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Urbanization and Its Impact on Necessities: Opportunities and Challenges in Pakistan

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Abstract

Cities having industries with high productivity and employment magnetize rural population and resultantly influence commercial activities. Likewise other developing economies, Pakistan (sixth most populous country in the world) also experienced a rise in its rate of urbanization at 2.81% in 2015-16. This raising pace of urbanization embraces emerging challenge of resource reallocation in both rural and urban sectors of the economy. Thus the structural transformation in the economy along effective nutrition and human developmental policies are serious notes among the many other socio-economic developmental strategies of country. In order to address access to necessities (food and drinking water insecurity and sanitation services), the present study is an attempt to discuss the association of improvement in health care, sanitation, water availability and especially food insecurity. For the purpose, time series data is taken for the period of 1975 to 2016.While to analyze the impact of urbanization to the necessities, this paper gives particular attention to theoretical and empirical findings observed from attributes of population development in rural areas. Technique of ARDL and Toda Yamamoto Granger Causality are applied to examine the relationship of variables. The study finds a significant association of food, sanitation services and water availability to the growth of urban population.

Keywords: urbanization; globalization; Food and drinking water insecurities

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Introduction

"Urbanization is not about simply increasing the number of urban residents or expanding the areas of cities. More important it is about a complete change from rural to urban style in terms of industry structure, employment, living environment and social security." Li Keqiang

In start of 20th century it was estimated that only 13% of world population reside in urban region, populated only in 16 cities having a minimum limit of 1 million people. But now about 54.5% of population lives in urban settlements and (it is projected to reach 60% by 2030 in a ratio of 1:3) about 512 cities in the world are registered for populating more than 1 million residents and interestingly of which 80% is from developing world (United Nations, 2016). During the last six decades a strong association is observed between urbanization in a country and its economic growth. It is now believed that urbanization begins beside economic progress and "political strength" in an economy. While, the nation's having low per capita income are witnessed to be less urbanized (Cohen, 2006). Actually, urban regions have many potential benefits needed for a better standard of living through economies of scale and a better infrastructure. Moreover, the high density facilitates the administration in the form of low per capita cost for infrastructure and other basic needs. In developing countries all big cities have a prominent ratio of poverty but despite of this, residents there could avail somehow a good approach to health care facilities, education and a better access to other public utilities like water, electricity and sanitation than the population living in rural regions. Being the third world, Asia has the cities with most population growth in the world. Likewise other developing economies of continent Asia, Pakistan (sixth most populous country in the world) also experienced a rise in its rate of urbanization at 2.81% in 2015-16 (World Bank, 2016). Hence, Karachi is ranked as 12th in the list of world's most populous megacity[2] and by 2030 is projected to reach at 7th, while Lahore is projected to be ranked as 27th in this list (UN, 2016). This rising speed of urbanization is actually could also be called a reflection of economic and industrial growth.

The current and projected trend of urbanization in Pakistan embraces many emerging challenges including resource reallocation (Ghani, 2012 and Haider et.al. 2010). And this reallocation process of resources is really complex in nature (Arif and Hamid, 2009). In order to implement the needed structural transformation, socio - economic factors must be considered and projected *'correctly'* and *'effectively'*. The rising concentration towards urbanization in Pakistan indicates the increasing demand for hygienic concentrated products

[2]There are 31 Megacities (referred to having 10 million or more resides) in 2016, in the world of which 24 are located in developing regions of the world.

especially dairy, fruits, meat and vegetables (Economic Survey of Pakistan 2016) withal disturbances in sanitation situations leading to serious health issues. The three prioritized factors to improve living standard are 1) *nutrition policy*, 2) *sanitation facility* and 3) *water availability*. The first one, nutrition policy, is a serious note among the developmental strategies of country. In this regard, the implications of required measures in agriculture industry (the source of processed and ultimate food among dietary requirements and contributor of about 19.5 %, about 14 % and 42.3 % to national GDP, overall export earnings and labor force in the country respectively) will be fruitful to address the increasing food demand. The second one sanitation facility alarm many healthcare issues likewise Tuberculosis, Diarrhea, Cholera, Influenza and malaria etc. And the third one that itself affects previous discussed two factors is water availability, as uncontaminated water is one of the most prerequisites of human life - a shield against many communicable diseases and sometimes proven to be a source of communicable diseases if got contaminated and mismanaged.

