors. In Table 7 for example, nearly all the subsectors identified as potential import-competing subsectors are in the Textiles and Garments subsectors. Most meet all four selection criteria. At least one (Women's and infants' outerwear) was also identified in section C as a candidate for scrutiny given that it used to be produced in Pakistan in the 1990s and 2000. Some higher-PCI and LT2 or MT2 products such as Chenille, Pile, lace and tarpaulins are included as they are vetted by the Product Space criteria and offer a pathway to diversification within the Textiles and Garments subsectors.

Table 8 presents identifies potential import-competing subsectors which offer a direct path to diversification in non-traditional and more sophisticated subsectors. Some reinforce our recommendations in Sections B and C. Leather Travel goods identified as a Disappearing subsector in subsection C is an example. Composition Leather and new Leather products identified in subsection B as an Emerging sector is another example. A set of construction industry-related subsectors such as Building and Monumental stones of all types, and related ceramics, cement and china industries are also vetted by the analysis of Emerging export industries in Subsection B. The Acyclic Alcohols subsector is identified given its large potential for import substitution. Its small exports are Emerging champions that confirm existing domestic capability which needs to be scaled up. Some Plastics and Iron and Steel products subsectors are specially identified because they pass our selection criteria as well as have strong forward and backward linkages with potential to seed modern manufacturing value chains.

Recommendations: Foster all subsectors listed in Tables 7 and 8.

Table 7. Pakistan: In addition to exports, there is a large potential for import-substitution in more sophisticated products (higher-PCI) within the traditional manufacturing sectors.

Pakistan: Import - substitution possibilities in more sophisticated products within the traditional manufacturing sectors

SITC	Description	Tech code	Product Complexity Index (PCI) 2015	Imports 2014 Mlns. USD	Imports 2015 Mlns. USD	Export Opportunity as per Product Space
	Food industries					
	Refined Sugar, syrups & preparations	RB1	-1.14 - -0.52	42	40	x
	Fruit products & juices - prepared/preserved	RB1	-1.11 - -0.29	35	30	
565	Vegetables, prepared or preserved, nes	RB1	-1.02	8	8	
	Garments					
	Womens, girls, infants outerwear, dresses - knitted and not	LT1	-0.95 - -0.53	8	8	x
	Men's and boys outerwear - overcoats, suits, jackets, trousers etc	LT1	-1.12 - -0.92	12	17	x
	Under garments knitted, not knitted of textiles/synthetic	LT1	-1.56 - -0.86	11	13	x
	Outerwear of all types	LT1	-1.25 - -0.43	14	20	x
	Clothing Accessories	LT1	-0.80 - -0.43	20	24	x
	Textiles, Yarn					
	Yarn of cotton and regenerated fibres - monofil/strip	LT1 - MT2	-1.28 - -0.13	302	278	x
	Lace,trimming, cordage, ropes	LT2	-0.58 - 0.45	42	36	x
	Fabrics - cotton, synthetics, regenerated fibres		-1.34 - -0.15	242	210	x
6584	Linens and furnishing articles of textile, not knitted or crocheted	LT1	-0.94	2	4	x
6935	Gauze, cloth, grill, netting, reinforced fabric and the like	LT2	-0.18	6	6	x
6539	Pile and chenille fabrics, woven, of man-made fibres	MT2	-0.08	0	1	x
	Consumer goods of textile materials					
6581	Bags, sacks of textile materials, for the packing of goods	LT1	-1.78	7	10	x
6583	Travelling rugs, blankets (non electric), not knitted or crocheted	LT1	-0.99	28	38	x
6582	Tarpaulins, sails, tents, camping goods, etc, of textile fabrics	LT1	-0.90	2	10	x
	Carpets and rugs	LT1	-1.19 - -0.30	9	11	
	Sub-total for traditional sectors			**$790**	**$766**	

Source: Authors calculations, COMTRADE and Observatory of Economic Complexity.

Note: LT1, LT2 =Low-tech; MT1, MT2, MT3 = Medium-Tech; RB2 = Resource-based products.

