

# POLICY BRIEF

## FRAMEWORK ON THE AGGLOMERATION OF ECONOMY: LEARNING FROM INTERNATIONAL EXPERIENCE

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### SUMMARY

Countries including China, India, and Australia have covenanted to transfigure unevenly concentrated industries into more inclusive, buoyant, and sustainable regional spatial units and urban clusters through an increased level of productivity, also known as agglomeration. Contextualizing it for Pakistan and especially Punjab, the policy brief has endorsed that cities can be governed judiciously and renovated into economic hubs for employment generation, overall regional development, and other economic benefits with an unswerving economic structure. This policy brief also offers a policy framework for structuring a stable agglomeration economy to lesser down the overall costs of production that ratifies the introduction of subventions, instigation of tax incentives, development of industrial parks and corridors, and investment in infrastructure and R&D for the industry.

### 1. Introduction

Globally, the Goal 11 under the Sustainable Development Goals (SDGs) pledges to make cities and human settlements more inclusive, safe, resilient, and sustainable by providing an unparalleled opportunity for attaining collective and inclusive progress with sustainable development. Krugman (1999) explained agglomeration as linkages, condensed labour markets, and pure external economies that effect the spatial pattern of economic activity. They arise through the collective effort resulting from increasing returns at firm level, transport cost, and consumers' migration. Such heterogeneity incentivizes suppliers by avoiding competition on the basis of price while increasing the income level of consumers by locating them in proximities and reducing transportation costs through locating them near the suppliers (Melitz and Gianmarco, 2008). The underlying concern of agglomeration of economies approach is not only inherent with simulating high growth rates, but also the advancement of an encouraging environment that it generates for promoting a broad-based and comprehensive form of progress (UNIDO, 2013). Such connotations allow participants to overawed restrictions and gain benefits that lie beyond the scope of an individual.

The idea gained momentum in the context of developed as well as developing countries for increasing the level of productivity, known as agglomeration, of unevenly concentrated industries into regional spatial units or urban clusters that are governed well (Bertinelli and Decrop, 2017). The conceptual rationale dates back to Marshall (1890), recent progress has been made on the development of firm- and establishment-level datasets on economic activity (Behrens and Robert-Nicoud, 2015).

### 2. Agglomeration of Economies: A Case of Punjab, Pakistan

In the realm of developing countries, Pakistan, especially Punjab, has persuaded a facilitation regime for its industrial and manufacturing sector to agglomerate. Stringent upon the reduction/exemption of taxes applicable to industrial clusters, incentives are provided to firms for the promotion of agglomeration of economies, and easing-out the processes in doing business.

#### 2.1. Situational Analysis

The Government of Punjab (GoPb) pledges to mature the core elements of cluster formation as identified by Porter (1990) including grouping of interconnected producing companies, provisioning of specialized facilities for suppliers of inputs, equipment, and services, developing

strong market channels, supporting production of complementary goods, and coordinating institutions within the province.

For this to materialize, the Special Economic Zone Act 2016 (amended) by the Board of Investment (BOI), Government of Pakistan (GoP) is enacted for provision of a platform for social and economic cohesion through delivery of public utilities and infrastructure in promoting agglomeration of economies. In line with the objective of reducing/exempting taxes to a specific SEZ, Section 36, clauses (a, b) under the SEZ Act 2016 states;

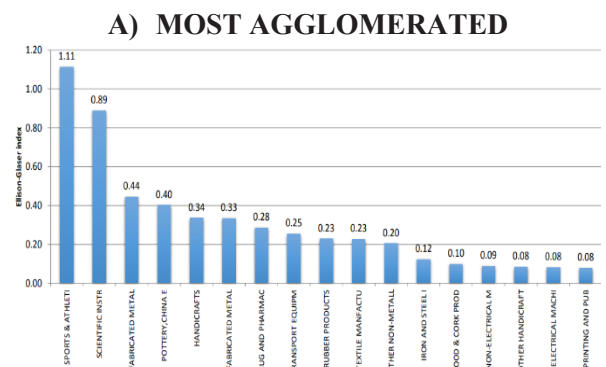
*'One-time exemption from all custom-duties and taxes on plant and machinery imported into Pakistan except the items listed under Chapter 87 of the Pakistan Customs Tariff, for the setting up of an SEZ subject to verification by the BOI'*

and;

