Status of Human Development in Punjab (Pakistan)

Muhammad Qasim
National College of Business Administration and Economics (NCBA&E), Lahore, Pakistan

Zahid Pervaiz
National College of Business Administration and Economics (NCBA&E), Lahore, Pakistan

A. R. Chaudhary
National College of Business Administration and Economics (NCBA&E), Lahore, Pakistan

Abstract
Present study investigates the current status of human development and human development disparities across the districts of Punjab. We have calculated Education Index (EI), Health index (HI), Income Index (INI), Human Development Index (HDI) and Non-Income Human Development Index (NIHDI) for thirty-five districts of Punjab. One district Chiniot is excluded from our analysis due to some data constraints. Districts have been ranked on the basis of their values of EI, HI, INI, HDI and NIHDI. The results of our study indicate that huge human development disparities exist in terms of EI, HI, INI, HDI and NIHDI among the districts of Punjab. Some districts like Rawalpindi and Lahore have high human development status with high HDI and NIHDI values whereas some districts like Bahawalpur and Rajanpur are lagging behind in human development with low HDI and NIHDI values. Comparison of income index (INI) and NIHDI reveals that some districts like Narowal and Gujranwala have performed well in terms of NIHDI than INI. Similarly, some other districts like Dera Gazi Khan, Muzaffar Garh and Rahim Yar Khan have performed better in terms of INI than their performance in NIHDI. The existing human development disparities among districts need to be reduced through effective public policy because such disparities can create a severe type of rivalry and distrust among the regions which can be harmful for social cohesion. The districts with poor human development especially the districts in the West and the South regions of Punjab are identified as target for special policy interventions.

Keywords: Human Development, Human Development Disparities, Punjab, Pakistan
JEL Codes: O15, O16

I. Introduction

Development may mean different things to different people. Human development does not have any unanimous working definition. Traditionally Gross Domestic Product, (GDP) per capita and GDP per capita growth have been used as an indicator to measure economic progress and human well-being of a society. Economic growth had been the primary focus of the economists and development planners. Growth in capital stock was considered as a mean and growth in GDP per capita was taken as an end. Per capita income and growth of per capita income were frequently used to compare the well-being of the people of the different countries and regions (UNDP, 1990). However, income per capita hides so many aspects of the socio-economic conditions of a society. Dasgupta and Weale (1992) describe that per capita income is not an appropriate measure to examine the well-being of a society because it does not necessarily tell about social condition of the society. Anand (1994) points out that income approach is a narrow approach to measure well-being of people and to examine the development of a society. According to him, people and their lives is the real end of all development policies. Income has instrumental importance to improve the quality of life of the people but it cannot be a direct measure of living standard.

According to Streeten (1995) three justifications can be given for the emphasis on economic growth as an indicator to measure the degree of development of an economy. First, through market forces it would automatically increase the labour demand, productivity and wages. So in that way, economic growth would spread its benefits broadly and with the passage of time income inequality would also decrease. Second justification is related to government especially democratic government. It is assumed that with increase in GDP per capita government will increase the tax collection from the rich people of the society and will distribute collected taxes among the poor people of the society through public provision of social services. As a result, both poverty and inequality in that society would automatically be decreased. Similarly, through market interventions government can also reduce poverty directly where they feel that poor people are not getting benefits from market forces. The third justification is that addressing the problem of poverty is not compulsory at the early stage of development. Once economy succeeds to develop physical capital, infrastructure and productive potential of the economy then the benefits of economic growth will be transferred to the poor automatically. It means that some sort of inequality may be inevitable for economic growth. In the early stages of development inequality will increase. But after that, inequality will decrease with increase in income. This suggests an inverted U shaped relationship between economic growth and income inequality. This kind of relationship was initially investigated empirically by Simon Kuznets and is termed as Kuznets' inverted U hypothesis in literature (Kuznets, 1955).

But the literature shows that above mentioned three justifications have proved true only in those economies that focused on land reforms, education and health. Thus there may not be an automatic process by which GDP growth would have a reducing effect on poverty and inequality. According to Sen (1988), growth and development are two distinct concepts. Economic growth is concerned only with improvement in GDP per capita and it does not explain about the distribution of GDP among the population. It is possible that a country or a society has greater expansion in GDP per capita but has unequal distribution of income. It is possible that the poor section of society gets little benefits of GDP per capita growth. According to him GDP is only a mean to achieve well-being but not an end in itself. Development is a very broad concept. It relates to "what people can actually do and be". He argues that a basic distinction should be made between the means and the ends of development. Development focuses directly on the lives of people. Development process is more linked with elimination of different ills of a society such as hunger, under nutrition and child mortality.

Haq (1995) describes that people are the means as well as the end of economic development. Generally, when economists talk about means of development they discuss about stock of physical capital which along with other factors of production plays an important role in production process. However, evidence suggests that despite having abundant physical capital, many societies could not perform well in terms of various indicators of economic development. Thus per capita income growth is not an appropriate measure of development. To address the shortcomings of income approach of development, different alternative approaches can be used to examine the development of a society. The Basic Needs Approach introduced by International Labour Organization (ILO, 1977) is one of such approaches. This approach suggested the use of different indicators related with basic needs such as food, water, clothing and shelter.

Physical Quality of Life Index (PQLI) introduced by Morris (1979) is another measure of the degree of development. This was the one of the pioneer attempt to measure the degree of development of a society with the help of combined index constructed by using three indicators of infant mortality, life expectancy and literacy.

Nowadays, it has become an established wisdom among development economist that instead of using income as a sole indicator of development, some comprehensive and holistic measure of human development should be used for analyzing human development of a country or region. It is argued that income is only a mean to achieve a goal of development and some basic distinction is required between means and ends of development (Anand, 1994). Human Development Index (HDI) is one of such composite measure. HDI introduced by United Nations Development Program (UNDP) in its first human development report (UNDP, 1990) is a better measure of human development due to holistic approach used in its construction. It evaluates the average improvement of a nation in three basic aspects of human development: a long and healthy life, access to knowledge and decent standard of living. Prior to 2010, HDI was obtained by taking the arithmetic mean of three sub-indices of income index, education index and health index. Each of these sub-indices reflected the progress of a nation in three basic aspects of human development related with living standard, education and health. Methodology used for the construction of HDI has undergone several minor revisions since the publication of first human development report. Since 2010, UNDP has introduced a slightly new methodology for the measurement of HDI in which HDI is the geometric mean of normalized indices measuring the improvements in each aspect. UNDP (2010) also introduced some new indices to measure human development. Non Income Human Development Index (NIHDI) is one of such measures. It is constructed by using the indicators related with health and education. Unlike HDI, it does not use Gross National Product (GNP) in its construction. NIHDI takes in to account only two aspects of a long and healthy life and access to knowledge. Thus NIHDI focuses only non-income dimensions of human development.

In this study, regional imbalances in human development have been investigated by calculating Education Index (EI), Health Index (HI), Income Index (INI), Human Development Index (HDI) and Non Income Human Development Index (NIHDI) for the districts of Punjab, Pakistan. It is important to study the development disparities among regions because such disparities may create a severe type of rivalry and distrust among the different regions which can be dangerous for social cohesion (Pervaiz and Chaudhary, 2010). This distrust and rivalry can be disastrous for development and wellbeing of the people through different ways.

II. Previous Studies Constructed HDI at District Level in Pakistan

United Nations Development Program (UNDP) publishes annual reports on human development. These reports examine the status of human development across the countries and across the regions of the world. Occasionally, country-specific reports are also published by UNDP to study the regional differences of human development in a country. The reports indicate that still there are huge human development disparities across the countries and across the regions of the world. One such report by UNDP (2003) examined human development disparities among the provinces as well as among the districts of Pakistan. The report calculated HDI for the year 1998. HDI was calculated with the help of three sub-indices termed as income index, education index and health index. The results revealed that human development disparities existed among the provinces and within provinces. The report used agricultural crop value and manufacturing value added as proxy for GDP per capita at districts level to calculate income index. Literacy rate and primary enrollment rate was used for the construction of education index. The health index was constructed for provinces as well as for districts by using the indicators of infant survival rate and immunization rate. However, in the construction of health index for different districts, provincial level infant survival rates were used by implicitly assuming that such rates were same across all the districts of a province.

