



## Economic Development And Structural Transformation: Analyzing Pakistan's Case

September 10, 2017 / 0 Comments / in Vol 11 No 3 / by admin

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### Abstract

*(The experience of developed countries suggests that structural transformation of the economy is closely linked to economic development. During the process of structural transformation, the economy transitions from the production of low-value primary products to high-value, and high-tech sophisticated products, and workers move from low-productivity to high-productivity sectors. As a result, national income increases and workers also become better off due to increase in their productivity and wages. An analysis of data for the period 1970 to 2015 suggests that the contribution of agriculture to GDP has declined over the years but in terms of employment it is still the largest sector of the economy. The contribution of the services sector has increased substantially but without a commensurate increase in employment. The manufacturing sector is stagnant both in terms of its contribution to GDP and employment since 1970. This sector is thus the Achilles Heel of Pakistan's economy. Contrary to Pakistan's experience, its comparator countries like South Korea and Malaysia have reduced their reliance on traditional sectors of economy via accelerated process of structural transformation. They have moved from the 'periphery' of the product space to the 'core' during this transformation. Pakistan's production/exports are still concentrated in the periphery of the product space. Constraints hindering Pakistan from producing high-tech, high-value goods are basically two-fold. First, Pakistan has specialized in sectors like textile and leather. The skill set acquired from producing these products is hardly relevant for the production of high-tech capital-intensive and consumer durables. Second, public policies such as industrial policy, technology policy, and innovation policy etc. have not been effectively utilized to facilitate the jump from the periphery to the core of the product space. Four lows i.e. low complexity of economy, low growth of manufacturing, low innovation, and low competitiveness are the real constraints for economic development in Pakistan. Accordingly, this paper suggests that Pakistan needs to focus on accelerating the process of structural transformation by establishing linkages between all sectors of the economy. Measures like identification of products nearby product space, picking strategic sectors and products for industrial policy intervention, developing clusters, focusing on SMEs and RNFE for rural structural transformation, and gearing public policies towards fostering productivity, innovation and national competitiveness etc. are recommended for economic development. – Author)*

### Introduction

What factors explain the difference in per capita income between the poor and developed nations and what are the effective pathways for economic development are two basic questions which are at the heart of development economics. The proponents of 'capital fundamentalism' view the underdevelopment of the poor countries in scarcity of capital, meaning that poor countries are poor because they do not have enough capital due to multiple factors like low savings rate, and low investment etc. which in turn are due to wrong policies, weak institutions, and poor business climate<sup>1</sup> etc. So, there is need to augment physical resources (through aid, borrowing, foreign investment etc.) to support economic development but poor countries do not have the ability or will to attract foreign capital<sup>2</sup>. 'Washington Consensus'<sup>3</sup> and Hausmann-Rodrik-Velasco Economic Growth Framework<sup>4</sup> (two modern versions of capital fundamentalism) are based on the premise that low savings and investment are the real stumbling blocks to economic development.

Therefore, policies of economic and financial liberalization which promote investment should be pursued for economic development. The experience of Latin American and African countries, however, suggests that such policies pursued under the broader framework of 'Washington consensus' proved disastrous in most of the cases<sup>5</sup>. In the case of Pakistan as well, results have not been that salubrious<sup>6</sup>.

The second broad view on development emphasizes that structural transformation is the name of the game. Economic development is nothing

but persistent structural change of the economy. Shifts in sectors and industries towards skill-and-capital intensive activities foster growth via increase in productivity and innovation. Such transformations often bring changes in the location of economic activity i.e. migration from rural to urban areas. So in order to sustain economic development, public policies should aim at acceleration in the process of structural transformation through innovation and competitiveness.

Pakistan has pursued different development strategies since 1947. In the 1950s and 60s, it pursued a policy of industrialization through import substitution. Public enterprises in the manufacturing sector were set up but subsequently sold to the private sector and as such this period is characterized by private-led growth strategy. In the 1970s, there was shift from private-led growth strategy to state-led heavy industry-based industrialization strategy. In the 1980s, there was again reversal to private-sector led growth strategy as the industries nationalized during the 1970s were gradually denationalized. Pakistan has, however, not been able to put itself on the trajectory of sustainable economic development despite experimentation with several strategies of economic development. Its growth experience is characterized by boom-bust cycles and human development is low. The logical questions, therefore, are the following. What are the binding constraints to economic development in Pakistan? How can these constraints be overcome? This paper, in a nutshell, is an attempt to find answers to these questions.

### **Significance and Scope of the Paper**

This paper aims to analyze constraints on economic development of Pakistan from the perspective of structural transformation of the economy. The saving-investment models like that of Harrod-Domar are out of the scope of the paper. Analysis is limited to figuring out the process of structural transformation of the economy. Concepts like product space, diversification and sophistication of products, innovation, and competitiveness etc. have been discussed in detail to arrive at conclusions. The significance of this paper lies in the fact that it is, to the best of my knowledge, the first systematic analysis of the process of structural transformation based on longitudinal data for the period

1970 to 2015. Further, it is the first paper on this theme since 2008 when two reports on the subject were published under the auspices of ADB. Hopefully, this paper will provide a framework for rethinking the phenomenon of economic development in Pakistan from the perspective of structural transformation.

### **Literature Review**

Dualistic models of economy suggest that a constant search for higher value-added sectors and jobs is required for sustainable economic development which is possible only through a structural transformation of the economy. It is in this tradition of thinking that Professor Ocampo<sup>7</sup> says that development is not 'inflating a balloon', meaning that just by adding factors of production a country cannot put itself on the trajectory of sustainable economic development. Economic development, especially in the developing countries, is inextricably linked to dynamics of production structures. Such dynamics requires policies and institutions which facilitate diffusion of innovations, development of new production structures, creation of linkages among firms and sectors, and reduction of dualism in the economy.

The 'balloon view' which considers structural changes as just a by-product of economic growth is not a perfect proposition; it is the ability to constantly generate new economic activities or innovations to induce structural changes in the economy. Innovation, technical changes, and creation and diffusion of knowledge are the drivers of structural change. Structural transformation is neither automatic nor costless. It requires well-thought out policies and interventions. Professor Ocampo argues in another article<sup>8</sup> that development is a combination of sound economic policies and proactive strategies for diversification of production structures. He further argues that the concept of innovation should be taken in a broader sense as innovation encompasses, from the perspective of structural transformation, technological upgrading, creation of new production activities, new marketing methods, exploration of new markets, and new ways of organizing a company or an industry.