Research Objectives

Actually what factors support urbanization? And what reforms actually happened and might be happened next? Are the questions that's answer bears the solution of above discussed issues. The main objective of the study here is to discuss the impact of urbanization in Pakistan on necessities 1.food especially hygienic concentrated food (meat and dairy), 2. Water availability and 3. Improved sanitation services.

Research Gap and proposed hypothesis

It is clearly observed that development for the betterment of urban population growth in terms of providence of basic needs is an alarming issue for Pakistan as the rest of developing world (Qutub and Richardson, 1986, Jan et.al. 2008 and Jabeen et.al. 2017). In Pakistan we find the area of effective nutrition policy as research gap in literature that needed to be addressed at national level and could be enhanced by focusing on resources reallocation process (Philips, 1964, Haider et.al., 2010 and Ejaz et.al. 2012).

In order to analyze the current scenario for urban population in Pakistan specifically addressing its growth while being influenced by basic needs of education, water and sanitation services and food requirement, this study is aimed to test the following hypothesis:

H_1: The urban population is influenced by basic needs of masses.
H_0: The urban population is not influenced by basic needs of masses.

Research Outline

In order to analyze the impact and association of growing population on the development of food and healthcare policies, the study structured first to describe the drivers of urbanization leading to impacts of globalization on it. The influence of population growth in urban agglomeration with reference to food demand, leading to the contribution of agriculture industry in dietary requirements along effects on labor force supply, water availability, sanitation services and role of literacy in current scenario, is discussed next. Further relevant facts are empirically examined to trace out the association of hygienic concentrated food productivity and socio - economic development of population in both the urban and rural regions. Finally concluding remarks are followed by discussion on empirical findings done in the study.

Literature Review

The uneven distribution of population affecting the living standard and economies of scale is discussed in many researches. In Pakistan, the access to basic necessities is considered more easy and improved in urban areas than in rural areas. An interesting fact discussed in different studies is that all urban regions are not considered to be equally enjoying the extent of basic necessities quality as enjoyed by big cities. The major influences of urbanization on availability of necessities in the country, specifically aimed to be discussed in the study are categorized as labor force, food requirement, availability to water resources and sanitation services. It is evident from previous researches that these factors played a crucial role in well-being of urban population.

Impact of urbanization on labor force

Migration of people from rural to urban regions alters the demand and supply of labor force in different sectors, differently. The agriculture sector (considered as lifeline source of raw material to both the food and non-food sectors of economy) already lacks in skilled labor force, faced a more declining ratio of manpower in the fields. While people flow to cities increases the supply for manpower to industrial sector. This uneven distribution of population causes many social challenges likewise sanitation problems are faced in big cities of Pakistan along water availability also got a serious form of disputes among the provincial governments. However education is in easy access in urban regions.

An increasing trend of population in urban regions of Pakistan could be highlight form the given below table of comparison of census done in 1998 and in 2017.

Table 5.1: Urban population in Top 10 big cities of Pakistan

CITIES	CENSUS – 2017	CENSUS - 1998
Karachi	14,910,352	9,339,023
Lahore	11,126,285	5,143,495
Faisalabad	3,203,846	2,008,861
Rawalpindi	2,098,231	1,409,768
Gujranwala	2,027,001	1,132,509
Peshawar	1,970,042	982,816
Multan	1,871,843	1,197,384
Hyderabad	1,732,693	1,166,894
Islamabad	1,014,825	529,180
Quetta	1,001,205	565,137

