Impact of Urbanization on Life Expectancy in South Asian Countries

Mala Rani Das[*]

Abstract: Life expectancy is globally considered a vital health indicator and a significant weight of human development which is in fact, the key metric for the assessment of population health. Urbanization has got a longer impact on it. Life expectancy is seen higher if a nation is more urbanized. Nations with highest life expectancy are categorically urbanized whereas most of the nations with the lowest life expectancy are predominantly rural. The sole purpose of this study is to find out the effect of urbanization on life expectancy in five south Asian countries. Applying redundant Fixed Effect Model the study has identified that the fixed effect model is better than Pooled Model. Furthermore utilizing Hausman test the study also indicates that it's better to use FEM rather than REM one for five south Asian countries during the time 1969 to 2017. If urbanization increases by 1%, life expectancy increases by about 0.36% in the selected south Asian countries.

Keywords: life expectancy, urbanization, pooled regression, redundant fixed effect test, fixed effect model (FEM), random effect model (REM), hausman test.

Introduction

There have been many dramatic changes in the previous century throughout the world. Rapid expansion in urbanization and increase in life expectancy are two of those changes. Due to urbanization, agriculture faces decay and industrialization propels the habitats shifting from villages to cities and towns. Urbanization is not only an increase in the number of people living in towns or cities but also an expansion of urban areas and facilities. When people move from their pastoral homes to the cities and towns this is regarded as urbanization and most of the developing countries undergo such way of urbanization, especially when they start being industrialized. Cities and towns gradually become hubs of business and culture, education and healthcare services increase then more people rush out of the countryside to get access of those blessings of city life (www.conservationinstitute.org).Urbanization is significantly linked with economic and social transformations e.g. higher levels of literacy and quality education, better healthcare, lower fertility rate and higher child survival rate leading a longer life expectancy. Also the access to different services and opportunities for socio-cultural and political activities comparing to village life is much more available to the people in cities. In addition to this, for the density of population in urban areas it becomes easy for the authority and other service providers to keep the supply chain of essential goods and services smooth and cost effective. For example, the supply of core facilities as clean water and electricity can be achieved with less effort and cost in the cities. Renowned Schools and colleges, and the universities are preferably established in cities with a view to developing skilled human resources. A variety of subjects as well as training courses offering participants a vast choice for their future career are available in those institutions. People of all strata cohabit in towns and cities which propagates better

---

[*] Assistant Professor, Department of Economics, Jahangirnagar University, Savar, Dhaka-1342, Bangladesh. Email: mrdas@juniv.edu

understanding and symphony as well as helps kibble down various social and cultural obstacles. There is also advanced communication and transport systems in the cities. All of these benefits that *accrue* from urbanization have got positive impacts on life expectancy. Actually urbanization is an integral part of a developing society, but it has its opposite side as well. Rapid and unplanned urbanization promotes vulnerability to disaster and spells poor infrastructures such as inadequate housing, water and sanitation, transport and healthcare services which put a reverse impact on life expectancy. The relationship between urbanization and life expectancy is debatable. Researchers detected a notable distinction between life expectancy of those residing in the cities and those in other territory. The premier objective of this paper is to find out how does urbanization influence life expectancy, that is, to examine the mold of relationship between urbanization and life expectancy in south Asian countries. The study concentrate on the effect of urbanization on the life expectancy in five south Asian countries (Bangladesh, India, Nepal, Pakistan, and Sri Lanka.

South Asian Countries:

South Asia consists of eight countries termed as Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. Current south Asian population is 1.94 billion which is over 24% of total world population with a population density of 362.3 per km2 (938 people per mi). Total land area of south asia is 5,134,641 km^2 (1,982,496 sq mi). (https://en.wikipedia./South_Asia). Urban population for south Asian is 36.6 percent and median age is 27.6years.(www.worldometers.info). From 2000 to 2011 the urban population extended by 130 million leading to a rise in urbanization in south asia. Productivity associated with the increasing number of people living in towns or cities gives rise to better improvement/advancement in this region as reflected in the decline of absolute poverty and increase in GDP per capita. During 2000– 2012 per capita GDP increased by 56 percent and average growth expanded by 3.8 percent. Thereby Urbanization paves the way of transforming their economies to prosperity and livability. Eighty percent of GDP comes from manufacturing and service sector. In manufacturing and service sector firms and workers realize better productivity and impetus job creation that made structural transformation in south Asian economy. In the long run urbanization generate economic and social benefits that spread beyond urban boundaries. Thus standard of livings in rural and urban areas converges. However these positive sides can be overlooked by the pressures of urban population growth on infrastructure, basic services, housing, environment and others. South Asia is

known as the abode of most populated urban areas for the rest of the world. Urbanization in south asia has been messy and hidden as reflected in the wide presence of slums. About 130 million urban residents dwell in slums and are disproportionately bereaved of infrastructure, housing and access to basic services undermining prosperity and livability of south asia.(Ellis & Robert 2016).

Life Expectancy in South Asian Countries:

Country	Life Expectancy in Years			
	2018	2019	2020	2021
Bangladesh	72.15	72.43	72.72	73.00
India	69.27	69.50	69.73	69.96
Nepal	70.31	70.60	70.88	71.17
Pakistan	67.02	67.17	67.33	67.48
Sri Lanka	76.72	76.89	77.06	77.22

Source: (www.macrotrends.net)

In 2021 Life expectancy of Bangladesh is 73 years which was a 0.39% gradual increase from the year 2018. For India it was about 0.33% gradual increase from the year 2018. Finally for Nepal, Pakistan and Sri Lanka it was respectively 0.41%, 0.23% and 0.22% gradual increase from the year 2018 (www.macrotrends.net).