The PCI is a measure of product sophistication or complexity. For SITC product codes, the PCI ranges from -2.97 for the least sophisticated products to 2.6 for the most-sophisticated products. The average PCI of Pakistan's traditional manufactured exports is –1.03; the average PCI of Pakistan's emerging manufactured exports is -0.67.

Table 8. Pakistan: There is a large potential for import-substitution in non-traditional and more sophisticated manufacturing subsectors with a higher PCI.

	Pakistan: Import - substitution possibilities in non-traditional manufacturing sectors					
SITC	Description	Tech code	Product Complexity Index (PCI) 2015	Imports 2014 Mlns. USD	Imports 2015 Mlns. USD	Export Opportunity as per Product
	Silk					
6511	Silk yarn and spun from noil or waste; silkworm gut	LT1	-0.52	10	10	x
	Leather industry - materials and products					
	Leather of new types	LT1	-1.48 - -1.03	44	29	x
6112	Composition leather, in slabs, sheets or rolls	LT1	-0.13	2	1	x
8310	Travel goods, handbags etc, of leather, plastics, textile, others	LT1	-0.07	20	24	
	Leather products of composition leather	LT2	-0.64 - -0.08	9	6	
	Footwear - parts and final goods	LT1	0.79 - -0.50	84	92	
	Building materials and products					
8991	Articles and manufacture of carving, moulding materials, nes	LT2	-0.36	75	92	
6613	Building and monumental stone, worked, and articles thereof	RB2	-0.80	15	18	x
6612	Cement	RB2	-1.20	12	17	x
	Othet consumer and producer goods					
5541	Soaps, organic products and preparations for use as soap	MT2	-0.94	31	29	
8993	Candles, matches, combustible products, etc	LT2	-0.15	3	4	
6651	Bottles etc of glass	LT2	-0.46	9	9	
8997	Basketwork, wickerwork; brooms, paint rollers, etc	LT2	-0.35	9	10	
8994	Umbrellas, canes and similar articles and parts thereof	LT2	-0.25	1	2	
6421	Packing containers, box files, etc, of paper, used in offices	LT2	-0.53	14	9	x
8947	Other sporting goods and fairground amusements, etc	LT2	-0.14	16	24	x
6664	Porcelain or china house ware	LT2	-0.22	17	22	x
8122	Ceramic plumbing fixtures	MT3	-0.22	5	7	x
5121	Acyclic alcohols, and their derivatives	MT2	-0.43	339	315	
5837	Polyvinyl acetate - polyester - plastics	MT2	-0.35	7	5	x
	Iron and steel products					
	Diverse range of iron and steel products - bars, rods, drills	LT1-LT2	-0.38 - -0.23	950	1036	x
	Base metal indoors sanitary ware, tanks, casks, tubes, pipes,	LT2-MT2	-0.18 - -0.01	107	187	x
6960	Cutlery	LT2	-0.21	18	18	x
6951	Hand tools, used in agriculture, horticulture or forestry	LT2	-0.43	0	0	
6973	Domestic, non-electric, heating, cooking apparatus, and parts, nes	LT2	-0.18	7	9	
6932	Barbed iron or steel wire: fencing wire	LT2	-1.17	0	2	
7731	Insulated electric wire, cable, bars, etc	MT3	-0.61	113	110	
6353	Builders` carpentry and joinery (including prefabricated)	LT2	-0.05	31	34	
6733	Angles, shapes, sections and sheet piling, of iron or steel	LT2	-0.03	20	26	
7822	Special purpose motor lorries and vans	MT1	-0.41	40	38	
8212	Furniture for medical, surgical, dental or veterinary practice	LT2	-0.73	9	9	
8219	Other furniture and parts thereof, nes	LT2	-0.08	10	11	
	Total for import-substitution in non-traditional sectors			**$2,028**	**$2,205**	

Source: Authors calculations, COMTRADE and Observatory of Economic Complexity

Note: LT1, LT2 =Low-tech; MT1, MT2, MT3 = Medium-Tech; RB2 = Resource-based products.

The PCI is a measure of product sophistication or complexity. For SITC product codes, the PCI ranges from -2.97 for the least sophisticated products to 2.6 for the most-sophisticated products. The average PCI of Pakistan's traditional manufactured exports is –1.03; the average PCI of Pakistan's emerging manufactured exports is -0.67.

