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Role of Infrastructure, Financial Development, and Urban Population in Determining Economic Growth: An Analysis in Asian Countries

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Abstract: *The purpose of this study is to look into the role of infrastructure, financial development (FD), and urban population (UP) in the economic growth (GDP) of a few Asian countries. The research used panel data methodology, using time spans from 2003 to 2019. GDP is used as the dependent variable, and the education index, health index, financial development, and urban population are used as independent variables in this study. The authors have used the random effect technique to highlight the role of infrastructure and financial development in the growth potential of Asian economies. The study findings indicated that health and education, and financial development with urban population have enhanced economic growth in these selected Asian countries. It is suggested that Government must play a major role in enhancing more and free-of-cost education in society and must focus on improving the infrastructure of society for further growth and development.*

Key Words: Infrastructure, Financial Development, and Economic Growth

JEL Classification:

Introduction

Infrastructural development is a major cause of the economic development of economies. The infrastructural conveniences have improved the lives of the people and helped to enhance the efficiency of people involved in production processes. It comprises public-sector services. The social infrastructure consists of education, primary health care, and banking facilities. *GDP* is also determined by social infrastructure, which is critical for future development. Social infrastructure, such as health and education, is a social instrument helpful in enhancing the productivity of nations.

The expansion of knowledge is a significant contributor to the development of the economy. Education can be thought of as an investment in society and has the potential to increase human capital. Any economy that wishes to foster the growth and development of its people resources would benefit from

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increased investments in social infrastructure. All of this might eventually result in a boost to economic development.

The importance of human capital in an economy's growth and development processes has been the subject of a significant amount of research in the field of endogenous growth theory. Human capital is defined as educational stock, which encompasses technology and research and development, according to Lucas (1988) and Romer (1990). Both of these studies demonstrated that human capital has a positive externality on the output of capital and that the accumulation of human capital has a positive impact on economic progress and overall well-being. Human capital was defined by Lucas (1988) and Romer (1990) as educational assets that included technology and research and development. Both demonstrated that human capital is a beneficial externality on capital output and that the accumulation of it has a favourable impact, both on economic development and on the health of the economy. To put it simply, human capital is the stock of knowledge, capability, and strength that an organization possesses that gives it the aptitude to carry out the responsibilities of its employees in a manner that is more efficient.

On the other hand, human capital development refers to the process of acquiring and improving an individual's ability, health, and practice, all of which are essential for economic development. The state of one's health plays a significant role in the process of accumulating human capital, and this role is significantly influenced by the efficacy of the educational system. For instance, a population that is in excellent health may be simpler to educate, and individuals may also be skilled at accumulating human capital.

Cities have been responsible for more than 80 per cent of the country's economic expansion. Taking all of this into consideration, urbanization has assisted in the achievement of sustainable development by fostering an increase in production and modernization. The transformative impact that urbanization has on the expansion and development of economies cannot be overstated. The rise in urbanization, on the other hand, has resulted in a whole host of problems, including a lack of housing and job possibilities as well as inadequate transportation infrastructure to support the expanding population. In addition to this, the amounts of consumption in urban areas have risen as a direct result of the rise in the urban population.

The development of the financial sector also plays a significant part in the expansion of the economy. It has been a significant contributor to both progress and development. It is beneficial to the development processes of countries. It is very useful in reducing the incidence of poverty and evening out the distribution of revenue in economies. As a consequence of this, people, specifically those who are financially disadvantaged, might be able to qualify for financial assistance. In addition to this, it encourages investments and results in increased production, both of which may contribute to high earnings for people living in economies that are still developing.

Statement of the problem

Throughout the years, numerous conversations have been had about how critically important it is to invest in both financial development and physical infrastructure. As it progresses, it helps underdeveloped countries around the world. In spite of significant efforts, the rate of economic development in some countries has remained unchanged. Current research examines the role that improvements in infrastructure and *FD* play in fostering such *GDP*. The focus of this research is on such a problem. In the present study, the factors that boost *GDP* are the primary emphasis.