Bangladesh: After independence there was a unique health network huge change in health sector. Community clinics were established, union based health centers were introduced, district and upazila based hospitals were launched, moreover enacting medical colleges and hospitals there was a huge change in health sector. Woman empowerment along with social awareness has been identified as emphasizing factor for the enhancement of life expectancy (https://en.prothomalo.com/lifestyle).

India: Improved healthcare and low child mortality are the crucial factors for the advancement of life expectancy. Besides these factors, good sanitation and sewage system, clean drinking water, control of diseases (like smallpox, malaria, tuberculosis), immunization etc are the other distinguishing factors (www.hindustantimes.com).

Nepal: Lower mortality rate (decreasing child and maternal mortality), better access to health care, education, nutrition, immunization, women literacy, increase in per capita income etc are the crucial factors that longer the life expectancy for Nepal (http://archive.nepalitimes.com).

Pakistan: Improvement in health lengthened life expectancy of Pakistan (https://countryeconomy.com).

Sri Lanka: Sri Lanka has made impressive progress on its health indicators covering with a health system that involves nearly all Sri Lankans i.e with a strong public health care facilities. Furthermore poverty reduction, immunization, political stability accelerates longer lives for the people of Sri Lanka. (https://www.ha-asia.com/why-are-sri-lankans-living-longer-now)

Trend of the Variables:

The trend of life expectancy and urbanization from 1969 to 2017 in selected five south Asian countries have been present below and it is found that each country has increasing level of urbanization as well as life expectancy.
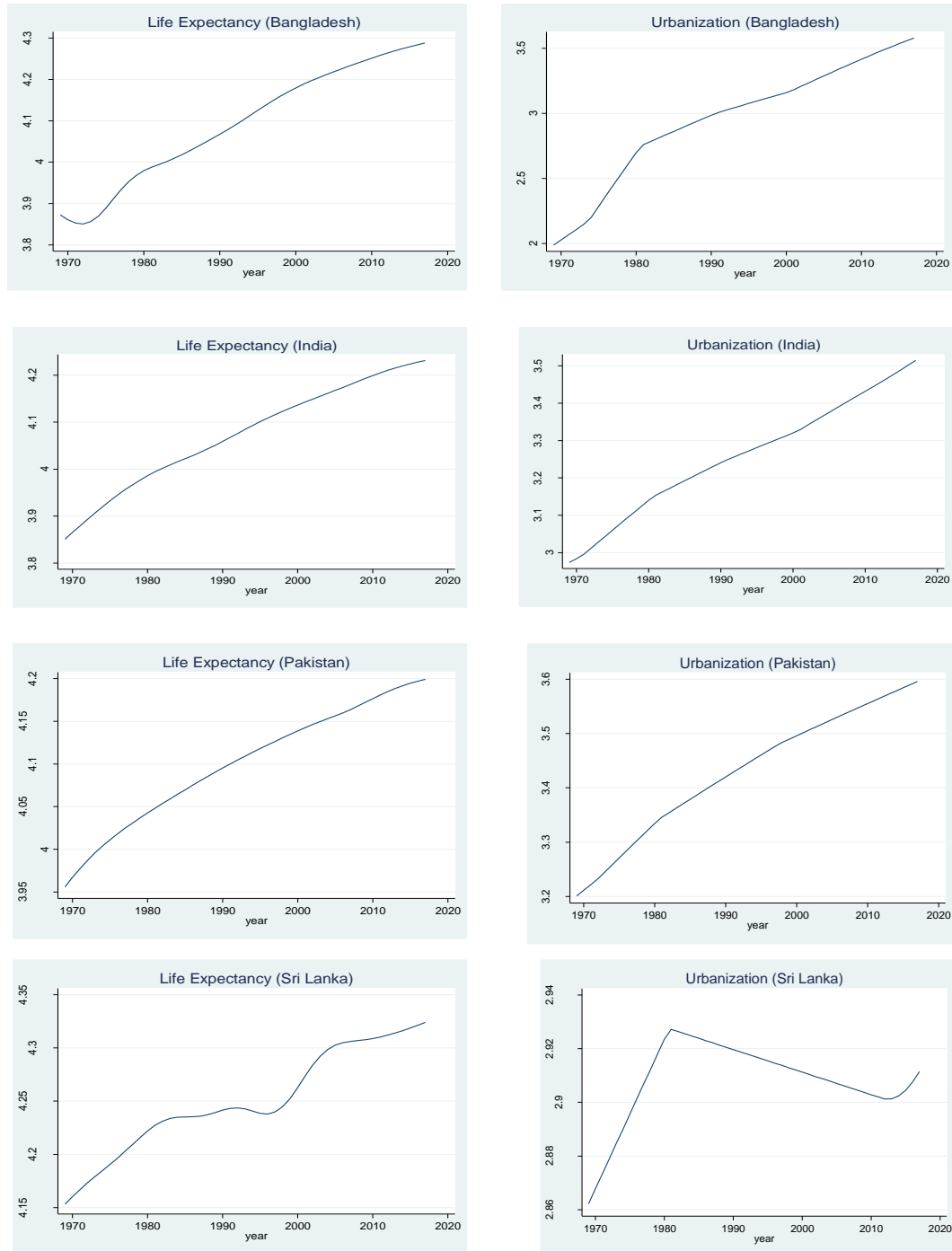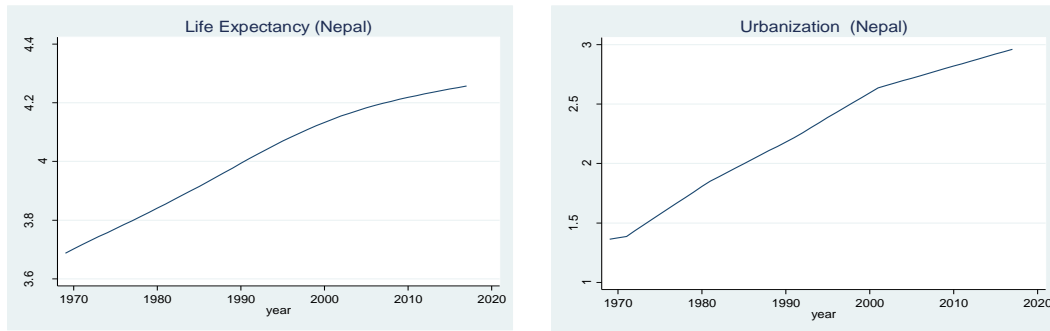
Source: author's calculation