Jamal and khan (2007) calculated HDI for the provinces as well as for the districts of the provinces of Pakistan. The study used different variables for the construction of three sub-indices of income index, education index and health index which were further used to develop HDI. Adult literacy rate and combined (primary, secondary and tertiary) enrollment rate was used for developing education index whereas age and sex specific death rates and immunization rates were used for the construction of health index. The income index for districts was constructed by using agricultural crop value and manufacturing value added. However, in the construction of health index for different districts, provincial level age and sex specific death rates and immunization rates were used by implicitly assuming that such rates were same across all the districts of a province. This seems to be an unrealistic assumption. The study analyzed inter-temporal change in human development across the provinces and districts of Pakistan by calculating HDI for the years 1998 and 2005. The findings of the study reveal that HDI values of provinces and districts improved significantly but some provinces and districts improved more as compared to other provinces and districts. Punjab had high HDI value as compared to other provinces but growth in HDI from 1998 to 2005 of Khyber Pakhtunkhwa (KPK) was the highest. There was no significant reduction in human development disparities across the provinces as well as across the districts of Pakistan from 1998 to 2005. Studies by UNDP (2003) and Jamal and Khan (2007) that examine human development disparities across the districts of Pakistan share a common flaw in

the construction of district level HDI. Provincial level health indicators have been used by these studies to reflect district specific health outcomes. The use of provincial level health indicators for the construction of district level HDI seems to be based upon an implicit assumption that health indicators remain same across the districts. But this assumption seems to be unrealistic.

III. Construction of Indices

This study uses Education Index (EI), Health Index (HI), Income Index (INI), Human Development Index (HDI) and Non Income Human Development Index (NIHDI) to investigate the human development disparities among the districts of Punjab, Pakistan. A brief description of the data sources, the variables and methodology used for the construction of these indices is given in the following section.

III.I. Human Development Index

Human development index (HDI) constructed in this study covers three dimensions. These dimensions include average achievements by the districts in health, education and income. The average achievements are measured through three indices i.e. health index, education index and income index. HDI is a composite index which combines these three indices with equal weightage. UNDP has been reporting HDI for a large numbers of countries since 1990 at annual basis. After 1990, UNDP has revised the formulation of the index at several times. In 2010, UNDP made a few changes in the construction of education index. Mean years of schooling and expected years of schooling were used instead of adult literacy rate and combined enrollment rate. The studies which calculated HDI across the districts of Pakistan were conducted by UNDP (2003) and Jamal and Khan (2007). UNDP (2003) calculated HDI for the year 1998. The report used adult literacy rate and primary enrollment rates for education index. The health index was constructed by using infant survival rate and immunization rate. The report proxied provincial infant survival rate for each district due to unavailability of district data. District GDP per capita was used as income index which was calculated by using agricultural crop value and manufacturing value added. Jamal and Khan (2007) calculated HDI for the years 1998 and 2005 and analyzed the inter-temporal change in human development across the districts of Pakistan. They used adult literacy rates and combined (primary, secondary and tertiary) enrollment rates for education index whereas life expectancy at birth and immunization rates for the construction of health index. The study proxied provincial estimates of life expectancy at birth for each district within the province. Income index consisted of district GDP per capita which was calculated with the help of agricultural crop value and manufacturing value added.

Both UNDP (2003) and Jamal and Khan (2007) have the deficiency in measurement of district specific health outcomes by using the value of provincial health indicators for each district. This study has constructed HDI by using district specific health indicators instead of provincial indicators as a proxy for district health achievements. We have used adult literacy rate and combined enrollment rate for construction of district education index. Child survival rate and immunization rates have been used for the construction of health index. Income index is constructed by calculating district GDP per capita. Districts share of agricultural crop value and manufacturing value added have been used for estimating district GDP per capita. These three indices are combined with equal weightage in order to calculate a composite HDI for thirty-five districts of Pakistani Punjab using 2011 data. Equation 1 and Figure 1 explain the methodology of constructing HDI.

$$HDI = \left(1/3\ Health + 1/3 Education + 1/3 Income\right) \quad (1)$$

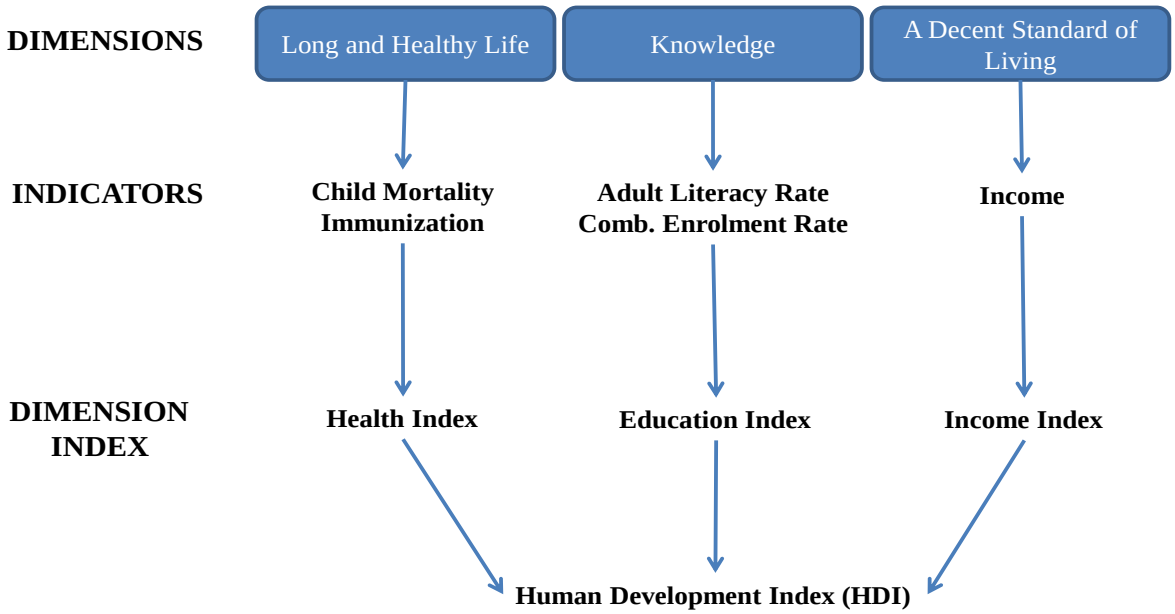

Figure 1: Construction of HDI

III.II. Education Index

Education index is constructed using combined (primary, secondary and territory) enrollment rate of age cohort 5 to 24 years and literacy rate of 10 years and above population. Both variables are normalized by using their actual, maximum and minimum values. 100 percent is considered as maximum and 0 percent as minimum for educational attainments. Composite education index combines these two normalized variables by assigning two-third weightage to literacy rate of ten years and above population and one-third weightage to combine enrollment. Equation 2, 3 and 4 explain the methodology of calculating education index.

Literacy Index (LI) = actual – minimum/maximum – minimum (2)
Combined Enrollment Index (EI) = actual – minimum /maximum–minimum (3)
Education Index (EDI) = 2/3 (LI) + 1/3 (EI) (4)

III.III. Health Index

Anand and Sen (1994) suggest that child mortality (i.e. additive inverse of child survival rate) and life expectancy are more suitable proxies for health because both present more comprehensive picture of health. Due to unavailability of district specific data for life expectancy, we used under five survival rate and immunization rate in construction of health index. Both variables are normalized by using their actual, maximum and minimum values. 100 percent is considered as maximum and 0 percent as minimum for health outcomes. The child survival rate is a consistent and more comprehensive representative measure of health condition of a society as compared to immunization rates. It is an outcome of different health relates activities and facilities. That's why we gave a higher weight to child survival rate in the calculation of health index. Composite health index combines these two variables by assigning 70 percent weight to child survival rate and gives 30 percent weight to immunization rate. Equation 5, 6 and 7 explain the methodology of calculating health index.