Research objectives

The current research looks into how financial development and infrastructure help Asian countries' economic growth.

The major objectives are given below.

It examines the impact of financial development on economic growth in Asian countries.

It analyses the influence of education on economic growth in selected Asian countries.

It examines how urban population and a health index enhance the economic growth of Asian countries.

Research Questions

What is the impact of financial development on economic growth in selected Asian countries?

How do education and health enhance the growth potential of Asian countries?

Does urban population increase the lead to increased economic growth in selected Asian countries?

Significance of the Study

There has been much focus on how trade openness, foreign direct investment and other variables affect *the GDP* of developing countries. But current study shows the important role of social infrastructure such as health, education and *FD* in *the GDP* of selected Asian countries which is very necessary for the development and welfare of the economies.

Research Hypothesis

The main hypotheses of existing research are as follows.

H1: There is a positive relationship between financial development and economic growth.

H2: Higher the education level index, the higher the economic growth

H3: There is a positive link between the health index and economic growth.

H4: There is a positive relationship between urban population and economic growth.

Much of the work has been done on *GDP*. But, the current study highlights how *GDP* is enhanced with the help of social infrastructure such as education and health index and *FD* in selected Asian countries.

The structure of the study is given below. Section II shows the literature review. Section III reveals data and methodology. Section IV highlights the results and discussion. However, section V shows the conclusion.

Literature Review

In this section, we will go over a significant portion of the research that demonstrates a connection between the major factors that contribute to economic development.

Education has been a significant factor in determining the extent to which underdeveloped countries can realize their full economic potential. Taking this into consideration, Hanushek and Kimbo (2000) analyzed the educational standard of 38 different economies using various indices. It was discovered by using data spanning from 1965 to 1999 that the standard of education has contributed to the increased *GDP* of countries.

The standard of education has been shown to play a very significant role in the development of many different economies. Dessus (2001) compiled statistics spanning the years 1960 to 1990 from 83 different economies. They came to the conclusion that the quality of education, the amount of money spent by governments on education, and access to educational services all have a beneficial impact on *GDP* in 83 different countries.

Zahra et al. (2003) used data ranging from 1985 to 2003 in order to investigate how the infrastructure of telecommunications impacted the growth of the economy. The fixed effect findings demonstrated that growth was increased in the telecommunications industry. According to the conclusions, additional capital should be allocated toward the expansion of telecommunications infrastructure.

Eryigit et al. (2010) conducted research to investigate the relationship between Turkey's *GDP*, and government spending on the military, health care, and educational

programs. In order to accomplish this, they centred their attention on the cointegration technique while collecting data from 1950 to 2005. According to the findings of the research, increases in spending on education and healthcare have contributed to economic expansion.

Zhang et al. (2012) highlighted the importance of *FD* in *GDP* by using data from 286 from 2001 to 2006 and focusing on the period from 2001 to 2006. The findings of the GMM suggest that the financial industry is to blame for the slowed growth of the economy. The research recommended some changes to the financial system. Chia-Guan Keh, 2022, examines the relationship between financial sector development and *GDP* in Malaysia from 1980 to 2017 using a nonlinear autoregressive distributed lags estimation technique. The research findings show that the development of the financial sector is critical to the country's *GDP*.

Prior research investigated the connection between the growth of the financial industry and overall economic expansion before the Global Financial Crisis. Similarly, Nasir et al. (2015) investigate the relationship between the expansion of the financial industry and the expansion of the economy. The findings of the research indicate that there is a positive and significant relationship between the growth of the financial industry and the relationship. Shahbaz et al. (2022), utilizing the ARDL estimation technique, investigate the relationship between the development of the financial sector and the expansion of the economy, covering the time period from 1971 to 2016. According to the findings, the development of Singapore's financial industry has a positive relationship with and contributes to the country's *GDP*, whereas this relationship has a negative impact on Finland's *GDP*.