Literature Review

This section covers some previous works related to urbanization and life expectancy. Ali and Audi (2019) concluded that food availability, environmental standards and urbanization had positive significant impact on average life expectancy in selected MENA countries whereas economic misery had negative significant impact on average life expectancy.

Applying (GARCH) model Nkalu and Edeme (2019) showed that environmental hazards decreases life expectancy in Africa, especially CO2 emission from solid fuel consumption contributed much in this regard. Where income and population growth (growth in manpower) increases life expectancy.

During 1861 to 1910 i.e. at the time of nineteenth and beginning of twentieth centuries, there was a high mortality in Europe and North America because of rapid urbanization and industrialization. Urbanization was treated as penalty, if this penalty were absent (Torres et al. 2019) showed Scottish life expectancy would be better.

Khan et al. (2016). Identified the low standard of livings, backward healthcare services, inefficient policy towards health sector, over population with terrorism, lack of standard education were the crucial factors that led to low life expectancy for developing countries. Researchers also clarified that just for the opposite reasons there is high life expectancy of the developed countries.

Using ARDL bounds testing approach Shahbaz et al.(2016) clarified a long run relationship between the variables that is the variables like health spending, urbanization and food supply increases life expectancy where economic misery and illiteracy decreases life expectancy.

Panahi & Aleemran (2016). disclosed that variables related to health expenditure and urbanization cause an increase in life expectancy in MENA countries

From 1980, compared to the rest of the world Brueckner (2016) traced negative but insignificant association between adult mortality and urbanization in sub-Saharan because of HIV pandemic. However before this pandemic there was negative significant association between adult mortality and urbanization.

Monsef and Mehrjardi (2015) identified unemployment and inflation as principal economic factors that had negative impact on life expectancy. At the same time, gross

capital formation and gross national income as another economic factor had positive impact. Moreover urbanization as socio-environmental factor had significant on life expectancy in the selected 136 countries.

Li and Liu (2015) revealed the existence of significant gap between rural and urban inhabitants in life expectancy.

Nnebue et al. (2014) expressed that the health of urban populations has changed because of urban aminities.

Using pooled-OLS, fixed effects first difference and long difference Bandyopadhyay* and Green (2013) Found negative correlation between crude death rates and urbanization. On the other hand use of Granger causality tests and instrumental variables suggested that this relationship was causal.

Idrovo (2011) pointed out that urbanization had positive impact on life expectancy along with factors like industrialization, environmental sustainability, ecological resilience which had the same impact on life expectancy. While Eckert & Kohler (2014) found a positive but insignificant association between urbanization and life expectancy. Urbanization rectify some health problem but degrade others in developing countries meaning that various health outcome is correlated with urbanization.

During the period 1978 to 2012 Apergis, N.& Li, J.(n.d.) wanted to examine the environmental sustainability in the face of change in population as well as their lifestyle using cointegration and instrumental variables methodologies and revealed that urbanisation, population changes and change in consumption patteren significantly contributed to the rise in carbon emissions in China. Reviewing the existing literature I find the gap of conducting this study as there are few works in showing the relationship between urbanization and life expectancy in South Asian countries.

Data and Methodology

To serve the purpose, the study mainly has used secondary data which has been attached in the annex. The necessary data regarding urbanization [represented by Urban population (% of total population)] and life expectancy [represented by Life expectancy at birth, total (years)] has been extracted from WDI of the World Bank from 1969 to 2017. In this study five south Asian countries has been taken into consideration - Bangladesh, India, Pakistan, Sri Lanka, and Nepal. The study is based on Panel Least Square Method i.e. it has followed the following tests- pooled regression, Redundant fixed effect test, Fixed effect model and Random effect method. Redundant fixed effect test has been applied to identify which model is better in between fixed effect model and pooled regression model. (Hunady, J.2016). Furthermore Hausman test has been prosecuted to detect whether fixed effect model is better than random effect model. The study has used statistical package Eviews 9.