Literature has also looked at structural change from some other angles as well. For example Hausmann et al in their paper titled 'what you export matters' emphasize that countries which specialize in the goods similar to the ones produced by rich countries tend to grow faster than countries which produce poor-country goods. Thus, there is a difference between producing textile goods and machinery. The countries which produce high quality and complex goods tend to perform better<sup>9</sup>, meaning it is not only aggregate output which matters for prosperity of a nation but composition of output is also important. Hausmann et al<sup>10</sup> say that countries become what they produce. The structure of output is important as each good produced requires a particular set of non-tradable capabilities. The countries with more varied sets of capabilities will be more diversified. As capabilities differ among the countries, so do differ the baskets of their exports.

In another paper Hidalgo et al<sup>11</sup>, while discussing the concept of product space, suggest that economies grow by upgrading the type of products they produce and export. The network of relatedness i.e. product space is crucial in determining the types of goods a country produces. It is comparatively easy for a country to produce new products which are closely related to the goods a country is already producing. The rationale is simple. The type of technology, skill set, institutions, and capital required is more easily adaptable in case of closely related goods. The concept of product space also suggests that upscale products (high quality) are located in the densely connected 'core' while less income goods occupy a less connected 'periphery'.

It is comparatively difficult to jump from the periphery to the core and it does partly explain why poor countries cannot develop more competitive and sophisticated exports. In another paper, Hidalgo et al<sup>12</sup> suggest that there is a strong empirical case that the level of development of a country is strongly correlated with the level of complexity of its economy. So, this strand of literature implies that development efforts and policies in the developing countries should focus on generating conditions which facilitate complexity to emerge for sustained growth and prosperity.

There is dearth of literature on structural transformation of Pakistan's economy. Two documents, one a working paper and the other a Technical Report, both prepared under the auspices of ADB, however, merit mention. The working paper by Jesus Felipe<sup>13</sup> suggests that the

pace of structural transformation in Pakistan has been very slow compared to its comparator countries and the policy implication is that measures be taken to accelerate the pace of structural transformation of the economy for economic development. The second document<sup>14</sup> is a technical report prepared by Ricardo Hausmann for the Planning Commission of Pakistan. Both these documents give some insights regarding the process of structural transformation in Pakistan but restrict their analysis mainly to manufacturing sector and ignore rural structural transformation. Factors like productivity of agriculture sector, promotion of non-farm rural economy and SMEs, and cluster-based development which are of vital importance for structural transformation in Pakistan have not been touched even cursorily in these documents. This paper attempts to plug these gaps by highlighting the relevance of the said factors for better understanding of the process of structural transformation.

## **Methodology**

The research methodology used for this paper is predominantly descriptive and analytical. Much reliance is placed on secondary sources like books and papers of academic journals. Data from the Economic Survey of Pakistan for the period 1970 to 2014 and Statistical Year Books of the Statistics Division have been used. Global reports like the Global Competitiveness Index (GCI), Global Innovation Index (GII), Atlas of Economic Complexity, UNIDO's Industrial Reports, and UNCTAD's 'Least Developed countries Reports' have been used for analysis and drawing lessons. The working papers of WB, IMF, ADB, and UNU-WIDER on the subject have also been relied upon for analysis.

## **Organization of the Paper**

This paper is organized in three sections following the 'introduction part' which contains introduction, statement of the problem, significance and scope of study, and brief description of research methodology. Section I focuses on structural change in output and employment between 1970 and 2015 and discusses the significance of the manufacturing sector besides deriving some stylized facts about the process of structural transformation in Pakistan. Section II contains a discussion on constraints to economic development in Pakistan especially using the concepts of product space and innovation. Section III gives suggestions for economic development and concludes by suggesting directions for future research.

## **SECTION-1**

### **Atypical structural change in output and employment**

#### **1.1 Structural change in output**

Structural transformation in Pakistan has remained slow compared to countries like South Korea, Malaysia, and China. In 1970, contribution of agriculture sector to GDP was 38.9 % which has decreased to 20.9 % in 2014-15. A substantial decrease in agriculture share took place during the 1970s and 1980s. Contribution of manufacturing sector to GDP in percentage terms has, however, not changed. In 1970, contribution of manufacturing sector to GDP was 16% which has decreased to 13.3% in 2014-15, pointing towards its stagnation. The manufacturing sector showed some improvement from 2004- 5 to 2007- 8. In 2004- 5, its contribution to GDP was 18.3% which rose to 19.2 % in 2007-8. Its contribution (in percentage terms) is, however, persistently on a decline since 2008-9. In 2014-15, its contribution to GDP was just 13.3% (Table 1).

#### **1.2 Structural change in employment**

Analysis of the sectoral contribution to employment shows that in 1970, the contribution of agriculture to employment was 57.58%.

In 2013-14, its contribution was 43.48%, confirming the fact that agriculture is still the biggest sector in terms of employment generation. The manufacturing sector is almost stagnant in terms of contribution to employment. Its contribution to employment in 2013-14 (14.16%) was almost the same as it was in 1970 (14.99%). As regards services sector, its contribution to GDP has substantially increased but its contribution to employment has not witnessed commensurate increase (Table2).

#### **1.3 Importance of manufacturing for structural transformation**

Structural transformation simply means moving from low productivity areas like agriculture and garments to high-productivity and value-added areas of industry. As per standard theory of structural transformation, the manufacturing sector absorbs surplus labour released by agriculture and generates more profits and wages. It stimulates productivity through 'learning by doing' technological development, innovation, etc. So, non-industrialization or pre-mature industrialization means slow structural transformation, and hence low productivity. The significance of the manufacturing sector for economic development can be gauged from the fact that the first ever thing written in the discipline of economics was not about gold, land or finance, it was rather about 'pin' manufacturing. The metal pin is the subject matter of the first chapter of

Adam Smith's book "The Wealth of Nations"<sup>15</sup>. While emphasizing the concepts of 'division of labour' and 'specialization', Smith writes that by dividing the process of pin-making into sub-processes, ten persons can manufacture 48000 pins or 4800 pins per day per person. In Smith's times, 20 pins were being produced per day per person. Two generations after Smith, writes Professor Ha-Joon Chang, Charles Babbage studied pin factories in 1832 and found that each worker was producing about 8000 pins per day<sup>16</sup>.