Child Survival Index (CSI) = actual – minimum / maximum – minimum (5)
Immunization Index (IMI) = actual – minimum / maximum – minimum (6)
Health Index (HI) = 0.7 (CSI) + 0.3 (IMI) (7)

II.IV. Income Index

To calculate real GDP per capita in terms of purchasing power parity (PPP$), we have used method proposed by UNDP (2003) at district level in Pakistan. We have calculated real GDP per capita for Punjab and its thirty-five districts. First we have estimated the real GDP (PPP$) per capita of Punjab by using data from Pakistan Household Integrated Economic Survey (PHIES, 2011). The average monthly household's income of Pakistan and all provinces has been given in (PHIES, 2011). We calculated the ratio of the average household's income of Punjab to the average household's income of Pakistan. Then this ratio is multiplied to real GDP (PPP$) per capita of Pakistan,

which is collected from World Development Indicators (WDI, 2011), to attain real GDP (PPP$) per capita of Punjab. To attain real GDP (PPP$) per capita for thirty-five districts of Punjab, we added agriculture-crop value and manufacturing value added of each district. Then this sum has been divided on the same at national level to obtain ratio of district income to the national income. This ratio is then multiplied to real GDP (PPP$) of Pakistan in order to attain district real GDP (PPP$). In last round, real GDP (PPP$) per capita for each district is obtained by dividing each district real GDP to the size of their respective population. Formulas to calculate real GDP (PPP$) per capita of Punjab and its thirty five-districts are given below;

Real GDP (PPP$) Per Capita of Punjab from (PHIES, 2010-11).

$$\text{R.GDP(PPP\$) P.C(Punjab)} = \frac{\text{Average Household's Monthly Income (Punjab)}}{\text{Average Households Monthly Income (Pakistan)}} \text{ X } \text{Real GDP (PPP\$)P.C (Pak)}$$

Real GDP Per Capita of each district of Punjab from agricultural crop value (ACV) plus manufacturing value added (MVA) method.

$$\text{Real GDP (PPP\$) (District)} = \frac{\text{ACV + MVA (District)}}{\text{ACV + MVA (Pak)}} \text{ X } \text{R.GDP (PPP\$) (Pak)}$$

$$\text{Real GDP (PPP\$) Per Capita (District)} = \frac{\text{Real GDP (PPP\$) (District)}}{\text{Population (District)}}$$

The limitation of the calculated district income is the assumption of equal percentage share of services in district GDP which is equal to the share of services in national GDP. This limitation is due to unavailability of district data for services sector. To calculate normalized values of income index we have set 100 $ (PPP) as a minimum value for income index which is suggested by UNDP as subsistence level internationally and world real GDP per capita (PPP$), which is 9814 $ (PPP), is taken as maximum value for income index.

Income Index (INI) = (actual–100 $(PPP))/ (9814 $ (PPP) – minimum) (8)

III.V. Non Income Human Development Index

In its human development report published in 2010 UNDP has introduced some new indices to measure human development. Non Income Human Development Index (NIHDI) is one of such measures. It is constructed by using the indicators related with health and education. Unlike HDI, it does not use Gross National Product (GNP) in its construction. HDI measures the improvements in three aspects which are a long and healthy life, access to knowledge and decent standard of living. But NIHDI takes into account only two aspects which include a long and healthy life and access to knowledge. Thus NIHDI focuses only on non-income dimensions of human development. The construction of NIHDI is given below:

NIHDI = (1/2 Health + 1/2 Education) (9)

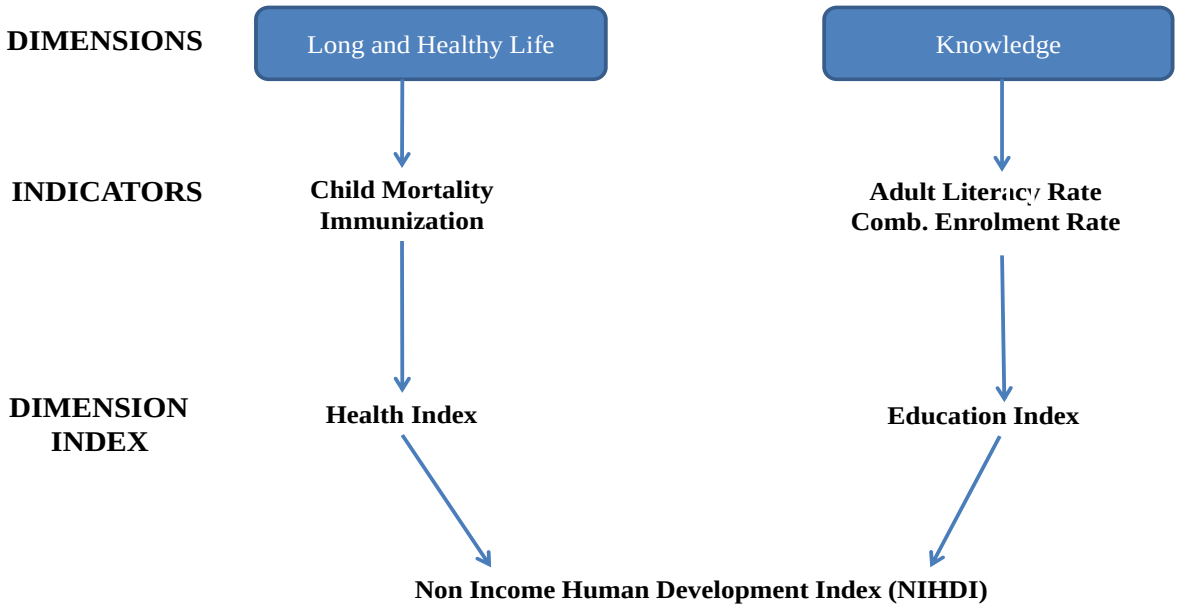

Figure 2: Construction of NIHDI

IV. Data Source

We have used cross sectional data for thirty-five districts of Punjab for the year of 2010-11 for present study. The data for HDI, NIHDI and determinants of human development disparities have collected from different kind of sources. The data of adult literacy rate, immunization rate and combined enrollment rate for thirty-five districts has taken from Pakistan Social and Living Standard Measurements Survey (PSLM, 2011). PSLM (2011) survey is conducted by Pakistan Bureau of Statistics (PBS) at district level with 76546 households sample from entire country to achieve Millennium Development Goals. This survey covered 14,549 enumeration blocks and 25,875 villages from Punjab. Data of child survival rate for the districts of Punjab is collected from Multiple Indicator Cluster Survey (MICS, 2011), which is conducted by Punjab Bureau of Statistics with the collaboration of UNDP and United Nations International Children's Emergency Fund (UNICEF). The survey covered 6,368 clusters and 91,280 households in urban and rural areas throughout the province.

Agriculture crops production data at district level, Punjab level and national level is taken from Crops Area Production by Districts (2011) published by Ministry of Food Pakistan and from Agriculture Marketing Information Services (AMIS, 2011) conducted by Government of Punjab. The prices data of agriculture crops is collected from Pakistan Statistical Year Book (2011), Pakistan Economic Survey (2011) and AMIS. The data of manufacturing value-added at districts level is collected (with this assumption that districts shares remained constant for the year of 2011) from Census of Manufacturing Industries (CMI, 2006). The data of World real GDP and Pakistan real GDP in PPP$ for 2010-11 is collected from World Development Indicators (WDI, 2011), districts population data is collected from (Punjab Development Statistics, 2012). Punjab Development Statistics (2012) is annually published by Punjab Bureau of Statistics.

