Human Capital, Urbanization and Dynamics of Economic Growth and Development

Rashid Mehmood [1], Zia Ullah [2], Irfan Lal [2*]

[1] *Applied Economics Research Centre, University of Karachi, Karachi, Pakistan*

[2] *Senior lecturer, Institute of Business Management (IoBM), Karachi, Pakistan*

Abstract

The process of economic growth and development has been shifted towards new strategies of entrepreneurship, institutional development, and market development. The shifting of the development process towards new strategies needs human capital, developed infrastructure, and effective policy reforms. This study investigates how urbanization impacts economic growth and development through the channels of external economies, institutional development, and human capital accumulation. The study focuses first on finding the relationship between human capital and urbanization and their convergence towards economic growth through capacity development. Secondly, it examines the role of urbanization in the formation of human capital and finds the channels through which it facilitates markets. By using econometric time series techniques, we found that urbanization plays a key role in the accumulation of human capital through structural changes and has a long-term relationship with economic growth and development. Our analysis shows that the demographic change of the population from rural to urban stimulates infrastructural development, investment in human capital, and institutional arrangements. Results of the study also suggest that the process of demographic transformation not only increases entrepreneurship activities but also drives up the living standards of citizens through the provision of social services.

JEL Classification: O18; J24; O4; H77.

Keywords: Urbanization; Human Capital; Fiscal Decentralization; Economic Growth.

1. Introduction

Economic growth and development are the key elements of the economy. The process of economic growth leads to development, passing through structural changes. The new strategies for economic development refer to entrepreneurship, institutional development, and market development. These new strategies require well developed human and physical capital to foster growth. Developed human capital, well-designed physical infrastructure, and highly integrated economic policies enhance market efficiency and promote entrepreneurship in the economy. Literature on economic development shows that countries in the world have never grown rapidly without a significant change in population density. Highly developed infrastructure not only improves the living standards of residents but also attracts investors and stimulates economic growth due to transportation costs, economies of scale and market availability. Many studies develop the link between human capital and economic growth. In the accumulation of human capital, the role of

---

urbanization is not neglected. Urbanization also has a relationship with economic growth through the channels of human capital accumulation. The process of urbanization is not only necessary for the development of infrastructure and market provision for goods and services, but also encourages human capital accumulation [1].

McCoskey & Kao (1998) used a panel data set for 30 developing countries. By applying the co-integration technique, he finds that a long-run relationship exists between urbanization, output per worker, and capital per worker [2]. Eaton & Eckstein (1997) developed a model of urbanization and growth based on the accumulation of human capital for France and Japan. They argued that the larger cities enhance the level of human capital and increase wages per worker [3]. But the question arises here: what level of urbanization may be consistent with economic growth and development in developing countries? Developing countries have less potential to cope with the Marshallian externalities of large cities because of their underdeveloped institutional structures.

Many economists have attempted to analyze the economic costs and benefits of demographic transformation. Particularly in the developing world, many economists emphasize the benefits of urbanization during the process of development. As economic growth is the backbone of economic development, many studies focus the urbanization and its consequences on growth process. Literature suggests that as the urbanization process is consistent with economic development, when urbanization takes place, it further affects the growth process by increasing productivity [4-6]. Bertinelli & Black (2004) assume that productivity increases when human capital increases and that urbanization provides positive externalities for the accumulation of human capital. High levels of human capital and a sufficient level of urbanization can cope with the high level of technological progress. Urbanization stimulates economic growth and development [7]. Moomaw & Shatter (1993) find a negative relationship between urban concentration in larger cities and economic growth [8].

Lo (2010) examines 28 countries data and found long run relationship between urbanization and economic growth. The results of the study indicate the causal relationship between two variables but in case of developing countries causality relation runs from urbanization to economic development [9]. Moomaw & Shatter (1993) find empirically the relationship between economic development and different aspects of urbanization. Firstly the study suggested that urbanization increases with GDP per capita and it also accelerate the exports share. Secondly, they find the negative relation between urban concentration and export share. Finally, the results show the negative relationship between urban primacy and economic development of country and literacy rate [8].

Galor & Tsiddon (1997) analyze the human capital composition and its effect on economic growth. The results of the papers suggested that composition of human capital is an important factor and determined the pattern of economic development. The relatively poor economies should focus on the formation of human capital and subsidizes the education; it will further accelerate the pace of economic development [10]. Gould & Ruffin (1995) concluded that human capital is a necessary part of the growth process. They further provide a positive relation between human capital and economic development. It is a main component endogenous growth theory because technological advancement cannot possible without well-developed human capital [11].

Ramos et al. (2010) analyzed empirically the impact of human capital on regional productivity and convergence for the Spanish province for 1980 to 2007. The results of the study show that human capital composition impacts positively the economic development of provinces [12]. Wei & Hao (2011) investigated the impact of human capital on total factor productivity in china and found positive relationship. While measuring human capital as quantitatively and qualitatively by suing enrolment ratio at different school level they find that human capital affect contribute positively in productivity [13]. Khan (2005) brings some factors in center of attention, deemed to be explaining Pakistan's relative growth performance for a sample of 72 low and middle income countries including Pakistan over the period of 1980-2002. Furthermore he explores the role of some disparities in the quality of human capital in determining growth. Results put forward the accumulation of physical capital and improvements in the quality of institutions in collaboration with better education and health care; have a largest contribution in achieving superior growth [14].

The aim of this study is to investigate first, the relationship of human capital and urbanization and their convergence towards economic growth through capacity development. Secondly, it will examine the role of urbanization along with institutional development in the formation of human capital and to find out the channels through which it facilitates the markets. Furthermore, it also discusses the factors and policies affecting the urbanization patterns and its relation with formation of human capital and their impact on economic growth and development. Econometric time series techniques are used to find out empirically, the channels through which human capital formation within the frame work of urbanization affecting the pace of economic growth and development.

The paper is organized as follows. Section 2 describes the role of urbanization in the formation of human capital. Section 3 provides a brief theoretical frame work about the relationship between urbanization, human capital and economic development. Section 4 contains data and methodology and discusses the empirical results. Final section contains concluding remarks.

2. What is Urbanization?

The term "*Urbs*" is derived from the Latin; it is used by the Romans to a city. There are different definitions of urbanization; urban economists consider an area urban where population density is relatively high. Urban economists consider the urban area is feasible for economic activities and economies of scale in production [15]. Urbanization refers to a process in which an increasing proportion of an entire population lives in cities and the suburbs of cities. Historically, it has been closely connected with industrialization.

