

## **Productive Capabilities and Economic Development: A Case for Industrial Diversification in Pakistan**

NAZEEF ISHTIAQ and AHMED CHAUDHRY

The central argument of our paper is that a country's long-term economic development depends upon its productive capabilities and the types of products it produces and exports. The East Asian countries (EACs), realising the importance of a clear long-term vision of industrial and technological catch-up with the developed world, designed their industrial policies accordingly. Thus, these countries gradually moved up the industrial ladder and developed capabilities for the production of more complex and sophisticated products. This, in our view, significantly contributed towards their phenomenal economic performance. The recent literature on the Product Space and Economic Complexity empirically support this logic of economic development through industrial diversification. This stream of literature also shows that the ability of a country to diversify its exports critically depends upon the kinds of industries that country specialises in. We have shown that Pakistan has failed to realise the importance of a long-term vision which involves industrial and technological catch up with developed countries. It is argued that protection of rent-seeking and uncompetitive industries, lack of performance oriented incentives to industrial sector, and failure to achieve industrial development targets, contributed in fostering an unsophisticated industrial structure. These have been the fundamental reasons for Pakistan's inability to diversify its export structure into higher value-added products; thus, resulting in an unstable economic growth. Our preliminary econometric analysis reveals that higher political instability in Pakistan, which can be seen as an indicator of discontinuity in economic policies and absence of a long-term vision, is found to be negatively associated with ECI in the long run. Liberal trade policies are also found to be negatively affecting ECI in the long run. Therefore, we argue that Pakistan's economic policies should be guided by a long term vision of developing productive and technological capabilities in sectors where there is a higher scope for diversification as well as innovation.

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*Keywords:* Productive Capabilities, Industrial Policy, Product Space, Economic Complexity, Pakistan, East Asian Countries

### **1. INTRODUCTION**

Looking back in history, one finds the industrial revolution of the 18th Century to be a turning point in the economic fortunes of the early industrialised countries of Britain, Germany and United States. It is extensively argued that the rapid economic growth achieved by these nations, during the industrial revolution, was caused by establishment of an industrial base. But by looking deeper, a subtler characteristic of this revolution—

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and perhaps a more meaningful one—comes into prominence. That is, underlined the rapid industrial and economic growth during the industrial revolution, was a process of continuous expansion in the range and type of products being produced. Upgradation of the existing production methods and manufacturing of newer products through technological change and innovation, were driving this expansion and, thus, strengthening the industrial structure of these countries.

A growing body of literature now seems to suggest that instead of specialisation in specific industries, establishing a highly diversified industrial structure and production of broader range and type of goods and services leads to long-term economic growth and development.<sup>1</sup> Keeping this perspective in view, this paper analyses Pakistan's case.

Pakistan, an underdeveloped country, has an immense potential to develop and grow economically. There was a time in the second half of the 20th Century, when Pakistan was expected to become the next Asian Tiger, but it ended up being a South Asian Snail. Even now, as we venture into the 17th year of the 21st Century, with an enviable demographic dividend—about 63 percent of the population is aged below 30 years—the potential and dream of becoming an Asian economic powerhouse is still intact, but yet unfulfilled. A report by Price waterhouse Coppers (PwC), published in February of 2017, suggests that Pakistan can become the 16th biggest economy (in terms of PPP) in the world by the year 2030.

But Pakistan has been unable to sustain high economic growth rates; rather it has been growing in spurts: high GDP growth rate in one period is followed by low or negative growth rate in another period. It is also interesting to note that high GDP growth rate almost always ends up in a subsequent Balance of Payments crisis [Hussain (2013); McCartney (2012)]. Even the recent surge in the rate of economic growth since 2014 is leading towards a balance of payment crisis. During financial year 2017, the Current Account deficit reached USD 12.1 billion and the Trade Deficit reached to USD 30.5 billion, highest in the history of Pakistan.<sup>2</sup>

We believe that a major cause behind these BOP crises is Pakistan's inability to manufacture a diverse range of high value-added products that are essential for earning the export revenues to balance our demand for petroleum, machinery and other capital goods.

Therefore, in this paper, we investigate the industrial planning of Pakistan in a historical perspective. This is achieved by discussing Pakistan's Five Year Plans which are the principal planning documents about Pakistan's Economy. We probe into the question that why Pakistan has been unable to diversify its industries and products into higher value-added commodities. While answering this question, we identify four major issues with Pakistan's industrial planning: (i) absence of a long-term vision; (ii) failure to achieve time-bound targets; (iii) lack of performance oriented incentives; and (iv) protection of uncompetitive and rent-seeking industries. Finally, we analyse the *Product Space* of Pakistan in comparison with some East Asian Countries and discuss its implications. *Product Space* a visualisation of all the products being traded globally, their interrelationships, and their level of complexity and diversification (see section 2.2 for details).

<sup>1</sup>See for example the empirical work of Imbs and Wacziarg (2003). More recently, similar evidence is also presented in the Atlas of Economic Complexity [Hausmann, *et al.* (2014)].

<sup>2</sup>Summary of Balance of Payments as per BMP6. State Bank of Pakistan. URL: [http://www.sbp.org.pk/ecodata/BPM6\\_c.pdf](http://www.sbp.org.pk/ecodata/BPM6_c.pdf)

This paper is arranged as follows: the argument for industrial diversification, as presented by the early development economists and as established through the recent evidence from the product space, is given in Section 2. A comparison of Pakistan and other countries within the Product Space is presented in Section 3. Section 4 discusses the reasons for Pakistan's lackluster industrial performance by analysing her industrial planning in a historical perspective in comparison to East Asian Tigers, and finally the paper is concluded in Section 5.

## **2. THE LOGIC OF INDUSTRIAL DIVERSIFICATION: EVIDENCE FROM EARLY DEVELOPMENT ECONOMISTS AND THE PRODUCT SPACE**

A growing body of empirical literature now shows that the long-term economic development of countries critically depends upon the kinds of products they produce and export [see for example: Hausmann, Hwang, and Rodrik (2007); Hausmann and Klinger (2007); Hidalgo, *et al.* (2007); Hidalgo and Hausmann (2008, 2009)]. This fact was also highlighted, though in a different manner, by a number of early development economists [e.g. Schumpeter (1942); Singer (1950); Prebisch (1950); Lewis (1954); Hirschman (1957); Kaldor (1970)].

This section first briefly discusses the theories of some early development economists and then goes on to analyse relatively recent literature the Product Space and Economic Complexity. We believe, that the evidence provided by the Product Space is quite remarkable and clearly demonstrates the need and importance of industrial diversification in underdeveloped countries. This evidence gives us a context within which we analyse Pakistan's industrial structure and its evolution over the years in Section 3.

### **2.1. Early Development Economists and Industrialisation**

Many of the early development economists argued that if the underdeveloped countries want to catch-up with the developed world, they must industrialise and develop a strong manufacturing base [e.g. Singer (1950); Prebisch (1950); Lewis (1954); Hirschman (1957); Kaldor (1970)]. These economists made a number of arguments in favor of industrialisation. Some of them were as follows:

#### **2.1.1. *Linkages, Multiplier Effects and Positive Externalities***

Some economists argued that development of a strong industrial base, especially in the large-scale manufacturing sector, is essential for the underdeveloped world, because, along with a number of positive externalities, these industries develop backward and forward linkages with the rest of the economy [Hirschman (1957)]. Manufacturing industries, thus, generate a demand for a large number of inputs, in the form of goods and services, leading to increased production in other sectors through backward linkages. Similarly, products of some manufacturing industries end up as essential inputs for other industries leading to an increased overall production through forward linkages. Naturally, the more linkages a particular industry has, the higher would be the secondary multiplier effects generated by the economic activities of that industry.