V. Empirical Results and Discussion

This section presents the empirical results of calculated Human Development Index (HDI), Non Income Human Development Index (NIHDI), Education Index (EI), Health Index (HI), Income Index (INI) and determinants of HDI and NIHDI. Thirty five districts of Punjab are ranked on the basis of current values of HDI, NIHDI, EI, HI, and INI. These ranks indicate the disparities of human development.

Table 1
Ranking of the Districts based on HDI

Districts	HDI		Districts	HDI	
	Value	Rank		Value	Rank
Rawalpindi	0.6731	1	Nankana Sahib	0.5505	19
Lahore	0.6667	2	Mandi Bahuddin	0.5470	20
Sheikhupura	0.6487	3	Narowal	0.5452	21
Faisalabad	0.6267	4	Toba Take Singh	0.5411	22
Sialkot	0.6198	5	Okara	0.5408	23
Kasur	0.6171	6	Hafizabad	0.5359	24
Multan	0.6071	7	Rahim Yar Khan	0.5302	25
Jhelum	0.5985	8	Layyah	0.5299	26
Chakwal	0.5983	9	Vehari	0.5064	27
Khushab	0.5776	10	Muzaffar Garh	0.5047	28
Jhang	0.5770	11	Sargodha	0.5006	29
Attock	0.5690	12	Dera Gazi Khan	0.4992	30
Mianwali	0.5665	13	Pakpatten	0.4787	31
Bhakhar	0.5643	14	Bahawalnager	0.4769	32
Gujrat	0.5642	15	Lodhran	0.4753	33
Gujranwala	0.5630	16	Bahawalpur	0.4521	34
Khanewal	0.5567	17	Rajanpur	0.4515	35
Sahiwal	0.5559	18	PUNJAB	0.5567	

Source: Author's Calculation

The results of HDI have been reported in Table 1 and Fig 3. The results indicate that overall Punjab is not at better position in human development. The HDI value of Punjab is 0.5567 which is not comparable with HDI developed nations. UNDP (2011) has categorized those nations in medium human development category which have the values of HDI in the range of 0.5220 to 0.6980. Keeping in view UNDP criteria, twenty-six districts and overall Punjab fall in medium human development category. Whereas nine districts of Punjab fall in low human development category. Results of the districts presented in Table 1 and Fig 3 reveal that some districts have high HDI values but some districts are lagging behind with low HDI values. To discuss the results in detail, we have divided thirty-five districts in three categories A, B and C. The districts having HDI values in the range of 0.61 and above are fall in category A. The districts having HDI values in the range of 0.51 to 0.60 are listed in category B. The districts which have HDI value 0.50 and below are fall in category C.

The Rawalpindi has first rank in terms of human development and the value of HDI is 0.6731 whereas Rajanpur stands on last position with HDI value 0.4515. Table 1 and Fig 3 show that category A is performing well as compare to other districts. The results indicate high human development disparities are existed across the districts. HDI value of Rawalpindi is 0.6731, Lahore 0.6667, Multan 0.6071, Vehari 0.5064 and Bahawalpur is 0.4521. The performance of category B districts in terms of human development is low as compare to category A and the performance of B category is high as compare to category C. Overall results indicate that category C has lower performance regarding human development. Moreover the results of the Table 1 clarify that southern districts like Rajanpur, Lodhran, Muzaffar Garh, D.G Khan, Vehari, Bahawalpur, Bahawalnager, Layyah and Rahim Yar Khan are lagging behind in human development.

To examine the difference in income and non-income human development among the districts of Punjab we have calculated NIHDI and compared it with INI. The results of INI and NIHDI for the districts have been given in Table 2 and Fig 4.

The results of Table 2 and Fig 4 reveal that Rahim Yar Khan, D.G Khan, Muzaffar Garh, Layyah, Vehari, Bahawalpur and Rajanpur are performing well in income as compare to Narowal, Gujranwala, Gujrat and Mandi Bahuddin but these districts have low ranking in NIHDI. The high values of INI and lower NIHDI values of southern districts show that southern districts are neglecting in public provision of social services related to education and health (education infrastructure, health infrastructure, sanitation facilities and clean drinking water etc.). The results of Table 2 also highlight that the districts which have more distance from capital cities (Islamabad

and Lahore) have low NIHDI. On the other hand, the public provision of social services increase the value of NIHDI and that is in favor of those districts which have less distance to capital cities.

Table 2
Ranking and Comparison of Districts based on NIHDI with INI

NIHDI		Districts	INI	
Value	**RANK**		**Value**	**Rank**
0.7046		PUNJAB	0.2608	
0.7003	18	Sheikhupura	0.5455	1
0.6936	21	Kasur	0.4640	2
0.7715	5	Lahore	0.4571	3
0.7133	15	Faisalabad	0.4536	4
0.7885	2	Rawalpindi	0.4422	5
0.6980	19	Multan	0.4252	6
0.6652	26	Bhakhar	0.3626	7
0.7516	7	Sialkot	0.3562	8
0.6437	29	Okara	0.3352	9
0.6282	31	Rahim Yar Khan	0.3342	10
0.7073	16	Khushab	0.3183	11
0.7393	10	Jhelum	0.3169	12
0.6823	24	Sahiwal	0.3033	13
0.6850	23	Khanewal	0.3002	14
0.7141	14	Mianwali	0.2713	15
0.6132	32	Dera Gazi Khan	0.2712	16
0.6286	30	Muzaffar Garh	0.2569	17
0.7395	9	Jhang	0.2519	18
0.7298	13	Attock	0.2475	19
0.6937	20	Hafizabad	0.2202	20
0.6085	33	Pakpatten	0.2191	21
0.7979	1	Chakwal	0.1991	22
0.7341	12	Nankana Sahib	0.1837	23
0.7034	17	Layyah	0.1829	24
0.6818	25	Vehari	0.1558	25
0.6019	35	Bahawalpur	0.1524	26
0.7371	11	Toba Take Singh	0.1475	27
0.6036	34	Rajanpur	0.1472	28
0.7731	4	Gujranwala	0.1432	29
0.7752	3	Gujrat	0.1422	30
0.7512	8	Mandi Bahuddin	0.1386	31
0.6487	27	Bahawalnager	0.1333	32
0.6486	28	Lodhran	0.1288	33
0.6875	22	Sargodha	0.1268	34
0.7562	6	Narowal	0.1237	35