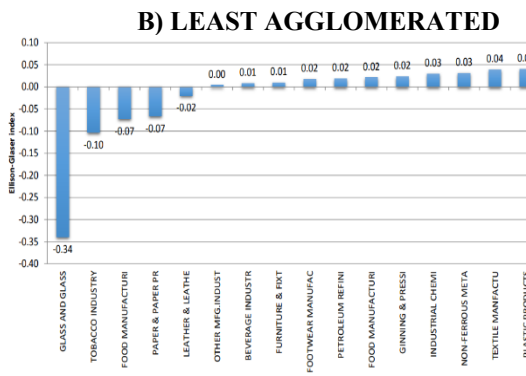
*'Exemption from all taxes on income accruable in relation to the development and operation of the SEZ for a period of five years, starting from the date of signing of the development agreement'*

Burki and Khan (2011) presented that almost 52 percent of industries were highly agglomerated (Ellison-Glaser Score > 0.05), 17 percent firms are moderately agglomerated (Ellison-Glaser Score between 0.05 to 0.02), and 31 percent firms are randomly dispersed (Ellison-Glaser Score < 0.02) (Figure 1). The ship-breaking industry stood at the top by being the most highly concentrated industry followed by sports and athletic goods industry and surrounding districts respectively.

Figure 1: Status of Agglomeration of Manufacturing Industries in Punjab, Pakistan (2011)



Source: Burki and Khan (2011).



Source: Burki and Khan (2011).

Figure 2: District-Wise Distribution of Industries<sup>3</sup> in Punjab (2017)



Source: Directory of Industries (2017), GoPb

Based on the Directory of Industries data (2017), Figure 2 shows a recent representation of industries in 36 districts of Punjab. An analysis of the spatial distribution of industries reveals that major industries are concentrated in the Central Punjab. Highest concentration of industrial units out of the total industrial units is found in Gujranwala (17.42 percent), followed by Lahore (16.84 percent) and Sialkot (14.95 percent) respectively. The map further shows a modest concentration in the Southern Punjab region highlighting 3.30 percent, 1.62 percent, and 1.42 percent of the total industrial units existing in Multan, Rahim Yar Khan, and Bahawalpur respectively.

In light of governments' comprehensive industrial development policy, 'Plug and Play' industrial areas comprising of appropriate services, better transportation facilities, and on-site housing for labour has remained an essential component in boosting industrial development through spurring firm's innovation. Strongmindedly, the GoPb is also destined to develop space for economic zones on 10,769 acres, in nine different industrial estates with enabling infrastructure and delivery of employment opportunities for the masses.

Table 1: Industrial Estates in Punjab, Pakistan

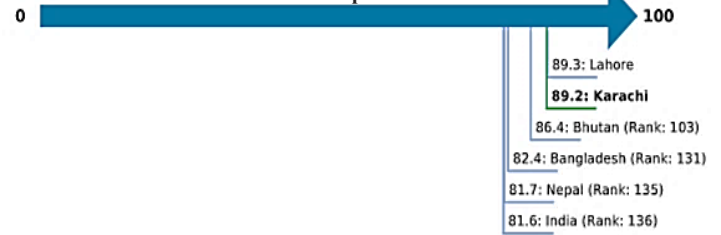
Industrial Estates	Total Acres
RYK Industrial Estate	456
Bhalwal Industrial Estate	445
Vehari Industrial Estate	277
Quaid e Azam Apparel Park (SEZ)	1,536
Small Industrial Estate Gujranwala	150
Small Industrial Estate Wazirabad	63
M3 Industrial City Faisalabad (SEZ)	4,300
Value Addition City Faisalabad (SEZ)	225
Mama Iqbal Industrial City Faisalabad (proposed prioritized SEZ)	3,317
<b>Total</b>	<b>10,769</b>

Source: Industries, Commerce, Investment, and Skills Development Department, GoPb.