Source: Pakistan Bureau of Statistics

(A fact behind the resource disturbance in cities of Pakistan is the lack of properly managed cities where Islamabad is the only *city proper* while remaining cities are *urban agglomeration*[3]*.)*

Impact of urbanization on food requirements

In order to manage the resource distribution in a region with growing population, the implementation framework is not simple; an accurate projection regarding the growth of population in urban regions must be the first step. The pace of population growth in the cities in developing economies possess many challenges, specifically degradation of 1) the environment, 2) natural resources, 3) health status, 4) social cohesion and 5) rights of individuals. In the presence of these factors the issues of employment, gender discrimination and *'under-nutrition'* are also effectively nourished. Urban areas have many developmental problems specifically increasing food security and poverty rates (this all could also be related to the cities enjoying a higher rate of economic growth). About 66% of low income countries faces food and energy shortage in both the urban and rural regions either in same ratio or in a ratio more in rural than in urban, despite of high income per capita there (Hill et al. 2007). Urban poor faces food security too to an extent as it is dependent upon his capacity to consume for households (Cohen and Garret, 2009).

Urbanization alters both the urban population and the dietary patterns demanded there. It is often observed that with speedy economic growth and

[3]The term "city proper" is used to administrative boundary, "urban agglomeration" describes a city with accord to built-up areas, and "metropolitan area" considers the boundaries to the extent of socio-economic "interconnectedness" of nearby areas.

people flow from rural to urban regions underpinned the demand for meat, dairy products, vegetable oil and other agricultural products. This diversifying dietary demand also pulls import (De Haen et al. 2003 and Anjum et al. 1989). More migration from rural to urban increases the ratio of working force in urban regions. This increasing ratio of working individuals influence the demand for processed and readymade food items, increasing income and lower supply enable people to refrigerate food (Readon et al. 2001) first due to more working hours and low physical activity and secondly due to changes in income distribution in urban regions (De Satterthwaite et al. 2010). This all cause a shift of labor force from agriculture to sector of logistics and other value added services (Cohen and Garret, 2009).

Every 1 of 3 faced malnutrition in Pakistan, while 45% of child's deaths under 5 are accounted to malnutrition. Diet and malnutrition are big risk factors to economic growth as well as attributed to rising disease burden for the world. Due to poor health of population, Pakistan suffered a loss of about 3 % which is about 7.6 billion dollar annually to its Gross Domestic Product (GOP, 2017). In this regard policy makers have put their efforts upon the development of nutrition policy to fill the demand and supply gap.

Impact of urbanization on water availability and sanitation services

Both the developing and developed economies faced the problems in management of sanitation and drinking water supply. About $2/5^{th}$ of diseases and $1/4^{th}$ of deaths sufferings in developing world are the attributed by contaminated water supply and poor sanitation facilities (Lüthi et. al. 2009). The rising population in urban cities of Pakistan suffered lack in improved sanitation facilities and availability of uncontaminated drinking water that further fetch many economic, environmental and social costs to country. In the country, as the growing concentration of population in some region is being observed as the major problems regarding 1) the rising demand of water for drinking and cleaning and 2) the costly infrastructure (needed to supply of water along effective and proper collection of waste) is also experienced.

Hygienic habits of population are also awoken by raising literacy rate. Use of boiled water for drinking reduces the communication chances of many diseases. In primary school education, it is usually greatly discussed and persuaded to adopt hygienic activities regarding sanitation.