### **2.1.2. Absorption of Surplus Labour**

Underdeveloped countries have a large amount of surplus labour underemployed in the low productivity sectors such as agriculture and basic industries. Absorption of this surplus labour in highly productive modern industrial sectors is essential for increasing overall productivity growth. Lewis (1954) argued that the fundamental problem in underdeveloped countries is a small "capitalist sector" (consisting of modern manufacturing industries) and a large "subsistence sector". This results in a low share of profits and savings in the national income because of which capital formation remains low. Thus, in order for the poor countries with surplus labour to develop, it is essential that this labour is absorbed into the modern industrial sector. As the "capitalist sector" develops, share of profits (and savings) in national income would increase and more capital would be generated. Eventually, when the surplus labour is absorbed in this manner, productivity would increase and so will be the living standards.

In the Lewis's model, since the "capitalist sector" drives economic growth, it can be directly inferred that development of modern industries should be facilitated in the underdeveloped countries. It is also quite evident that the modern large-scale manufacturing industries have more linkages, these sectors would absorb more labour directly as well as indirectly, leading to higher overall productivity growth in the economy.

### **2.1.3. Innovation and Industrialisation**

According to Schumpeter (1942), capitalism is driven by technological change and innovations and through a process which he called 'creative destruction'. Firms within an economy operate under competitive pressure to develop new products and production processes. Emergence of new products through technological change and innovations has a negative impact on the demand for existing products. Older technologies also become obsolete with the emergence of new ones. According to Schumpeter (*ibid.*), this process makes capitalism a dynamic and evolutionary system driven by the creation of new products and production processes by the firms competing for their survival.

If the development of capitalism within countries is driven by innovations and 'creative destruction', then this process is also likely to operate at the global level, i.e., emergence of new products and technologies in one country can have a negative impact on the productive structures of other countries.<sup>3</sup> Therefore, just like firms within a capitalist economy, countries have to develop their productive structures with capabilities for innovation if they want to compete globally.

It is a fact that since the Industrial Revolution, majority of innovations have occurred in the manufacturing industries, therefore, development of this sector is essential for the underdeveloped countries if they want to reap the benefits of an innovation driven economy. Innovations in other sectors (i.e. agriculture and services) are also usually a result of innovations in the manufacturing sector. For example, development of machinery and fertilisers for agricultural activities led to new farming techniques which further led to higher productivity and growth in the agriculture sector.

<sup>3</sup>See Singer (1998) for a brief discussion on the phenomenon of creative destruction at the global level.

#### **2.1.4. The Terms of Trade Aspect**

Some development economists also emphasised the importance of terms of trade for the underdeveloped countries. Starting from the seminal works of Raul Prebisch and Hans Singer during the 1950s, it was observed that the terms of trade of the underdeveloped countries have a systematic tendency to deteriorate with the passage of time [Singer (1950); Prebisch (1950)]. The proponents of this view argue that underdeveloped countries must industrialise if they want to avoid a systematic deterioration in their terms of trade. Recent evidence has indicated that in order for the terms of trade to improve, it is not only essential for the developing countries to decrease their reliance on primary commodities and develop a manufacturing base, but also to gradually diversify towards more sophisticated and advance products [Chakraborty (2012)]. This implies that industrialisation should not just be seen as building static capabilities in certain sectors, but, diversifying towards new products and sectors with the passage of time.

#### **2.2. Product Space and its Implications for Industrial Planning**

The idea of *Product Space*, first introduced by Hidalgo, *et al.* (2007), is a novel way of looking at the types of products being traded globally and the relationship among these products. Since then, a number of studies have emerged which have extended the original work of Hidalgo, *et al.* (*ibid.*) [For example: Hausmann and Klinger (2007); Hidalgo and Hausmann (2009); Hausmann, *et al.* (2014); Felipe, Kumar, and Abdon (2014); Hartmann, *et al.* (2017)]. Product Space is essentially a graphical representation of all the products traded in the world. It is the application of Network Theory to economics and it depicts how different products are connected to each other within a network called Product Space (see Figure 3.5). Apart from different types of products, countries can also be mapped within this space according to the types of products they export.

The evidence which has emerged from this stream of literature lends remarkable support to ideas extended by some early development economists, i.e., industrial advancement in the underdeveloped world is imperative. But it also gives us some valuable new insights and helps us to see things from a different perspective.

It can be observed from the Product Space that some sets of products are more connected to each other whereas others are not. More advanced and sophisticated products can be found in the densely connected *core* of Product Space, whereas less sophisticated products can be found in the least connected *periphery* (see Figure 3.5). Well-connected products are defined as those having a high probability of being produced and exported together by countries.<sup>4</sup> Therefore, the observation that different types of products have different degrees of connectedness, implies, that the extent to which an economy can diversify its exports is determined by the types of products that economy specialises in. Moreover, the core of Product Space is occupied by high income countries whereas low income countries are at the periphery. In other words, different areas of Product Space are associated with different levels of development.

<sup>4</sup>See Hidalgo, *et al.* (2007) for details.

The position of countries within the Product Space is also an important determinant of their future growth. Hidalgo and Hausmann (2009) have shown that different products have different consequences for economic development. The degree of complexity of an economy is not only strongly correlated with the level of income, but, more importantly, deviations from this relationship predict the future growth of an economy i.e. "countries tend to approach the level of income dictated by the complexity of their productive structures".

An important question here is, that, should countries actively pursue policies to develop a complex and diversified industrial structure? According to the traditional view, it is specialisation according to comparative advantage which makes economies efficient and enable them to grow to their full potential. Neither the productive structure, nor the extent of diversification count much for the future economic prospects of a country. But a study by Imbs and Wacziarg (2003) presents strong evidence that as incomes increase, economies become more diversified and less concentrated. In addition, their cross-sectional econometric analysis for a large number of countries, as well as time series analysis for various individual countries, reveals that *higher economic growth is strongly associated with increased diversification*, and not specialisation within a narrow set of products.

The literature on Product Space has established that countries which are stuck at the 'periphery' (of the Product Space) have to take measures beyond what is dictated by the traditional economic theory in order to change the productive structure of their economies (to reach the 'core' of the Product Space).<sup>5</sup> This is because the productive capabilities of countries at the periphery are insufficient for the production of more sophisticated products at the core (as depicted by the low degree of connectedness of their products). These countries can only diversify to a certain extent after which they will be unable to produce any new products unless they change their industrial structure and develop new productive capabilities.<sup>6</sup> Therefore, governments have to play an active role in changing the economic structure of countries at the periphery.<sup>7</sup>

Hidalgo and Hausmann (2009) also contest the view of the mainstream literature on economic growth (including the literature on endogenous growth theory) where more emphasis is laid on accumulating certain "highly aggregated" factors of production (e.g. physical capital; human capital; institutions etc.). They argue that capabilities required for complex economic activities cannot be understood in highly aggregated terms such as human capital (mostly measured through years of schooling) or institutions (measured through some proxy of rule of law). Countries acquire these capabilities mainly through a learning-by-doing process. Therefore, development strategies should aim to promote new products as a way to create incentives for the accumulation of these capabilities that would further result in a "coevolution of new products and capabilities".

<sup>5</sup> See for example: Hidalgo, *et al.* (2007); Hidalgo and Hausmann (2009).

<sup>6</sup> *ibid.*

<sup>7</sup> This is a logical conclusion which can be drawn from the evidence presented in the literature on Product Space. Hadalgo (2009), and almost all other studies referred in this paper (related to Product Space), have emphasised an active role of state in moving the economies from the periphery towards the core of the Product Space.