<sup>3</sup>The numbers mentioned in the above map represent the total number of industries existing in each respective district of Punjab.

According to the Doing Business 2020 report by the World Bank (WB), an economy's ease of doing business score is reflected on a scale from 0 to 100, where 0 represents the lowest and 100 represents the best performance. The major city of Punjab, Lahore scores at 89.3 in terms of the ease of doing business depicting that its economy is only 10.7 percentage points away from the best regulatory performance constructed across all cities and time (Figure 3).

Figure 3: Starting a Business in Karachi and Lahore with Ranking and Score



Source: Doing Business (2020).

Thus, the efficiency of the firms, driven by a reduction in the cost of moving goods, people, and ideas within the geographical boundaries of the province, has resulted in inter-industry learning economies that are critical for taking advantage from confined geographical than diverse territories. Azhar and Adil (2019) also highlighted the existence of intra-industry spillovers in Punjab alongside a positive relationship between agglomeration and efficiency of firms through the DEA bootstrap analysis.

This calls for a collective effort from both public and private enterprises to chip in finances for development of strong and inclusive economies with common standards to expand trade and investment. A simplification in trade procedures enhances the opportunity of a better response by the clusters towards trade prospects. In this regard, the strategic location of the country is imperative for its metropolis to take full advantage of trade thus ensuring sustained economic growth as agglomeration of economies will become a vent for economic growth.

### 3. Framework for Agglomeration of Economies

The literature on urban economics highlights the importance of agglomeration of economies through various forms of cost-saving benefits associated with local sectors that are significant to a firm's spatial environment (Duranton and Puga, 2004). Vital to this is the use of low-cost, intermediate, and specialized inputs by industries due to incidence of heterogeneous yet efficient industries in a locality. Additionally, the employer's demand of these local industries is an authorization of a conducive environment for skilled labor by enhancing job opportunities through labour pooling. Furthermore, the firm-level interactions of these local hubs open up new horizons for learning through engagement in similar production procedures and technological progressions (Becker and Murphy, 1992). This leads us to one of the fundamental results in spatial economics postulated as the Starrett's Spatial Impossibility Theorem. It is stated as follows;

*“Once we abstract from the heterogeneity of the underlying space, without indivisibilities or increasing returns, any competitive equilibrium in the presence of transport costs will feature only fully autarchic locations where every good will be produced at small scales. Thus, a substantial localization or spatial concentration of economic activity can be seen as a sign of agglomeration economies.”*

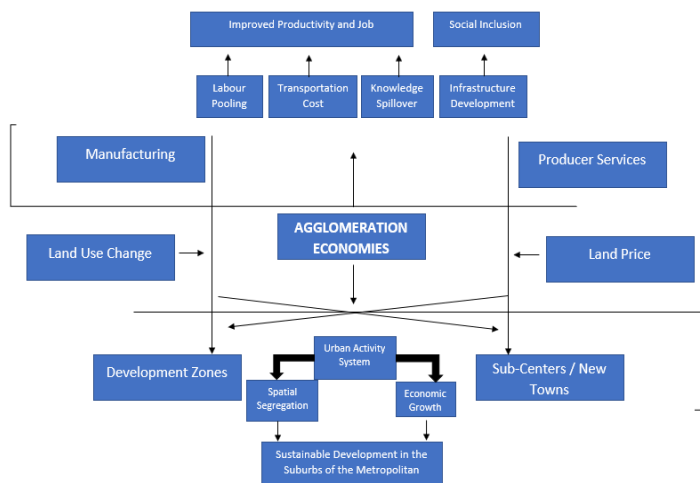
(Starrett, 1978)

The creation of economic externalities, emergence of scale economies, and increasing returns occurring at the city level through forward and backward linkages facilitate the creation of agglomeration of firms and workers in the city (Figure 2). Therefore, a strong tendency exists with industries to agglomerate in regions in order to benefit from agglomeration of economies at the global front (Fujita, 2007).