Drivers of urbanization

Urban growth is mainly influenced by 1) the natural growth of urban population, 2) expansion of cities by absorbing rural settlements, 3) newly

transformed urban regions and 4) flow of people in the form of migration from rural to urban regions (Sustainable Sanitation & Water Management, 2012). Further, factors motivating rural inhabitants to move towards urban regions in Pakistan, could be categorized into 1) social consequences, 2) economic consequences, and 3) political consequences (Kugelman, 2013). In Pakistan, populations living in rural regions are categorized on the basis of the professions they are belonged long ago. In profession hierarchy cobbler, washer men, barber, carpenter, and milkmen are considered lower in social status and with the passage of time these professions are called to be their cast. Having a treatment of lower strata in villages many of them come to cities to explore better opportunities. Often young male move towards cities for having a good income so their family in rural area could enjoy a better life but either that earner person get tired of living a bachelor lifestyle in cities or for children better educational future, called their families also in cities and this economic thrust also drive people to urbanize. Next the political factors also have an influence on migration of population. At first it starts in 1947 while partitioning of subcontinent into India and Pakistan, next in 1971 while partitioning of Bangladesh and next in 1979 when Afghan migrants crossed Pak - border for refugee and further reside there permanently. Along these major political events, political parties influence the rural population to have a prominent vote figure in elections. Thus these three factors played their part well in raising the urban population.

Globalization hampers urbanization economically

Globalization urges urbanization also. Mega cities magnetize people from different regions of world and some of these could better be called as global cities. There are more than 2 % of worlds' populations who do not reside in their birth regions. Urbanization is impressed by both the "nature and scale of economic". Due to "spatial" economic changes in developing economies people living in rural regions migrate towards urban regions as a response of evolved economic opportunities (De Satterthwaite et al. 2010). Globalization in mega cities is influenced by two main determinants ; advanced infrastructure and corporate structure, the later one corporate structure designs to separate the operational site from financial site, while the first one advance infrastructure, if decentralized, then could facilitate the first one corporate design by providence of telecommunication and logistics. The telecommunication service sector also helps to alter the demography. Internet facilitates manufacturing/ industrial corporations, these corporations choose a location with better infrastructure and less populous regions. Hence small towns got neglected and regions touching the cities are selected, this "spatial" distribution of economic changes geared the out-sourcing. Lower domination of central city over urban forms persuades investor to scratch out green-field sites (Castells and Hall 1994). The effects of

human's activities on local ecosystem may also be reduced by an increase in population density there (Cohen, 2006).

The increasing population capacity in big cities influenced the local government's developmental plans towards policy of decentralization; as regions nearby mega cities enjoyed advanced infrastructural facilities and investor found these regions for investment opportunity to establish operational sites. Hence a population that was living on primary economic activities (agriculture, livestock and forestry etc.) now shifts towards secondary and tertiary economic activities (manufacturing, distribution, and research etc.).

Research methodology

The proposed research framework suggest the following model to describe the urbanization in Pakistan with its functions,

$$UPG=\beta_0 + \beta_1 RPG + \beta_2 AGVA + \beta_3 IWSU + \beta_4 IWSR + \beta_5 ISU + \beta_6 ISR + \beta_7 PENROLL + \beta_8 EXPORT + \beta_9 IMPORT + \mu$$

Where:

β_0 is a constant or y-intercept and β_1, β_2, β_3, β_4, β_5, β_6, β_7,β_8 and β_9 are parameters of variables described in Table 5.1. And μ is Error term.

To find out the trend of production in hygienic concentrated food (dairy and meat industry) annual time series is taken from the period of 1975 to 2016. Variables (shown in Table: Description and symbol of variables), to checkout competitiveness of food industry are taken milk, meat production and agricultural value added as % of GDP (AGRIVALUEADDED). Urban population growth rate (UPG) and rural population growth rate (RPG) are used as a proxy to urbanization while attributes of improved water services in urban region (IWSU), improved water services in rural region (IWSR), improved sanitation services in urban region (ISU), improved sanitation services in rural region (ISR) and primary enrollment (PENROLL) are used as proxy to human development. Descriptive statistics are described to checkout nature and normality of data while to trace-out stationarity of data unit root test has been applied.