Manufacturing is at the heart of economic development. All the countries which are now bracketed among the developed countries have transitioned from agriculture to manufacturing. In modern times, Malaysia and China are two pertinent examples to make the point. Manufacturing has a 'growth-pulling role,' especially for developing countries like Pakistan. The increasing share of services in GDP does not mean that manufacturing is not important for economic development. Growth of the services sector is also dependent on the manufacturing

sector as high-value services like finance, consulting, IT, engineering, etc. sell their services to the manufacturing sector.

It is also an undisputable fact that manufacturing has the maximum potential of employment generation among all sectors of the economy. So, there is need, emphasizes Professor Chang, to bring production back

into the discourse of development<sup>17</sup>. Development is transformation of productive capabilities and structures. The 'new developmentalism' generally does not take into account this perspective of development. That is why Professor Chang calls the current mainstream discourse on development as 'Hamlet without the prince of Denmark'.<sup>18</sup> Literature suggests that if a country starts deindustrializing after manufacturing's share to GDP reaches to 30 %, the benefits of manufacturing are likely to have diffused in other sectors of the economy over an extended period<sup>19</sup>. These benefits include skill development and productivity through learning by doing , technological benefits , and ignition of growth in other sectors of the economy through backward and forward linkages but if premature deindustrialization occurs (before contribution of manufacturing sector is less than 30%), then it is difficult to ensure optimum growth in other sectors of the economy as well.

In case of Pakistan, the share of manufacturing has hovered around 13-15 %, half of 30%, meaning that non-industrialization and premature deindustrialization are big constraints to economic development in Pakistan. Compared to its regional comparators like India, China, Malaysia, South Korea and even Vietnam<sup>20</sup>, Pakistan lags far behind against indicators like MVA per capita and manufactured exports per capita etc. (Table3).

Table3: Competitive Industrial Performance by Economy 2013

#### 1.4 Some Stylized Facts

In view of the analysis above, the following stylized facts emerge about structural transformation in Pakistan. First, in terms of contribution to GDP Pakistan is a service economy as it makes the highest contribution to GDP while in terms of employment generation, it is an agriculture economy. Second, low productivity of labour is partly explained by the fact that reallocation of labour from low productivity sectors to high productivity sectors has remained slow. Third, labour absorption capacity of industrial and services sectors is low and these sectors of economy have failed to absorb the surplus labour released by the agriculture sector contrary to what dualistic models of economy suggest. Fourth, Pakistan's manufacturing sector has remained stagnant for decades. It is low-tech and low value added. Pakistan lags far behind its comparators in terms of indicators like manufactured value added (MVA) per capita, manufactured exports per capita, share of MVA in GDP, etc. Fifth, Pakistan is stuck in products generally exported by poor countries and the income level<sup>21</sup> of Pakistan's exports is at the same level as it was almost three decades ago.

## SECTION-2

### Constraints to economic development: structural transformation perspective

#### 2.1 Product space and low complexity

Rich countries not only produce more output per worker, they also produce different and more challenging products which means that economic development is in the complexity of the economy. It is not a matter of coincidence that developed countries produce goods like chemicals and machinery (more complex products) while poor and developing countries produce rice, coca, and textile goods etc. (less complex products). Producing simple things have several implications for the development process of a country. First, simple products bring low income as many others produce them. Second, structural transformation remains slow as it becomes difficult for the country to jump from the periphery of the product space to the core. Third, people remain stuck in the capabilities that do not have alternate uses, thus having negative implications for productivity and diversification. That is why increase in the complexity of a country's economy, especially production, is considered an important element of economic development.

According to the 'Atlas of Economic Complexity', "Countries simply do not make the products and services they need. They make the ones they can. To do so, they need people and organizations that possess relevant knowledge. Some goods, like medical imaging devices or jet engines, embed large amounts of knowledge and are the results of very large networks of people and organizations. By contrast, wood logs or coffee, embed much less knowledge, and the networks required to support these operations do not need to be large. Complex economies are those that can weave vast quantities of relevant knowledge together, across large networks of people, to generate a diverse mix of knowledge-intensive products. Simpler economies, in contrast, have a narrow base of productive knowledge and produce fewer and simpler products, which require smaller webs of interaction".

A historical analysis of product space of Pakistani goods simply shows that Pakistan has specialized in unsophisticated or less sophisticated goods typical of poor countries. Pakistan has the least diversified patterns of manufactured exports compared to its comparators in the region. Its exports are concentrated in textile and clothing, rice and food. Hamna Ahmed et al<sup>22</sup> have examined historical trends in the diversification of exports in Pakistan. Their findings suggest that the export structure of Pakistan is fairly traditional and the degree of structural change in the export sector has remained slow. Pakistan's ranking is 89 out of total 125 countries in terms of economic complexity index (ECI) whereas rankings of China, South Korea, Malaysia, Indonesia and Vietnam respectively are 22,07,34,72 and 73 in terms of ECI<sup>23</sup>. It merits mention here that complexity of an economy not only determines the current development level of a country, it also predicts future growth of an economy. A direct relationship is discernible from the experience of both developed and poor countries between income growth and economic complexity

#### 1. Evolution of product space of Pakistan (1970-2013)

Figure1: Exports of Pakistan (1970)

Figure2: Exports of Pakistan (1980)

Figure3: Exports of Pakistan (1990)

Figure 4: Exports of Pakistan (2000)

Figure 5: Exports of Pakistan (2013)

Analysis of Pakistan's exports in 1970 shows that Pakistan's major export products were jute, cotton yarn, textile goods, leather, etc. In 1980 we see a similar pattern except jute (as East Pakistan became a separate country). This pattern persists to date with very few changes. Pakistan's exports are still concentrated in textiles, wearing apparel, food and beverages, leather and leather products, footwear, etc. which are low-tech and low sophisticated products<sup>24</sup>. The structure of Pakistan's economy is thus stagnant over time and the country's production profile is dominated by low value goods. Pakistan's inability to move towards manufacturing of chemicals, machinery, communication equipment, medical and optical equipment, etc. which are high-tech/ high sophisticated products does explain its low economic development.