The contribution of human capital to *GDP* has been the primary emphasis of Jaiyeoba's (2015) research. They used the Johansen cointegration method in conjunction with the ordinary least squares approach to analyze the data that they collected from 1982 to 2011. According to the conclusions, there is a correlation between the amount of money the government spends on education (both secondary and tertiary), healthcare, and economic expansion. According to the findings of the research, education should receive significant funding.

Eggoh et al., (2015) examined the relationship between human capital (i.e., education and health) and *GDP* in African economies using data collected from 1996 to 2010. Their emphasis was on the impact of human capital on *GDP*. According to the findings, public expenditures on education and health have a negative impact on economic development; however, indicators of human capital stock have a positive impact on growth.

Using data ranging from 2002 to 2016, Saidi et al. (2018) investigated the relationship between the amount of energy used for transportation, the infrastructure used for transportation, and economic development. The results of the GMM revealed that improvements to transportation infrastructure have contributed to increased *GDP* in each state. In addition, research demonstrated that the modernization of infrastructure through the application of new methods has contributed to rapid expansion.

Using data ranging from 2000 to 2017, Habbibi and Zabardast (2020) investigated the impact of information and communications technology (ICT) and education on economic development in OECD countries and the Middle East. Both the OLS fixed-effect technique and the GMM method were utilized in this study. According to the conclusions, education and the use of ICT have both experienced increased growth. According to the study, increased investment in education and information and communication technology is necessary for substantial *GDP*.

Data Source and Methodology

Data source

Using panel data from 2003 to 2019 and looking at the results, we found a strong link between financial development, infrastructure growth, and *GDP* in a few of the Asian

countries we looked at. Our research is done in 12 Asian countries, such as Bangladesh, China, Bhutan, Malaysia, Nepal, India, Indonesia, Iran, Jordan, Pakistan, the Philippines, and Sri Lanka. We have made use of secondary statistics derived from indicators of global development.

Within the scope of this study, we have given infrastructure a lot of thought in terms of how it affects the rate of *GDP*. For this purpose, our explanatory variables are *FD* (domestic credit ratio as a percentage of GDP), education index (primary and secondary gross enrolment percentage), health index (hospital bed per 100 people and specialist per 1000 people), and urban population (urban population as a percentage of GDP). We used the random effect technique to figure out if the GDP is significantly linked to any of the main variables that explain things.

Model

The model is given below.

The equation is:

$GDP = \alpha_0 + \beta_{1ti}HLTHI + \beta_{2t}iEDUI + \beta_{3ti}iFDP + \beta_{4t}iURBNP + \varepsilon_{ti}$

GDP= Economic growth (gross domestic products growth per capita)

HLTHI= health index (hospital bed per 100 people and physician per 1000 people)

EDUI= Education index (primary and secondary enrollment(%)

FDP= Financial development (domestic credit to private sector % of GDP)

URBNP= Urban population as % of GDP

$_t$ = (time trend)

ε_t= (error term

Descriptive statistics and results

Descriptive statistic

In this section, we have shown the descriptive statistics of the important variable

Variables	Observations	Mean	Standard deviation	Minimum	Maximum
LGDP	204	3.3797	0.3566	2.6757	4.096
HLTHI	204	0.0163	0.9990	-1.4362	3.2994
EDUI	204	0.0155	0.9998	-2.0303	2.8139
FDP	204	57.0249	35.50122	15.3055	164.6643
URBNP	204	45.3204	21.0295	14.538	91.203

This chart provides a summary of the statistical information regarding the variables. The GDP per person in a selection of developing countries comes out to an average of 3.3797. On the other hand, 45.32 per cent of the overall population lives in urban areas on average. The significant disparities are illustrated by the spread of values for financial development, which goes from 15.3055 per cent to 164.6643 per cent, with the minimum value being 15.3055 per cent. The percentages on the health index can stretch anywhere from -1.4362 to 3.2994.