Table 8.1: Description and symbol of variables

S.	Variables description	Symbols
1	Agricultural value added as percentage of GDP, explaining food supply in the country.	AGVA
2	Urban population growth, explaining growth of inhabitants and labor force in urban region.	UPG
3	Rural population growth, explaining growth of inhabitants and labor force in rural region.	RPG
4	Improved water services in urban regions, explaining supply of/ access to drinking water in urban regions.	IWSU
5	Improved water services in rural regions, explaining supply of/ access to drinking water in rural regions.	IWSR
6	Improved sanitation services in urban regions, explaining development of sanitation facilities available in urban regions.	ISU
7	Improved sanitation services in rural regions, explaining development of sanitation facilities in rural regions.	ISR
8	Primary enrollment, explaining access to basic literacy in country.	PENROLL
9	Export, explaining the liberalization in trade and export competitiveness of food industry	EXPORT
10	Import, explaining liberalization in trade and increasing domestic demand	IMPORT

Source: Authors

Empirical discussion

Descriptive statistics

The selected data set comprises of 42 years of annual observations from the period of 1975 to 2016. Table 9.1. represents the results of descriptive statistics, which exhibits that the average of AGRI VALUE ADDED is 2.861924 with standard deviation of 2.245169, the average of Export is 1.67E+09 with standard deviation of 8.76E+08, the average of Import is 3.12E+08 with standard deviation of 3.83E+08, the average of ISR is 33.5588 with standard deviation of 12.176, the average of ISU is 76.694with standard deviation of 4.4484, the average of IWSR is 87.1412, with standard deviation of 2.03564, and the mean value of IWSU is 94.759, with standard deviation of 0.6433, The mean value for MEAT OUTPUT is 3E+06, and standard deviation is 6E+05, mean value of MILK OUTPUT is 4E+07, with standard deviation of 1E+07, the average value of PEN ROLL is 85.31, and standard deviation of 0.28561, the mean value of UPG is 3.1614, with standard deviation of 0.1706, and the mean value of RPG is 1.58402, with standard deviation of 0.28561.

Table 9.1. Descriptive Statistics

	Agri Value Added	Export	Import	ISR	ISU	IWSR	IWSU	Meat Output	Milk output	Pen roll	RPG	UPG
Mean	2.861924	1.67E+09	3.12E+08	33.5588	76.694	87.1412	94.759	3E+06	4E+07	85.31	1.58402	3.1614
Median	2.675037	1.86E+09	2.17E+08	34.3	77	87.3	94.7	3E+06	4E+07	89.81	1.48167	3.1275
Maximum	6.482853	3.22E+09	1.74E+09	51.1	83.1	89.9	96.5	4E+06	5E+07	95.74	2.55372	3.7294
Minimum	-2.177328	2.44E+08	39251143	4.9	66.2	81.8	93.9	2E+06	2E+07	58.66	1.3052	3.0151
Std. Dev.	2.245169	8.76E+08	3.83E+08	12.176	4.4484	2.03564	0.6433	6E+05	1E+07	9.988	0.28561	0.1706
Skewness	-0.253352	-0.05458	3.252541	-0.54923	-0.555	-0.885	1.0039	0.261	-0.212	-1.222	2.46344	2.2414
Kurtosis	3.074184	1.78519	12.80572	2.88599	2.9	3.80273	4.1603	2.269	2.004	3.851	8.99281	8.324
Jarque-Bera	0.185762	1.053773	98.08166	0.86389	0.8801	2.67536	3.8089	0.572	0.83	4.745	42.633	34.313
Probability	0.911302	0.590441	0	0.64925	0.644	0.26245	0.1489	0.751	0.66	0.093	0	0

Source: Estimation output

JarqueBera Test represents the normality of variables, by exhibiting Table - 9.1., corresponding probability value of variables AGRIVALUEADDED, Export, ISU, ISR, ISWR, ISWU, PENROLL, MEATOUTPUT and MILKOUTPUT shows normally distributed data while variables RPG, UPG and Import are not normally distributed. Skewness and Kurtosis are describing the shape and trend of variables, Table -01 represents that AGRIVALUEADDED, Export, ISR, ISU, IWSR, MILKOUTPUT and PENROLL are negatively skewed /skewed left, while Import, IWSU, MEATOUTPUT, RPG and UPG are positively skewed / skewed right. The value of Kurtosis represents that AGRIVALUEADDED, Import, IWSR, IWSU, PENROLL, RPG and UPG are leptokurtic or long-tailed / higher peak trend in data while variables like Export, ISR, ISU, MEATOUTPUT and MILKOUTPUT are Platykurtic short-tailed/ lower peak having a smaller deviation from their mean values.