Econometric model: pooling all the 245 observations (5 cross-section observation over the period 1969 to 2017) the required balanced panel equation can be written as-

$Y_{it} = \beta_1 + \beta_2 X_{it} + \varepsilon_{it}$ ……………(1)

$_{i==}$ 1 to 5 and t = 1,2, 3,4,5……49.

Where 'i' stands for the ith cross-sectional unit and 't' for the tth time period. Y represents lifeexpectancy , X represents urbanization and ε_{it} = error term.

Fixed effect: when 'individuality' of each country differ for each country but if it is assumed that slope coefficients are constant we can write equation (1) as follows:

$$Y_{it} = \beta_{1i} + \beta_2 X_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots(2)$$

Where, i = 1,2,3,4,5 and t = 1,2,……49.

This implies that the intercept may vary across individuals (here five countries), each countries intercept does not vary over time

Random effect: From equation (2) β_{1i} is treated as fixed, instead of this, if it is treated as random variable with mean value of β_1 and the intercept value for an individual country can be written as

$$\beta_{1i} = \beta_1 + u_i \; ; \quad i = 1,2\ldots.5$$

Here u_i is a random stochastic term. Five countries lie in a common mean value for the intercept (β_1) and individual variations in the intercept values of each country are counted in the stochastic term u_i .

$$Y_{it} = \beta_{1i} + \beta_2 X_{it} + u_i + \varepsilon_{it}$$

$$Y_{it} = \beta_{1i} + \beta_2 X_{it} + \lambda_{it} \ldots\ldots\ldots\ldots\ldots.(3)$$

Where, $\lambda_{it} = u_i + \varepsilon_{it}$

 (Gujarati: Basic Econometrics, Fourth Edition, ch 16)

Result Discussion

Pooled Regression:

Dependent variable: lnlifeexp, Sample: 1969 to 2017, period included: 49, cross-section included: 5, total panel (balanced) observations: 245.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.601605	0.042745	84.25698	0.0000
LNURBAN	0.170314	0.014230	11.96829	0.0000

R-squared	0.370857	Mean dependent var	4.105824
Adjusted R-squared	0.368268	S.D. dependent var	0.142387
S.E. of regression	0.113171	Akaike info criterion	-1.511698
Sum squared resid	3.112282	Schwarz criterion	-1.483117
Log likelihood	187.1831	Hannan-Quinn criter.	-1.500189
F-statistic	143.2399	Durbin-Watson stat	0.002551
Prob(F-statistic)	0.000000		

Although pooled regression indicates that urbanization has positive and significant impact on life expectancy but the model contains poor R-squared and adjusted R-squared value. However Redundant fixed effects test suggest that fixed effect model is better than pooled regression.

Redundant fixed effects- likelihood ratio

Null: Pooled OLS is better

Alt: fixed effect model is better

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	456.681712	(4,239)	0.0000
Cross-section Chi-square	528.409600	4	0.0000

As p value is significant, we can reject null hypothesis and accept alternative hypothesis meaning that fixed effect model is better.

Fixed Effect :

Method: Panel Least Square

Sample: 1969 2017

Periods included: 49

Cross-sections included: 5

Total panel (balanced) observations: 245

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.037543	0.023713	128.0955	0.0000
LNURBAN	0.360842	0.007966	45.29861	0.0000

Effects Specification		

Cross-section fixed (dummy variables)

R-squared	0.927210	Mean dependent var	4.105824
Adjusted R-squared	0.925687	S.D. dependent var	0.142387
S.E. of regression	0.038815	Akaike info criterion	-3.635819
Sum squared resid	0.360084	Schwarz criterion	-3.550074
Log likelihood	451.3879	Hannan-Quinn criter.	-3.601290
F-statistic	608.8800	Durbin-Watson stat	0.015941
Prob(F-statistic)	0.000000		

Following fixed effect the result shows that urbanization has positive impact on life expectancy at 1% level of significance. That is if urbanization increases by 1% then life expectancy increases by about 0.36%.

Random Effect:

Method: Panel EGLS (Cross-section random effects)

Sample: 1969 2017

Periods included: 49

Cross-sections included: 5

Total panel (balanced) observations: 245

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.042465	0.049195	61.84520	0.0000
LNURBAN	0.359179	0.007944	45.21328	0.0000

Effects Specification		S.D.	Rho
Cross-section random		0.096459	0.8606
Idiosyncratic random		0.038815	0.1394

Weighted Statistics			
R-squared	0.891034	Mean dependent var	0.235639
Adjusted R-squared	0.890586	S.D. dependent var	0.119022
S.E. of regression	0.039370	Sum squared resid	0.376645
F-statistic	1987.063	Durbin-Watson stat	0.015170
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	-0.085191	Mean dependent var	4.105824
Sum squared resid	5.368292	Durbin-Watson stat	0.001064

Following the random effect the result shows that urbanization has positive impact on life expectancy at 1% level of significance. That is if urbanization increases by 1% then life expectancy increases by about 0.35%.

Hausman Test: has been used to justify which method is appropriate.