Source: Author's Calculation

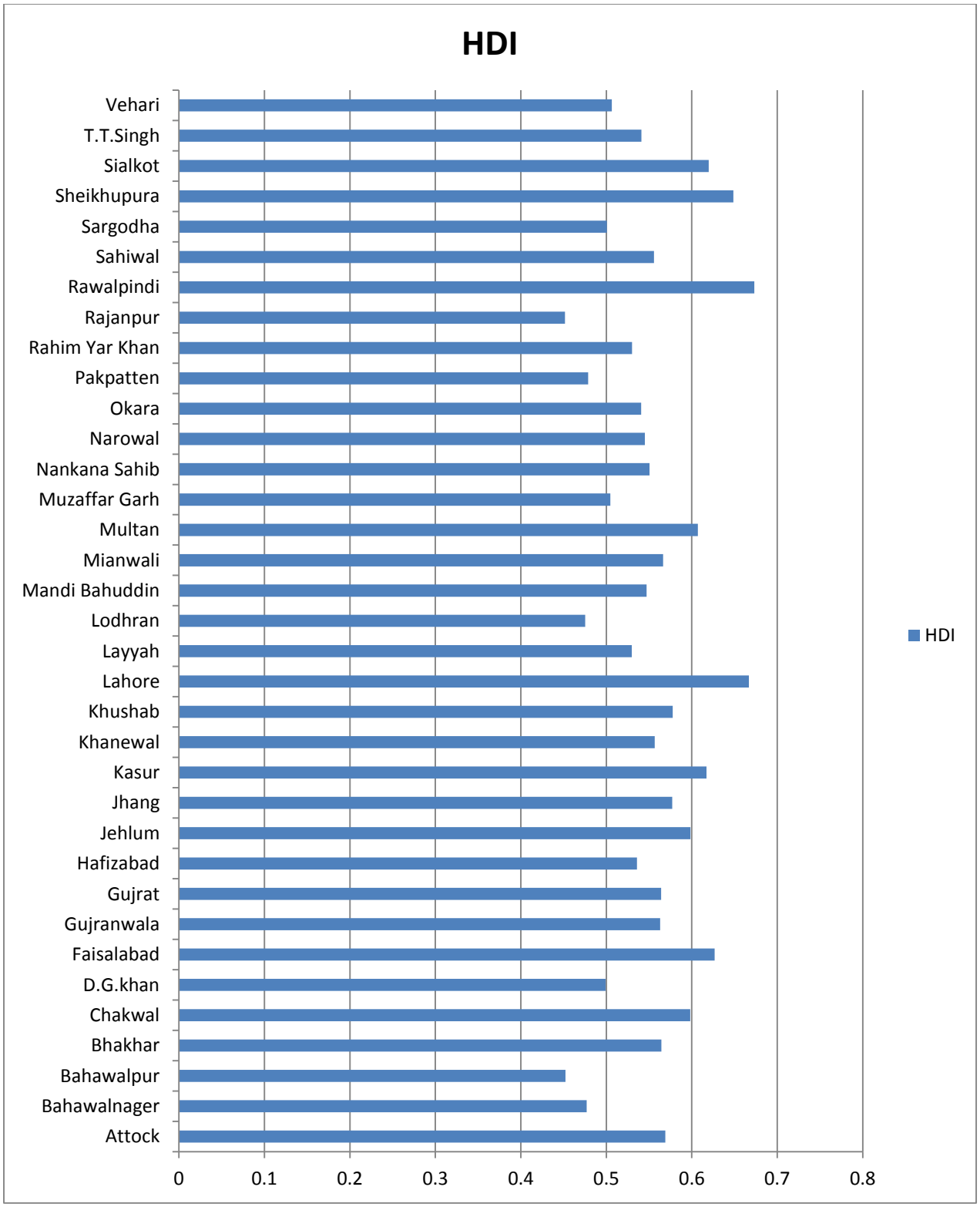

Fig: 3 Human Development Status of all Districts

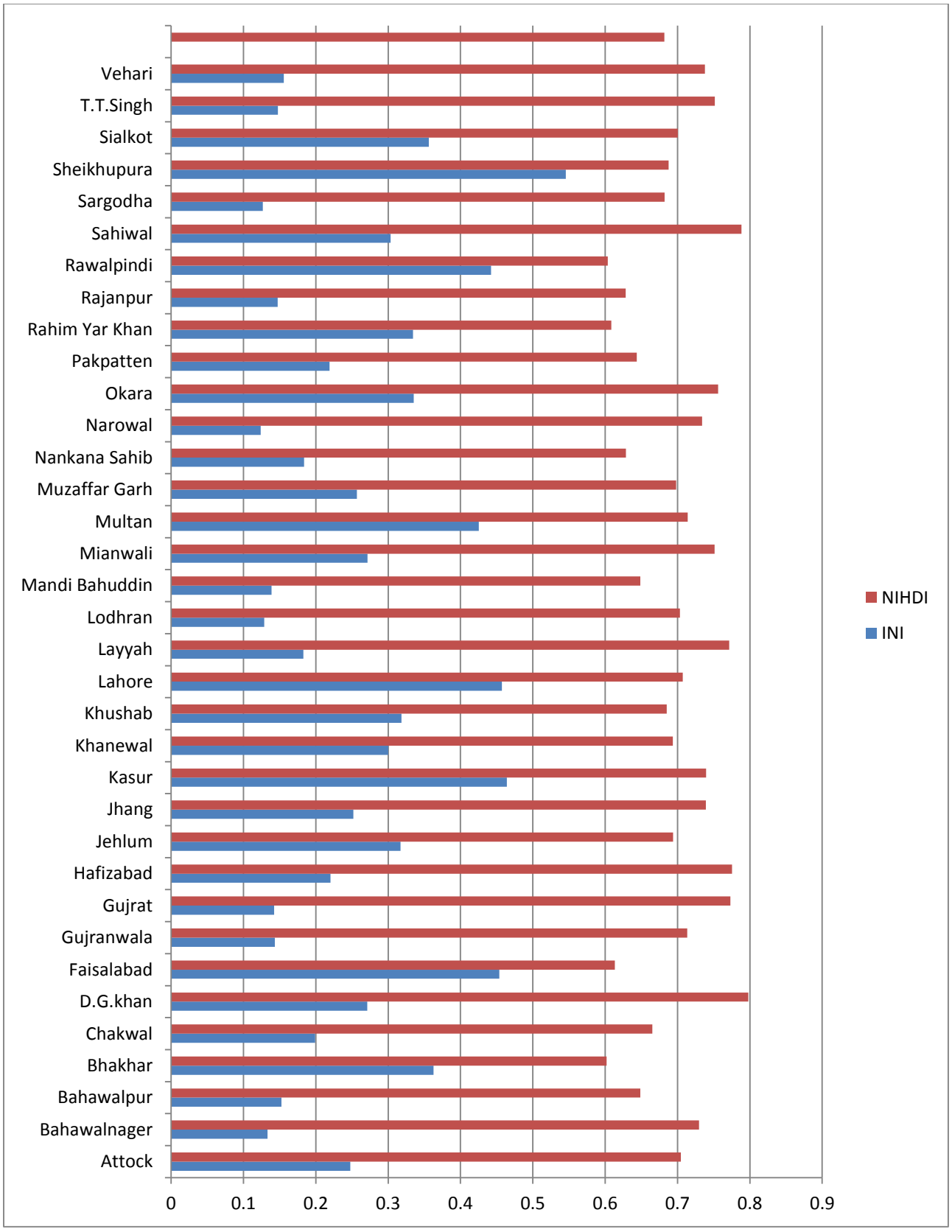

Fig: 4 Comparison of Districts Based on NIHDI and INI

Table 3
Ranking of the Districts based on EI

Districts	EI		Districts	EI	
	Value	RANK		Value	RANK
PUNJAB	0.5241		Khushab	0.5206	18
Chakwal	0.6507	1	Sargodha	0.5108	19
Gujranwala	0.6505	2	Hafizabad	0.5103	20
Rawalpindi	0.6401	3	Layyah	0.5013	21
Lahore	0.6315	4	Multan	0.4931	22
Gujrat	0.6101	5	Khanewal	0.4819	23
Sialkot	0.6023	6	Vehari	0.4811	24
Toba Take Singh	0.6017	7	Sahiwal	0.4809	25
Jhang	0.5914	8	Bhakhar	0.4603	26
Narowal	0.5732	9	Bahawalnager	0.4412	27
Mandi Bahuddin	0.5717	10	Okara	0.4311	28
Jhelum	0.5711	11	Rahim Yar Khan	0.4143	29
Nankana Sahib	0.5605	12	Pakpatten	0.4012	30
Attock	0.5602	13	Lodhran	0.4011	31
Mianwali	0.5421	14	Muzaffar Garh	0.3921	32
Sheikhupura	0.5405	15	Dera Gazi Khan	0.3913	33
Faisalabad	0.5317	16	Bahawalpur	0.3909	34
Kasur	0.5304	17	Rajanpur	0.3011	35

Source: Author's Calculation

The results of Education Index are presented in Table 3 and Fig 5. The EI value of Chakwal is 0.6507, Lahore 0.6315, Rawalpindi 0.6401, Lodhran 0.4011, Muzaffar Garh 0.3921, Dera Gazi Khan 0.3913 and Rajanpur 0.3011. The results reveal that there is huge difference between Chakwal and Rajanpur in status of education. Chakwal, Gujranwala, Rawalpindi, Lahore, Gujrat and Sialkot have high education status on the other hand Bahawalnagar, Okara, Rahim Yar Khan, Pakpatten, Lodhran, Muzaffar Garh, Dera Gazi Khan, Bahawalpur and Rajanpur have low education status. The value of EI shows that the southern districts have lower ranking positions than others. The overall results of Table 3 and Fig 5 indicate that there are education inequalities across the districts.