In Pakistan an area of 5000 inhabitant or having administrative status was considered urban in census of 1951, 1981. While in 1998 census only administrative boundaries were considered as urban [16].

2.1. Role of Urbanization

The social scientists greed that man is a gregarious in nature and always likes to live in flocks and groups. Agricultural production enables man to think about economics and development of living standard. The old civilizations of ancient Egypt, Mesopotamia, Crete and Mohenjo-darro (Indus valley Civilization) were earliest urban settlements of man. From the very first day of civilization man tries to make that type of cities which facilities the large group of peoples due to economies of scale in production. After agricultural revolution the river valleys remains the center of civilization because of fertile land and availability of waters. The first cities were developed in the fertile river valleys in the near East around 3000BC.

First large cities (population of about 25,000) were established in Mesopotamia around 3500-4000BC. But the large population of the world lives in rural areas until the early 20th century. After the industrial revolution man started urban settlements due to economies of scale in production, enhancement in trade and better living standard [15]. During the early stage of Industrial Revolution in Europe, the living standard of industrial worker was seriously deteriorated [17]. But with the urbanization and transformation of rural to urban population the living standard of workers increases due to demand factor of urbanization. In fact in early stage of Industrial development labor force was recruited from rural areas and labor was easily available because of high wage rate as compare to agriculture sector. The living standards of labours were very low due to low urban development. After the transitional period, the competitive industrial production enhances the demand and quality of labor. In this era high output and industrial growth foster the urbanization. Furthermore, competitive industrial production, high growth rate and technological advancement increase the importance of cities due to external economies. The development of cities not only fosters the growth in industrial production but also increases the human capital. Recently conducted studies find that increase in urbanization also increases the living standard and quality of life. Due to better provision of social services the social indicator of urban population are higher than rural areas [18]. In contrast, although poor urbanites in developing countries are not too much better like urbanites in developed countries but urban poor live in little better environment than rural poor [19]. Throughout the history countries adopt different methods and procedures to fasten the growth process. Urbanization plays a key role in the process of development [20]. In Many developed countries cities are the back bone of high economic growth and development. Industrial and service industries productivity enhances in concentrated urban environment because urban environment provides, Economies of scale, low unit costs for infrastructures and public services, well developed human capital and competitive markets [21].

Pakistan is situated where the great old civilization and earliest urban settlements of the man existed. The cities were centers of art and crafts, and were exported to other countries. Mohenjo-Darro (2600 BC) and Harrpa (2600 BC) were centers of Indus Valley Civilization. Harappa was complete urban city of about 23000 people and Mohenjo- Darro at its peak of development was the city of around 35,000 residents. Mohenjo- Darro has central market place for business and public facilities. Many studies explore the urbanization, rapid growth of urbanization and its development pattern in Pakistan [22-27]. The urban population grows significantly during last sixty four years. According to first population census held in 1951 urban share of population was 17% of total population and it grows about double till 1998 census [25]. The main factor of growing urban population was the spillover effects of urban centers which were developed during first decade of development. The process of urbanization in Pakistan is a result of rapid growth in industrial sector during Ayub era, when surpluses in agriculture output converts into manufacturing sector.

In Figure 1 solid trend line shows that Agriculture share in GDP continuously decreasing, it was 53.2 of total GDP in 1950 and in 2010 it remains only 20 percent of GDP, average agriculture share in GDP during 2010 to 2021 is 22 percent. The Figure 1 also indicates the increase in share of Industrial sector, especially during first two decades it grows more than double.
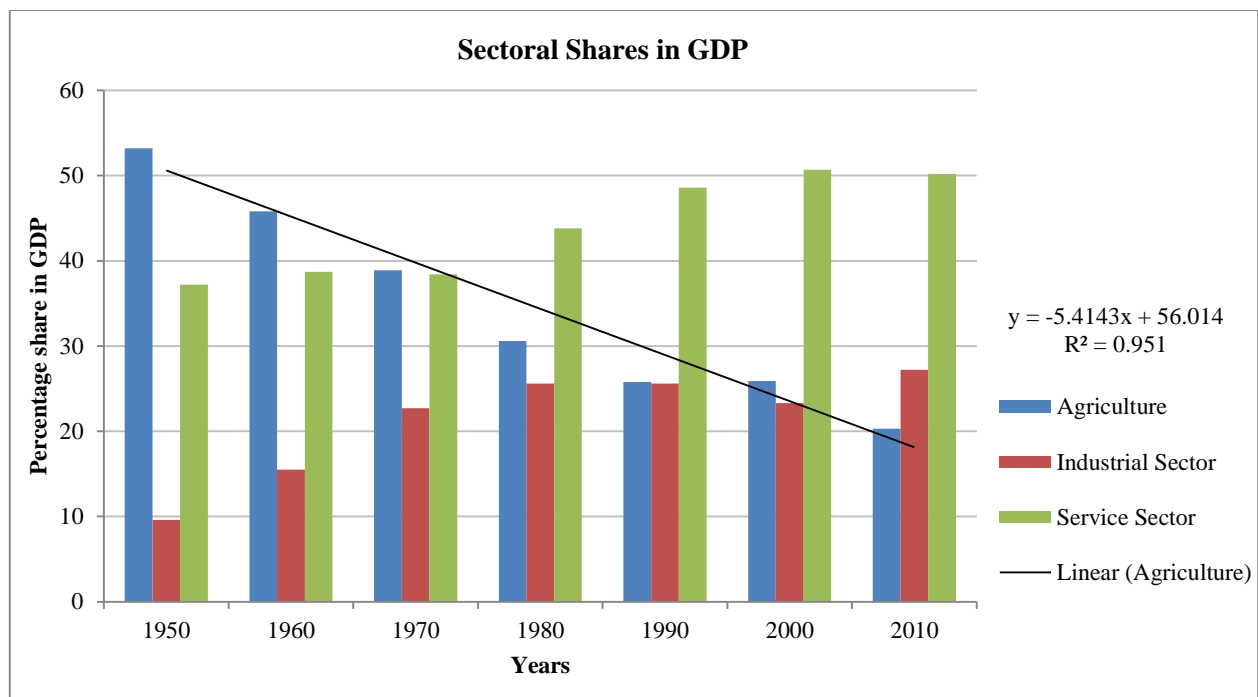
Figure 1. Sector wise Shares in GDP

Figure 2 shows that the growth rate of urban population was also significant during first two decades.