Table 4: Anatomy of manufacturing in terms of technology

Just 2% of manufactured exports of Pakistan are high-technology exports. The South Asian average is 6% while world average of high-tech exports is 14%. Results of the World Bank Enterprise Survey (2010) show that hardly 6 % of firms surveyed in Pakistan had introduced a new product in the last three years while in highly innovative countries like Chile 70% did so<sup>25</sup>. According to the International Industrial Report, 2016, if we add both medium and high technology exports share in manufactured exports, it was 10.4 % in 2013. Pakistan's product diversification has largely remained unchanged since decades. Its export sophistication is below average for its per capita income and its export basket has stagnated compared to its comparators<sup>26</sup>.

According to new dynamics, country's ability to absorb and master new technologies and production processes matter perhaps more than its factor endowments in the determination of its comparative advantage. The development experience of the world suggests that countries gradually move from primary, resource-based and low-technology to value-added high technology exports but this does not seem to have happened in Pakistan. Several factors can be responsible for low product diversification but the main constraint to diversification is what economists call 'path-dependence'. Products which a country produces today will mainly determine what it will produce tomorrow. Product space- a network in which products are nodes connected to each other if they are part of the same product mix- provide a useful framework to analyze possible paths for diversification. If we analyze the product space of Pakistan since 1970, it becomes very obvious that Pakistan is stuck in the periphery of the product space, meaning thereby that the products produced by Pakistan in 1970 were mainly resource based low tech products like cotton, fabrics, rice, textile, leather, miscellaneous agriculture products including fish, seafood, etc.

Figure 6: Pakistan Product Space (1970)

After one decade, Pakistan was still in the peripheral zone of the product space and was exporting almost the same products which it was doing in 1970.

Figure7: Product Space 1980

The product space for 1990 and 2013 also confirm that Pakistan is an exporter of low tech products which many other poor countries are also exporting with the result that Pakistan has not been able to upgrade its products though there is increase in exports in terms of quantity of these goods. Thus Pakistan's comparative advantage in production of low-technology resource-based goods seems to have become a constraint to product diversification and its graduation to high-tech goods like chemicals and machinery.

Figure8: Product Space 1990

Figure 9: Product Space 2000

Figure 9: Product Space 2000

### 2.1.2 Evolution of product space of India (1970-2013)

An analysis of some other countries which can be called Pakistan's comparators is also necessary to have an understanding of the process of structural transformation of the economy. In this regard brief analysis of India, Indonesia, Malaysia, China and South Korea in the light of evaluation of their product space is presented below. India's product space for the year 1970 shows that India was in the peripheral area of the product space and had not moved to the core of the product space, meaning it was exporting mainly low tech and primary goods.

Figure 11: Product Space 1970

However, we see a gradual increase in the products falling in the core of the product space in 1980, 1990 and 2013. The product space of 2000 indicates that a sizeable portion of the Indian products had moved to the core high- tech products but this change in the composition of products was not as rapid and sizeable as we see in case of the Asian Tigers.

Figure 12: Product Space 1980

Figure 13: Product Space 1990

Figure 14: Product Space 2000

Figure 15: Product Space 2013

### **2.1.3 Evolution of product space of Indonesia (1970-2013)**

Analysis of Indonesian product space shows that in 1970 it was an exporter of resource-based primary products. Much change is not visible in the product space for the year 1980. However, afterwards there is a discernible movement to various corners of the product space, meaning thereby that the diversification process accelerated in case of Indonesia after 1980.

Figure 16: Product Space 1970

Figure 17: Product Space 1980

Figure 18: Product Space 1990

Figure 19: Product Space 2000

Figure 20: Product Space 2013

### **2.1.4 Evolution of product space of China (1970-2013)**

Evolution of China's product space gives interesting results. In

1970, its products were already diversified but were concentrated in the area of low-tech, resource-based products. Later it moved to the core of the product space. But it is worth noting that China had not completely shifted to high-tech products as we see in case of the Asian Tigers. China exported both low-tech and high-tech goods as is evident from the product space of 2013. Perhaps, the size of the Chinese economy explains such dualism even at such an advanced level. The Chinese experience also offers an important insight regarding structural transformation of the economy. Structural transformation does not necessarily mean complete switching over to manufacturing and services. Agriculture can also remain an important sector of the economy if its productivity is enhanced and linkages are established with manufacturing and services sectors.

Figure 21: Product Space 1970

Figure 22: Product Space 1980

Figure 23: Product Space 1990

Figure 24: Product Space 2000

Figure 25: Product Space 2013

### **2.1.5 Evolution of product space of Malaysia (1970-2013)**

An analysis of the product space of Malaysia for the years 1970, 1980, 1990, 2000 and 2013 shows a gradual increase from low-tech, resource-based products to high-tech products. In 1970, a dominant part of Malaysian products were related to agriculture and mineral sectors. Its export basket in the 1970s contained fewer products in capital goods but achieved a more sophisticated production/export profile of goods by jumping to products with high value in capital goods and consumer durables with the passage of time.

Figure 26: Product Space 1970

Figure 27: Product Space 1980

Figure 28: Product Space 1990

Figure 29: Product Space 2000

Figure 30: Product Space 2013

### **2.1.6 Evolution of product space of South Korea (1970-2013)**

South Korea comparatively had a diversified base of economy in 1970 as is evident from its product space visualization. It had been able to form a strong manufacturing base by 1970. A comparison of products space for the year 1970,1980,1990,2000 and 2013 clearly shows that South Korea rapidly moved to high-tech industries in the 1990s and 2000s as a dominant part of products produced by South Korea since 1990 falls in the core of the product space indicating that the products produced by South Korea are high tech. The process of structural transformation has been very rapid and smooth in case of South Korea.