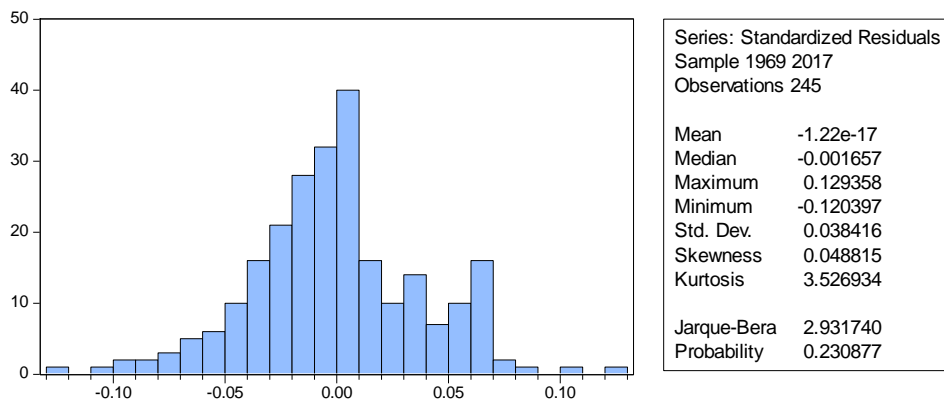Null: random effect model is appropriate

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.992348	1	0.0047

Following the Hausman test result shows that the null hypothesis is rejected where the chi-square statistic value is 7.992348 and the degree of freedom is 1 and the probability is less than 5%, so there is no random effect i.e. there exist fixed effect in the long run. That means following Hausman test it is also recognized that fixed effect model is appropriate in this study.

Normality test:

Following Jarque-Bera test, it is clear that there is normality in the data set.

Series: Standardized Residuals Sample 1969 2017 Observations 245	
Mean	-1.22e-17
Median	-0.001657
Maximum	0.129358
Minimum	-0.120397
Std. Dev.	0.038416
Skewness	0.048815
Kurtosis	3.526934
Jarque-Bera	2.931740
Probability	0.230877

Residual Cross-Section Dependence Test:

Null: No cross-section dependence (correlation) in residuals.

Test	Statistic	Prob.
Pesaran CD	2.642363	0.0082

As the p value is lower than 5%, we can reject null hypothesis at 1% significance level which exhibits that there exist cross sectional dependence in data set.

Conclusion and Recommendations

Rapid increase in the level of urbanization in developing countries leads to remarkable changes. Gradual increase in life expectancy is one of them. This study focuses on pointing out the key effects of urbanization on life expectancy in five south Asian countries. Average life expectancy of south Asian countries is 67 years. South Asia has carried out fascinating progress in health outcomes in last few decades. Although spending or allocation rate in health sector are not the same but each country has increased their expenditure in health sector.(chin et al. 2017). Level of urbanization has

increased in south Asian countries and health status has also improved thereby life expectancy in south Asian countries has made progress as well. So fixed effect model here in this case is better than random effect model. Applying redundant fixed effect test the study has identified that fixed effect model is better than pooled model. (Hunady, J.2016). Furthermore utilizing Hausman test the study suggest that fixed effect model is also better than random effect model for five south Asian countries. If urbanization increases by 1%, life expectancy rises by about 0.36% in the aforesaid south Asian countries. Actually urban people avail many opportunities compared to those living in the rural areas especially considering the availability of resources that support good health. With better infrastructure, quality healthcare service, advanced communication and higher educational facilities -urbanization is associated with socio-economic development that provide opportunities good enough to achieve sound health (http://www.brinknews.com). So, as per this study it is identified that urbanization has got positive impact on life expectancy in five south Asian countries. Life expectancy is affected by many factors like expenditure on health, availability of food, economic misery, literacy, income, urbanization and the like. One of the limitations of this study is that it has only considered urbanization that affect life expectancy. Life is, no doubt, invaluable and so necessary actions should be taken to obtain better health facilities and other things to have higher life expectancy not only in towns and cities but also in rural areas. Especially government of the respective countries should spend more on health sector as the more govt. spend on health, the longer people live. Govt. of selected countries should invest more on social sector advancement through social safety net programs, educational facilities, sanitation etc. urbanization has direct or indirect influence on life expectancy through rendering various urban facilities, so govt. of each country should be more careful in promoting urban infrastructure as well.

References

Ali, A., & Audi, M. (2019). Economic Misery, Urbanization and Life Expectancy in MENA Nations: An Empirical Analysis.

Apergis, N.& Li, J.(n.d.) Urbanization and lifestyle trends in China: Implications for the carbon emissions problem. Retrieved from file:///C:/Users/HP/Downloads/Documents/life%20exp%20and%20urban/EAAERE2015-91.pdf

Bandyopadhyay, S., & Green, E. (2013, November). Urbanization and mortality decline. In *Population Seminar Series and Oxford University (CSAE)*.

Brueckner, M. (2016). Mortality and urbanization: An African tragedy.

Chin, B., Rani, M., & Bonu, S. (2017). South Asia, Health Systems of.

Eckert, S., & Kohler, S. (2014). Urbanization and health in developing countries: a systematic review. *World Health Popul*, *15*(1), 7-20.

Ellis,P and Robert, M (2016). Leveraging Urbanization in South Asia : Managing Spatial Transformation for Prosperity and Livability. Washington, DC: World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/22549 License: CC BY 3.0 IGO.