Unit root test

Unit root of all the series is tested. The result of Augmented Dicky Fuller at level and at 1st Difference are presented in Table- 9.2., Which exhibits that AGRIVALUEADDED, IMPORT, and RPG are stationary at level and found *I(0)*, while EXPORT, MEATOUTPUT, MILKOUTPUT, PENROLL and UPG are non - stationary at level but got stationary at 1st Difference and found *I(1)* at the significance level of 5 %.

Table 9.2: Unit Root Test

Variables	LEVEL	1st Difference
Agri_value_added	0	
Export	0.9995	0.0355
Import	0.0003	
Meat output	0.9999	0.0122
Milk output	0.9761	0.0000
Penroll	0.8906	0.0002
RPG	0.0433	
UPG	0.6709	0.0141

Source: Estimation output

ARDL approach

As variables selected for the study are mixed series of I(0) and I(1), hence ARDL approach is seemed to be appropriate for finding the long and short run associations of variables for urban population growth. Before going for ARDL at first we have tested optimal lag selection for research model (See Table - 9.3.1.). The findings direct to take lag of 2 for research model.

Table 9.3.1. Optimal lag selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2582.802	NA	5.08e+52	152.5766	153.0704	152.7450
1	-2163.746	542.3089	1.75e+45	135.0439	140.9697	137.0647
2	-1654.582	329.4589*	3.73e+36*	112.2107*	123.5686*	116.0841*

Source: Estimation output

The optimal lag selection directs our research to run the model with lag of 2 but before going further the bound test has been done where calculated F-statistic value as 3.300654 indicates that our value is more than the upper boundary at 10% and 5% level of significance.

Table 9.3.2. Bound test

Test Statistic	Value	k
F-statistic	3.300654	10
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	1.83	2.94
5%	2.06	3.24

Source: Estimation output

In Table 9.3.3, there are the results of long run coefficients of ARDL model. it is evident from the table that imports, improved sanitation services in rural areas, improved water services in rural and urban areas and literacy rate negatively influence the urban population growth while all other variables positively influencing the urban population growth in Pakistan.

Table - 9.3.3. Long run coefficients of ARDL(2, 0, 0, 1, 1, 1, 0, 0, 0, 1, 1) Dependent Variable Urban Population Growth

Variable	Coefficient	Std. Error	Prob.
EXPORT	0.000000	0.000000	0.2281
IMPORT	-0.000000	0.000000	0.0178
IMPROVED_SANITATION_R	-0.011302	0.011879	0.3517
IMPROVED_SANITATION_U	0.055043	0.024075	0.0322
IMPROVED_WATER_SOURCE__R	-0.012377	0.008468	0.1580
IMPROVED_WATER_SOURCE__U	-0.003831	0.034124	0.9116
MEAT_PRODUCTION	0.000000	0.000000	0.0000
MILK_PRODUCTION	0.000000	0.000000	0.3439
RURAL_POPULATION_GROWTH_	0.700124	0.081202	0.0000
SCHOOL_ENROLLMENT__PRIMA	-0.012280	0.003117	0.0007

Source: Estimation output

Causality analysis

As variables selected for the study are mixed series of I(0) and I(1), hence Toda Yamamoto granger causality test is suitable to checkout causality relationship of variables (Wolde-Rufael, 2005). The result of granger causality for ; export in Table - 9.4.1., showing that export in the sector is being granger caused by import in the sector, ISR, ISU, IWSU, MEATOUTPUT and PENROLL ; dairy import in Table - 9.4.2 , showing that export, ISR, ISU, IWSR, IWSU, UPG, RPG, MEATOUTPUT, MILKOUTPUT and PENROLL granger cause import ; milk production in Table - 9.4.3., exhibits that import, export, ISR, MEATOUTPUT and PENROLL granger cause MILKOUTPUT ; urban population growth in Table - 9.4.4., exhibits that AGRIVALUEADDED, ISR, ISU, IWSR, MEATPUTPUT, MILKOUTPUT and RPG granger cause UPG ; IWSU granger cause ISU and IWSR and UPG granger cause RPG.