Figure 31: Product Space 1970

Figure 32: Product Space 1980

Figure 33: Product Space 1990

Figure 34: Product Space 2000

Figure 35: Product Space 2013

## 2.Low Innovation and Competitiveness

### 1.Significance of innovation for structural transformation

Innovation is considered key to structural transformation in a country. Innovation is not merely invention of new technology rather it should be taken in the broader perspective. According to Professor Ocampo innovation includes the following:<sup>27</sup> (1) introduction of new goods and services ; (2) introduction of new qualities of goods and services; (3) development of new production methods; (4) development of new marketing strategies; (5) opening up new markets; ( 6) discovery of new sources of raw materials; (6) establishment of new industrial structures in a given sector. Thus innovation is a very broad concept and includes creation of firms, creation of new production activities and sectors and also 'creative destruction'<sup>28</sup>. Moreover, the concept of innovation involves creation of knowledge or capacity development to apply such knowledge to production. Innovation is essential for structural change and economic development. Subhan et al<sup>29</sup> have empirically examined the impact of process innovation prevailing in SMEs on economic development for a period of 1980-2013 in case of Pakistan. Their findings suggest a positive relationship between process innovation and economic development. Hamna Ahmed et al <sup>30</sup> have explored the determinants of innovation for a sample of manufacturing firms in Pakistan. Their study suggests that size of the firm, its presence in the cluster, and management quality are the most significant determinants of innovation.

The concept of innovation is basically related to what the economist now call 'productive knowledge'. Hausmann, Hidalgo et al write<sup>31</sup>:

"Accumulating productive knowledge is difficult. For the most part, it is not available in books or on the internet. It is embedded in brains and human networks. It is tacit and hard to transmit and acquire. It comes from years of experience more than from years of schooling. Productive knowledge, therefore, cannot be learned easily like a song or poem. It requires structural changes. Just like learning a language requires changes in the structure of the brain, developing a new industry requires changes in the patterns of interaction inside an organization or society". Tacit knowledge does not travel well and it is socially and culturally embedded. The process of acquiring tacit knowledge is neither linear nor timeless, nor is it costless<sup>32</sup>.

#### 2.2.2 Pakistan on innovation rankings

Pakistan's position with regard to innovation is not very promising. It has persistently scored low on innovation and competitiveness indicators. For example, Pakistan's ranking is 131 out of total 141 countries as per the Global Innovation Index<sup>33</sup>. It lags behind all countries of the South Asian region except Nepal. Innovation seems to have direct correlation with structural transformation and economic development. Two developing countries i.e. Chile and Vietnam which have undergone fast structural transformation in the recent past have improved their rankings on the global innovation index. Chile and Vietnam are respectively at 42 and 52 positions as per GII, 2015. The Global Competitiveness Report of the World Economic Forum also issues rankings on the global competitiveness index every year. Out of a total of 12 pillars of the report, innovation is one of the pillars becoming the basis for the ranking of a country on GCI. Pakistan is at 126 out of 140 countries as per GCI rankings for the year 2015 and lags behind even in the South Asian Region.

Table 5: Pakistan's innovation rankings (2015)

Innovation and competitiveness are directly related to structural transformation of the economy. Pakistan's low score on these variables partly explains as to why the process of structural transformation has remained slow. Innovation is not a costless or an automatic process. It requires investment of money and time. The dilemma in the case of developing countries like Pakistan is that the private agents i.e., firms and industry are least incentivized to invest in innovative activities. They lack in conducting formal research, developing high technology products and applying advanced production processes. Spending on research and development is very low and collaboration of industry with local universities and product development centers is almost non-existent<sup>34</sup>.

In a nutshell, limited product space, minimal sophistication and diversification of products/exports, a stagnating manufacturing sector, low innovation and competitiveness are the real constraints to economic development in Pakistan.

## SECTION-3

### Suggestions to accelerate economic development via structural transformation

Pakistan is undoubtedly producing on the periphery of the product space where it has got very few opportunities for diversification. It does partly explain its slow structural transformation and stagnation of the manufacturing sector. Creation of new products i.e., diversification is generally a function of the existing comparative advantage of a country. So the challenge is to move from the periphery of the product space to the core given the constraint of the existing comparative advantage. Doing so requires a process of discovery <sup>35</sup> as up-gradation and diversification do not occur automatically. Well thought-out policies and actions by the government as well as business firms are required for the process of discovery to happen. The experience of Asian economies (Asian Tigers) is a case in point. These economies made enormous investments in human capital, prepared a workforce which could absorb and adapt new technology, created DFIs to provide credit to the private sector, made liberal use of industrial policy, and ensured political stability etc.<sup>36</sup> Pakistan can move out of the periphery of the product space by accelerating the process of structural transformation via more focus on productivity, competitiveness, and innovation. The following suggestions can go a long way in putting the country on the trajectory of sustainable economic development.

### 3.1 Focus on products nearby the location in product space

Pakistan needs to work on identification of new sectors and products for diversification of its economy. Such sectors and products can broadly be categorized into labour-intensive sectors/products and strategic sectors/products. The current location of the country in the product space amply indicates that a majority of the products in case of Pakistan are labour-intensive. There are, however, certain products which are close to the location of Pakistan in the product space but are not being produced at all or under-produced i.e. their potential is not being fully tapped for production and export. Professor Hausmann<sup>37</sup> has identified 25 sectors

which are most intensive in unskilled labor and are very near to the current location of Pakistan in the product space. These sectors include tobacco products manufacturing, poultry and egg production, gypsum product manufacturing, non-clay refractory manufacturing, oilseed farming, wood windows and door manufacturing, wood container and pallet manufacturing and veneer and plywood manufacturing etc.

Similarly some other products, which Professor Hausmann calls Pakistan's low hanging fruit, also need to be explored for production and export. These include frozen food manufacturing, bread and bakery product, mattress manufacturing, jewelry and silverware manufacturing, and ferroalloy and related product manufacturing. These products are already being produced but based on their location in the product space of Pakistan, there is potential for enhancing their production and exports. Enhanced focus on readymade garments (product space of Pakistan) is also required as it will not only help increase exports but will also provide employment being labour-intensive. According to estimates 50,000 pounds of cotton fiber creates 400 jobs in spinning, weaving, and finishing stages each and 1600 jobs in garments manufacturing. Thus 50,000 pounds of cotton generates 2800 jobs<sup>38</sup>.