### 2.3. The Economic Complexity Index (ECI)

Economic Complexity Index (ECI) is a numeric measure which shows the relative position of countries within the Product Space by capturing the degree of complexity of their productive structures.<sup>8</sup> Economic Complexity of countries is determined by the sophistication and knowledge intensity of the products they export. According to Hausmann, *et al.* (2014), products produced in an economy reflect the knowledge and capabilities possessed by that economy. Therefore, complexity of an economy is “expressed in the composition of a country’s productive output” (*ibid.*, p. 18).

Two important elements on the basis of which ECI is calculated are “Diversity” and “Ubiquity”. Keeping other factors constant, if an economy is more diverse (i.e. it can produce and export large number of products), its ECI would be higher. On the other hand, Ubiquity of a product is defined as the number of countries exporting that particular product. Ceteris Paribus, if the products exported by a country are produced by many other countries, then the ECI of that country would be lower. Measures of Diversity and Ubiquity are also used to correct each other while calculating the ECI of countries, since not all diverse economies can be considered to have complex productive structures.

ECI is also an important determinant of economic growth. Some of the econometric models presented in Hausmann, *et al.* (2014) show that ECI is strongly associated with higher per capita income growth in countries. Furthermore, it is found to be a much better predictor of per capita income growth than the traditional measures of institutions, competitiveness and human capital.<sup>9</sup>

The discussion above emphasises the importance of a diverse industrial structure and its consequences for the future growth of an economy. In the next section, we analyse the “economic complexity” indicators for Pakistan and their historical evolution by drawing comparisons with some other countries.

## 3. PAKISTAN WITHIN THE PRODUCT SPACE: IMPLICATIONS AND COMPARISON

Pakistan is ranked 87th in the world in terms of economic complexity out of 108 countries for which the ECI was calculated in the year 2015. In 1970, country’s ranking in terms of ECI was 52nd in the world (out of 96 countries). An analysis of historical patterns of ECI of Pakistan reveals that the economic structure of the country was more complex (relative to other countries) during the 1960s and 1970s, then it is today.

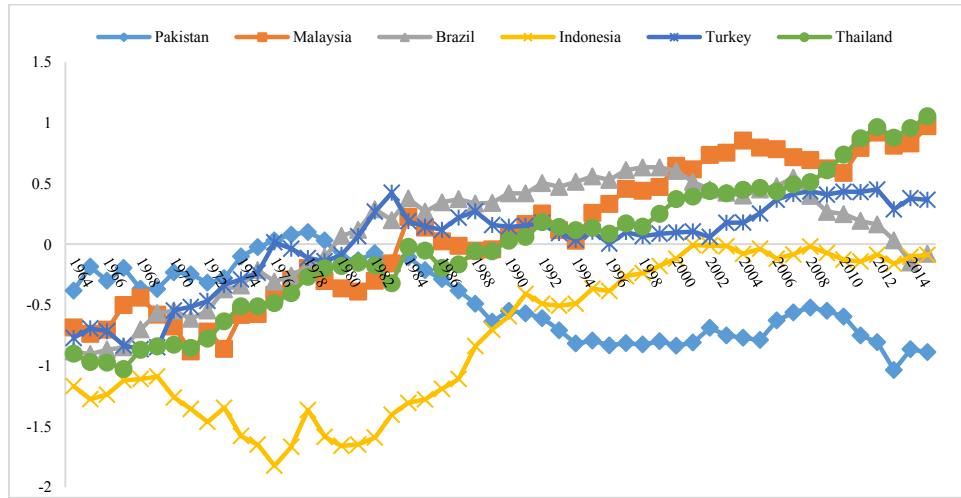
Figure 3.1 shows the historical pattern of Pakistan’s ECI. During the 1960s and 1970s, the country’s productive structure was relatively more diverse and the products it exported were relatively less ubiquitous than Brazil, Malaysia, Indonesia, Turkey and Thailand. The reason that these countries overtook Pakistan is because they radically changed their productive structures towards more sophisticated and knowledge intensive products. This can be easily verified by looking at the changes in the export structures of these countries and by

<sup>8</sup> See Hausmann, *et al.* (2014, pp. 19-25) for a detailed methodology of ECI. MIT Observatory of Economic Complexity can be accessed at: <http://atlas.media.mit.edu>

<sup>9</sup> Hausmann, *et al.* (2014) have used World Bank’s Worldwide Governance Indicators (WGI) as a measure of institutions; World Economic Forum’s Global Competitiveness Index (GCI) as a measure of competitiveness; and Barro and Lee’s data on the years of schooling of working age population as a measure of human capital.

observing their evolution within the Product Space.<sup>10</sup> On the other hand, Pakistan's productive structure remained more-or-less stagnant, especially since the 1980s.

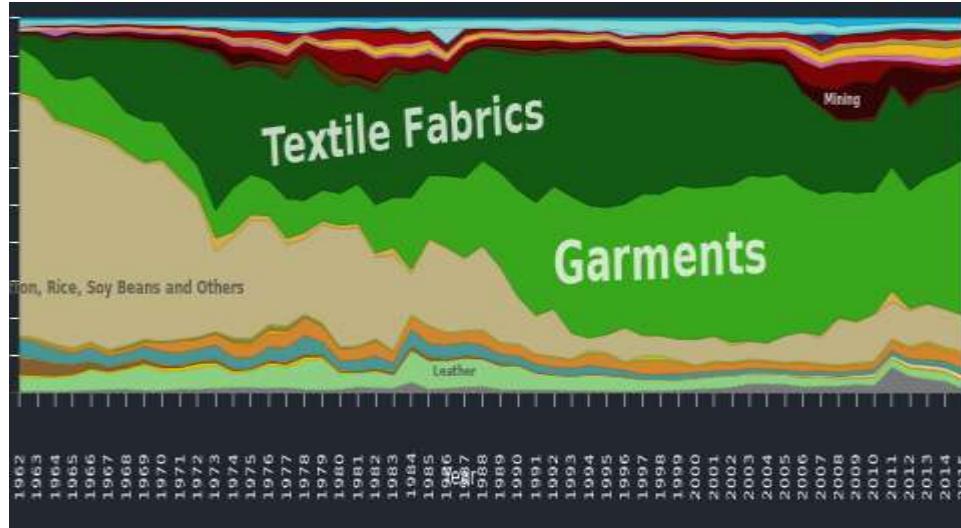
**Fig. 3.1. Economic Complexity Index: Pakistan's Comparison with Selected Countries 1964 – 2015**



Source: Authors' calculations based on the data obtained from the MIT Observatory of Economic Complexity.

Similarly, from Figure 3.2, it can be clearly seen that Pakistan initially managed to decrease the share of primary products and increase the share of manufactured items in its exports, but this increase was mainly led by textile fabrics and garments. However, since the 1990, country's export structure has remained stagnant, unlike that of EACs.