The results of Table 4 and Fig 6 indicate that there is inequality in health outcomes across the districts. Chakwal is on first position and its HI value is 0.9452 whereas Bahawalpur stands on last rank and HI is 0.8131. The performance of Chakwal, Gujrat, Narowal, Rawalpindi and Lahore is high in term of HI value whereas Muzaffar Garh, Sheikhupura, Kasur, Okara, Bahawalnager, Rahim Yar Khan, Dera Gazi Khan, Pakpatten and Bahawalpur have low health performance.

The results of Table 5 and Fig 7 indicate that there are high income inequalities across the districts. There is high difference between the INI value of first rank position district and last rank position district. The INI value of Sheikhupura is 0.5455 on the other hand the value of Narowal is 0.1237. There some southern districts like Rahim Yar Khan, Muzaffar Garh and Dera Gazi Khan have high INI values as compare to some other districts like Gujranwala, Gujrat and Narowal but due to having low values of EI and HI these districts have low overall HDI ranking. The INI values of the districts are Sheikhupura is 0.5455, Kasur 0.4641, Bhakkar 0.3626, Muzaffar Garh 0.2569, Chakwal 0.1991, Gujranwala 0.1432 and Narowal is 0.1237.

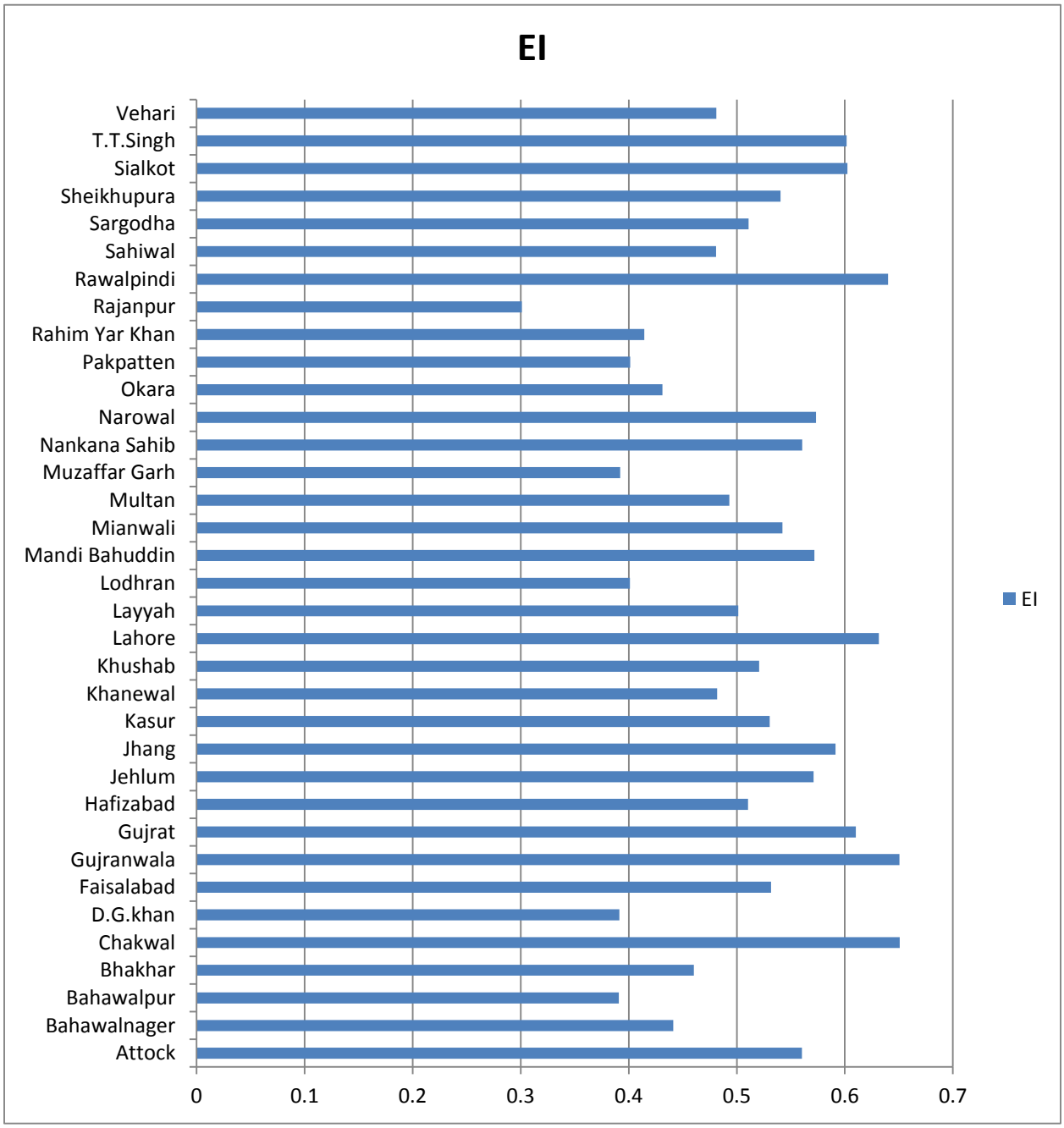

Fig: 5 Education Status of all Districts

Table 4
Ranking of the Districts based on HI

Districts	HI		Districts	HI	
	Value	RANK		Value	RANK
PUNJAB	0.8852		Khanewal	0.8882	18
Chakwal	0.9452	1	Jhang	0.8877	19
Gujrat	0.9404	2	Mianwali	0.8861	20
Narowal	0.9388	3	Sahiwal	0.8837	21
Rawalpindi	0.937	4	Vehari	0.8825	22
Mandi Bahuddin	0.9307	5	Hafizabad	0.8772	23
Lahore	0.9116	6	Toba Take Singh	0.8741	24
Jhelum	0.9076	7	Bhakhar	0.8701	25
Nankana Sahib	0.9075	8	Muzaffar Garh	0.8652	26
Rajanpur	0.9062	9	Sargodha	0.8643	27
Layyah	0.9056	10	Sheikhupura	0.8601	28
Multan	0.903	11	Kasur	0.8569	29
Sialkot	0.901	12	Okara	0.8563	30
Attock	0.8994	13	Bahawalnager	0.8562	31
Lodhran	0.8961	14	Rahim Yar Khan	0.8421	32
Gujranwala	0.8955	15	Dera Gazi Khan	0.8352	33
Faisalabad	0.8949	16	Pakpatten	0.8159	34
Khushab	0.894	17	Bahawalpur	0.8131	35

Source: Author's Calculation

Table 5
Ranking of the Districts based on INI

Districts	INI		Districts	INI	
	Value	RANK		Value	RANK
PUNJAB	0.2608		Jhang	0.2519	18
Sheikhupura	0.5455	1	Attock	0.2475	19
Kasur	0.4641	2	Hafizabad	0.2202	20
Lahore	0.4571	3	Pakpatten	0.2191	21
Faisalabad	0.4536	4	Chakwal	0.1991	22
Rawalpindi	0.4422	5	Nankana Sahib	0.1837	23
Multan	0.4252	6	Layyah	0.1829	24
Bhakhar	0.3626	7	Vehari	0.1558	25
Sialkot	0.3562	8	Bahawalpur	0.1524	26
Okara	0.3352	9	Toba Take Singh	0.1475	27
Rahim Yar Khan	0.3342	10	Rajanpur	0.1472	28
Khushab	0.3183	11	Gujranwala	0.1432	29
Jhelum	0.3169	12	Gujrat	0.1422	30
Sahiwal	0.3033	13	Mandi Bahuddin	0.1386	31
Khanewal	0.3002	14	Bahawalnager	0.1333	32
Mianwali	0.2713	15	Lodhran	0.1288	33
Dera Gazi Khan	0.2712	16	Sargodha	0.1268	34
Muzaffar Garh	0.2569	17	Narowal	0.1237	35