	1951		1961		1972		1981		1998		2017	
	Pop. million	Percent	Pop. million	Percent	Pop. million	Percent	Pop. million	Percent	Pop. million	Percent	Pop. million	Percent
Punjab												
Urban	3.57	17.4	5.48	21.5	9.18	24.4	13.05	27.6	23.02	31.3	40.39	36.7
Rural	16.97	82.6	19.99	78.5	28.42	75.6	34.24	72.4	50.60	68.7	69.63	63.3
Sindh												
Urban	1.77	29.2	3.17	37.9	5.73	40.4	8.24	43.3	14.84	48.8	24.91	52.0
Rural	4.28	70.8	5.20	62.1	8.43	59.6	10.79	56.7	15.60	51.2	22.98	48.0
KP												
Urban	0.50	11.1	1.76	13.2	1.20	14.3	1.67	15.1	2.99	16.9	5.73	18.8
Rural	4.05	88.9	4.97	86.8	7.19	85.7	9.40	84.9	14.75	83.1	24.79	81.2
Balochistan												
Urban	0.14	12.4	0.23	16.9	0.40	16.5	0.68	15.6	1.57	23.9	3.40	27.5
Rural	1.02	87.6	1.13	83.1	2.03	83.5	3.66	84.4	5.00	76.1	8.94	72.5
Pakistan*												
Urban	5.99	17.7	9.65	23.1	16.59	25.4	23.84	28.3	43.04	32.5	75.58	36.4
Rural	27.75	82.3	32.23	76.9	48.72	74.6	60.41	71.7	89.32	67.5	132.19	63.6

Figure 2. Population and its percentage distribution by urban rural areas

Figure 3 indicates that secondary school enrolment is increasing over the time. But question arises here whether urbanization is the cause or consequence of economic development? Urbanization occurs in the absence of economic growth and economic growth is not dependent on urbanization as well. In case of Pakistan high economic growth fasten the process of urbanization during sixties; the large area of central Punjab was transformed into urban centers. The external economies of these urban centers (Gujranwala, Gujrat, Wazir Abad and Faisalabad etc.) further increase the process of economic development. Managing urbanization is difficult and process of urbanization remains fruitless for development in the absence of structural changes including institutional change, social structure and financial system. But there is causal relationship between urbanization process and structural changes. The considerable growth in urban population impacts the economic growth and human development in Pakistan. Figure 2 shows urban areas was 17 percent and in 1951 it increases up to 40 percent 2017.
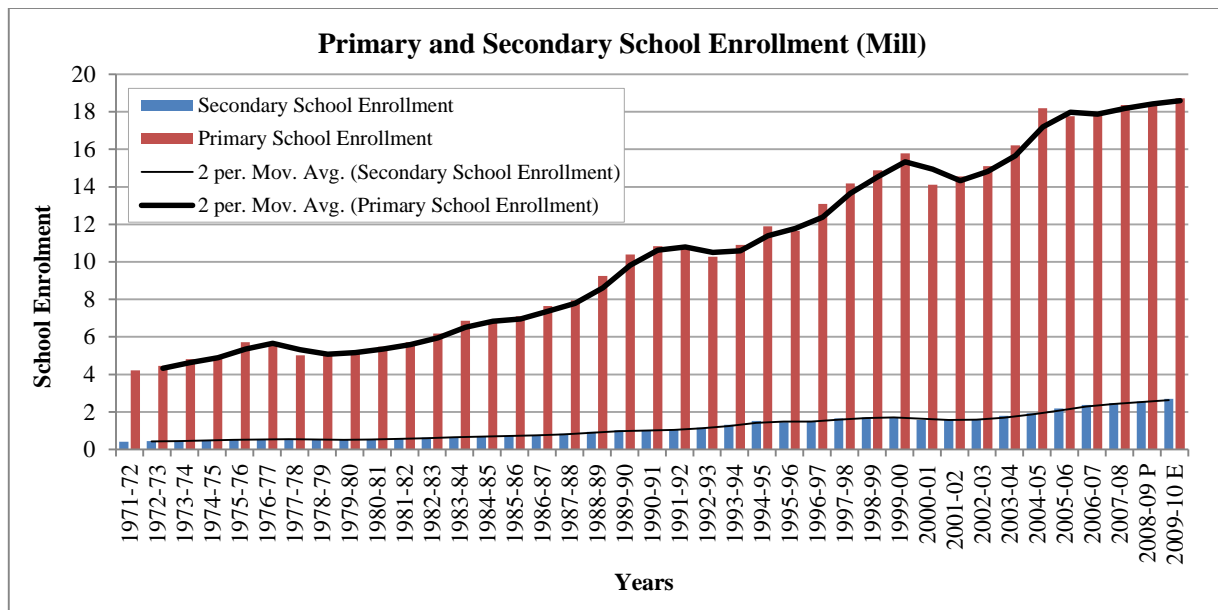
Figure 3. Primary and Secondary School Enrolment (Mill)

2.2. External Economies of Cities

The literature of urban economics classified production scale economies into two types: 'economies of scale' within a firm, and 'external economies'. External economies are external to individual firms but internal to the industry. The external economies explain scale economies, within a convenient framework of spatial agglomeration of firms and population [28]. External economies of scale decreases the firms cost of production due to external factors and it also increase the productivity of an entire industry, geographical area or economy.

Due to high density in urban settlement it provides lower transportation cost and low per capita expenditure on infrastructure. Cities have usually well-developed market which attract producers. Producers always choose location for investment which facilitates economic activities and decreases cost of production. Cities foster the entrepreneurship activities and due to developed financial markets and economies of agglomeration it enhances the economic activities. Especially Mega cities tend to have greater potential for economies of scale and human capital accumulation [29]. Firms that face high fixed cost can produce huge volume of goods to reduce production cost in competitive markets [30]. Core-Periphery theory suggest that if one region or state expand in economic activity its spillover effects also impact the economic and political activities in neighboring regions. Theory also suggests that these spillover effects stimulate the rural areas through backward channels.
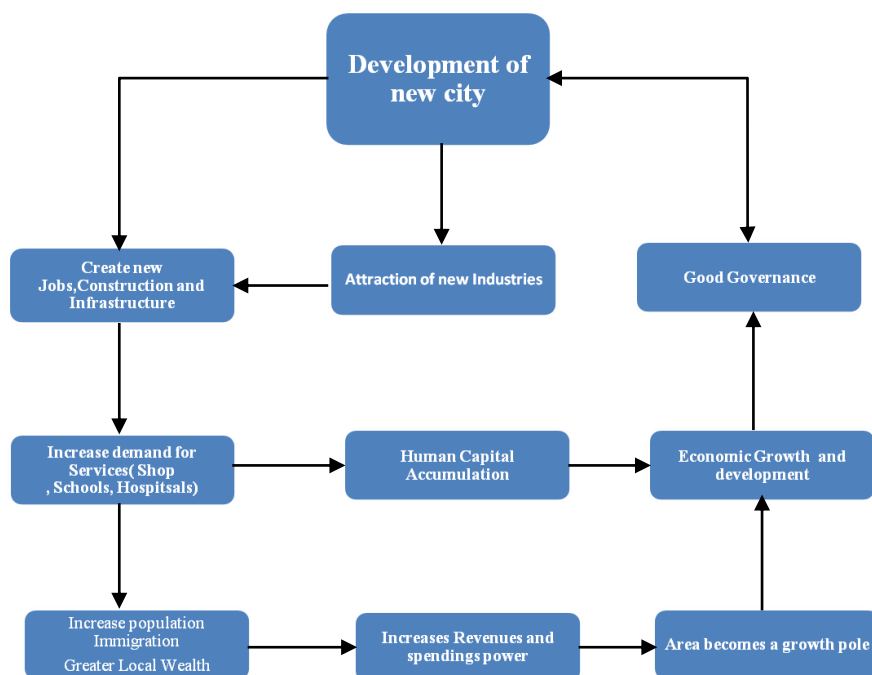