Results of Toda Yamamoto Granger Causality

Table - 9.4.1. Dependent variable: EXPORT

Excluded	Chi-sq	df	Prob.
IMPORT	6.907398	2	0.0316
ISR	13.26104	2	0.0013
IWSU	6.004663	2	0.0497
MEAT_PRODUCTION	6.418724	2	0.0404
PENROLL	38.36726	2	0.0000

Source: Estimation output

Table - 9.4.2. Dependent variable: IMPORT

Excluded	Chi-sq	df	Prob.
AGRI_VALUE_ADDED	7.214817	2	0.0271
EXPORT	9.230068	2	0.0099
ISR	11.39303	2	0.0034
ISU	10.47832	2	0.0053
IWSR	20.01247	2	0.0000
IWSU	16.04722	2	0.0003
MEAT_PRODUCTION	10.22011	2	0.0060
MILK_PRODUCTION	13.27863	2	0.0013
PENROLL	39.62590	2	0.0000
RPG	11.42054	2	0.0033
UPG	12.67518	2	0.0018

Source: Estimation output

Table - 9.4.3. Dependent variable: MILK_PRODUCTION

Excluded	Chi-sq	df	Prob.
EXPORT	19.00747	2	0.0001
IMPORT	30.50679	2	0.0000
ISR	20.82143	2	0.0000
MEAT_PRODUCTION	85.85542	2	0.0000
PENROLL	49.90383	2	0.0000
UPG	4.451448	2	0.1080

Source: Estimation output

Table - 9.4.4. Dependent variable: UPG

Excluded	Chi-sq	df	Prob.
AGRI_VALUE_ADDED	12.12745	2	0.0023
ISR	26.88640	2	0.0000
ISU	10.46349	2	0.0053
IWSR	49.79201	2	0.0000
MEAT_PRODUCTION	128.0189	2	0.0000
MILK_PRODUCTION	6.965617	2	0.0307
RPG	166.3499	2	0.0000

Source: Estimation output

Above all results reflect that import of milk in food sector, and human developmental attributes along meat production affects the export of milk in the sector. All variables affected the milk import. Including attributes taken for human development along hygienic concentrated commodity (milk and meat) production in the country. In Pakistan milk supply to urban regions is significantly affected by improved sanitation services in rural areas, education, and foreign trade of milk and meat production. Urbanization is being greatly affected by improved sanitation in urban areas, population growth, improved sanitation and water services in rural areas along milk and meat production and other agricultural value added services. Interesting fact is that improvement in

water sources in urban regions affects both the rural and urban sectors in terms of water supply and sanitation services.

Conclusion

The increasing population in urban areas strongly influences the availability and access to necessities in both urban and rural regions of country. In order to meet the supply and demand gap of these necessities the wheel of economic production accelerates its pace. Hence, this strong association of economic growth and urban change has clearly shown off the needed pace of economic along socio-political reforms. The causality analysis and ARDL approach of the study support the idea that the increasing ratio of poor and dense population to the heterodox settlement bears the lack of sanitation, proper drainage, uncontaminated drinking water, education, health care facilities and law and order situation. Adequate and safe nutrition is an essential requirement for a productive and healthy life. Healthy population contributes more in development of a country. In order to raise the standard of living of rural regions, food sector especially meat and dairy industry could play its role effectively not only to respond nutritional requirements of growing population but to contribute in balance of trade if its potential will be utilized properly and effectively.