E. Final recommendations

Given its currently small share of 11 – 14 percent of GDP in the economy, it is unrealistic to expect that Pakistan's manufacturing sector to either leapfrog into new modern manufacturing activity, or scale up or become an export growth engine in the short term. Its traditional or Classic Textiles and Garments exports account for almost 60 percent of overall exports and over 30 percent of the large firm manufacturing sectors. Their composition/structure has not changed much since the 1990s, and most of the current products are less sophisticated low-tech ones. Fortunately, a handful of modern Emerging manufacturing subsectors had an export share of 6 percent in 2015 but they did not grow much between 2010-15. These could transform Pakistan's manufacturing sector in the medium term but it will not happen automatically. A discrete twin-forked strategy can be a game-changer for Pakistan's manufacturing sector. It is necessary (i) to propel diversification in the Classic and Emerging manufacturing export sectors, and support import competition/substitution that will help in scaling up the domestic manufacturing sector; and (ii) to nurture innovation which is essential to build the technological capabilities of domestic firms to produce more sophisticated manufactured products in existing industries as well as nascent modern manufacturing subsectors such as chemicals, electronics, and machinery. In a nutshell, given the inertia and lack of structural transformation since the 1990s, focused-innovation is essential for diversification and scaling up of Pakistan's existing manufacturing sector. Most countries have followed the more gradual learning-by-doing route to diversification and exporting. As there are no shortcuts to learning, Pakistan needs to do the same.

Our case for export diversification rests firmly in evidence of comparative advantage and is based on the framework introduced in Section III, as well as by the Product Space. For the short to medium term, we recommend the following manufacturing subsectors:

- Continue to foster growth in the Classics as they are crucial for manufactured exports and account for 75 percent of them. Focus public policies on removing the constraints to these subsectors as they create better paying jobs.
- Explore why exports of sophisticated Classics such as Medical Instruments and Appliances or Sporting Goods have not gained a larger market share.
- Pakistan has a large agricultural sector but its Agroprocessed food subsectors are small. Policies should focus on constraints to more value-addition in the food sector .
- Foster nascent manufacturing subsectors that have acquired a comparative advantage in the last decade. These Emerging champions are in the Chemicals, Plastics and Medical Furniture, as well as the processed raw materials subsectors (Rubber, base metal scrap and cement). Attention should also be given to new and sophisticated products in the Emerging Textiles, Garments and Leather subsectors such as Composition Leather and products, Clothing Accessories, and Tarpaulins.
- Investigate what happened to Disappearing exports such as Travel Leather goods in which Pakistan had a comparative advantage until 2000-04 but not in 2010-15, and avoid repeating those policy mistakes.

- Facilitate the emergence of select import-competing or substitution subsectors in both traditional and non-traditional subsectors. They are listed in tables 7 and 8 and include modern manufacturing subsectors.

V. Constraints to Growth in Pakistan's Manufacturing Sector

While the subsector specific constraints can only be diagnosed through comprehensive fieldwork, the general constraints to manufacturing can be gleaned from the findings of the World Bank's latest Enterprise Survey[5] on Pakistan. 1,247 firms were interviewed between May 2013 through May 2015 for the latest version of the Enterprise Survey for Pakistan in 2013.[6] 509 firms were small firms (5-19 employees), 471 were medium firms with 20-99 employees, and 267 were large firms (100+ employees). Therefore, the survey skews towards constraints for firms with fewer than 100 employees. 233 of the firms produced food, 167 firms produced textiles, and 111 produced chemicals & chemical products.

Respondents were presented with a list of 15 business environment obstacles and asked to choose the biggest obstacle to their business. The top obstacles cited by Pakistan's firms are Access to electricity (45.3 percent), Corruption (17.3 percent), and Political instability (8.7 percent).

The World Bank's just released Doing Business 2019 Report assigns Pakistan a ranking of 136 out of a total of 190 countries where ranking 1 is the best. Scoring occurs on a set of 10 types of indicators

[5] The Enterprise Survey conducted by the World Bank is administered to a representative sample of firms in the non-agricultural formal private economy. The survey is performed through face to face interviews with firm managers and owners regarding the business environment in their countries.
[6] http://www.enterprisesurveys.org/data/exploreeconomies/2013/pakistan

related with the ease of doing business. Pakistan's ranking on these should be seen as complementary to the 2013 Enterprise Survey findings.