Globally, localization through agglomeration of economies has gained prominence in recent years as a probable driver of development, innovation, and connection. It is regarded as an efficient policy instrument that allows for resource concentration and funding in targeted areas, of high growth and development potential, through

a multiplier effect. Yet, the extent of benefit of these geographical proximities lies in its ability to rescue from cut-throat competition, stagnation and poverty thereby hurdling innovation and growth (Figure 4).

Figure 4: Framework for Agglomeration of Economies



Source: PERI (Based on survey of Literature)

#### 4. International Evidence on Agglomeration of Economies

for any country, cities are the economic engines that drive economies of scale and economies of agglomeration through social and economic concentrations of the firms. The horizontal networking facilitated by the agglomeration of economies enhances the productivity and competitiveness of public-private led productions by improving access of clusters to local as well as international markets. Higher productivity in the form of economic specialization and reduced transaction costs impact urban development by constituting advantages to firms through clustering. These clusters lead to higher demand of employees that improves the economic profile of each city, also known as urban growth.

##### 4.1 China

1980 marked the year in China when the concept of ‘city region’ was proposed by Song (1980) which is an economic region composed of multiple economic centers. Yu and Ning (1983) was the pioneer of introducing Gottmann’s work as ‘metropolis’ in the Chinese context that laid the foundation stone for urban agglomeration in China with varied spatial distributions and structures of urbanization.

During the initial exploration of urbanization in China, Dong (1989) defined urban agglomeration as follows:

*“Urban agglomeration, or urban cluster region, is a clustered urban system with different hierarchies and types of cities that often appear in highly developed, commercialized and urbanized regions.”*

Thereafter, the idea gained momentum while ensuing a city regions, urban clusters, and megalopolis respectively. It is in 2006, that an aggregate of cities within certain geographic area was then regarded as agglomeration with varied sizes, functions, and characteristics (Yao et al., 2006). The financial investment made by the Chinese government, reduction in corporate income tax rate of 33 percent between 15-24 percent for foreign, technologically advanced, and export-oriented enterprises, and an exemption for custom duties on equipment and machinery used for production of exportable items facilitated the formation and growth of urban agglomeration that became revolutionary in the new global economic core with the announcement of the ‘Silk Road Economic Belt’ (Fang and Yu, 2016). Driving capability of urban agglomerations encourages government to engross in research to discover prospects for future spatial organization of cities and regional development in China. More than 100 economic zones have been established in China since 1995 through promotion in product innovation, technological development and adoption of high-technology.

##### 4.2 South Australian Wine Cluster

The wine cluster in South Australia is the main producer and exporter of wines from early 1990s to the present period. Since long, the cluster has experienced an enormous export-led growth.

There are many reasons for the success of Australia in selling wine and mastering the tastes of the global consumer. The initial impetus for growth in export markets is derived from low domestic demand prices. The per-capita intake is 21 litres per year and, while increasing, Australia’s low population makes it responsible for only 400 million litres in 2010. Additionally, the Strategy 2025 has been the driving force behind the domestic and foreign growth of the Australian wine industry through initiatives to encourage cluster growth in the Southern region.

##### 4.3 Bangalore Information Technology (IT) Cluster

The Bangalore IT cluster has expanded considerably since the liberalization reforms implemented in 1991. The creation of the cluster was underpinned by a labour arbitration policy that aims to carve out the share of the main IT services markets in the United States and Europe by taking advantage of labour cost disparities between India and aforementioned markets. In particular, the financial services industry has been very swift to incorporate global IT services into its business model. Low labour costs, a favorable time-zone, the proliferation of high-speed international communication networks and the prevalence of skilled English-speaking workers have all enabled the cluster to grow rapidly over the last 20 years.

#### 5. Policy Recommendations

Annals of recent history reveal that cities which are well-functioning and relish agglomeration of economies espouse well-maintained infrastructure, water and sanitation facilities, low-cost energy, and low cost of production. Some of the widely acceptable policy initiatives to promote agglomeration of economies are given below.

##### 5.1 Introduction of Agglomeration Subventions

Fresh debuts to a metropolitan region have an impetus to apportion the benefits of agglomeration for improving the quality and productivity of production. The added advantage can supplement motivation to agglomerate, strengthening the recompenses treasured by the market occupants, and fortifying response. In order to rally the efficacy of agglomeration subventions, the types of industries that the policymakers wish to draw in with a sheer objective to improve quality and future incentive should be protruded.