The structural transformation in the economy along effective nutrition and human developmental policies are serious notes among the many other socio-economic developmental strategies of country. In order to improve quality system with reduced environmental degradation, increased health standard and nutrition sustained delivery required more intelligent approaches in supply chain of hygienic concentrated food industry.

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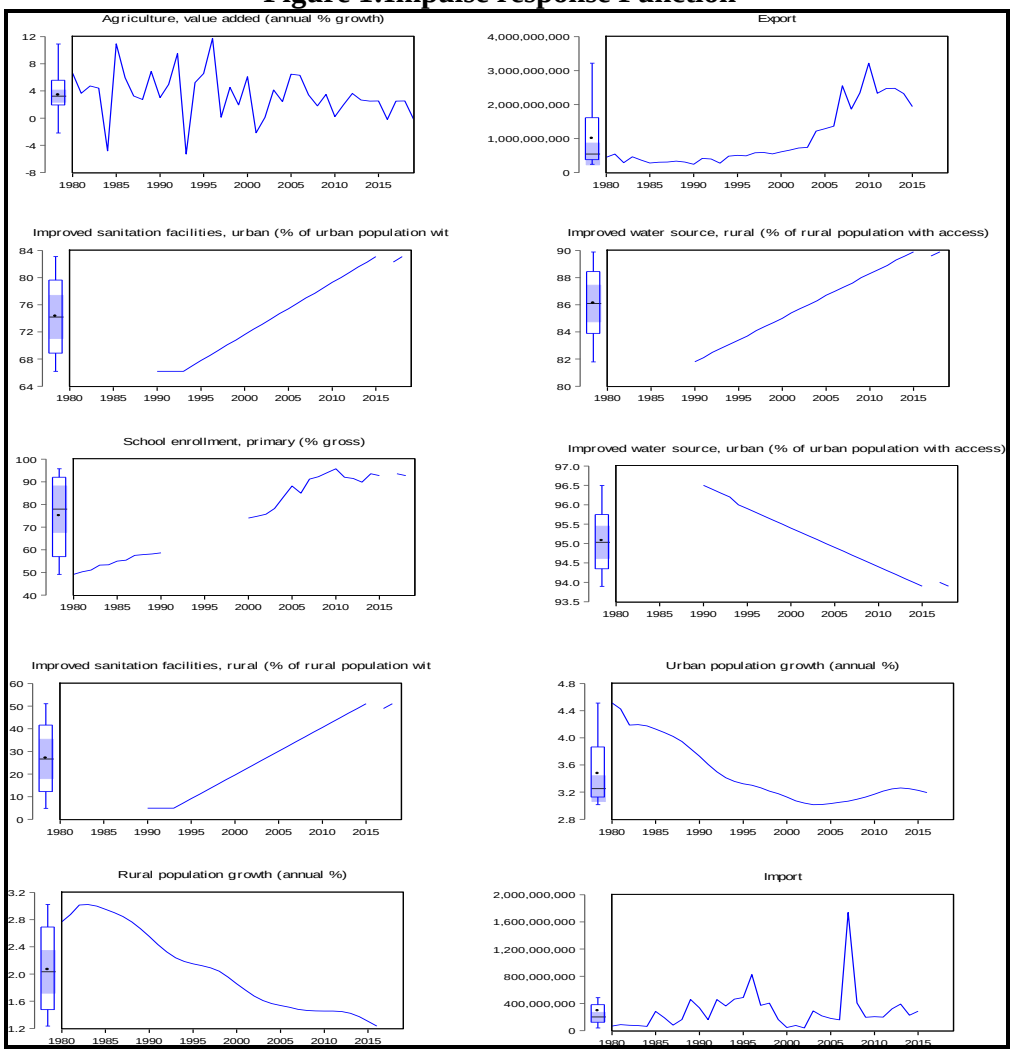
Appendix

Figure 1:Impulse response Function



Source: Estimation output