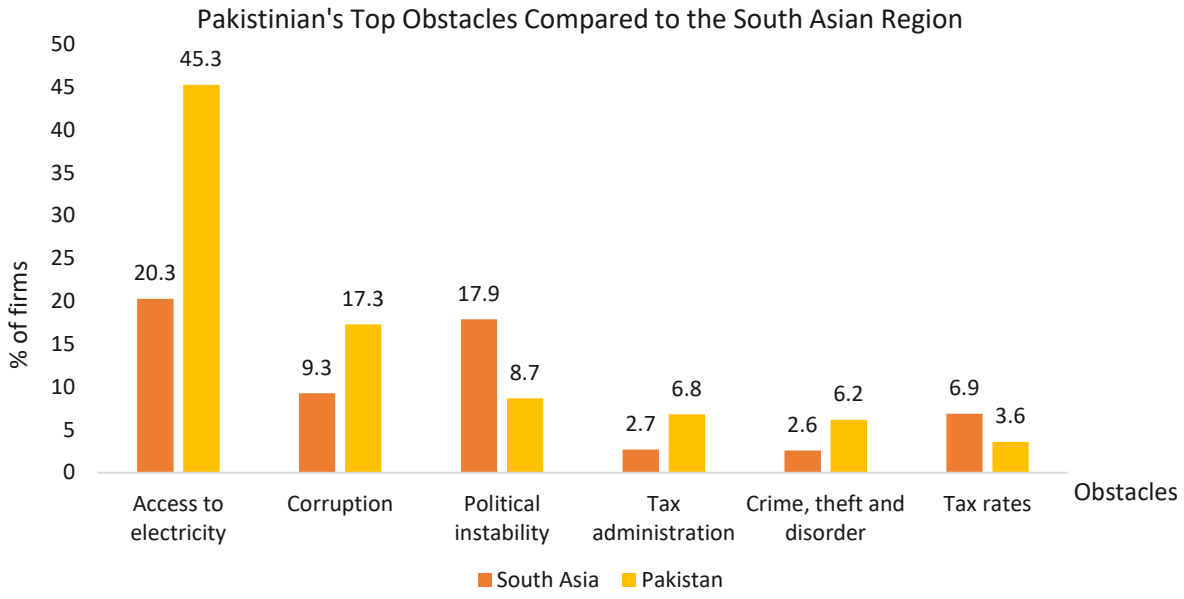
Pakistan's ranking in the 2019 Ease of Doing Business Survey

Doing Business Indicator	Rank	Doing Business Indicator	Rank
1.Starting a business	130	6. Protecting minority investors	26
2. Dealing with construction permits	166	7.Paying taxes	173
3.Getting electricity	167	8.Trading across borders	142
4.Registering property	161	9.Enforcing contracts	156
5.Getting credit	112	10.Resolving insolvency	53

Source: World Bank. http://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB19-Chapters/DB19-Country-Tables.pdf

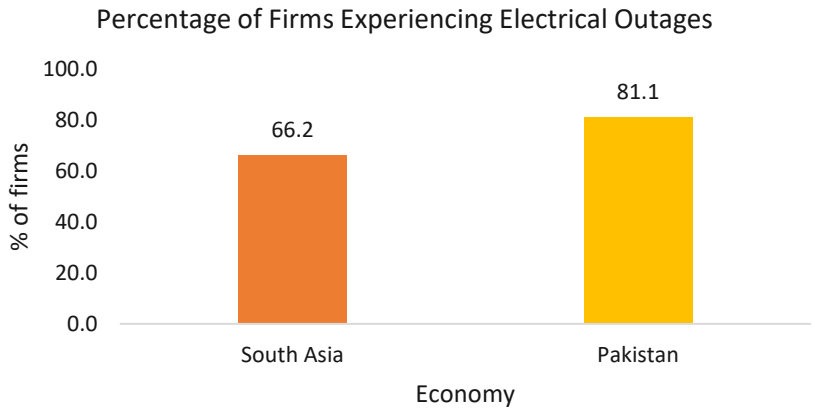
A. The Need to Focus on Solving the Binding Constraints, Not All Problems at Once