Figure 4. Channels of Core-Periphery Model

Figure 4 shows the channels of Core- Periphery models, that how a city growth effects the growth of economy. Many developed countries are urban and the countries in Asia which grow rapidly during last four decades like Malaysia, Philippine, Singapore and Thailand are mostly urban. Country cannot have sustained growth without rapid urbanization process during growth. Pakistan faces significant urban externalities during the era of high economic growth. Peripheral areas of the core urban cities grew significantly through transport links, employment opportunities and backward linkages of industries. The long ribbon of developments in the central Punjab along with highway is the evident of external economies of bigger cities [16].

Developments of urban centers like Gujranwala, Sheikupura, Sialkot, Gujtrat, and Wazirabad are the results of urban externalities. Industrialization in Faisalabad plays a considerable role in the transformation of adjacent rural areas to urban. The development process in the core urban cities results into increase the demand of civic services in peripheral areas. The growth of manufacturing sector and services sector transforms the rural areas into urban centers. Push and pull factors contribute positively in the growth of urban centers. The pull factor of urban areas increases the provision of social services and decreases the per-capita expenditure on services due to high density. Provision of social services stimulates the process of human capital accumulation, which then contributes in the growth process. The significant growth (4.8%) in urban population in 80s is mostly due to rural immigration. The pull factors in urbanization are availability of jobs in industry and services, better education and health facilities [25]. According to World Bank high economic growth during 2002-2008 is the main cause of high level of urbanization in Pakistan and its highest level of urbanization in South Asia. Pakistan have better standard of living in cities than India. Pakistan ranks 163 and India at 174 on a list of over 200 countries according to report titled "life in cities' published by United Nations Population Fund.

2.3. Increases Investment

Urbanization can affect the investment in three ways namely; agglomeration effect, industrial correlation effect, and economic structural upgrade effect. Agglomeration and economic structural upgrade effects are the push effects while the remaining on is the pull effect. Agglomeration increases the efficiency of investment through improving economic efficiency and lowering economic cost by economies of scale and economies of scope. Industrial correlation effect of urbanization means that the development of an industry can cause the development of a related industry. Urbanization drives the activities of investment by pushing the close relation of all industries. Finally through the economic structural upgrade effect urbanization forms a consumption model effect and an income increase effect. These will drive the improvement of investment level by stimulating domestic needs through changing the consumption mode and improving the general consumption level. At the same time it optimizes present products' needs structure, further optimizing the industrial structure, and making the investment structure more rational [31].

Urbanization have a positive impact on FDI location i.e. urbanization significantly promote industrial FDI. A simple conclusion is that, policies promoting urbanization will encourage FDI [32]. Poelhekke & Ploeg (2009) analyzes the cross country data for OECD countries and find that countries having good infrastructure, highly developed financial system, fine road density and high per capita income, and attracts more FDI. Moreover countries having medium size cities also attract FDI. By re-estimating the regression with fixed effects it is concluded that cities are the best drivers of FDI and growth [33].

2.4. Urbanization, Institutional Development and Governance

Historically Cities remains the center of civilizations and institutional development. Due to concentration of population man needs to build institutions for better living. The concept of democracy and its practices are rooted around 500 BC to the Greek city- state of Athens. Solon (594 BC), Cleisthenes (508 BC), and Epilates (462 BC) all contributed to the development of Athenian democracy. After the industrial and technological revolution modern world becomes a global village. The management of economic and social resources becomes a complex phenomenon. The well-functioning institutions and governance needs for the management of country's economic and social resources for development [25]. Lot of literature focused the issues of governance and fiscal decentralization especially for federations. Most of the recent studies argues that fiscal decentralization* not only impact positively the economic growth but also social impacts Human development in country due closer to localities [34-38]. Halder (2007) conclude for 61 countries that fiscal decentralization positively impact GDP and human development [39].†

Most part of the developed Countries has urban settlement and well-functioning institutions. The demographic shift of rural to urban not only impacts the living standard of peoples but also develop civic sense due to high education and awareness [41]. Rapid growth in urbanization generates the concept of city governance or local governance. Democratization, political pluralism, decentralization and rise of civil society are the bi-products of urbanization [42,

---

* The term fiscal decentralization refers to the transfer of authority and responsibility from central government to sub-national or the local government [35, 54].

† Human development increase the human capital, See also, Mehmood & Sadiq (2010) argued that fiscal decentralization effect government expenditure on social services delivery and impact positively human development along with urbanization development [40].

43]. Tiebout (1956) analyzed the regional competitiveness and find that peoples are free to sort their preferences among jurisdictions [44]. Competition among local Governments enables residents to set their preferences. Most of the studies argue that local governance increases the economic growth and development.