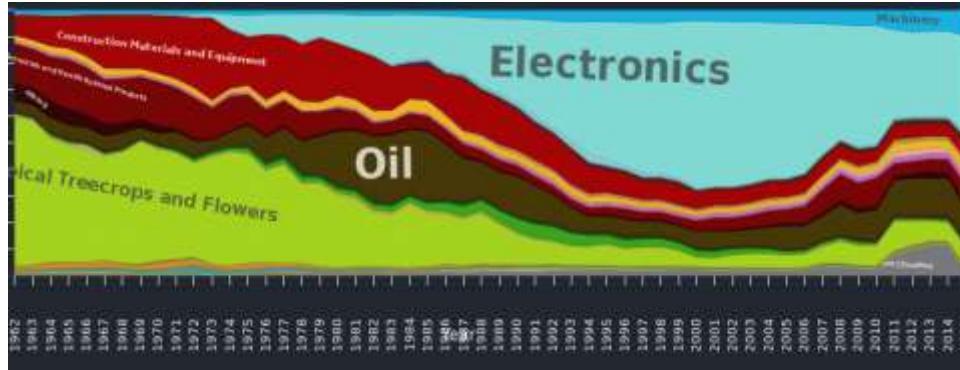
**Fig. 3.2. Evolution of Pakistan's Export Structure (1962-2015)**



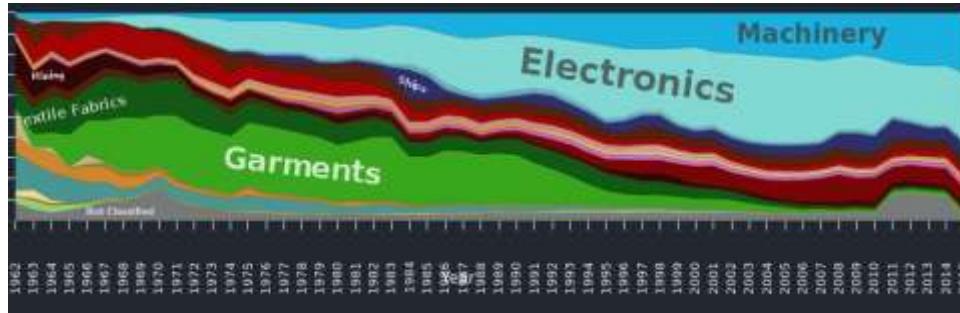
<sup>10</sup> However, due to space constraints, Product Space visualisations for all these countries cannot be shown in this paper. Interested readers can obtain the Product Space visualisations for these countries through the following link: <http://atlas.media.mit.edu/en/visualize>

The following Figures (3.3 and 3.4) depict the evolution of the export structures of Malaysia and South Korea. It can be clearly observed from these visualisations that unlike Pakistan, these countries managed to significantly change their export structures towards more sophisticated products.

**Fig. 3.3. Evolution of Malaysia's Export Structure (1962-2015)**



**Fig. 3.4. Evolution of South Korea's Export Structure**



Source: Visualisation generated from the web application of the MIT Observatory of Economic Complexity.

In the case of Malaysia (Fig. 3.3), the country's export structure was initially dominated by primary commodities and some basic manufactures. However, since 1970, Malaysia started to develop an industrial base in electronics and over the years, the share of this sector in exports has increased significantly.

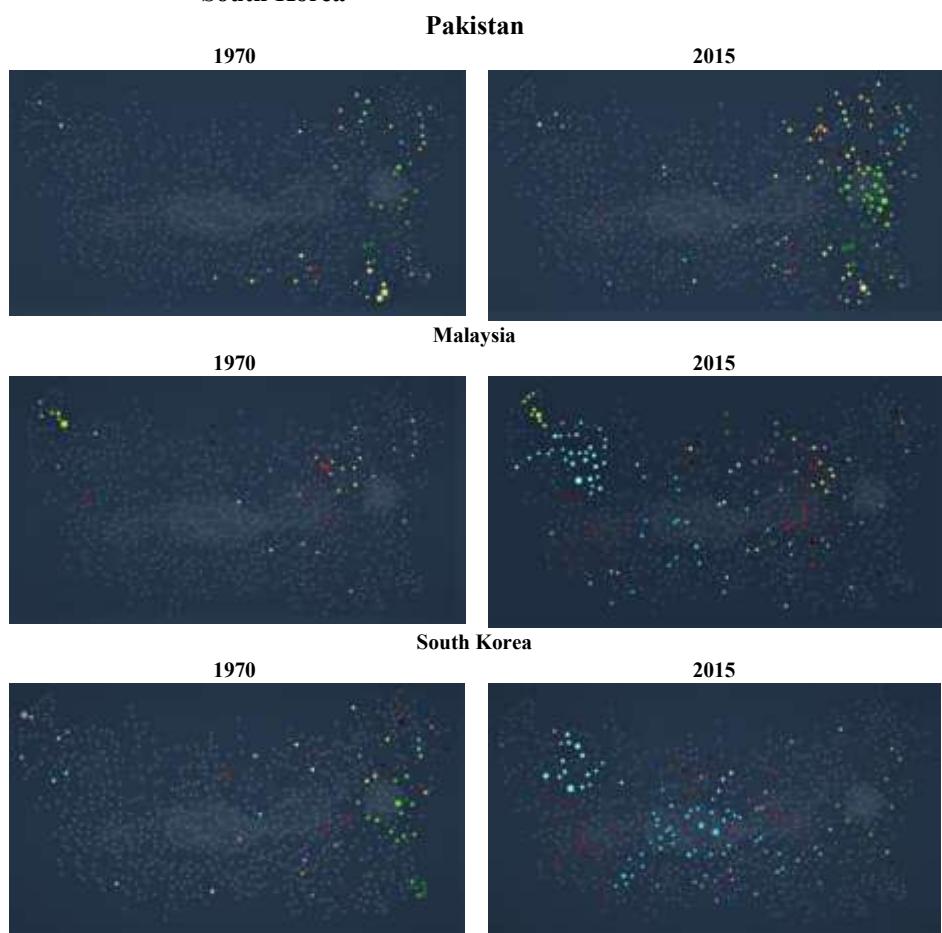
South Korea (Fig. 3.4), on the other hand, had a higher share of textiles and garments in its exports till 1980. But starting 1970, the country also started building industrial capabilities in electronics, machinery and ships. Over the years the share of electronics became highest in exports. A recent trend which can be observed is the rising share of machinery in the country's exports which would further strengthen the growth prospects since machinery is the most complex sector within the product space.

As discussed above, the kinds of goods in which a country specialises have important consequences for future development. This could explain the growth differences between Pakistan and Malaysia. The position of electronic products within the Product Space allow the countries specialising in this sector a greater opportunity for diversification and innovation which are in turn important for future growth. On the other hand, the position of textiles and garments within the Product Space allow the countries specialising in these sectors limited opportunities for diversification and innovation.

The same logic can be used to explain the growth differences between South Korea and Malaysia. Unlike Malaysia, South Korea managed to significantly increase the share of machinery in its exports. Since this sector occupies the “core” of the product space and is the most complex (as well as the most well-connected) sector within it, Korea was able to diversify and innovate more than Malaysia and was thus able to reach a higher growth trajectory.

Similarly, Figure 4.5 show the position of Pakistan, Malaysia and South Korea within the Product Space and the evolution of the productive structures of these countries since 1970. In 1970, all three countries mainly specialised in the products which were at the periphery of the Product Space. However, over the years, both Malaysia and South Korea have been able to penetrate the core of the Product Space (although to a different extent). Whereas Malaysia has mainly exploited the electronics segment of the Product Space, South Korea has also managed to move into the machinery segment situated deep into the core. Pakistan, on the other hand, largely remained at the periphery, populating mostly the textiles and garments related areas.

**Fig. 3.5. Visualisation of Product Space for Position, Malaysia and South Korea**



Source: Visualisations generated from the online app of MIT Observatory of Economic Complexity.

The product space visualisations above lend support to the central argument of this paper i.e. economic development critically depends upon the kind of productive capabilities a country has and the products which it exports.