##### 5.2 Ease of Doing Business and Tax Incentives

Under the heterodox and the neo-classical schools of thought, ease of doing business and tax incentives encourage the crusade of activities for industrial clusters. As such, agglomeration of economies tend to attract both the foreign and domestic investments (Zeng, 2016). The achievement of an initial milestone helps them to produce evolutionary dynamics which lead the economy to a self-enforced and accelerated path of growth that is driven by localized economies and knowledge spillovers while contributing to productivity.

##### 5.3. Development of Industrial Corridors

In a globalized world, many industrial estates and clusters face technological challenges that alter the existing strategies of skills and quality control. Therefore, an expansion of such clusters can help in creating synergies thereby refining opportunities of learning and innovation (Tyler and Negrete, 2009). The idea can be turned to the development of synthesizing economic zones into industrial corridors comprising of clusters located around the investment regions and industrial hubs. Such equipping these hubs with state-of-the-art technology, transport facilities, and good connectivity. In this regard, industries including gems and jewelry, sports, shoes, and pharmaceuticals can be implanted by promoting large scale production through clustered economic zones for regional development in Pakistan

##### 5.4 Promotion of Industrial Parks

In order to cut down the cost of logistics, the said scheme can be adopted by brand manufacturers in Pakistan by attracting global value chains through the formations of economic zones and forge an industrial chain by creating forward and backward linkages of the firms. Therefore, efforts may be directed to form large-scale integrated production zones/industrial parks in the form of vertical integration that will improve industrial efficiency by lowering inventory costs. The synergies drawn from the aforementioned value chains of local production and global resources will also enhance regional competitiveness.

## 5.5 Increased Investment on Transport

Increased investment on transport networks can speed up movement of people and goods and increase level of positive agglomeration externalities (FIAS, 2008). This is because better transport infrastructure is important for productivity growth especially in industries where transportation of final goods to urban centres is important. Productivity of regional industries can also increase with improved highway traffic networks through reduced transport costs and improved market access.

## 5.6 Development of R&D Industry

There can be an introduction of specific R&D for industry to contribute in new innovations. They can adapt best practices in technologies to enhance Total Factor Productivity (TFP) growth alongside government helping them to adapt new technology by providing symmetric information.

## 6. Conclusion

The idea of agglomeration of economies does not hinge on the formation of clusters rather necessitates on a regimented effort in terms of connection between consumers and firms along with creation of institutional settings to enhance industrial linkages. The fact that building back better is the logical answer, the need of the hour is to create a consortium of industries for the realization of chartered goal of regional development by fostering capabilities within the geographical boundaries of the country in terms of time. Government needs to develop a holistic framework to the welfare of its people outside low-productivity sectors to high-productivity sectors. Therefore, in order to achieve Goal 11 of the SDGs under increasing global competition and gaining benefits from the China Pakistan Economic Corridor (CPEC), the success of policies to ensure agglomeration of economies lies in collective responsibility and requires coordinated responses at different tiers of implementation while addressing ancillary issues.

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## About Punjab Economic Research Institute

The British Government established a Board of Economic Inquiry in India in the year 1919 to undertake evidence-based policy research on different socio-economic issues including Agriculture and Rural Economy. After the partition in 1947, the organization was renamed as Board of Economic Inquiry, West Pakistan. In 1975, it was reorganized as Economic Research Institute and in 1980 it was reactivated as Punjab Economic Research Institute (PERI) with the status of Autonomous Body of the Planning and Development Board under the Punjab Economic Research Institute Ordinance, 1980. Therefore, it is the oldest economic research institution in the country with an unbroken record of economic research going back to 1919.

## Vision

A dynamic and vibrant research institute that provides analytical inputs for the formulation of forward-looking provincial development strategies, and also undertakes high quality, evidence-based research to broadly improve public policy making in the province.

## Mission

To be a leader for provision of socio-economic insight in Punjab on evidence-based research by adopting proactive and new ideas/ orientation to assist in policy formulation.

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