Empirical analysis

This chart provides a summary of the statistical information regarding the variables. The GDP per person in a selection of developing countries comes out to an average of 3.3797. On the other hand, 45.32 per cent of the overall

population lives in urban areas on average. The significant disparities are illustrated by the spread of values for financial development, which goes from 15.3055 per cent to 164.6643 per cent, with the minimum value being 15.3055 per cent. The percentages on the health index can stretch anywhere from -1.4362 to 3.2994.

Table.2 Random Effect Results, Dependent Variable is GDP per capita

Variables	Coefficients, Standard Errors and z-values
HLTHI	0.04544*
	0.0139
	(3.27)
EDINDX	0.2107**
	0.0091
	(2.33)
FDP	0.0008*
	0.0003
	(2.52)
URBNP	0.0172*
	0.0015
	(11.45)
C	2.5548
	0.0991
	(25.77)
R-Square within	0.65
R-Square between	0.55
R-Square overall	0.55
Wald chi2	354.00

z-values are in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The results gained from random effects are shown in table 2.

The state of a country's economy is directly correlated to its level of healthcare spending in Asian nations. According to the findings of the research, there is a correlation between improvements in health and increases in economic activity, and the value of the coefficient is significant and positive. In countries that are still developing, an increase of one unit in the health index results in an increase of 0.04544 per cent in economic development. A healthy population is one of the most important drivers of socioeconomic progress. People who are healthy are more productive, which is beneficial to the *GDP*, employment opportunities, and prospects for employment in these nations. The results of this research are in line with those found in Eggoh et al. (2015) and Habibi and Zabardast (2017). (2020).

Education is absolutely necessary for the advancement of these countries. People with higher levels of education have greater job prospects and perform better overall. According to the findings of the research, an increase of 0.2106 percentage points in *GDP* can be attributed to an increment of one unit in the education index. Educated people have an easier time finding employment

opportunities, which leads to higher earnings and contributes to economic development. Both Jaiyeoba's (2015) and Habibi's and Zabardast's conclusions contradict those that we obtained. (2020).

It is impossible to disregard the part that *FD* plays. The coefficient for financial improvement is positive and significantly different from zero. According to the findings, an increase of one per cent in domestic credit to the private sector will contribute to an increase of 0.0007 per cent in *GDP* in developing countries. People who take advantage of this credit have increased possibilities for work, investment, and productivity, all of which are important to the expansion and development of economies. This conclusion is supported by Das and Sethi's (2019) research.

The process of industrialization has been beneficial to both the growth and development of the economy. As a result of this study's findings, it was determined that a one per cent increase in the urban population contributed to a 0.0172 per cent increase in *GDP* in the selected developing countries. It is possible that the majority of the metropolitan population possesses a high level of education and/or expertise. In this manner, they make a contribution to the production process as well as the expansion of the economies in which they operate. The conclusions are in line with what Rosenthal and Strange (2003) discovered.

Conclusion

In this study, we investigated the significance of the need for Asian nations to strengthen both their financial systems and their physical infrastructure in order to foster economic expansion. In the research, random effect methodology was applied to the data that was collected from 2003 to 2019 for the study was conducted. The outcome demonstrated the significant and favourable relationship between the development of the financial sector and the expansion of the economy. In addition, improvements in schooling and health care for the urban population have contributed to an increase in the potential for economic expansion in developing countries. Due to the fact that their economies are expanding at a faster rate and their social and economic infrastructure is becoming more developed, we can say that these nations are currently in the development period. Recent studies have highlighted the skilled and educated metropolitan population as having contributed significantly to the expansion of the economy. According to the conclusions, in order for these economies to experience growth and development, educational and healthcare systems need to be strengthened. People should have more access to credit options so that they can engage and increase their income to a greater extent. Urban inhabitants should have unrestricted access to free education in order for these economies to experience rapid expansion. It is of the utmost importance to make necessary improvements to the infrastructure.

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