Source: Author's Calculation

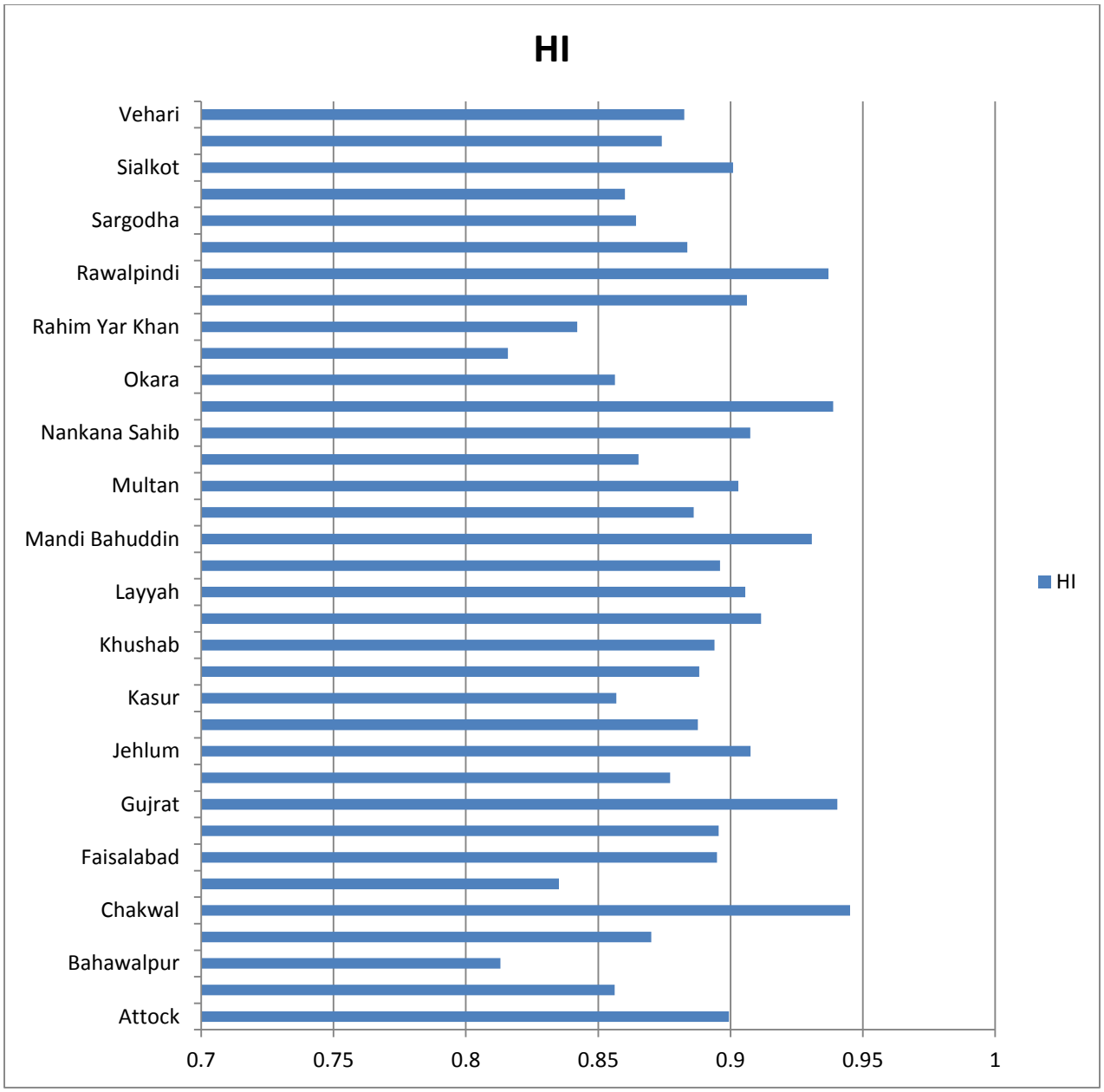

Fig: 6 Health Status of all Districts

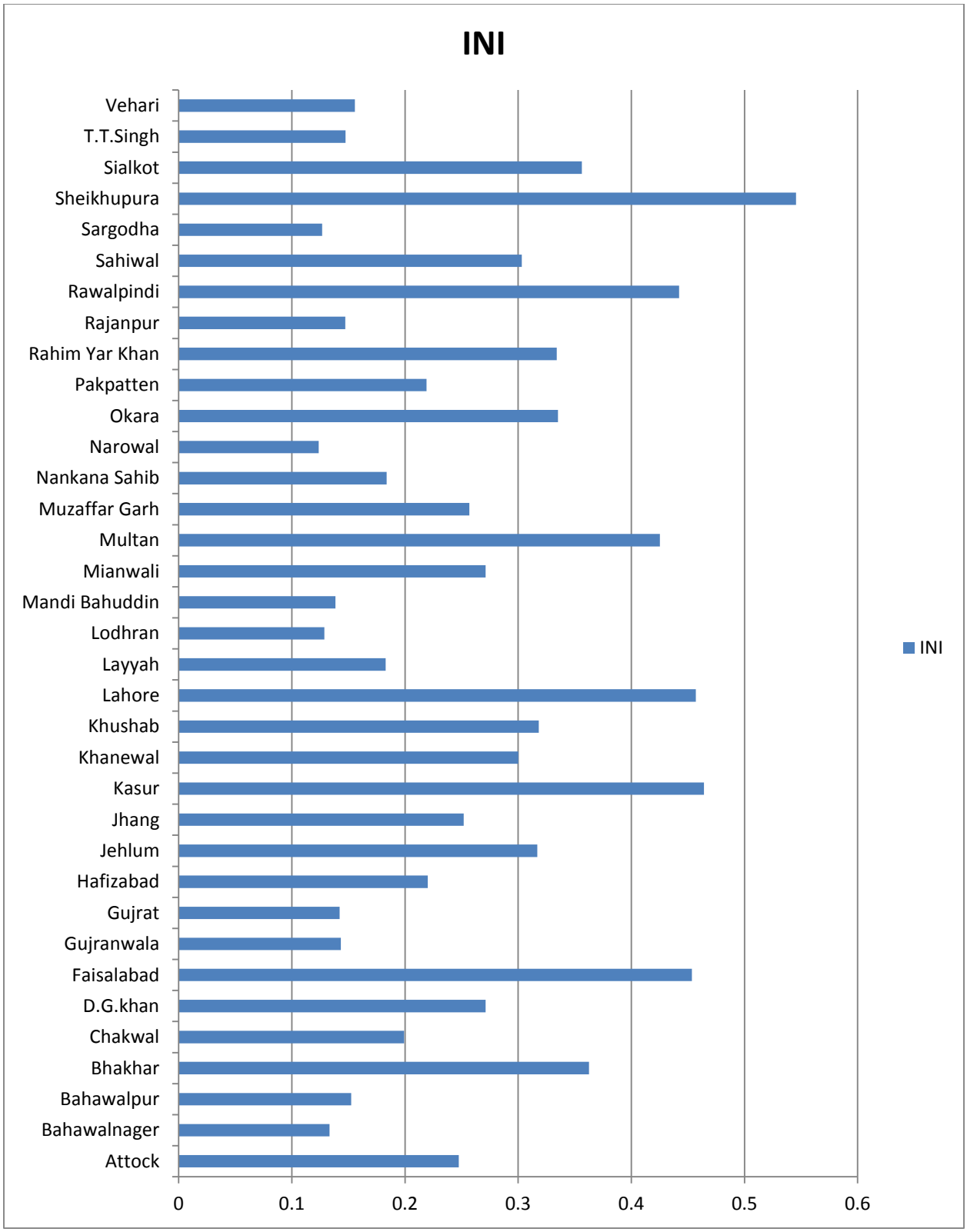

Fig: 7 Income Status of all Districts

VI. Concluding Remarks

This study calculated HDI, NIHDI, EI, HI and INI and examined the current status of human development and human development disparities across the districts of Punjab. Thirty-five districts were considered for this purpose and cross section data was used. The results of HDI indicated that there were high human development disparities in terms of HDI. The results of HDI revealed that the performance of Punjab in terms of HDI was not comparable with high HDI ranked nations. According to UNDP categorization twenty six districts had medium and nine districts had low human development status and also there were massive human development disparities among the districts. The analysis revealed that some districts achieved high level of human development with high literacy rate, high combined enrollment rate, high immunization rate, high child survival rate and high level of real GDP per capita such as Rawalpindi and Lahore. On the other hand some other districts were lagging behind in human development with low literacy rate, low combined enrollment rate, low immunization rate, low child survival rate and low level of real GDP per capita such as Layyah, Vehari, Muzaffar Garh, Sargodha, D.G Khan, Pakpatten, Bahawalnager, Lodhran, Bahawalpur and Rajanpur, most of that districts belonged to the south region of Punjab.