Gujarati: Basic Econometrics, Fourth Edition, CH 16

Hunady, Jan. (2016). Re: What is the key distinction between pooled OLS regression model, Fixed Effect or LSDV model and Random Effect model with respect to panel data?. Retrieved from: https://www.researchgate.net/post/What_is_the_key_distinction_between_

pooled_OLS_regression_model_Fixed_Effect_or_LSDV_model_and_Random_Effect_mo del_with_respect_to_panel_data/56a34e4c7dfbf968808b4570/citation/download.

https://www.conservationinstitute.org/what-is-urbanization, Accessed date: 7/8/19

https://www.hindustantimes.com/analysis/what-is-behind-indians-life-expectancy-going-up/story-MLGeeOddNWhkHYu7K9CtVL.html, accessed date:2/7/2021

https://www.macrotrends.net/countries/BGD/bangladesh/life-expectancy, accessed date: 2/7/2021.

https://www.macrotrends.net/countries/IND/india/life-expectancy, accessed date 14/7/2021

https://en.prothomalo.com/lifestyle/Bangladesh-life-expectancy-increases-by-24-yrs,   accessed date: 2/7/2021

https://www.macrotrends.net/countries/PAK/pakistan/life-expectancy, accessed date: 2/7/2021

https://countryeconomy.com/demography/life-expectancy/pakistan, accessed date: 23/8/19

https://www.macrotrends.net/countries/LKA/sri-lanka/life-expectancy

https://www.ha-asia.com/why-are-sri-lankans-living-longer-now/, accessed date:2/7/2021

https://www.macrotrends.net/countries/NPL/nepal/life-expectancy, accessed date: 2/7/2021

https://archive.nepalitimes.com/article/from-nepali-press/Nepalis-are-living-longer,2027, accessed date: 2/7/2021

http://www.brinknews.com/health-and-safety-in-the-age-of-the-megacity/, accessed date: 3/7/2021

https://www.worldometers.info/world-population/southern-asia-population/,accessed date:3/12/2021

https://en.wikipedia.org/wiki/South_Asia, accessed date: 3/12/2021

Idrovo, A. J. (2011). Physical environment and life expectancy at birth in Mexico: an eco-epidemiological study. *Cadernos de saude publica*, *27*, 1175-1184.

Khan, A; Khan, D. S. & Khan, M. (2016). Factors effecting life expectency in developed and developing countries of the world (An approach to available literature). *International Journal of Yoga, Physiotherapy and Physical Education, 1(1), 04-06.*

Li, J., Bateman, H., & Liu, K. (2015, August). Regional Differences in Life Expectancy in Mainland, China. In *Actuaries Institute. Astin, AFIR/ERM and IACA Colloquia* (pp. 23-27).

Monsef, A., & Mehrjardi, A. S. (2015). Determinants of life expectancy: a panel data approach. *Asian Economic and Financial Review*, *5*(11), 1251.

Nkalu, C. N., & Edeme, R. K. (2019). Environmental Hazards and Life Expectancy in Africa: Evidence From GARCH Model. *SAGE Open*, *9*(1), 2158244019830500.

Nnebue, C. C., nnebue, Q.S., & Adinma, E. (2014) Urbanization and health -an overview.
Retrieved from https://www.researchgate.net/publication/306254159_Urbanization_and_health_-an_overview
Panahi, H., & Aleemran, S. A. (2016). The Effect of inflation, health expenditure and urbanization on life expectancy in the Middle East and North Africa Countries (MENA). *Payesh (Health Monitor)*, *15*(4), 346-351.

Shahbaz, M., Loganathan, N., Mujahid, N., Ali, A., & Nawaz, A. (2016). Determinants of life expectancy and its prospects under the role of economic misery: A case of Pakistan. *Social Indicators Research*, *126*(3), 1299-1316.

Torres, C., Canudas-Romo, V., & Oeppen, J. (2019). The contribution of urbanization to changes in life expectancy in Scotland, 1861–1910. *Population studies*, *73*(3), 387-404.

ANNEX: data set

Annex:

code	country	year	lnlifeexp	lnurban
1	BD	1969	3.872242	1.987326
1	BD	1970	3.861214	2.027227
1	BD	1971	3.853037	2.066989
1	BD	1972	3.850807	2.106692
1	BD	1973	3.85632	2.146282
1	BD	1974	3.869637	2.200995
1	BD	1975	3.889061	2.286049
1	BD	1976	3.911643	2.370337
1	BD	1977	3.933745	2.453588
1	BD	1978	3.952819	2.535996
1	BD	1979	3.967987	2.617469
1	BD	1980	3.97927	2.698067
1	BD	1981	3.987446	2.760073
1	BD	1982	3.994377	2.785752
1	BD	1983	4.001461	2.811268
1	BD	1984	4.009186	2.836737
1	BD	1985	4.017787	2.861972
1	BD	1986	4.027171	2.887089
1	BD	1987	4.036963	2.912079
1	BD	1988	4.046903	2.93699
1	BD	1989	4.056989	2.961658
1	BD	1990	4.067333	2.986237
1	BD	1991	4.078097	3.0085
1	BD	1992	4.089332	3.025776
1	BD	1993	4.100989	3.042902
1	BD	1994	4.112954	3.060021
1	BD	1995	4.125003	3.07699
1	BD	1996	4.136925	3.093947
1	BD	1997	4.148485	3.110756
1	BD	1998	4.159477	3.12755
1	BD	1999	4.169792	3.144238
1	BD	2000	4.17936	3.160823
1	BD	2001	4.188184	3.182046
1	BD	2002	4.19642	3.209068
1	BD	2003	4.20417	3.23589
1	BD	2004	4.211535	3.262472
1	BD	2005	4.218581	3.288738
1	BD	2006	4.225417	3.314804
1	BD	2007	4.23209	3.340633
1	BD	2008	4.238618	3.366192
1	BD	2009	4.245046	3.39145
1	BD	2010	4.25132	3.41648
1	BD	2011	4.257398	3.441219
1	BD	2012	4.263229	3.465517
1	BD	2013	4.268732	3.489269
1	BD	2014	4.273926	3.51259
1	BD	2015	4.278817	3.535379
1	BD	2016	4.283435	3.557717
1	BD	2017	4.287826	3.579567
2	India	1969	3.851062	2.973589
2	India	1970	3.865372	2.98366
2	India	1971	3.879479	2.995282
2	India	1972	3.89335	3.011655
2	India	1973	3.90693	3.027861
2	India	1974	3.92009	3.044094
2	India	1975	3.932747	3.060208
2	India	1976	3.944781	3.076252
2	India	1977	3.956174	3.092224
2	India	1978	3.966871	3.108123
2	India	1979	3.976855	3.12395
2	India	1980	3.986054	3.139746
2	India	1981	3.994432	3.153462
2	India	1982	4.002065	3.163236
2	India	1983	4.009132	3.172999
2	India	1984	4.015806	3.182751
2	India	1985	4.022311	3.19245
2	India	1986	4.028935	3.202137
2	India	1987	4.035815	3.211771
2	India	1988	4.043104	3.221393
2	India	1989	4.050828	3.231002
2	India	1990	4.058976	3.24052
2	India	1991	4.06747	3.249521
2	India	1992	4.076096	3.257481
2	India	1993	4.084648	3.265416
2	India	1994	4.093027	3.273326
2	India	1995	4.101122	3.281174
2	India	1996	4.108855	3.289036
2	India	1997	4.11622	3.296873
2	India	1998	4.123272	3.304686
2	India	1999	4.130017	3.312475
2	India	2000	4.136478	3.32024
2	India	2001	4.14277	3.329272
2	India	2002	4.148959	3.340881
2	India	2003	4.15511	3.352427
2	India	2004	4.161286	3.363945
2	India	2005	4.167533	3.375367
2	India	2006	4.173864	3.386727
2	India	2007	4.180262	3.398059
2	India	2008	4.18665	3.409364
2	India	2009	4.192967	3.420575
2	India	2010	4.19908	3.431727
2	India	2011	4.204887	3.442851
2	India	2012	4.210304	3.454232
2	India	2013	4.215293	3.46583
2	India	2014	4.219816	3.477664