The second category of sectors/products which need to be explored may be called 'strategic products'. These include paint and coating manufacturing, plastic pipes and fittings, blind and shade manufacturing, metal tank, aluminum sheet, show cases, tyre manufacturing, wood office furniture, and gypsum product manufacturing. Clovis Freire<sup>39</sup> has also suggested that there are 1607 products in case of Pakistan which are above the country's average complexity, meaning thereby that the potential exists for diversification and exports of such products. Once such products have been identified, a critical analysis in consultation with the private sector should be undertaken to remove the constraints hindering production and export of these goods.

### 3.2 Devise a well-coordinated industrial policy

The role of the government structural transformation of the

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cannot be under-estimated in the economy. Experience in structural

transformation of developed countries suggests that governments played a vital role in coordinating business activities and provisions for an enabling environment to the private sector for development. As regards to facilitation of the private sector in its jump to other products, the government has to play its role from several angles. The very process of identification of potential products and sectors requires a close collaboration between the government and businesses. Currently, the government interacts with the private sector through its representative bodies like Chamber of Commerce and Industries. Issues at such fora are discussed at high level of aggregation. There is need of dialogue between the government and the private sector at more 'disaggregated level' for identification of sector-specific constraints. Talking of general types of constraints such as 'shortage of power' and 'complexity of taxation structure' etc are not that helpful for making policy decisions for accelerating structural transformation of the economy. What is required is the identification of products within sub-sectors of the sectors of the economy and constraints in producing and exporting such products. Instead of picking individual winners, winning products and sectors, most preferably SME sectors, should be picked for intervention by the government.

The role of industrial policy has been very vital in the economic development of the West as well as Asian Tigers. Industrial policy is, however, understood in a narrow sense in our policy circles. Our understanding of industrial policy is limited just to subsidies, rebates, duty drawbacks, or provision of utilities like electricity and gas to the industrial sector at subsidized rates. The scope of industrial policy is much wider. Professor Ha-Joon Chang in case of East Asia has identified a long list of tools of industrial policy<sup>40</sup>like the following“(1) coordination of complementary investments (so called Big push); (2) coordination of competing investments through entry regulations, investment cartels and negotiated capacity cuts; (3) policies to ensure scale economies e.g. licencing conditional upon production scale;

(4) regulation on technology exports; (5) regulation on foreign direct investment; (6) mandatory workers' training for firms above certain size; (7) state acting as venture capitalist; (8) export promotion (export subsidies, export loan guarantees); (9) government allocation of foreign exchange etc.” So the point is that the role of industrial policy was very crucial in economic development of the East Asian countries.

It can be argued that with the advent of WTO, the scope of industrial policy is limited due to the ban on export subsidies and requirement of local content etc under the WTO law. Despite all such restrictions, the government's role cannot be belittled in providing an enabling environment for the firms to grow. Government coordinates business activities and has to set the rules of the game. The following is recommended for a robust industrial policy. First, introduce tax incentives for product development. Second, upgrade national curricula for technical and skills training and make it industry-specific and demand-driven. Third, establish a close interface between industrial policy, trade policy and competition policy. Sometimes, the objectives of these policies may conflict with one another and may not give the desired results. The possibility for merging the Ministry of Industries and Production with the Ministry of Commerce may be considered for effective policy coordination. Fourth, incorporate national innovation and technological upgradation as important objectives of industrial policy. Fifth, establish



coordination. Fourth, incorporate innovation and technological upgradation as important objectives of industrial policy. Fifth, establish 'New Development Bank' or mobilize instruments such as 'venture capital' or 'equity finance' to revive development finance in the country. It merits mention here that DFIs played a vital role in the economic development of the Asian Tigers. Even in Pakistan, the role of DFIs like PICIC and IDBP was very crucial in the economic development of 1960s. Sixth, pick winning sectors based on latent comparative advantage like agro-processing, light engineering and garments manufacturing. Choosing winners from the SME sector will also take care of equity concerns.

### 3.3 Develop clusters and focus on SMEs

The role of clusters was highly significant in the economic development of countries like South Korea. The benefits of clusters like labour pooling, information spillover, and specialization and division of labour are widely known. However, another benefit which has not been discussed much in literature also merits mention here, especially in our context and that is 'contract enforcement'. In a state where cases of contract violations may drag for years in the courts due to a slow moving judicial system, clusters may provide an informal mechanism of contract enforcement. Clusters develop a type of community in a specified geographical area and it becomes very difficult for an individual or a firm to renege on the commitments made due to social constraints. In this way, clusters help reduce what economists call 'transactions costs'.

Cluster development does not require an 'umbrella strategy' at a macro or national level. An integrated approach based on a focused strategy is needed to develop a cluster in an area. The role of the government for providing an enabling environment for promotion and growth of a cluster is, however, very crucial. A carefully developed policy for cluster development can go a long way in stimulating sluggish industrial development in Pakistan. Support from the government, effective incentives, adequate legal framework of support, customized support system, long-term planning, and creation of specialized agencies are some of the important success factors for cluster based development<sup>41</sup>. Pakistan's development policy has remained oriented towards creation of industrial estates and export processing zones. Natural clusters have lacked attention. Policy focus and strategies for the natural clusters can be a good starting point for cluster based development. Some of the priority clusters can be the following (Table 5).

Table 6: Some Natural Clusters

Cluster based development will not only enhance exports but will also help in promoting inclusive growth due to promotion of SMEs. Development is not merely increasing the pie of the cake i.e. GDP, it is also the equitable distribution of this cake, meaning 'growth with equity' should be the prime objective of any development strategy as uneven growth may endanger the very process of growth. SMEs are an effective pathway for inclusive economic growth. The contribution of SMEs to GDP and employment is very high even in countries like South Korea and Japan which are producing high-tech goods. For example, in South Korea the contribution of SMEs to GDP and employment is respectively 87.5 % and 49.4%<sup>42</sup>. In order to promote SMEs, easy access to finance, establishing links with dynamic firms, and imparting training and skills are recommended.