The results of NIHDI concluded that non-income human development disparities were also existed among the districts of Punjab. The comparison of NIHDI and INI revealed that the public provision of social services had not been remained in favored of south region districts. The four districts (Narowal, Gujranwala, Gujrat and Mandi Bahuddin) had low ranked positions in terms of INI but they had high ranked positions in terms of NIHDI. Similarly some south region districts like Layyah, Vehari, Muzaffar Garh, D.G Khan, Bahawalpur and Rajanpur had high ranked positions in terms of INI but they shifted in low ranked positions in terms of NIHDI. The upward shifting of Narowal, Gujranwala, Gujrat and Mandi Bahuddin in HDI ranking was due to high ranked positions NIHDI and downward shifting of (Layyah, Vehari, Muzaffar Garh, D.G Khan, Bahawalpur and Rajanpur) in HDI ranking was due to low ranked positions in NIHDI. Education disparities had observed across the districts from the values of EI and there were health inequalities among the districts in terms of HI. There were also high income inequalities among the districts in terms of INI. The results of HDI, NIHDI, EI, HI and INI revealed that there was high variation in human development across the districts. The differences in these indices indicate that may there is need to take some suitable steps at district level in Punjab. The improvement can be in terms of education facilities, health facilities and tap water or sanitation facilities to improve the human development status of the districts especially in the districts of south region in Punjab. Out of nine districts which were categorized in low human development category, 7 districts belonged to the south region of Punjab. The government of Punjab can enhance the empowerment of the people among the districts with the improvement in income, education, health and other social services. There are different criterions for the allocation of development budget among the regions. Underdevelopment may also be considered as criterion for the allocation of development budget among the different regions. The government of Punjab may increase the development budget of those districts which have low level of human development like Layyah, Vehari, Muzaffar Garh, Sargodha, D.G Khan, Pakpatten, Bahawalnager, Lodhran, Bahawalpur and Rajanpur.

References

Adams, R.H. (2006). *Remittances and Poverty in Ghana*. World Bank, Washington DC.

Adenutsi, D.E. (2010). Do international remittances promote human development in poor countries? Empirical evidence from Sub-Saharan Africa. *The International Journal of Applied Economics and Finance*, 4(1), 31-45.

Anand, S. (1994). *Population, Well-Being, and Freedom*. Harvard University Press.

Anand, S. & Sen, A. (1994). *Human Development Index: Methodology and Measurement* (No. HDOCPA-1994-02). Human Development Report Office (HDRO), United Nations Development Program (UNDP).

Antle, J.M. (1983). Infrastructure and aggregate agricultural productivity: International evidence. *Economic Development and Cultural Change*, 31(3), 609-619.

Bhattacharya, B. (1998). Urbanisation and Human Development in West Bengal: A District Level Study and Comparison with Inter-State Variation. *Economic and Political Weekly*, 21(1), 3027-3032.

Dasgupta, P. & Weale, M. (1992). On measuring the quality of life. *World Development*, 20(1), 119-131.

Eberts, R.W. (1986). *Estimating the contribution of urban public infrastructure to regional growth*. No. 8610, Cleveland: Federal Reserve Bank of Cleveland.

Government of Pakistan (2006). *Census of Manufacturing Industries 2006*, Federal Bureau of Statistics, Islamabad

Government of Pakistan (2011). *Crops Area Production (By Districts)*, Ministry of Food, Agriculture and Livestock, Islamabad, Various Issues.

Government of Pakistan (2011). *Pakistan Household Integrated Economic Survey*, Federal Bureau of Statistics, Islamabad.

Government of Pakistan (2011). *Pakistan Social and Living Standard Measurement Survey*, Federal Bureau of Statistics, Islamabad.

Government of Pakistan (2011). *Pakistan Statistical Year Book*, Federal Bureau of Statistics, Islamabad.

Government of Pakistan, *Economic Survey of Pakistan* (various Issues). Islamabad, Pakistan: Finance Division.

Government of Punjab (2011). *Multiple Indicator Cluster Survey*, Bureau of Statistics, Lahore.

Government of Punjab (2012). *Punjab Development Statistics*, Bureau of Statistics, Lahore.

Government of Punjab, *Agriculture Marketing Information Services.* Directorate of Agriculture (Economics and Marketing) Punjab, Lahore.

Haq, M. (1995). *Reflections on Human Development*. Oxford, USA: Oxford University Press.

Hardy, A.P. (1980). The role of the telephone in economic development. *Telecommunications Policy*, 4(4), 278-286.

Haider, A., & Ali, A. (2015). Socio-Economic Determinants of Crimes: A Cross-Sectional Study of Punjab Districts. *International Journal of Economics and Empirical Research*, 3(11), 550-560.

International Labour Office (1977). *The Basic-Needs Approach to Development: Some Issues Regarding Concepts and Methodology*. Geneva: International Labour Office.

Jamal, H. and Khan, A.J. (2007). *Trends in Regional Human Development Indices.* Karachi, Pakistan: Social Policy and Development Center Karachi.

Kim, S. (1995). Expansion of markets and the geographic distribution of economic activities: the trends in US regional manufacturing structure, 1860-1987. *The Quarterly Journal of Economics*, 110(4), 881-908.

Kuznets, S. (1955). Economic Growth and Income Inequality. *American Economic Review*, 45(1), 41-72.

Mera, K. (1973). Regional Production Functions and Social Overhead Capita. *Regional and Urban Economics*, 3(1), 157-186.

Ministry of Food Pakistan (2011). Crops Area Production by Districts. Islamabad, Pakistan.

Morris, M.D. (1979). *Measuring the Condition of the World's Poor: The Physical Quality of Life Index.* New York: Pergamon.

Noorbakhsh, F. (2002). Human Development and Regional Disparities in Iran: A Policy Model. *Journal of International Development*, 14(1), 927-949.

Sen, A. (1988). The concept of development. *Handbook of Development Economics*, 1, 9-26.

Siddique, R. (2008). *Income, Public Social Services, and Capability Development: A Cross-District Analysis of Pakistan*. Working Paper 2008:43, Pakistan Institute of Development Economist (PIDE), Islamabad, Pakistan.

Streeten, P. (1995). Human Development: Means and Ends. *The Pakistan Development Review*, 34(4), 333-372.

Szirmai, A. (2009). *Industrialization as an engine of growth in developing countries*. Working paper series 2009-10, Maastricht, The Netherlands: United Nations University.

UNDP (1990). *Human Development Report*. New York: United Nations Development Program.

UNDP (2003). *Pakistan National Human Development Report*. Karachi, Pakistan: Oxford University Press.

UNDP (2005). *Karnataka Human Development Report*. Delhi, India: Oxford University Press.

UNDP (2010). *Human Development Report*. New York: United Nations Development Program.

UNDP (2011). *Human Development Report*. New York: United Nations Development Program.

World Bank (2011). *World Development Indicators Database.* Washington DC: The World Bank.

Yang, D. (2011). Migrant remittances. *The Journal of Economic Perspectives*, 25(3), 129-151.