2.5. Costs of Urbanization

Managing urbanization is a difficult and needs lot of structural changes to cope with the positive effects of urban spillovers. If it is not properly managed it may result in congestion, crimes, sanitation problem, clean water and environmental degradation especially air pollution and deforestation. During the last two decades Pakistan is facing a problem of deforestation which has a deteriorating effect on environment. Enhancement of urban areas also affects forests and cultivated land which need proper planning for regeneration of forests. According to United Nation's reports deforestation rate in Pakistan is estimated at 0.2-0.5% annually, which is highest in the world. Figure 5 reveals that country faces a severe deforestation during last two decades, Pakistan lost 9.68kha of tree cover equal to 0.99 percent decrease in tree cover since 2000, and 3.63Mt of carbon dioxide emission according to global forest watch.
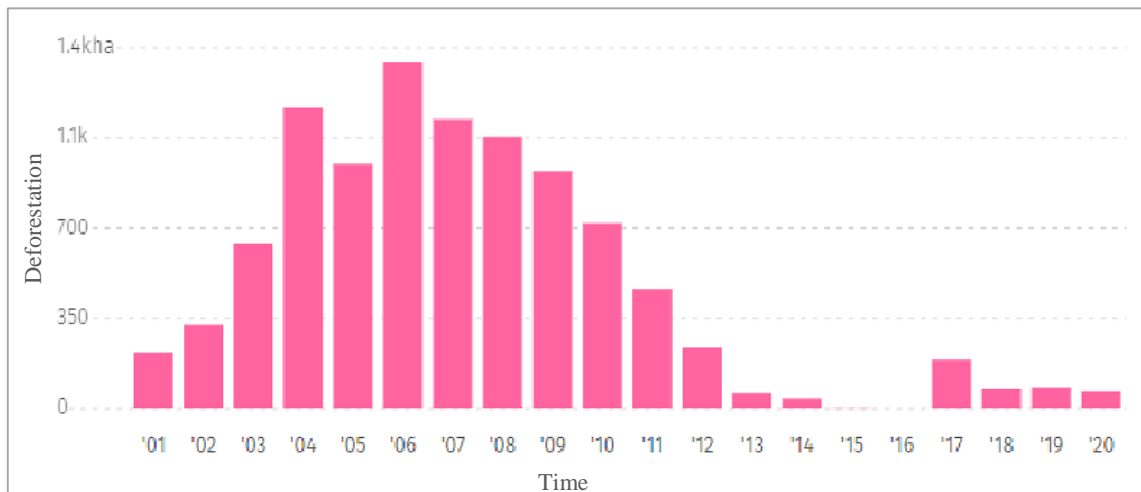

Figure 5. Deforestation in Pakistan 2001-2020 (Global forest watch)

3. Theoretical Framework

The role of human capital in economic growth and development are much considered in endogenous growth theory in 1980s. Many economists studied the different countries economic process and found significant role of human capital in economic growth of countries [45, 46]. In this era economists focused on the improvements in productivity and suggested that the pace of economic growth can increase by investing more in human capital. The formation of human capital is more important for developing economies where high investments are taking place in industrial sectors due to high marginal productivity of capital. The process of human capital formation requires structural changes to enhance investment in this sector. The structural change in countries demographic composition can play key role. Many developed countries in the world are now highly urbanized it may due to high growth in industrial sector but after rural to urban transformation, the pace of growth and development is at par. The transformation process makes country enable for sustainable growth.

The debate on the role of urbanization and economic growth through the channels of human and physical capital cannot be rejected [1- 3, 47, 43]. Historically urbanization process is not different from industrialization. The developed world mostly consists of urban areas with huge industrialization. In the beginning the transformation from agriculture production to industrialization changes the demographic composition of countries. With the passage of time rapid urbanization becomes the catalyst in competitive environment of industrial production. Cities create externalities for the factors of economic development. Quigley (2008) studies the relationship between urbanization and process of economic development of high and low income countries. Urbanization fosters the economic growth by increasing productivity gains from specialization; from lower transactions costs and accumulating human capital [48]. Duranton (2008) argues that cities considered the most important for growth for two reasons; first, the existence of human capital externalities and secondly, cities are properly defined as administrative region for economic activities [49, 50]. Human capital accumulation and its externalities are directly linked to the cities due to spillover effects.

Endogenous growth model predicts that human capital improvements create positive externalities for competitive industries [51]. Many empirical studies linking human capital growth with economic growth and development of country [10-13]. Romer (1986) and Lucas (1988) argued that in Endogenous growth theory human capital accumulation is the key determinant of economic growth [45, 51]. Human capital accumulation creates positive externalities for firms and

accelerates the growth of firms. Spillover effects of human capital in the agglomeration economies influence economic growth of area. In the absence of negative spillovers of urbanization, cities foster the economic growth of region.

3.1. The Solow Model

The concept of growth as increased stocks of capital goods (means of production) was codified as the Solow-Swan Growth Model, which involved a series of equations which showed the relationship between labor time, capital goods, output, and investment. This view made the crucial, the role of technological change; even it became more important than the accumulation of capital. To give long-run growth a shape of analytical model, Robert Solow and Trevor Swan made their first attempt by developing this model in 1950s. This model is based on the assumption that countries are using their resources efficiently and with the increase in capital and labor there is diminishing return. From these two premises, the neoclassical model makes three important predictions. First, by making relatively more increase in capital as compare to labor will create economic growth because due to this people will be more productive. Second, poor countries with less capital per person will grow faster because each investment in capital will produce a higher return than rich countries with sufficient capital. Third, economies will reach eventually a point namely steady state at which further increase in capital will not be capable to let the economy grow because of the diminishing returns to capital.

The model also notes that countries can overcome this steady state and continue growing by inventing new technology. In the long run, output per worker depends on the rate of saving, but the rate of output growth should be equal for any saving rate. In this model, the process by which countries continue growing despite the diminishing returns is exogenous and represents the creation of new technology that allows production with fewer resources. Technology improves, the steady state level of capital increases, and the country invests grows. The data does not support some of this model's predictions; in particular that all countries grow at the same rate in the long run or that poorer countries should grow faster until they reach their steady state. Also, the data suggests the world has slowly increased its rate of growth.

3.2. Endogenous Growth Theory

One needs to go ahead of the Solow model to understand fully the process of economic growth. Solow model actually takes the technological progress exogenously which does not provide enough explanation about the growth process. So in this regard the theory needs to be improved that it develops a model that explain technological progress. Models that provide such explanation are labelled as Endogenous Growth Theory, because they refuse the assumption of Solow model about the exogenous technological change.