Studies of the constraints on the expansion of light manufacturing in low income countries have usually involved staggering lists of constraints which suggest that no feasible set of policy adjustments would lead to a result attractive to investors. Often, the implication has been that unless all the shortcomings are addressed, the sector cannot grow. Yet, on the ground, since the binding constraints usually vary by sector and firm size, economy-wide policies may not even be effective or sufficient in jumpstarting specific subsectors. Therefore, policymakers should carefully prioritize the leading constraints. In Pakistan's case, if one focuses on the Enterprise Survey findings, it is clear that government can make a significant across-the-board improvement in the investment climate by redressing the electricity constraint alone.



When compared to the Enterprise Survey's South Asia region,[7] Pakistan had higher rates of firms citing both Access to electricity (45.3 percent vs 20.3 percent for South Asian firms) and Corruption as their top obstacle (17.3 percent vs 9.3 percent for South Asian firms). But more South Asian firms cited Political instability as their top obstacle than Pakistani firms (17.9 percent for South Asian firms vs 8.7 percent for Pakistani firms).[8]

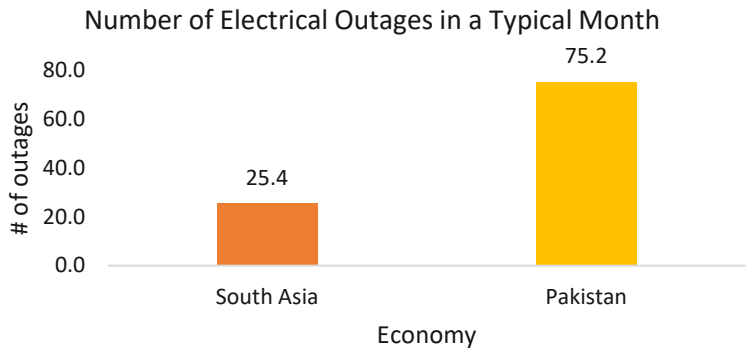
B. Access to Electricity



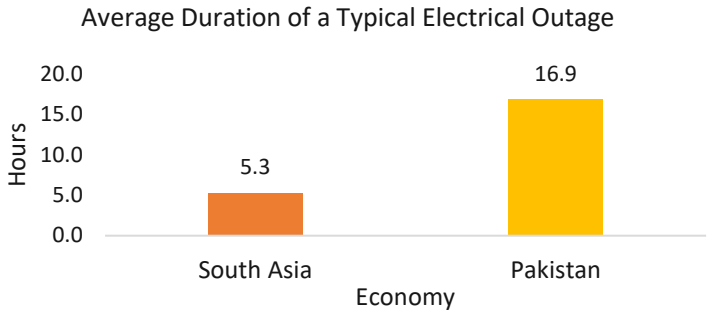
At 45.3 percent, access to electricity was the most cited obstacle by a very large margin. There are several metrics that support why this is so. First, the percentage of Pakistani firms that experienced electrical outages was about 15 percentage points higher than the South Asia benchmark.[9]

Second, for the firms that do experience electrical outages, the frequency of those outages occurred at a much higher rate for Pakistani firms than it did for South Asian firms. Pakistani firms that experienced electrical outages typically had about 75 outages per month. That number almost triples the amount South Asian firms experience (25 outages per month).[10]

[7] South Asia includes: Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka.
[8] http://www.enterprisesurveys.org/data/exploreeconomies/2013/pakistan
[9] http://www.enterprisesurveys.org/data/exploreeconomies/2013/pakistan
[10] http://www.enterprisesurveys.org/data/exploreeconomies/2013/pakistan



The average duration of each electrical outage for Pakistani firms is almost triple the length of the average duration of an electrical outage in South Asia (16.9 vs 5.3 hours).[11] Although when one combines both the number of electrical outages in a typical month with the average duration of each outage (the length of outages equates to a greater number of hours that exist in a month), one would likely find a statistical inaccuracy, the important point is that firm respondents perceived electricity to be an extremely significant obstacle.