In this section, we have attempted to show that the kinds of sectors in which a country develops its productive capabilities, determine its long term growth. This argument is backed by strong empirical evidence presented by the literature on the Product Space. Our analysis revealed that the kinds of products in which Pakistan specialises are situated at the periphery of the Product Space. These products have a low level of sophistication and are poorly connected which means that there are limited opportunities for Pakistan to diversify its exports based on its current productive structure. Pakistan's comparison with Malaysia and South Korea has revealed that unlike Pakistan, these countries have managed penetrate the core of the product space, towards more sophisticated and highly connected products. Thus, the export structures of these countries are more diversified than Pakistan and they have also managed to achieve higher growth rates. Pakistan's inability to move out of the textiles sector has meant that the country has been unable to diversify its exports and thus has been unable to sustain high growth rates. Why is this the case? We attempt to answer this in the next section.

#### **4. PAKISTAN'S INDUSTRIAL PLANNING IN A HISTORICAL PERSPECTIVE**

In this section, we discuss Pakistan's industrial planning, specifically focusing on its failure to achieve diversification and move into higher-value added industrial production. Since technological development and innovation contributes significantly towards diversification and higher-value added production, we also probe into lack of R&D and innovation in Pakistan. To provide a perspective to our discussion, we analyse relevant literature along with Pakistan's five year plans, a direct source to understand country's industrial planning.<sup>11</sup> Finally, some preliminary regression results from our ongoing study are also presented to further reinforce our analysis.

The discussion about economic and industrial performance of Pakistan in various decades is out of the scope of this paper. However, for an overview, we give the growth rates of real GDP and industrial sector in Table 1.<sup>12</sup>

Our analysis reveals an absence of a long-term vision of industrial advancement i.e. what kind of industrial structure country would have in next 30 or 40 years. In addition, failure to achieve time-bound targets, lack of performance oriented incentives (conditional protection), and protection of uncompetitive and rent-seeking industries, have been the hallmark of Pakistan's industrial policy. We discuss each issue in turn; and afterwards we discuss the political economy of industrial development in Pakistan along with our preliminary regression results.

<sup>11</sup> For a summary of Pakistan's economic and industrial performance during various decades see Zaidi (2015), Hussain (2012).

<sup>12</sup> For a summary of Pakistan's economic and industrial performance during various decades see Zaidi (2015), Hussain (2012).

Table 1

*Real Growth Rates During Five-Year Plan Periods*

Period	Industry				
	Industry (Overall)	Manufacturing		GDP	
	Manufacturing (Overall)	Large-Scale	Small-Scale		
1951-55	10.2	10.3	23.7	2.3	3.2
1956-60	6.1	5.2	7.8	2.3	3.1
1961-65	13.2	11.7	16.9	2.9	6.8
1966-70	8.8	8.1	9.9	2.9	6.7
1971-75	5.1	4.7	3.9	7.3	4.3
1971-77*	4.8	3.8	2.7	7.3	4.0
1978-83**	8.8	10.0	10.6	8.4	6.9
1984-88	8.3	8.2	8.1	8.4	6.3
1989-93	6.2	5.9	4.9	8.4	5.0
1994-98	3.1	2.7	2.9	2.6	4.1
1999-03	3.5	5.3	5.0	6.6	3.6
2004-08	9.7	10.7	12.4	8.1	6.6
2009-13	1.2	1.3	0.3	8.4	2.8
2014-15	4.0	3.8	3.2	8.3	4.1

Source: SBP Handbook of Statistics 2015 (authors' estimates).

\*Nationalisation Period.

\*\*Non-Plan Period.

#### 4.1. Absence of a Long-term Vision

As clichéd as it may sound, for any country to progress, its government and policymakers must have a vivid idea of the direction in which to develop their industry. To do this, both short-run and long-term planning is required. For example, a country with a high volume of textile exports, like Pakistan, must know that it has to adapt to the changing global trends and demands in the short-run, and develop the capacity to be a world leader in textile and clothing high-value added products in the long-run. A similar visionary approach is required to develop other manufacturing industries such as silicon chips, etc. This vision has largely been absent in Pakistan's case. In fact, plans made in one period were discontinued in the next; and economic policies have also never been consistent: government led private sector growth in 1960s to nationalisation of 1970s to neo-liberal economic reforms of 1980s and 1990s. Let us now examine this proposition.

The First Five Year Plan did not contain any long-term plan. As compared to the first one, the second plan contained a longer aim to double and eventually quadruple national income by fourth and sixth plan periods. But, a long-term vision, i.e. the kind of productive structure country aspires to develop in the next 30 to 40 years, was largely absent. This arbitrariness by government to achieve the objectives of the Second Plan can be clearly understood from following two statements: "The economic and social objectives of Pakistan are long-range goals... The nation aspires to a standard of living for all its people *as high as can be achieved* (authors' emphasis) with resources available to it", and, "... The Second Five Year Plan may be said to have a single underlying purpose: *to advance the country as far as possible* (authors' emphasis) within the next five years,

along the road of these long-range objectives". The emphasised phrases from the previous two sentences clearly show that government planning, at least till 1960s, was for the short-run; a long-term policy was rather missing.

The Perspective Plan, a long-term plan prepared for the next 20 years, was introduced for the first time in the Third Five Year Plan (1965-70). In this plan, future targets were set to be achieved by 1985 included quadrupling of GNP, provision of full employment, parity in income levels, and universal literacy, etc. It was proposed that as socio-economic changes will occur overtime, the Perspective Plan will be altered and reoriented with each five-year plan. The Fourth Five Year Plan (1970-75), however, neither contained its revision nor its restatement, an evidence of government's discontinuity in economic planning.

The lack of commitment by policymakers and government towards economic development in general and industrial research, productivity and innovation in particular, can be explained from the fact that a significant portion of both Third and Fourth Plans had the same exact text. The authors of the plan only substituted the word 'Third' with 'Fourth' in numerous paragraphs. The following is a selected extract, out of many, from the Third and Fourth Plans (the differences are underlined):

"The pace of applied industrial research will be accelerated. Industry is a changing field and it behooves responsible and progressive elements in private industry to join hands with Government to ensure that Pakistan keeps up with external development which may be used to advantage and also that the country contributes its own measure of research in the interest of greater productivity from Pakistan's industry... Some of these like the ones for the production of water proofing material for jute, water proofing additive for cement, lightweight concrete, Vitamin-A concentrate from shark liver, dry distemper, printing ink, insulation board from baggasse, chipboard from wood waste and synthetic marble are already in commercial uses. The Council already has its laboratories at Karachi, Dacca, Rajshahi, Lahore and Peshawar comprising 21 Divisions. During the *Third Plan (Fourth Plan)* period the activities of the Council will not only be continued but its facilities will be expanded to undertake research on fuels, minerals processes, building materials, food technology, leather, etc."

As mentioned before, first during the period 1970-77, and later during the 1980s, two major paradigm shifts occurred respectively in Pakistan's economic structure due to a change in political regime. From a partially closed economy with government playing an active role in both public and private sector development, the economy went on to be driven primarily by the public sector. The nationalisation<sup>13</sup> of 1970s was followed by privatisation and economic liberalisation (neo-liberal), marking another policy paradigm shift in Pakistan's economic history. Keeping the merits and demerits of these three economic systems on one side, the above discussion shows that neither our politicians nor the policymakers were on the same page when it came to economic planning, an indicator of absence of long-term vision.

