



THE MEDIATOR ROLE OF STARTING NEW BUSINESS IN THE RELATIONSHIP BETWEEN LOGISTICS PERFORMANCE AND GROWTH

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Abstract:

Economic growth refers to the enhancement in per capita income or purchasing power and this process of development. The main feature of economic growth is that continues progress by emergence of new source of growth when necessary. In addition to changes in the sources of economic growth, the indicators that explain economic growth are also changing. Recent researches show that Gross Domestic Product (GDP) per capita is accepted as one of the main indicators of growth. Logistics Performance Index (LPI) which has a direct and indirect impact on economic growth, is a World Bank indicator that examines a country's logistics performance in six sub-dimension. In order to indicate the importance of economic growth and logistics performance, this study investigates the mediator role of starting new business in the relationship between logistics performance and gross domestic product per capita. The aim of the research is to analyze 76 countries based on the data of 2010-2012-2014-2016-2018 according to the data available at the World Bank. As a result of analyses, the mediation effect of starting new business on the relationship between logistics performance was not established. Even if no starting new business, the improvement in logistics investments directly affects economic growth. Even with existing logistics investments, it contributes to economic growth by increasing efficiency, increasing the capacity and cost of existing companies. In this case, starting new business does not have an mediator role.

Keywords:

Logistics Performance Index, Score-Starting a Business, GDP per capita

1. Introduction

The fact that many variables that contribute to the economic development process are analysed through literature studies shows that the interest in the economic development process continues. The framework of economic development has not been fully drawn as a result of the theoretical studies conducted and ongoing theoretical studies explains that many parameters have an ongoing contribution to economic growth. Economic growth is a process of enhancement production capacity and the economic resources. In recent and much research, Gross Domestic Product (GDP) is accepted as one of the indicators of economic growth (Çelebi, Civelek, & Çemberci, 2015). In this study, Gross Domestic Product per capita (GDP per capita) is considered as an economic indicator parameter. GDP is the economic measure of the market value of products produced domestically in a period. GDP per capita is obtained by dividing the gross domestic product (GDP) by the population of the country. Gross domestic product per capita is an important indicator for determining the average living standards of nations and measuring their economic well-being (OECD, 2009).

Logistics performance, another parameter in the study, has been a new premise used to analyze the interrelationship between economic growth and GDP. Improvement in logistics performance has both indirect and direct contributions to economic growth. It is observed that the economic development process of countries accelerates with the improvement of logistics performance; therefore, there is a linear relationship between logistics performance and economic development levels of countries (Sanchez, Tomassian, & Perrotti, 2014). With the improvement of logistics performance, the country's development accelerates and establishment of new industries in

regions where logistics services are improved and intensified as well as other impacts of economic growth (Zhang, 2002). At the same time, starting new business becomes easier as the way of doing business becomes easier and because it provides capital abundance with economic growth.

The aim of this study is to investigate the mediating role of starting a new business in the relationship between logistics performance and economic growth, to evaluate the interrelationships between parameters and to measure the degree of its effect.

2. Conceptual Background

Logistics is the process of providing, planning, implementing, and controlling the flow of products, services, and information between the starting point of production and the end point of consumption. Logistics performance is the criterion of quality and competency of logistics activities that ensure that products and services are delivered to the buyer on time and with the content intact. One of the most important studies used to measure the logistics performance of countries is the Logistics Performance Index published by the World Bank every two years since 2007.

Undoubtedly, the regions and countries where logistics activities are developed are becoming centers of attraction for industries with the qualification to continue production with less inventory cost as possible, to react quickly to changing demands and customizations, and to shorten delivery times. Therefore, it facilitates the decision of individuals and businesses to start a new business to participate in the economy in these regions and/or countries. Logistics services take place as a driving force in the economy as it provides sectoral links within the economy and globalization of the economy. Development of the logistics industry; it contributes to the country's economy by increasing the trade volume by providing new employment areas and thus generating income, positively affecting investments, especially foreign direct investments, and has a positive effect on economic growth. In this context, the logistics sector has a critical role in social and economic development.