Disappointed with Solow's explanation, Romer and Lucas worked to make the technology indigenous in the late 1980s and early 1990s. They developed the endogenous growth theory that includes a mathematical explanation of technological advancement. They start with a particularly simple production function:

$$Y(t) = AK(t) \tag{1}$$

where Y is output, K is the capital stock, and A is the constant measuring the amount of output generated after a unit change in the capital stock. This is a linear in aggregate capital stock. By denoting output and capital stock with small letters for per worker we get:

$$y \times (t)/y(t) = k \times (t)/k(t) \tag{2}$$

Equation 2 denotes that growth in output per worker is equal to the growth in capital per worker stock. The Solow growth equation in per worker term is given as:

$$k \times (t) = sAk(t) - (\delta + n) \, k(t) \tag{3}$$

$$k * (t)/k(t) = sAk(t) - (\delta + n) \tag{4}$$

We can also write Equation 4 as from Equation 5:

$$g(y) = sAk(t) - (\delta + n) \tag{5}$$

Which means that as long as $sA > (\delta + n)$ this economy displays positive long-run growth, despite the absence of exogenous productivity growth. As here the output per worker grows without the need of exogenous technical progress so this is endogenous growth model.

This model also incorporated a new concept of human capital, the skills and knowledge that make workers productive. Unlike physical capital, human capital has increasing rate of return. Therefore, overall there are constant

returns to capital, and economies never reach a steady state. Growth does not slow as capital accumulates, but the rate of growth depends on the types of capital a country invests in. Research done in this area has focused on what increases human capital (e.g. education) or technological change (e.g. innovation).

4. Data and Methodology

The data used in this paper from 1979 to 2019 is obtained from the Economic Survey of Pakistan (Various Issues), Hand book of Statistics by State Bank of Pakistan, Fifty years of statistics and Demographic Survey of Pakistan (Various Issues).

The aim of the study is to find out the role of urbanization in the accumulation of human capital along with institutional development and their impact on economic growth. For the purpose of analyzing the above relationship the following model is to be used.

$$PCI = f(URB, SSE, FDI, Q) \tag{6}$$

where PCI represents the Per Capita Income (for Economic Development), URB, SSE and FDI denotes urban population as a percent of total population, Secondary School Enrolment (proxy for human capital) and Fiscal Decentralization Index (for Institutional Development) for respectively. While Q represent the set of control variables including Remittance (REMT), Private Investment (PINVT) and National Saving (SAV).

4.1. Econometric Modeling

To find out the long run relationship among economic growth, urbanization, human capital and fiscal decentralization we apply co-integration technique.

4.1.1. Unit Root Test

Usually there exist a unit root problem in time series data. Before applying co-integration test, we apply Augmented Dickey & Fuller (1979) test to check the stationary problem [52], Mansoor et.al. (2020) used same methodology [53]. The null hypothesis in ADF test is that, series has a unit root.

$$\Delta Y_t = \Psi_o + \delta t + \Psi_1 Y_t - 1 + \beta \Sigma \Delta Y_t - 1 \tag{7}$$

4.1.2. Co-integration Technique

After checking the unit root problem in all variables we apply Johansen (1988) co-integration technique to find long run relationship among the variables [55].

4.1.2. Granger Causality Test

Literature suggested that there exist causal relationship among Economic growth, Urbanization, Human Capital and Governance variables. To check the causality among the variables we use the Granger Causality Test. The first null hypothesis is that GDP does not Granger cause Urbanization.

$$X_t = \sum_{i=1}^{n} \alpha_i Y_{t-i} + \sum_{j=1}^{n} \beta_j X_{t-j} + \mu_{1t} \tag{8}$$

$$Y_t = \sum_{i=1}^{n} \gamma_i Y_{t-i} + \sum_{j=1}^{n} \lambda_j X_{t-j} + \mu_{2t} \tag{9}$$

4.2. Empirical Results

Table 1 shows that all variables are stationary at first difference. Once the series may be integrated at first difference by using ADF, it is appropriated that by applying Johnson Co-integration technique can check long run relation. The results in Table 2 suggest that there exists long run relation among the variables. Both Maximum Eigen value and Trace statistics suggest two co-integration equations at 5% level of significance. Table 3 indicates that Fiscal Decentralization indicator (FDI), ratio of Urban Population(URB), Secondary School Enrolment (SSE) are statistically significant and having positive sign. Control variables National Savings and Remittances (REMT) have positive impact on Economic Development (PCI).

Table 1.Test for Unit- Root: (ADF with Drift and Trend)

Variables	First Difference
LRPC	-5.4439**
FDI	-4.9091**
URB	-8.4579**
SSE	-4.8369**
REMT	-4.0010**
LSAV	-8.4331**
LPINVT	-5.9843**

(*) Significant at 1% Level (**) significant at 5% level (***) significant at 10% level.

All the entire three variables are Non Stationary at level but found Stationary at 1st Difference.

Note: Schwarz information criterion is used to select the optimum lag length.

Table 2. Johnson Unrestricted Co-integration Rank Test

Hypothesized No. of CE(s)	Hypothesis	Trace		Max. Eigen Statistic	
		Statistic	Critical value	Statistic	Critical value
None *	Ho; r=0, H1; r≥1	177.7837	125.6154	65.81281	46.23142
At most 1 *	Ho; r=1, H1; r≥2	111.9708	95.75366	47.48455	40.07757
At most 2 *	Ho; r=2, H1; r≥3	64.48630	69.81889	25.71035	33.87687

* Denotes rejection of the hypothesis at the 0.05 level.

Trace test indicates 2 co-integrating eqn(s) at the 0.05 level.

Max-eigenvalue test indicates 2 co-integrating eqn(s) at the 0.05 level.

The derived Equation 10 states the long run relationship among Economic Development, Decentralization, urban population, Secondary School Enrolment (proxy of Human Capital).

$$LRPCt = 0.0098\ FDIt + 0.214PUPt + 2.73\ SSEt + 0.001RIMTt + 1.34LRSAVt + 1.40LPINVt \qquad (10)$$

Table 3. Normalized Cointegrating Coefficients

Dependent Variable: LRPC	
FDI	0.009561
URB	0.218526
SSE	2.730063
REMT	0.001134
LSAV	1.341261
LPINVT	1.400096

Literature suggests that urbanization, human capital, fiscal decentralization, and economic development have a causal relationship with each other. The results from Table 4 reveal that URB causes per capita income, SSE and LPC, UB and REMT have bilateral causality. While URB causes LPINVT, there exists a unilateral causality between URB and LSAV. In the case of FDI and LPC, the null hypothesis is accepted that both do not Granger causes each other.