Having said this, the Seventh Plan (1988-93) was the second plan to contain a long-term Perspective Plan. This new Perspective Plan set targets up to 2003. The plan

<sup>13</sup>Nationalisation, here, is the process through which government acquires a majority share in private sector enterprises. This is done as a part of national industrial policy. The private businessmen, if not willing to comply, are forced to give up its majority share in ownership of their enterprises.

also acknowledged that in previous plans “R&D set up in the country has developed without any systematic planning and has, therefore, resulted in a proliferation of institutes with overlapping functions and duplication of efforts.” (Planning Commission, 1988). The eighth plan (1993-98), building upon the seventh plan revised the Perspective Plan, but there were severe problems in its implementation.

Thus, we can say, industrial planning in Pakistan was formulated arbitrarily “in response to some crisis or other the country faced with”, were short to medium-term, and lacked a long-term vision [Burki (2008)]. Similarly, Haque (2015) has summarised this quite well, “In short, Pakistan’s early industrialisation was essentially reactive, not born out of a *grand vision* of turning the country into an industrial power... Pakistan adopted five-year plans, but its approach to economic development remained more or less ad hoc, eclectic, non-ideological, and nonstrategic, fashioning policies and approaches ‘on the fly,’ as it were... With the government’s effectively hands-off approach to industrialisation, it is no wonder that Pakistan was more or less left out of the historic transformation of the world economy and, today, finds itself stuck in producing low-technology, low value-added, labour-intensive products.” (Authors’ emphasis).

Keeping in view the above discussion it can be said that when a particular plan envisages technological upgradation and industrial diversification and sets goals in this regard, it can be expected that at least some steps would be taken by the government to achieve these goals. As a result, it is reasonable to expect that the subsequent plan would revisit the goals specified in the previous plan and would mention some of the steps taken in this regard. Pakistan’s industrial plans made a habit of repeating the same goals over and over again. It seems that these plans were written only as a formality; there was never an intention to implement them in entirety – hence the same wording of whole paragraphs in third and fourth plans. This means that Pakistan never had any direction when it comes to industrial advancement. A mere mention of ‘long-term goals’ in isolated plans cannot be constituted as a ‘long-term vision’. Thus, it is safe to conclude that we never had any long-term vision despite of the fact that some of the plans claim that they do.

#### **4.2. Failure to Achieve Time-Bound Targets**

Another feature of Pakistan’s economic and industrial planning has been its inability to meet the set targets. Targets were set in each plan, and in each plan it was recognised that those targets have not been achieved.

To begin with, Pakistan’s first two five year plans were successful to the extent of setting up the basic industrial infrastructure. However, while evaluating the performance of the previous plan, it was stated in the opening chapters of the Third Five Year Plan (1965-1970) that “The first plan was over optimistic in certain respects and its implementation seriously suffered because of absence of adequate Government support for the planning process.” [Planning Commission (1965)]. The high GDP and income growth rates during the second plan period were attributed to “*larger inflow of foreign assistance* (author’s emphasis) and increased domestic savings” in the third plan.

The Sixth Five Year Plan (1983-88),<sup>14</sup> commenting on the industrial performance of past decades, states, “Some industries remain uncompetitive even after long periods of operation. Studies carried out at different stages of development indicate that the value

<sup>14</sup> Here, we are skipping a discussion about nationalisation period and the non-plan period.

added in a number of cases may be negative, if international prices are used for analysis. This implies that, in cold reality, a part of the industrial sector is using more of the national resources than it is contributing to the national pool. The main justification for such industries is to provide a base for acquiring modern skills and technology. But over the long run, they must improve efficiency in order to survive and to contribute meaningfully to national prosperity.” [Planning Commission (1984)].

Conservative comments in the Seventh Plan (1988-93) itself highlighted the failure to achieve required industrial investment and diversification towards capital goods and ‘sophisticated and precision items’ including transmission equipment, engines, etc. during the Sixth Plan. At one point it is written, “The policy package that was developed for the electronics industry has so far been ineffective.” It further stresses on the need to develop manufacturing industries of microchips, circuits, small electronic equipment and computers. Also, during the seventh plan period, a system of R&D was announced which was to operate on three tiers: national level public sector organisation, R&D units in large industries and R&D units for small industries. However comprehensive it may sound, it was never implemented in its entirety in 1990s.

Similarly, the Eighth Five Year Plan (1993-98) accepts that “The Seventh Plan could not achieve fully the integration of Science and Technology with development plans and production sector... No attractive incentives were given to the private sector to encourage investment in R&D.” [Planning Commission (1988)]. Similarly, the Eighth Plan was no different from the Seventh Plan for it too assured the manufacturing value-addition, modernisation of production process, upgradation of technology, technology transfer and industrial R&D. However, during the 1990s, “There was no attempt at product innovation, not much attention given to technological improvement, and very little effort made at market penetration” [Burki (2008)].

McCartney (2011) argues that if ever, problems in the industrial sector were correctly identified, their solutions were never proposed. In minority of the cases where an action plan was made, it was never implemented in its letter and spirit.

Thus, the characteristic feature of all the five year industrial plans have been: first, identifying the problems (low value-added, low productivity, need for innovation and technological upgradation, etc.); second, planning to solve those problems; and third, humbly admitting that those problems were not solved.

#### **4.3. Lack of Performance Oriented Incentives (Conditional Protection)**

In Pakistan’s case, state’s protective measures have been unconditional and a target oriented approach has rarely been employed. In 1960s, Pakistan’s economic strategy was very similar to that of EACs, in fact it is said that Korea adopted its five year plans from Pakistan. However, Pakistan was “ultimately unable to attach performance conditions to subsidies and large firms were able to form alliances with powerful political factions to prevent subsidies being reallocated once given.” [McCartney (2014)].

#### **4.4. Protection of Uncompetitive and Rent-Seeking Industries**

Typically, protection of certain industries is justified by the infant industry argument. The argument goes on to suggest that some recently established industries which cannot compete against the cheap imports from abroad must be protected from

foreign competition. Various measures are employed for this purpose such as granting subsidies and financial packages to the, so called, infant industry and by placing import restrictions through tariffs and quotas, etc. on competing goods and services.

In Pakistan, industries such as textiles and clothing have been protected almost since the time of their establishment in 1949-50. Automobile industry is another recent example of industrial protectionism in Pakistan. No doubt, the infant industry argument is plausible and has been used by the EACs to justify their industrial and trade policies. But the important question is that which industries can be categorised as infants and up to what point?

In Pakistan, firstly, it can be easily observed that industries which were heavily protected 70 years ago, still enjoy a great deal of protection from the state. Secondly, the state's protective measures have been unconditional and a target oriented approach has rarely been employed. Thirdly, in Pakistan, mainly sunset industries have been protected historically. Sunset industries are those industries for which income elasticity of demand is either low or negative globally; hence, when there is an increase in people's income they start to buy less of a commodity.

Once the protection was given to certain industries, these industries started to earn abnormal profits in many cases. As Kemal (1979) has shown that a number of industries which were given extremely high degree of protection in 1960s and 70s, were efficient enough to produce (and even export in some cases) without such excessive protection. This excessive protection resulted in generation of a negative value-addition by these industries when adjusted for the protection during that time [Soligo and Stern (1965); Lewis and Guisinger (1968)]. According to Alavi (1973),<sup>15</sup> certain 'parasitic' groups of people called 'contactors' due to their contacts with political figures, accumulated wealth for themselves while contributing little to Pakistan's industrial development. Another group, called 'contractors', who were small businessmen, were funded by Industrial Development Bank to set up industries. They were given preferential treatment in the sense that they only had to show 10 percent of the investment funds required to establish an industry. To help them become industrialists, they were also provided loans on easy conditions.

Kemal (1999) estimates that even as late as 1990-91, subsidies amounting to about 7 percent of GDP were transferred to industrialists by the government. Haque (2007), on the other hand, also contends that the government "has been unable to promote genuine entrepreneurship and promoted cartelisation and rent-seeking instead."