2	India	2015	4.223939	3.489727	3	Pakistan	2015	4.194522	3.584241
2	India	2016	4.227709	3.502008	3	Pakistan	2016	4.196916	3.589998
2	India	2017	4.231247	3.514526	3	Pakistan	2017	4.19914	3.595722
3	Pakistan	1969	3.955944	3.200793	4	sri lanka	1969	4.153148	2.862201
3	Pakistan	1970	3.967212	3.211529	4	sri lanka	1970	4.160398	2.867785
3	Pakistan	1971	3.977605	3.22223	4	sri lanka	1971	4.167099	2.873395
3	Pakistan	1972	3.987149	3.232897	4	sri lanka	1972	4.173371	2.878974
3	Pakistan	1973	3.995923	3.245362	4	sri lanka	1973	4.179314	2.884577
3	Pakistan	1974	4.003964	3.258289	4	sri lanka	1974	4.185008	2.89015
3	Pakistan	1975	4.011398	3.271127	4	sri lanka	1975	4.190669	2.895746
3	Pakistan	1976	4.018291	3.283952	4	sri lanka	1976	4.196585	2.901312
3	Pakistan	1977	4.024744	3.296688	4	sri lanka	1977	4.20281	2.906846
3	Pakistan	1978	4.03089	3.309374	4	sri lanka	1978	4.209279	2.912405
3	Pakistan	1979	4.036804	3.321974	4	sri lanka	1979	4.215839	2.917987
3	Pakistan	1980	4.04256	3.334559	4	sri lanka	1980	4.222019	2.923538
3	Pakistan	1981	4.048213	3.345685	4	sri lanka	1981	4.227257	2.927239
3	Pakistan	1982	4.053748	3.354071	4	sri lanka	1982	4.231218	2.926382
3	Pakistan	1983	4.059166	3.362422	4	sri lanka	1983	4.233744	2.925524
3	Pakistan	1984	4.064521	3.370773	4	sri lanka	1984	4.234947	2.92472
3	Pakistan	1985	4.069796	3.379088	4	sri lanka	1985	4.235251	2.92386
3	Pakistan	1986	4.075026	3.387369	4	sri lanka	1986	4.235352	2.923
3	Pakistan	1987	4.080195	3.395615	4	sri lanka	1987	4.235859	2.922193
3	Pakistan	1988	4.08527	3.40386	4	sri lanka	1988	4.237131	2.921332
3	Pakistan	1989	4.09027	3.412038	4	sri lanka	1989	4.239181	2.920524
3	Pakistan	1990	4.095178	3.420215	4	sri lanka	1990	4.241485	2.919661
3	Pakistan	1991	4.099962	3.428358	4	sri lanka	1991	4.243167	2.918851
3	Pakistan	1992	4.104641	3.436468	4	sri lanka	1992	4.243626	2.917987
3	Pakistan	1993	4.1092	3.444544	4	sri lanka	1993	4.242664	2.917176
3	Pakistan	1994	4.113641	3.452587	4	sri lanka	1994	4.240636	2.91631
3	Pakistan	1995	4.117996	3.460598	4	sri lanka	1995	4.238589	2.915498
3	Pakistan	1996	4.122284	3.468607	4	sri lanka	1996	4.237969	2.914631
3	Pakistan	1997	4.126505	3.476552	4	sri lanka	1997	4.239872	2.913817
3	Pakistan	1998	4.130676	3.483852	4	sri lanka	1998	4.244831	2.912948
3	Pakistan	1999	4.134782	3.48991	4	sri lanka	1999	4.252715	2.912133
3	Pakistan	2000	4.138792	3.495962	4	sri lanka	2000	4.262708	2.911263
3	Pakistan	2001	4.142611	3.501947	4	sri lanka	2001	4.273536	2.910447
3	Pakistan	2002	4.146241	3.507957	4	sri lanka	2002	4.283738	2.909575
3	Pakistan	2003	4.149685	3.513931	4	sri lanka	2003	4.292211	2.908757
3	Pakistan	2004	4.153006	3.519899	4	sri lanka	2004	4.29855	2.907939
3	Pakistan	2005	4.156317	3.525831	4	sri lanka	2005	4.302659	2.907065
3	Pakistan	2006	4.15982	3.531758	4	sri lanka	2006	4.304862	2.906245
3	Pakistan	2007	4.163606	3.537679	4	sri lanka	2007	4.306009	2.90537
3	Pakistan	2008	4.167672	3.543565	4	sri lanka	2008	4.306858	2.904549
3	Pakistan	2009	4.172	3.549416	4	sri lanka	2009	4.307707	2.903727
3	Pakistan	2010	4.176447	3.555262	4	sri lanka	2010	4.308811	2.902849
3	Pakistan	2011	4.180813	3.561103	4	sri lanka	2011	4.310289	2.902026
3	Pakistan	2012	4.184886	3.566938	4	sri lanka	2012	4.312047	2.901202
3	Pakistan	2013	4.188548	3.572711	4	sri lanka	2013	4.314029	2.901312
3	Pakistan	2014	4.191759	3.578478	4	sri lanka	2014	4.316234	2.90241

4	sri lanka	2015	4.318661	2.904494		5	Nepal	2015	4.24688	2.920847
4	sri lanka	2016	4.321268	2.907502		5	Nepal	2016	4.252103	2.941382
4	sri lanka	2017	4.323934	2.911481		5	Nepal	2017	4.257087	2.961969
5	Nepal	1969	3.687529	1.363793						
5	Nepal	1970	3.702388	1.375233						
5	Nepal	1971	3.716713	1.387544						
5	Nepal	1972	3.730645	1.434608						
5	Nepal	1973	3.744314	1.481377						
5	Nepal	1974	3.757822	1.528228						
5	Nepal	1975	3.771243	1.574846						
5	Nepal	1976	3.784712	1.621564						
5	Nepal	1977	3.798339	1.668084						
5	Nepal	1978	3.812203	1.714338						
5	Nepal	1979	3.826356	1.760613						
5	Nepal	1980	3.840785	1.806812						
5	Nepal	1981	3.855431	1.852541						
5	Nepal	1982	3.870242	1.889491						
5	Nepal	1983	3.885124	1.92629						
5	Nepal	1984	3.900112	1.963048						
5	Nepal	1985	3.915258	1.999586						
5	Nepal	1986	3.930609	2.036012						
5	Nepal	1987	3.946193	2.072417						
5	Nepal	1988	3.961974	2.108758						
5	Nepal	1989	3.977867	2.144878						
5	Nepal	1990	3.993787	2.180869						
5	Nepal	1991	4.009603	2.217027						
5	Nepal	1992	4.025209	2.259886						
5	Nepal	1993	4.040451	2.302485						
5	Nepal	1994	4.05524	2.344974						
5	Nepal	1995	4.069522	2.387202						
5	Nepal	1996	4.0833	2.429218						
5	Nepal	1997	4.096575	2.470977						
5	Nepal	1998	4.109381	2.512522						
5	Nepal	1999	4.121652	2.553888						
5	Nepal	2000	4.133341	2.595031						
5	Nepal	2001	4.144435	2.635264						
5	Nepal	2002	4.154891	2.656055						
5	Nepal	2003	4.164741	2.676766						
5	Nepal	2004	4.173972	2.697394						
5	Nepal	2005	4.182615	2.717935						
5	Nepal	2006	4.190654	2.738385						
5	Nepal	2007	4.198179	2.758807						
5	Nepal	2008	4.20523	2.77913						
5	Nepal	2009	4.211891	2.799352						
5	Nepal	2010	4.218242	2.819472						
5	Nepal	2011	4.224334	2.839546						
5	Nepal	2012	4.230215	2.859798						
5	Nepal	2013	4.235931	2.880041						
5	Nepal	2014	4.241485	2.900432						