Table 4. Granger Causality Test

Null Hypothesis	Probability
URB does not Granger Cause LPC	0.02715
LPC does not Granger Cause URB	0.51730
SSE does not Granger Cause LPC	0.00290
LPC does not Granger Cause SSE	0.08154
URB does not Granger Cause LPINVT	0.04890
LPINVT does not Granger Cause URB	0.20449
SSE does not Granger Cause LPINVT	0.03637
LPINVT does not Granger Cause SSE	0.62318
URB does not Granger Cause REMT	0.10049
REMT does not Granger Cause URB	0.00061
LSAV does not Granger Cause URB	0.09642
URB does not Granger Cause LSAV	0.84409
FDI does not Granger Cause LPC	0.76100
LPC does not Granger Cause FDI	0.93504

5. Conclusion

This paper investigated how urbanization impacts economic growth and development through the channels of external economies, institutional development, and human capital accumulation. By using time series data, we found that urbanization plays a key role in the accumulation of human capital through structural changes and has a long-run relationship with economic development. Our analysis shows that the demographic change of the population from rural to urban stimulates infrastructural development, investment in human capital, and institutional arrangements. The results of empirical analyses revealed the casual relationship among urbanization, human capital, and economic development. The process of demographic transformation not only increases entrepreneurship activities but also drives up the living standards of citizens through the provision of social services. Agglomeration economies increase the efficiency of investment and reduce the cost of production. The results of the study indicate a long-run relationship between economic development and the decentralization indicator as the theory assumes.

The fruits of the spillover effects of urbanization can be reaped through proper management and well-functioning institutions. The revenue efforts and expenditure efficiency of an area can be enhanced through the decentralization of government. The government should develop cities because cities are the main boosters of human capital and, therefore, of economic development.

6. Declarations

6.1. Author Contributions

Conceptualization, I.L.; formal analysis, Z.U.; investigation, R.M.; data curation, Z.U.; writing—original draft preparation, R.M.; writing—review and editing, R.M., Z.U., and I.L.; supervision, I.L. All authors have read and agreed to the published version of the manuscript.

6.2. Data Availability Statement

The data presented in this study are available in the article.

6.3. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

6.4. Institutional Review Board Statement

Not applicable.

6.5. Informed Consent Statement

Not applicable.

6.6. Declaration of Competing Interest

The authors declare that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

7. References

[1] Bertinelli, L., & Strobl, E. (2007). Urbanisation, urban concentration and economic development. Urban Studies, 44(13), 2499–2510. doi:10.1080/00420980701558442.

[2] McCoskey, S., & Kao, C. (1998). A panel data investigation of the relationship between urbanization and growth. United State Naval Academy and Syracuse University (Issue January 1998). Centre for Policy Research Syracuse University, United State.

[3] Eaton, J., & Eckstein, Z. (1997). Cities and growth: Theory and evidence from France and Japan. Regional Science and Urban Economics, 27(4–5), 443–474. doi:10.1016/s0166-0462(97)80005-1.

[4] Burgess, R., & Venables, A. (2004). Towards a Microeconomics of Growth, World Bank Working Paper 3257. Washington D.C., United States.

[5] Henderson, V. (2003). The urbanization process and economic growth: The so-what question. Journal of Economic Growth, 8(1), 47–71. doi:10.1023/A:1022860800744.

[6] Henderson, J. V. (2005). Urbanization and Growth. Handbook of Economic Growth, 1543–1591. doi:10.1016/s1574-0684(05)01024-5.

[7] Bertinelli, L., & Black, D. (2004). Urbanization and growth. Journal of Urban Economics, 56(1), 80–96. doi:10.1016/j.jue.2004.03.003.

[8] Moomaw, R. L., & Shatter, A. M. (1993). Urbanization as a factor in economic growth. Journal of Economics, 19(2), 1-6.

[9] Daniel Yet Fhang Lo. (2010). Urbanization and Economic Growth: Testing for Causality. 16th Annual Pacific Rim Real Estate Conference January 24-27 2010, Wellington, New Zealand. 1–25.

[10] Galor, O., & Tsiddon, D. (1997). The Distribution of Human Capital and Economic Growth. Journal of Economic Growth, 2(1), 93–124. doi:10.1023/A:1009785714248.

[11] Gould, D., & Ruffin, R. (1995). Human Capital, Trade, and Economic Growth. Weltwirtschaftliches Archiv, 131(3), 425–445.

[12] Ramos, R., Suriñach, J., & Artís, M. (2010). Human capital spillovers, productivity and regional convergence in Spain. Papers in Regional Science, 89(2), 435–447. doi:10.1111/j.1435-5957.2010.00296.x.

[13] Wei, Z., & Hao, R. (2011). The role of human capital in china's total factor productivity growth: A cross-province analysis. Developing Economies, 49(1), 1–35. doi:10.1111/j.1746-1049.2010.00120.x.

[14] Khan, M. S. (2005). Human capital and economic growth in Pakistan. Pakistan Development Review, 44(4 PART I), 455–471. doi:10.30541/v44i4ipp.455-478.

[15] O'Sullivan (2011). Urban Economics (8th Edi.), McGraw Hill Education, New York, United States.

[16] Ali, R. (2013). Understanding Urbanization. In S. Zaidi & Akbar (Eds.), Urban Pakistan. City Press, Pakistan.

[17] Szreter, S., & Mooney, G. (1998). Urbanization, mortality, and the standard of living debate: New estimates of the expectation of life at birth in nineteenth-century British cities. Economic History Review, 51(1), 84–112. doi:10.1111/1468-0289.00084.

[18] Arif, G. M., & Hamid, S. (2009). Urbanization, city growth and quality of life in Pakistan. European Journal of Social Sciences, 10(2), 196–215.

[19] Banerjee, R., Mishra, V., & Maruta, A. A. (2021). Energy poverty, health and education outcomes: Evidence from the developing world. Energy Economics, 101, 105447. doi:10.1016/j.eneco.2021.105447.

[20] Condit, C. W., Bairoch, P., & Braider, C. (1990). Cities and Economic Development: From the Dawn of History to the Present. Technology and Culture, 31(2). University of Chicago Press, Chicago, United States. doi:10.2307/3105665.

[21] Arshad, Z., Robaina, M., Shahbaz, M., & Veloso, A. B. (2020). The effects of deforestation and urbanization on sustainable growth in Asian countries. Environmental Science and Pollution Research, 27(9), 10065–10086. doi:10.1007/s11356-019-07507-7.

[22] Phillips, W. M. (1964). Urbanization and Social Change in Pakistan. Phylon, Clark Atlanta University, 25(1), 33. doi:10.2307/273576.

[23] Siddiqi, A. H., & Bastian, R. W. (1981). Urban place names in Pakistan: A reflection of cultural characteristics. Names, 29(1), 65–84. doi:10.1179/nam.1981.29.1.65.