Economic growth refers to the increase in production, production capacity, and therefore country's national income level. Gross domestic product, which is one of the essential indicators, is a measure that gives information about the growth and development status of countries. In the environment of globalization and increasing competition that comes with it, logistics performance is one of the most crucial factors for countries to achieve economic growth and develop the current economic growth and to gain a place in international markets by maintaining their competitiveness.

2.1. Logistics Performance Index

Logistics performance is a measure of the quality and competence of logistics activities that ensure that products and services are delivered to the buyer on time and with their contents intact as desired. Intensifying globalization and competition have made logistics activities and thus logistics performance an important element for international trade and national economies. Countries need to have low logistics costs and high logistics services to increase their trade performance on a global scale and to ensure their international competitiveness. (Devlin & Yee, 2005).

The Logistics Performance Index (LPI) is a tool to evaluate the logistics performance of countries, to identify the areas of opportunity and challenges of logistics activities, and to enable the logistics performance of 160 countries to be compared with each other by conducting surveys with global freight forwarders and carriers in countries (World Bank, 2022). Logistics Performance Index has six subdimension namely customs (the efficiency of customs and border management clearance), infrastructure (the quality of trade and transport infrastructure), ease of arranging shipments- (the ease of arranging competitively priced shipments), quality of logistics services (the competence and quality of logistics services—trucking, forwarding, and customs brokerage), tracking and tracing (The ability to track and trace consignments), timeliness (The frequency with which shipments reach consignees within scheduled or expected delivery times) (World Bank, 2022).

LPI has the effect of improving and guiding cooperation between policy makers and the private sector in the development and improvement of trade and logistics services, and in the determination and implementation of priorities that will provide competitive advantage both regionally and internationally. The multidimensional relationship between national and international trade and logistics is in deep connection with the development and implementation of plans and policies, regulations that will ensure global harmony by developing infrastructure, taxation, private sector and trade.

In the research based on the analysis of the economies of the developing countries, the LPE dimensions have shown the positive effect of the countries on the international trade and reveal the importance of the countries in the economic development (Marti, Puertas, & Garcia, 2014). There are also significant differences in the logistics performance of countries with high national income and countries with low-income levels. While high-income countries are at the top of the logistics performance index rankings, the inadequacy of logistics activities is an important obstacle for developing countries (Arvis, et al., 2014). Hoekman and Nicita (2010) evaluated the quantitative impact of the qualitative improvements in LPE on the economy and stated that if low-income countries increase their LPE to middle-income countries, their trade will increase by around 15 percent (Hoekman & Nicita, 2010).

Countries with high logistics performance index values are also seen to be leading countries in world trade; therefore, the logistics performance index plays an important role in explaining the interaction between international trade and logistics. Increasing the scope and competencies of logistics activities is very important both indirectly by increasing the activities of individuals to starting a business and directly contributing to the development of national economies by attracting foreign investments to the country and increasing trade.

2.2. Score-Starting a Business

Starting new business measures the number of procedures, time, cost, and minimum paid-in capital required to establish and operate a small to medium-sized limited liability company in a major city (World Bank, 2023). Starting a business, logistics performance and economic growth have inter-relations: Increasing logistics performance and improving infrastructure contribute to economic growth by facilitating the process of establishing a new business. As economic growth increases, domestic and foreign capital investments increase. As capital investments increase, more investments are made to improve logistics performance and as a result of the investments, it becomes easier for individuals and/or businesses to start a business.