Khawaja and Mian (2004) have estimated economy wide costs of rent-seeking to by 0.3 percent –1.9 percent of GDP every year. Similarly, Hussain (2013) argues that 'government patronage' is one important reason of lack of higher-value added industrial diversification in Pakistan.

According to Hussain and Ahmed (2012), some industries including textiles were given undue protection, which continues till date. Similarly, Rasiah and Nazeer (2016) point out that government policy was shaped by 'clientlist interests' and was not focused on diversification, building international competitiveness, technological catch-up and distribution of rents in the form of incentives.

<sup>15</sup> Cited from Qadir (2016).

Hence, as a consequence of all such measures, Pakistan ended up spoiling her (industrial) infants. If the example of EACs is considered, only those industries can be categorised as infants which have a potential to be dynamic and innovative in the long-run.<sup>16</sup> Seen in this context, it seems that we ended up giving a high degree of protection to those industries and sectors which needed it the least.

#### **4.5. The Political Economy of Industrial Development: Political Stability and Economic Complexity**

It becomes clear from the above discussion that Pakistan has been unable to effectively design policies which could have contributed in product diversification and high-value addition in its manufacturing sector. In cases where policies were made to steer the country in the right direction, their implementation lacked precision and consistency. Therefore, Pakistan's arbitrary policies, left it far from becoming a diverse economy.

However, we recognise the fact that the political economy of industrial development in Pakistan cannot be ignored. Various political factions inside the country benefitted themselves at the cost of Pakistan's development. On the other hand, Pakistan, while in different decades had a different economic system in place, was also involved in major international conflicts. Its alliance with US in 1980s during US-Russia Cold War in Afghanistan, and later in 2000s in the War Against Terror, made the country's economic growth dependent on foreign aid. A detailed analysis of national and international political economy of Pakistan is out the scope of this paper, however interested readers can see Zaidi (2015) and Hussain (2012).

Some preliminary regression results<sup>17</sup> show that there is a long-term association between Pakistan's Economic Complexity Index (ECI) and political stability in the country. This relationship only exists in the long-run and political instability is found to be negatively associated with ECI. Higher political instability can both be seen as an indicator of discontinuity in economic policies and the absence of a long-term vision of industrial development. Furthermore, liberal trade policies are also found to be negatively associated with Pakistan's ECI.

In conclusion, it is imperative to highlight that the recipe for economic development is a balanced one where governments conceive a long-term vision, set goals and targets accordingly, and then in sync with the private sector, take steps to ensure the nation's success.

Now, that we have seen the issues in Pakistan's industrial planning, it is also imperative to understand how East Asian Countries (EACs), through a long-term vision, did not make the mistakes which Pakistan did. Therefore, in the next section, we briefly analyse the case of EACs industrial policy.

### **5. EAST ASIAN DEVELOPMENTAL VISION**

The economic growth achieved by some of the East and Southeast Asian Countries (EACs) of South Korea, Taiwan, Singapore, China and Malaysia is perhaps the most remarkable story of development during the last 50 years. In terms of its speed and

<sup>16</sup> More on this in Section 5.

<sup>17</sup> Regression results from our ongoing study are reported in the Appendix.

dynamism (especially in the case of South Korea, Singapore and China), such an economic performance is “unparalleled in human history” [Chang (2006)].

While there is a debate among economists about the role the ‘free-market economics’ played in the development of these countries. But the fact that state played an important role – although differently in case of each EAC—in successfully transforming their industrial structures towards highly sophisticated sectors cannot be underemphasised [Page (1994); Stiglitz (1996); Rodrik (2007); Chang (2006)].

In this regard, the presence of a long term vision of industrial transformation, a national consensus and a strong commitment towards fulfilling that vision were the most important common factors shared by these nations [Evans (1998); Aukuz, *et al.* (1998)]. We argue that all development policies in these countries, specifically the industrial policy, were a natural outcome of a commitment borne out of this long-term vision. Dahlman (2007) too compliments this by concluding that a common strategy followed by high performing East Asian countries involved a gradual movement of their industrial structures towards more sophisticated products.

As the Section 2 of this paper demonstrates, EACs were not very complex<sup>18</sup> economies during 1960s and 1970s, their export structures were mainly dominated by either primary commodities or basic manufactures. The important factor which separates the EACs from Pakistan, as well as from a number of other underdeveloped countries, is the *continuous* upgradation of their productive structures towards more sophisticated sectors and products. Industrialisation, for EACs, was not merely seen as building of static productive capabilities in certain sectors. Rather, it was conceived as a process which involves gradually moving up the industrial and technological ladder, thus, enabling the development of new products and production processes. The example of these countries shows that the process of industrial upgradation itself leads to the development of new capabilities. Industrial specialisation is important but not at the cost of industrial diversification. For example, Taiwanese government conjointly developed its electronics industry by first establishing special science-based industrial parks (such as Hsinchu Industrial Park) in the vicinity of both a university and a large public research institute (Industrial Research Institute). According to Dahlman (2007), this was instrumental in the development of electronics industry in Taiwan. The country’s electronics industry was also successful in moving from simple assembly of electronic products for foreign firms to developing its own capabilities in electronic-chip making and other electronic items. A number of Taiwanese brands also emerged globally in these sectors.

Some important common features in the EAC’s strategies for industrial development are as following:

### **5.1. Long Term Vision of Industrial Transformation**

As mentioned above, the most important aspect of development strategies of the EACs, is the presence of a clear long term vision of industrial and technological catch-up with the developed world. This vision included not just a process of industrialisation, but

<sup>18</sup> A country’s economic complexity depends upon two things: (i) the extent to which the export structure of an economy is diversified, and (ii) the level of sophistication of the export structure. Section 2 discusses this in detail.

a gradual, yet continuous, progression towards more sophisticated and high tech sectors. Thus, development of indigenous technological capabilities was the main goal of EACs industrial (as well as trade) policies. Protection was mainly given to new industries in the high technology sectors, which being dynamic in nature, had a higher scope for innovation. Chang (2006), for example, notes in the case of South Korea that a “constant upgrading of industrial structure based on the development of local technological and managerial capabilities was seen by the Korean policy-makers as the surest way to achieve sustained growth and efficient structural change and hence higher living standards”. Unfortunately, Pakistan’s industrial planning lacked such a long-term vision.

### **5.2. Protection: Only for the New Industries in Specific Sectors**

Due to the presence of a long term vision of industrial transformation and a commitment to fulfill it, protection was given only to the new industries in sectors which were thought to be dynamic and innovative (e.g. electronics). Although, EACs used the infant industry logic to protect certain industries, but *not all infants were considered worthy of protection*. Only those sectors were protected which had the potential to grow and be innovative in the long-run (sectors such as electronics, automobiles, ship building, heavy machinery etc.). While discussing East Asian economies, Rodrik (2007) notes that an industrial base which can generate high long-term economic growth “requires strategic policies directed specifically to *new economic activities*” (authors’ emphasis).

### **5.3. Conditional, Target Oriented Protection**

In the case of EACs, protection given to certain industries has been conditional upon the achievement of certain targets (such as export related conditions or efficiency targets). These targets were in line with the long-term vision of these countries. If a particular firm fulfilled certain criteria and met the specific targets, government’s support continued, but if it failed to do so, government withheld any kind of protection or benefits given to that firm.