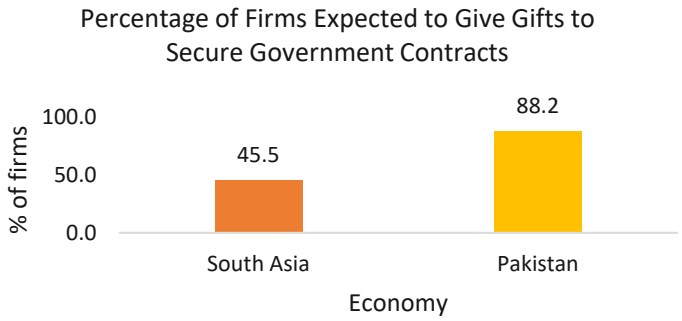


Ultimately, Pakistani firms face a significant disadvantage in electrical access when compared to South Asian firms. Firm respondents perceived their electrical outages as significant costs to doing business.

C. Corruption and Political Instability

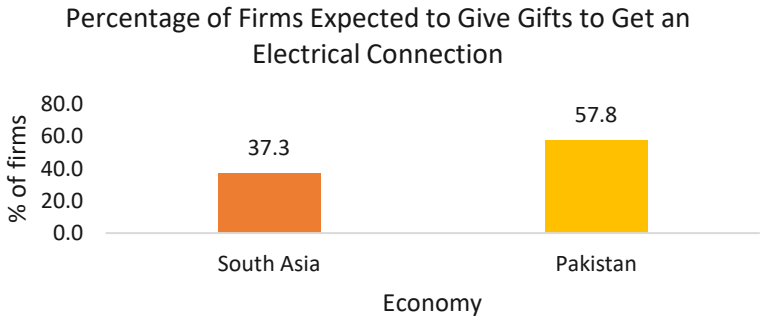
Enterprise Survey indicators also provide support for why corruption was often cited as a leading obstacle by Pakistani firms. The effects of political instability are difficult to measure, especially because the Enterprise Survey does not define political instability when posing the question to respondents. Corruption is likely the best measure of political instability given that corruption was also a most frequently cited top obstacle.

[11] http://www.enterprisesurveys.org/data/exploreeconomies/2013/pakistan



Almost twice as many firms in Pakistan than in South Asia are expected to give gifts to secure government contracts.[12] This high rate of gifting is a strong indication of a corrupt business environment for firms.

More firms than not are also expected to give gifts to obtain an electrical connection in Pakistan. This is another indication that there are problems for Pakistani firms in obtaining access to electricity.[13]



To "get things done" which includes giving gifts to gain approval for customs, taxes, and regulations, Pakistani firms are expected to give at a rate almost 20 percentage points higher than their South Asia counterparts.[14],[15]

[12] http://www.enterprisesurveys.org/data/exploreeconomies/2013/pakistan
[13] http://www.enterprisesurveys.org/data/exploreeconomies/2013/pakistan
[14] "Percent of establishments that consider that firms with characteristics similar to their's are making informal payments or giving gifts to public officials to "get things done" with regard to customs, taxes, licenses, regulations, services, etc."

[15] http://www.enterprisesurveys.org/data/exploreeconomies/2013/pakistan

Ultimately, a more stable political climate, as well as a reduction in overall corruption could help firms retain funds for use towards developing business as opposed to spending on gifts.

VI. A Policy Framework to Facilitate Export Diversification

As almost 60 percent or more of Pakistan's exports have been concentrated in relatively less sophisticated Textiles and Garments since the 1990s indicating weak transformation toward modern manufacturing subsectors like machinery, electronics or chemicals, the strategy for its export diversification should focus on two paths: fostering other subsectors, and more technologically sophisticated products within all sectors. The latter is important because it does not happen automatically or easily but is essential if Pakistan is to industrialize and graduate to the next level of income by creating better-paying jobs characteristic of a modern economy. To this end, Pakistan needs a combination of appropriate macroeconomic policies including a more export-oriented growth and innovation strategy, and a stable business environment.