### 3.4 Focus on innovation and competitiveness

Knowledge creation is at the heart of innovation. Knowledge can broadly be divided into two categories i.e. 'explicit knowledge' and 'tacit knowledge'. Explicit knowledge can be transferred easily. For example, it is easy to transfer information like yesterday's temperature, score of a cricket match, amount of natural reserves in a country, name of first Mughal emperor in India, or a verse of a poet, but the bad news is that such knowledge hardly contributes to economic growth and innovation. It is the 'tacit knowledge' which contributes towards economic development. The economies of the developed countries as those of USA and Western Europe which are already working on the production possibility frontier (PPF) curve can grow only through constant innovation and accumulation of tacit knowledge. Some leading economists have attributed the current economic downturn in USA and Europe to staggering innovation. For example, according to Professor Robert J. Gordon of Northwestern University faltering innovation is the major cause for slowdown of economic growth<sup>43</sup>. Developing countries like Pakistan, however, have the advantage of latecomer, meaning skills, technology and production processes already introduced in the developed world can be applied by the developing countries as they are operating inside the PPF.

It is a lack of tacit knowledge, not explicit knowledge, which constrains growth and development and the difference in the amount of tacit knowledge does explain the differences in the prosperity of the nations<sup>44</sup>. There are, however, some issues with acquisition of tacit knowledge. First, it is hard to embed it in people as it is costly and time-consuming. Second, firms in the developed countries are more incentivized by extraordinary profits they can earn from the introduction of technical, commercial, or organizational changes but in developing countries there is generally sub-optimal search for new economic activities due to an absence of special incentives<sup>45</sup>. Third, imperfect tradability of technology means that you need to invest even for imitation of technology which means 'human resource development' (more focus on training, education and health etc.) should be an important plank of any development strategy. Empirics<sup>46</sup> also suggest that business training increases business knowledge, reduces business failure, improves business practices, and optimizes financial and labour allocation decisions.

In order to stimulate innovation, the following is suggested. First, a policy with clear bias in favour of applied research and skill development is needed. There is a need for prioritization of universities and research institutions for public funding. More public funding should be funneled to institutions meant for technical education, skills development, product development, and applied research etc. According to professor Daron Acemoglu & James A. Robinson<sup>47</sup> "Improvements follow from science and from entrepreneurs such as Thomas Edison, who applied science to create profitable businesses". Second, it is a matter of common observation that strong export orientation triggers innovation as

competing in international markets requires that technology and quality standards are met. This partly explains high innovative activities in the countries which pursued export-led growth strategies. So the policy implication is that 'export-led growth' should be another key component of

the development strategy of Pakistan. Unfortunately, Pakistan's firms cater to local demand and growth in Pakistan is primarily driven by the dynamics of the domestic economy contrary to popular belief that growth in Pakistan is dependent on external factors<sup>48</sup>.

Third, there is need to revisit the educational system which focuses more on explicit knowledge, rote learning than honing cognitive skills. We need to focus more on accumulation of tacit knowledge. Empirics suggest that the proposition that all types of education contributes towards economic development is a misplaced idea. Professor Lant Pritchett<sup>49</sup> has shown, on the basis of cross-national data, that there is no association between human capital (rising educational attainment i.e. more years of schooling) and economic growth. Irrelevance and low quality are the plausible reasons for this disconnect. Professor Paul Romer says that the ability to keep discovering new and better processes (i.e. innovation) is of vital importance for economic development. Education of merely existing knowledge does not spur economic growth especially in the developed countries which need to push PPF outwards through innovation. Visualizing a hypothetical situation of the Middle Ages, Romer writes: "A farmer who educated his children and workers at the leading institutions of the day would not have been able to increase his output per acre by very much. It is not the dissemination of old information but steady arrival of bits of software (new knowledge) that makes education even more valuable and provides new opportunities of growth<sup>50</sup>". There is need to establish linkages between domestic industry, skills development, and science base in universities and research institutions.

As regards competitiveness, WEF's report every year identifies a host of problematic factors hindering the national competitiveness of a country. Scrutiny of reports for the year 2008-9 to 2015-6 show that corruption, poor access to finance, political instability, inadequately educated work force, poor work ethic, inefficient government bureaucracy, etc. are some of the factors which appear every year among the top ten factors responsible for the low competitiveness of Pakistan<sup>51</sup>. It calls for a holistic approach for improving competitiveness but the point is whether it is possible to remove all these constraints simultaneously. Perhaps it is not. The Hausmann-Rodrik-Velasco Growth Diagnostics Framework provides an answer.

According to the said framework you need to find out the most binding constraint to economic growth and fix it. Two studies<sup>52</sup> conducted in the line of said framework have suggested that poor governance and corruption (symptomatic of poor governance) emerge as the most binding constraints for sustainable economic growth in Pakistan. So the policy implication is that good governance should be one of the top priorities for improving competitiveness. A competent and professional public bureaucracy is of vital importance for improving governance. Modern literature<sup>53</sup> on governance emphasizes on enhancing capacity and autonomy of the civil servants for good governance. Political stability is a sine qua non for economic development. The experience of Asian Tigers vindicates this assertion. It is hard for the divided societies with weak institutions of conflict management to put them on the trajectory of sustainable development<sup>54</sup>.

There is also need to facilitate access to finance especially for the poor and less disadvantaged who can setup small enterprises and can contribute towards economic development. It is a matter of common observation that most of the developed economies have provided 'mass access to finance' but in Pakistan it is not so by design. Credit availability to the masses is a necessary condition to enlarge the size of the economy. The low productivity of the labour force is also responsible for low national competitiveness of Pakistan. Pakistan stands at 147 out of a total 188 countries in terms of HDI calculated by the Human Development Report, 2015. Pakistan's score is very low in terms of indicators like literacy, years of schooling, life expectancy, etc.<sup>55</sup>. Pakistan ranks at 121 out of 155 on the Gender Inequality Index.

Besides direct investment in education, training, and health of the people, there are two big sources of aggregate labour productivity growth. First, it can result from innovations in each sector or activity when capital is increased, new technologies are adopted and knowledge and skills are acquired to use them. Second, productivity can increase as a result of movement of workers across sectors-from low-productivity to high-productivity sectors. Inter-sectoral transfer of workers is an essential ingredient of the process of structural transformation<sup>56</sup> (Diagram).

