Identify the Relationship between GDP and the Economic Infrastructure in Sri Lanka.

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Goal 09: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

1. Introduction

Economic infrastructure development such as road and transportation networks, electricity, water, tele communication, air control towers, bridges, and so on, that is completed on time will aid in increasing economic efficiency while enhancing the economy's output capacity, facilitating productivity improvement and reducing regional disparities. These infrastructural systems, which demand significant upfront investments, are critical for an economy's productivity. The government either fully funds or greatly subsidizes the majority of initiatives. According to the Sustainable Development Report 2021, Sri Lanka ranked at 85 by overall performance of SDG. And the SDG9, Industry, Innovation and Infrastructure shows lowest average performance of SDG in Sri Lanka in 2021 The country's vast infrastructure development program helps to maintain high and sustainable growth in the medium and long term.

Sri Lanka takes a major place among the developing countries of the world. Out of these, the Government of Sri Lanka is a pioneer in developing infrastructure for the betterment of the lives of the people and the country, comparing to other countries. With over 80% of Sri Lanka's population now residing in rural areas, mass transportation and renewable energy, as well as the creation of new businesses and information and communication technology, are becoming increasingly vital. Economic infrastructure contributes a significant amount of income to the country’s GDP. This study limited only to the economic infrastructures, transportation and telecommunication. The main objective is to identify the relationship between GDP and economic infrastructure. Specific objectives are identifying recent

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trends of economic growth and the government investment in infrastructure and to identify the problems and challengers on economic infrastructure during past years.

2. Materials and Methods

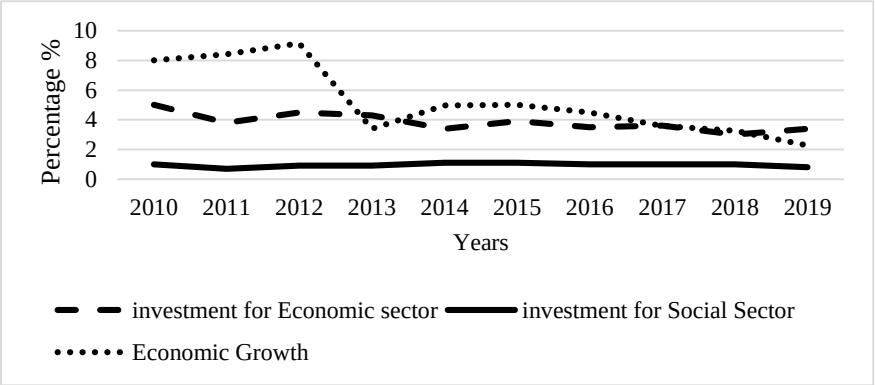
The Study is based on the secondary data which was collected by the Annual reports of Central Bank of Sri Lanka (2010 to 2020), Labour Force Survey - Annual Reports of Department of Census and Statistics, magazines and journal articles. The collected data were analyzed by using descriptive statistics, multiple regression models, charts and tables.

3. Results and Discussion

One of the targets in SDG 9 which hopes complete by 2030, is to Create high-quality, dependable, long-lasting, and resilient infrastructure, including regional and transnational infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for everyone. To achieve this target Sri Lankan government, pay more attention on the infrastructure of Sri Lanka. Esfahani and Ramirez in their paper deal with Institutions, infrastructure and economic growth. They developed a structural model of infrastructure and economic growth that takes institutional and economic aspects into consideration when analyzing infrastructure-GDP interactions. From the study they found that, the effect of infrastructure on GDP growth is significant. (Esfahania & Ramı´rez, 2002).

Although there has been a gradual decline with fluctuations in investment for infrastructure development in economic service over the past decade, there has been a steady allocation of funds for social services. The obvious reason for that is great fall of economic growth in Sri Lanka after 2012.

Figure 1: Government Investment in Infrastructure as a percentage from GDP



Sources: Central Bank Annual reports, 2010-20

3.1 Relationship between GDP and the economic infrastructure

Lars-Hendrik Roller and Leonard Waverman state that there is a causal relationship between telecommunications infrastructure and GDP through their study. (Roller & Waverman, 2001). Also, Beyzatlar, Karacal and Yetkiner conclude that there is an endogenous relationship between income and transportation. (Beyzatlar, Karacal, & Yetkiner, 2014)

According to model summary table, R = 0.991. it means, there is strong positive relationship between the variables. R^2 = 98% of variance in the GDP explained by income of economic infrastructure (transportation and telecommunication). If we consider the correlation between the dependent variable and independent variables. There is a strong positive correlation between GDP and income of transportation which equals to 0.981. and also, there is a strong positive correlation between GDP and income of telecommunication which equals to 0.937.

According to Anova table, the significant value of the model is 0.000 and it is less than 0.05. Therefore, the regression model is statistically significant at 95% confidence level. This indicate that, overall, the model is statistically significantly predicting the dependent variable.

According to the coefficients table we can write model as,

$$GDP = -1433376.771 + 7.699\ income\ of\ transportation +$$

$$42.507\ income\ of\ telecpmmunication \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Both income of transportation (0.000) and income of telecommunication (0.013) are statistically significant at 95% confidence level. According to the above regression model, when income of transportation is increased by 1 million, GDP is increasing by Rs 7.699 million. Also, when income of telecommunication is increased by 1 million, GDP is increasing by Rs 42.507 million.

The value of Durbin-Watson is 1.635. As the obtained value can be rounding off to 2, proves that the Assumption of Autocorrelation had not been met in this study. Moreover, Analysis of collinearity statistics show assumption of multicollinearity also has not been met, as VIF score were well below 10 (statistics = 4.819 and 4.819 respectively) and the Tolerance scores above 0.1(statistics = 0.208 and 0.208 respectively).