Economy-wide policies: In addition to maintaining peace and stability, Pakistan would benefit greatly from policy measures to maintain macroeconomic stability, build good institutions and infrastructure, and develop human resources to facilitate innovation and industrialization. Modern manufacturing which includes subsectors such as machinery and chemicals should be central to this effort though it needs to be noted that this cannot be achieved without supporting business support services including IT.

Boosting electricity generation seems to be the single most important hurdle to firm growth yet trying to fix electricity shortages economy-wide is a time-intensive challenge and cannot be achieved rapidly. The other critical economy-wide constraint is regulatory and related with improving the doing business environment. Then there will be infrastructure needs which are likely to be industry-specific. A practical approach to reforms is to place priority on providing electricity and other infrastructure to specific areas where clusters and industrial parks are located. Additional measures in this group include the simplification of regulatory procedures related with doing business. Since the investment climate is fraught with complex regulations and distortionary measures, fixing them all is a longer-term agenda.

Sectoral policies include helping existing industries grow. There is a fair amount of consensus on what is needed to accelerate growth in mining and agriculture but the agenda for sectoral policies to help break into ***new manufacturing products*** has to be defined. The list of agenda items varies from tariff policies, to duty drawbacks, to trade logistics, to all aspects of the investment climate. Lessons from some

successful countries in Asia will be useful for Pakistan but the bottom-line is that in addition to economy-wide policies, Pakistan also needs to resolve sector-specific constraints. What will work for a successful machinery producing industry which will need firms to organize procurement of metals, other inputs, and modern technology will not suffice for the chemical, plastics or more sophisticated Textiles or Leather industries.

Sector-Specific Issues: Industrial clusters are the best way to deal with a plethora of binding constraints in Pakistan. For each subsector, governments should first find out where enterprises are already clustered and should then ease the most binding constraints (identified in the report) within the clusters. Similarly, successful industrial parks provide enterprises with security, basic infrastructure, streamlined government regulations, and affordable industrial land. Pakistan already has a large number of industrial zones but clearly, they fall short of what is needed for a thriving and modern manufacturing sector. Policy makers in Pakistan need to attract foreign direct investment on a mass scale, particularly in new and modern manufacturing industries such as those identified in this Note. They should also harmonize and improve customs procedures and facilitate access to inputs for manufacturing. A close public-private cooperation will be needed to implement the proposed policy reforms.

VII. Future directions

Beyond its capacity to stimulate job creation, the strong connection between manufacturing and trade supports the development choice to be strategically focussed in the short to medium term on export diversification as well as some import-competition/substitution in manufacturing, especially in non-Textiles and Garments sectors in Pakistan. The case for export-led growth is well established among developing countries (Chenery 1980; Commission on Growth and Development 2008; Harrison and Rodríguez- Clare 2010). Harrison and Rodríguez-Clare (2010) find that export-oriented countries have grown more rapidly, though establishing causality is difficult. Trade also enables developing countries to take advantage of the important learning that is derived from exposure to global competition and then to import the skills and technology necessary to move up the value chain. As the statistics in the Note showed, the relative size of Pakistan's manufacturing sector, and exports jointly confirm that Pakistan is a laggard in pursuing an outward-oriented growth strategy. The consequence is evident in a narrowly concentrated manufacturing sector that lacks the features of modern manufacturing. Due to the lack of outward-orientation, Pakistan has also lost the opportunity to engage in the innovation and technology transfer that go hand-in-hand with modern industry and trade when domestic firms strive to keep-up with foreign competitors. Therefore the recommended strategy in this Note is twin forked – diversification through both exports and import-competition, as well as innovation to propel and support diversification into modern manufacturing sectors.

Pakistan, together with many other low-income countries, has the necessary inputs for a competitive manufacturing sector: a comparative advantage in low-wage labour (at the proper exchange rate), abundant natural resources sufficient to offset the lower labour productivity compared with their Asian competitors, and a sufficiently large local or regional market to allow emerging producers to develop capabilities in quick-response.

Pakistan can follow the course pioneered by a succession of Asian countries by accelerating the realization of latent comparative advantage in segments of manufacturing in which specific, feasible,

sharply focused, low-cost policy interventions can deliver a quick boost to output, productivity, and perhaps exports, opening the door to expanded entry and growth.

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