For example, in Japan, projects to firms were granted based on their performance on previous projects. Similarly, the government distributed rents to those participants who have behaved cooperatively in business councils [see Stiglitz (1996) for an overview]. The level of technology in developing countries is typically far below than that of industrial economies due a lack of incentives to invest in acquiring and upgrading technology “because it is difficult to appropriate the returns to knowledge” [Stiglitz, *ibid*]. But, when rewards are tied with performance of firms, like that in Japan and other EACs, they face an incentive to upgrade their technology and become more competitive by diversifying and innovating into higher value-added products. This incentive, when coupled with government policies to advance towards a technologically advanced and highly innovative knowledge economy—where technological upgradation by the firms is subsidized by the government—an economy’s productivity and hence GDP grows rapidly.

In this regard, Chang (2006) notes that disciplining the beneficiaries of government’s protection is perhaps the most important difference between the East Asian Countries and others which have given protection to their industries and failed.

#### **5.4. Protection for a Limited Time Period**

In the case of EACs, the infant industry logic as a basis of protection has been used mainly for the sunrise industries. Sunrise industries are those industries for which income elasticity of demand is positive globally; so as income (of the consumers) increases they demand more goods from those industries. The policy-makers in EACs were well aware that infant industries cannot remain infant forever. Thus, the protection given to certain industries has always been for a limited time period. Although, the time period varied in case of different industries, but these countries ensured that protection given should be for a limited time. Once a particular industry became mature and stood on its feet, government shifted its focus to another sector. However, in case of Pakistan, it can be easily observed that industries which were heavily protected 60 years ago, still enjoy a great deal of protection from the state.

To conclude, EACs, not only had a clear and long-term vision for industrial development but they also implemented their policies effectively. As a result, they developed complex and sophisticated industrial base; which Pakistan failed to do so.

### **6. CONCLUSION**

Majority of the developed countries of the world rely on their industrial structure to foster better economic conditions for their people. In particular, the long-term economic development of a country depends upon its productive structure, i.e., the kinds of products it produces and exports. Pakistan's industrial sector, as we know, has failed to deliver its promise. We ask why?

The aim of this paper was to explore the reasons behind the lack of industrial diversification in Pakistan and its failure to move into the production of more sophisticated and high-technology products.

Firstly, drawing from the recent evidence, we argued a case for decreasing reliance on the traditional textiles and clothing sector, while diversifying the overall industrial structure of the economy. We discussed the recent evidence which shows that it is not industrial specialisation but the establishment of new type of industries, i.e. industrial diversification, which is more important for long-run economic growth. Therefore, while examining the *Product Space*—which is a visualisation of all the goods being traded internationally, their interrelationships, and their level of complexity and diversification—it is argued, that a country's position within this space determines the extent to which it can diversify.

In this regard, we analysed the level of Pakistan's product diversification and sophistication to find that it ranks 87th among 108 countries on the Economic Complexity Index. We further observed that Pakistan's economic complexity has deteriorated over-time, compared to 1960s and 1970s, when the economic structure was more complex relative to other countries.

Secondly, to understand Pakistan's lackluster industrial performance, we analysed Pakistan's Five Year Plans and identified four distinct problems with Pakistan's industrial development strategy. These plans reveal that Pakistani governments and policymakers, throughout the years, lacked a clear-cut long-term vision regarding the industrial development in Pakistan. Moreover, setting targets but not meeting those targets, providing no incentives for the firms to enhance their performance, and

protecting uncompetitive and rent-seeking industries, have been the hallmark of Pakistan's industrial policies. The industrial planning and benchmarks set in the Five Year Plans were never achieved. This clearly shows that the industrial planning in Pakistan has been quite arbitrary.

In addition, we also report preliminary regression results from our ongoing study to show that Pakistan's Economic Complexity Index (ECI) has a negative long-term association with political instability; and liberal trade policies were also found to be negatively associated with ECI in the long-run.

Finally, we have compared Pakistan industrial planning with that of East Asian Countries (EACs). We conclude that each high-performing EAC, despite having different political and economic systems, shared a long-term vision for industrial advancement into high value added and more sophisticated products. This long-term vision has always been lacking in Pakistan's case.

To conclude, based on our discussion, we suggest that for Pakistan's long-term development, it is imperative to have lucid vision for moving up the industrial and technological ladder and building capabilities for the production and export of more sophisticated items. It is also necessary for Pakistanis to develop a national commitment and consensus regarding the industrial development strategy. And most importantly, it should be recognised that a plan is as good as its implantation, thus, focus should be on implementation of the industrial plans.

## APPENDIX

### PRELIMINARY RESULTS OF ONGOING ECONOMETRIC STUDY

#### **1. Functional Form and Econometric Model:**

$$ECI = f(POLST, TF, GDPPC, TOT)$$

$$ECI = \beta_0 + \beta_1(POLST)_t + \beta_2(TF)_t + \beta_3(GDPPC)_t + \beta_4(TOT)_t + \mu_t$$

Table A.1

*Variables and Data Sources*

Variable	Description	Source
ECI	Economic Complexity Index	MIT Observatory of Economic Complexity; Atlas for Economic Complexity
POLST	Government Stability	ICRG
TF	Freedom to Trade Internationally	Fraser Institute, Economic Freedom of the World Database
GDP_PC	Real GDP Per Capita	World Bank, World Development Indicators
TOT	Net Barter Terms of Trade	World Bank, World Development Indicators

## 2. Results of Johansen's Cointegration Test<sup>19</sup>

Table A.2

<i>Results of Johansen's Cointegration Test</i>				
Null Hypothesis	Trace Statistic	P-Value	Max-Eigen Stat.	P-Value
H <sub>0</sub> : r = 0				
H <sub>1</sub> : r = 1	97.55498	0.0001	48.33063	0.0005
H <sub>0</sub> : r ≤ 1				
H <sub>1</sub> : r = 2	49.22435	0.0370	23.33798	0.1595
H <sub>0</sub> : r ≤ 2				
H <sub>1</sub> : r = 3	25.88637	0.1321	17.77261	0.1386
H <sub>0</sub> : r ≤ 3				
H <sub>1</sub> : r = 4	8.113759	0.4533	7.004384	0.4886
H <sub>0</sub> : r ≤ 4				
H <sub>1</sub> : r = 5	1.109375	0.2922	1.109375	0.2922

\*Trace test indicates two cointegrating vectors and Max-Eigen test indicates one cointegrating vector at 0.05 level.

## 3. Long Run Coefficients

Table A.3

<i>Normalised Cointegrating Coefficients<sup>20</sup> (ECI = 1.0000)</i>			
Variables	Coefficients	Standard Errors	t-values
POLST	-0.5746	0.0731	-7.8605
TF	2.4401	0.2762	8.8345
GDPPC	-0.0024	0.0024	-1.000
TOT	0.0921	0.0146	6.3082

## 4. Error Correction Model

Table A.4

<i>Results of Vector Error Correction Model</i>			
Variable	Coefficient	Standard Error	T-Values
ECM <sub>-1</sub>	-0.056240	0.018046	-3.116525
D(ECI) <sub>-1</sub>	0.056766	0.216012	0.262791
D(TF) <sub>-1</sub>	0.061733	0.046636	1.323707
D(POLST) <sub>-1</sub>	-0.024190	0.015918	-1.519716
D(GDPPC) <sub>-1</sub>	0.001644	0.000980	1.677953
D(TOT) <sub>-1</sub>	0.002971	0.001884	1.577223
Constant	-0.051179	0.022289	-2.296179

<sup>19</sup>Results of unit-root test are not reported here and are available upon request. All variables were found to integrated of order 1 and therefore Johansen's Cointegration Test is applied.

<sup>20</sup>These are normalised cointegrating coefficients and their signs should be interpreted in opposite way.

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