[24] Qadeer, A., Saqib, Z. A., Ajmal, Z., Xing, C., Khan Khalil, S., Usman, M., … Liu, M. (2020). Concentrations, pollution indices and health risk assessment of heavy metals in road dust from two urbanized cities of Pakistan: Comparing two sampling methods for heavy metals concentration. Sustainable Cities and Society, 53, 101959. doi:10.1016/j.scs.2019.101959.

[25] Zaidi, S. A. (2005). Issues in Pakistan Economy. Oxford University Press Oxford, United Kingdom.

[26] Haider, M. (2006). Urbanization Challenges in Pakistan. McGill University, Canada and National Institute of Urban Infrastructure Planning, Peshawar, Pakistan.

[27] Weglin, E. (2011) Pakistan: Framework for Economic Growth Creative cities, Issues for Consideration on the new growth strategy, Islamabad, Pakistan.

[28] Fujita, M. (1989). Urban economic theory: land use and city size. In Urban economic theory: land use and city size. Cambridge University Press. doi:10.2307/2233705.

[29] International Monetary Fund. External Relations Dept. (2007). Finance & Development, 44(03). doi:10.5089/9781451953862.022.

[30] Karlsson, C., Andersson, A. E., Cheshire, P. C., & Stough, R. R. (Eds.). (2009). New Directions in Regional Economic Development. Advances in Spatial Science. doi:10.1007/978-3-642-01017-0.

[31] Zhao, B., & Liu, J. (2010). Research on Pushing Effect of Urbanization on China Western Investment. International Journal of Economics and Finance, 2(1), 182–185. doi:10.5539/ijef.v2n1p182.

[32] Chen, Y. (2009). Agglomeration and location of foreign direct investment: The case of China. China Economic Review, 20(3), 549–557. doi:10.1016/j.chieco.2009.03.005.

[33] Poelhekke, S., & van der Ploeg, F. (2009). Foreign direct investment and urban concentrations: Unbundling spatial lags. Journal of Regional Science, 49(4), 749–775. doi:10.1111/j.1467-9787.2009.00632.x.

[34] Asfaw, A., Frohberg, K., James, K. S., & Jütting, J. (2008). Fiscal Decentralization and Infant Mortality: Empirical Evidence from Rural India. The Journal of Developing Areas, 41(1), 17–35. doi:10.1353/jda.2008.0026.

[35] Oates, W. E. (2003). An essay on fiscal federalism. Fiscal Federalism and European Economic Integration, XXXVII, 13–47. doi:10.4324/9780203987254.

[36] Matheson, T., & Asfar. (1999). Decentralization and Social Welfare in the minority provinces of Philippines. University of Maryland, Maryland, United States.

[37] Bardhan, P. (2002). Decentralization of governance and development. Journal of Economic Perspectives, 16(4), 185–205. doi:10.1257/089533002320951037.

[38] Busemeyer, M. R. (2008). The impact of fiscal decentralisation on education and other types of spending. Swiss Political Science Review, 14(3), 451–481. doi:10.1002/j.1662-6370.2008.tb00109.x.

[39] Halder, P. (2007). Measures of fiscal decentralization, Department of Economics, Andrew Young School of Policy Studies, Georgia State University, Atlanta, Georgia.

[40] Mehmood, R., & Sadiq, S. (2010). Impact of fiscal decentralisation on human development: A case study of Pakistan. Pakistan Development Review, 49(4), 513–529. doi:10.30541/v49i4iipp.513-530.

[41] Jones, G. W. (2017). Urbanization trends in Asia: The conceptual and definitional challenges. New Forms of Urbanization: Beyond the Urban-Rural Dichotomy, 113–131. doi:10.4324/9781315248073-6.

[42] Henderson, J. V., & Wang, H. G. (2007). Urbanization and city growth: The role of institutions. Regional Science and Urban Economics, 37(3), 283–313. doi:10.1016/j.regsciurbeco.2006.11.008.

[43] Cohen, B. (2006). Urbanization in developing countries: Current trends, future projections, and key challenges for sustainability. Technology in Society, 28(1–2), 63–80. doi:10.1016/j.techsoc.2005.10.005.

[44] Tiebout, C. M. (1956). A Pure Theory of Local Expenditures. Journal of Political Economy, 64(5), 416–424. doi:10.1086/257839.

[45] Romer, P. M. (1986). Increasing returns and long-term growth. Journal of Political Economy, 94(5), 1002-1035, The University of Chicago Press, Chicago, United States.

[46] Barro, R. J. (1990). Human capital and growth: Theory and evidence. A comment. In Carnegie-Rochester Confer. Series on Public Policy, National Bureau of Economic Research, 32(C), 287–291. doi:10.1016/0167-2231(90)90029-K.

[47] Henderson, J. (1993). Comic hero versus political élite. In Tragedy, Comedy and the Polis. Papers from the Greek Drama Conference (Nottingham, 1820 July 1990), Bari (Vol. 307319). Lavante Editori, Napoli, Italy.

[48] Quigley, M. J. (2008). Urbanization, Agglomeration, and Economic Development, Working Paper No.19. World Bank.

[49] Duranton, G. (2007). Human Capital Externalities in Cities: Identification and Policy Issues. In J. Arnott & P. McMillan (Eds.), A Companion to Urban Economics, 24–39. Blackwell Publishing. doi:10.1002/9780470996225.ch2.

[50] Liu, S., & Yang, X. (2021). Human capital externalities or consumption spillovers? The effect of high-skill human capital across low-skill labor markets. Regional Science and Urban Economics, 87, 103620. doi:10.1016/j.regsciurbeco.2020.103620.

[51] Lucas, R. E. (1988). On the mechanics of economic development. Journal of Monetary Economics, 22(1), 3–42. doi:10.1016/0304-3932(88)90168-7.

[52] Dickey, D. A., & Fuller, W. A. (1979). Distribution of the Estimators for Autoregressive Time Series with a Unit Root. Journal of the American Statistical Association, 74(366), 427. doi:10.2307/2286348.

[53] Mansoor, S., Baig, M., & Lal, I. (2020). Can Pakistan Raise More External Debt? A Fiscal Reaction Approach. Business & Economic Review, 12(4), 21-43.

[54] Tanzi, V. (1995). Fiscal federalism and decentralization: a review of some efficiency and macroeconomic aspects. In Bruno & Pleskovic (Eds.), Annual World Bank conference on development economics 1995 (pp. 295–330). World Bank.

[55] Johansen, S. (1988). Statistical analysis of cointegration vectors. Journal of Economic Dynamics and Control, 12(2–3), 231–254. doi:10.1016/0165-1889(88)90041-3.