Thus labour flows from low-productivity activities to high-productivity activities are a key driver of economic development<sup>57</sup>. A well-designed human development policy is a must for a country's overall development strategy. On-job training is an important ingredient of such a policy contrary to popular belief that productivity only comes from schools and universities. Moreover, human development strategies are dynamic and need to be continuously revised and adjusted according to other national strategic economic policies<sup>58</sup>.

### **3.5 Accelerate rural structural transformation**

The share of agriculture in GDP has gone down but it is still the largest sector for employment in Pakistan. This trend is not Pakistan specific as most Asian countries point towards the same trend. Countries like Japan and South Korea followed an 'agriculture-led industrialization' pathway. China and Vietnam also seem to be following the same pathway<sup>59</sup>. The structural transformation does not mean neglect of agriculture. Agriculture matters for Pakistan and will remain important at least for the next few decades due to being the largest employer. The process of rural structural transformation will also continue. Rural structural transformation simply means enhancing agricultural productivity, promoting the rural non-farm economy (RNFE), and production of higher value agricultural products. Enhancing agricultural productivity will accelerate the process of structural transformation. Political economists<sup>60</sup> argue that structural transformation is important for economic development but at the same time it needs to be managed for food security and livelihoods of the rural poor.

Pakistan is a highly diversified country from the agricultural perspective. It has got 12 agro-ecological zones where more than 35 types of crops can be produced. Pakistan is self-sufficient in food grains (wheat and rice) and now we need to have a diversification plan for agriculture. Besides diversification of agricultural produce, a strategy needs to be evolved for the development of the rural non-farm economy which has remained a neglected area in Pakistan. Doing so will help create backward and forward linkages which in turn will accelerate the process of structural transformation. Shifting labour from small-scale agriculture (where the marginal productivity is low) to more productive activities like agro-processing, diversifying the rural economy away from heavy reliance on agriculture towards RNFE, and a shift of productive resources within agriculture towards activities with higher productivity are some of the key components of the structural transformation of rural economies<sup>61</sup>.

Increase in non-farm income stimulates demand for agricultural produce. Similarly increasing agricultural income generates demand for non-farm goods and services. Thus agricultural upgrading and rural economic diversification complement each other by creating synergies.

Moreover, there is also need to integrate agriculture activities to the global supply chain. Linking agriculture to supermarkets (modern retailing) and use of biotechnologies can be important ingredients of the development policy<sup>62</sup>. Farm to market roads can play a vital role in rural economic transformation and RNFE development as proximity and access to urban markets is highly significant for rural structural transformation.

### Conclusion and directions for future research

This paper has made out a case for sustainable economic development via structural transformation of the economy. All the developed countries have undergone this transformation. Their experience suggests that diversified high-tech and high-productivity sectors are the very basis of economic development. Production and export structures of South Korea, Malaysia, China, etc. lend credibility to this assertion. The type of comparative advantage a country enjoys does partly explain the pace of diversification and sophistication of its production / export basket.

Structural transformation of the economy is, however, not automatic. It requires well-coordinated public policies and strategies for industrial growth, agricultural productivity, innovation, human resource development, etc. Accordingly, this paper suggests that Pakistan needs to concentrate on the discovery of new products, productivity of its workforce, diversification of rural economy, promotion of clusters and SMEs for accelerating the process of structural transformation. Furthermore, forging strong linkages between agriculture, RNFE, the services sector, and manufacturing are also recommended.

Sincere effort has been made to identify constraints to economic development and suggestions have to be made based on credible data, empirical research papers, and books of globally renowned scholars on the subject. Findings and suggestions are, however, neither definitive nor sacrosanct. Researchers and economists need to come forward and conduct empirical research on various aspects of structural transformation in Pakistan. Identification of winners, possibility of establishment of DFIs and venture capital, pathways for integration of agriculture and RNFE, and designing an innovation ecosystem can be some possible areas for future research. This paper will, hopefully, provide a basis for future research on the theme of economic development via structural transformation.

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
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Volume 2: Case Studies I. Structural Change and Industrial Policy in Turkey II. Structural Transformation and Industrial Policy in Morocco III. Structural Transformation and Industrial Policy: Tunisia IV. First, structural transformation is synonymous with economic development. In fact, no country in the world has been able to develop without going through major structural transformation, which is defined as “the reallocation of economic activity across agriculture, manufacturing and services that accompanies the process of modern economic growth” (Herrendorf et al., 2013). In particular, it will analyze the nature of industrial policy over time and document these policies in terms of whether they are horizontal or vertical. Development theory Structural transformation Economic sectors Neoclassical theory Schumpeter Lewis model. Download chapter PDF. 2.1 Three Schools of Economic Development Theory. However, the converse is the case for sub-Saharan Africa and Latin America because labor has been transferred from higher to lower productivity sectors and this has reduced growth rates.2. McMillan and Rodrik (2011) find that countries with a large share of exports in natural resources tend to experience growth-reducing structural transformation and, even if they have higher productivity, cannot absorb surplus labor from agriculture. Rethinking Development Policy: Deindustrialization, Servicification and Structural Transformation. \* Prepared by Manoj Atolia, Prakash Loungani, Milton Marquis, and Chris Papageorgiou. Authorized for distribution by Chris Papageorgiou September 2018. Economic development and structural transformation in Ghana has occurred “without a green revolution, an industrial revolution, or a service revolution of the types seen, for example, in Asia.” (See Osei and Jedwab, 2017.) It has maintained an annual growth rate of about 5% over 2001-2010. Tax Expenditure. Economic and Social Indicators. Download Statistical Appendix. Highlights of the Economic Survey. The structural problems and lack of mechanization remained main impediment to growth. Major crops remained the victim of natural calamities during the last few years and three out of last four years witnessed negative growth in the major crop sector. The unprecedented floods in July 2010 destroyed two major crops, i.e. rice and cotton. The rising trend in Pakistan’s foreign exchange reserves continued unabated since 2008-09 and reached to \$17.1 billion by end-April 2011. Pakistan’s rent-based social order is analyzed in historical perspective. We trace the emergence of an economic structure characterized by an unsustainable and unequal growth process within which mass poverty has become endemic. These features are rooted in an institutional structure that excludes a large proportion of the population from.