3.2 Economic Infrastructure

3.2.1 Transportation and Road development

Transportation is known to have a significant impact on development's sustainability in all three frequently recognized dimensions, namely social, economic, and environmental. As of the end of 2018, Sri Lanka’s Road network included 12,220 kilometers of Class A and Class B highways and 170 kilometers of expressways. Despite the pandemic's delays, particularly between mid-March and the end of April, the Road Development Authority (RDA) continued to carry out its development efforts in 2020. The RDA maintained roughly 12,224 km of National Highways, consisting of class A and B roads, as of the end of 2020, while the total length of expressways was 271.7 km.

Throughout the country, public road passenger transportation continues to played an essential role in the provision of transportation services up to year 2018. But after from following years, Low passenger movements due to the Easter Sunday attacks and the introduction of COVID-19-related mobility limitations in the years 2019 and 2020 respectively resulted in a subdued performance in both public and private passenger transportation operations. Total revenue of the SLTB fell by 28.2 percent to Rs. 31.2 billion, according to

interim unaudited financial results, due to lower passenger movements. The SLTB, which had been operationally successful in recent years, reported a Rs. 2.3 billion operating lost in 2020, compared to a Rs. 1.6 billion operating profits in 2019. SLR finished building a 27-kilometer railway line from Matara to Beliatta in order to increase railway services in Southern Sri Lanka. Meanwhile during the review time, the Katunayake-Kurana railway line was double tracked with a signal system. In-country flight service is limited due to the lack of non-military airports outside of Colombo.

The government's efforts to improve infrastructural facilities in the country's major ports. In-country flight service is limited due to the lack of non-military airports outside of Colombo. The government's efforts to improve infrastructural facilities in the country's major ports continued in 2020, despite severe delays caused by the COVID-19 pandemic and trade union strikes.

In 2019 and 2018, The construction of transportation systems, such as roads and bridges, accounted for a large portion of foreign debt of Rs.1028.64 billion (16.07%) and Rs.919.75billion (15.43%) respectively, whereas air transportation, ports and ground transportation development accounted for Rs.630.78billion (9.85%) and Rs.650.7(10.92%) respectively of total foreign debt.

3.2.2 Telecommunication

"Increase access to information and communications technology significantly, with the goal of providing universal and inexpensive Internet access in LDCs by 2030". Is one of the targets which comes under the SDG 9, Industry, Innovation and Infrastructure.

Sri Lanka's telecommunications sector is one of the most energetic sectors in the country, contributing considerably to investment, employment, productivity, innovation, and overall economic growth, both directly and indirectly. Five mobile operators serve a 22 million-strong population in Sri Lanka's telecommunications market. Telecommunication services are now available across the country, thanks to sustained infrastructure expansion. Three fixed-line operators, five mobile phone operators, and eleven Internet service

providers are all in fierce competition. In 2020, the US sold telecoms equipment worth $2.4 million to Sri Lanka.

The first 5G spectrum auction is scheduled for the end of 2021 by the Telecommunications Regulatory Commission (TRC). The market is gearing up for the transition from 4G to 5G mobile services. In 2019, Dialog Axiata and Mobitel performed pre-commercial 5G experiments, with Dialog repurposing 20% of its LTE antennae for 5G compatibility.

Telecommunication sector of Sri Lanka continue to improve with rising of mobile phones and internet. Internet connections increased by 30.7%, bringing internet penetration to 79.95 percent by the end of 2020. Meanwhile, tax reductions in the telecommunications sector, which will take effect on December 1, 2019, are likely to help the sector expand even further.

Despite nationwide mobility restrictions and public health measures restricting in-person attendance in order to set combat the spread of COVID-19, activities in several key sectors such as banking, health, education, retail, and government administration were able to continue to a large extent thanks to innovative services provided by telecommunications providers. There was a noticeable increase in the number of telephone connections as a result of the imminent necessity to transition away from physical platforms and, as a result, the increased demand for telecommunications services. There was a decrease in the number of mobile phone connections. In 2019 and 2018, Telecommunication sector accounted foreign debt of Rs.19.75 billion (0.31%) and Rs.23.05billion (0.39%) respectively for its development.

4. Conclusion

Sri Lanka takes a major place among the developing countries of the world. Out of these, the Government of Sri Lanka is a pioneer in developing infrastructure for the betterment of the lives of the people and the country, comparing to other countries. Sri Lanka ranked at 85 by overall performance of SDG. (Sustainable Development Report of Sri Lanka 2021, 2021) Every government has focused on growing investment in infrastructure so that it can maintain long-term budget

stability. According to the study outcomes, Sri Lanka's infrastructure has improved significantly, with successive governments recognizing it as a national priority. These include an ambitious plan to develop and upgrade seaports throughout the island, international airports, roads in Colombo and highways connecting to other parts of the country, as well as telecommunications facilities. Public investment in economic and social infrastructure development by 2019 is Rs. 588.8 billion. That is 2.26 % from GDP. 475.9 billion out of 588.8 billion are for Economic infrastructure developments. The country's infrastructure suffered many setbacks in relation to both service delivery and development activities as a result of COVID-19. Mobility limits, physical distance, and other COVID-19-related health rules slowed the completion of several infrastructure development projects in 2020. However, the country's excellent infrastructure served as a buffer, allowing economic activity to continue during this period of unprecedented problems. Also, Sri Lanka's reign debt has steadily increased over the last decade, owing primarily to unsustainable infrastructure loans.

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