2.3. GDP per capita

Investments in the logistics sector lead to an increase in the efficiency, reliability and service quality of logistics capacity. This leads to lower logistics costs, shorter transfer times and causing the industry to grow. In this case, economic growth occurs spontaneously, as it will increase productivity and competition. The capital provided by logistics investments contributes to economic growth in many respects: Investments in the logistics sector increase the demand for related goods and services, providing economic vitality and growth, effective logistics systems directly save time and money and ensure efficient use of resources, having better logistics infrastructure attracts foreign investors directly to the country, low logistics costs accelerate industrial and commercial activities, intensify economic activities and increase production activities (Chu, 2012). Therefore, with the increase in logistics investments, economic growth increases and the increase in the economy increases the national income and provides an increase in logistics investments with mutual effect. In the study, GDP per capita is discussed as a measure of economic growth. The increase in GDP is referred to as economic growth, and the factors that ensure economic growth are also the main factors that enable the country's production possibilities curve to shift outwards. Increasing production and cheaper production costs increase the country's exports by increasing its competitiveness in international markets. Thus, the increase in logistics performance increases the export potential of the country after domestic economic developments, increasing foreign exchange earnings and economic growth, thus increasing GDP per capita as inter-relation.

3. Hypotheses Development

3.1. The Effect of Logistics Performance Index on Score-Starting a Business

Logistics activities are a service activity area that has a very important strategic place in modern business administration and starting a new business process. Regions and/or countries where logistics infrastructure and other sub-dimensions are improved are encouraging for both national and international investors with the decision to establish a new business, its process, and its cost-reducing effect. Effective and efficient logistics activities affect the decision and process of starting a new business, as higher customer value can be achieved by lessening the time and cost of establishing a new business, and by creating an efficiency advantage, and businesses can take a step forward

compared to their competitors in the sectors in which they operate. Improved logistics performance makes the regulatory environment more conducive to the establishment and operation of the business.

Depend upon the extant literature the following hypothesis is constructed:

H1: Logistics performance index has a positive effect on score-starting a business

3.2. The Effect of Score-Starting a Business on GDP per capita

The procedural structure, duration and cost of new business establishment processes are one of the most important factors that determine the investment environment and are one of the reasons that directly affect the investment decision. Therefore, it is an important fact that new business establishment processes should be improved and facilitated in order to increase domestic and foreign direct investments to stabilize and improve economic growth. Starting a business and ease of doing business is an international instrument that corresponds to a change in behavior not only to motivate national investors but also to attract foreign investors. Improvements in the business establishment process provide economic growth by attracting domestic and foreign investments, while increasing economic growth positively affects the gross domestic product per capita and human well-being.

Eifert (2009) in the data set he created on national income, business environment and investment rates of 90 countries; It has been determined that the improvements made in the ease of doing business process lead to faster economic growth and an increase in investments (Eifert, 2009).

In the study conducted by Yaşar and Yaşar (2017), the hypothesis that countries with higher real income rank higher in the ease of doing business index was investigated, and it was determined that the ease of business establishment and doing business differed according to the income group of the countries (Yaşar & Yaşar, 2017).

Depend upon the extant literature the following hypothesis is constructed:

H2: Score-starting a business has a positive effect on GDP per capita

3.3. The Effect of Logistics Performance Index on GDP per capita

Civelek et al., 2015 analyzed the relationship between the six sub-dimensions of logistics performance and the gross national product in their study and showed statistically that the improvement in the two sub-dimensions of logistics performance (the efficiency of customs and border management clearance and the quality of trade and transport infrastructure) directly affects the gross national product (Uca, Civelek, & Çemberci, 2015). Sanchez et al.2014 emphasized the four-way effect of infrastructure improvements, which is one of the sub-dimensions of logistics performance, on economic growth: operating costs, efficiency, accessibility, and general welfare level of the country's population (Sanchez, Tomassian, & Perrotti, 2014).

Sanrı et al, 2022 examined the relationship between logistics performance, competitiveness and economic growth for OECD countries and determined that there was a significant relationship between these three variables. For this reason, the competitiveness levels and logistics performances of countries that will ensure economic growth should not be evaluated separately (Sanrı & Pişkin, 2022). For countries to achieve international competitiveness and perform better on a global scale, they need to make performance improvements to reduce logistics costs and keep logistics costs low with improved logistics performance (Devlin & Yee, 2005).

The interrelationship of logistics performance and economic growth, hence GDP per capita, has been extensively studied in the literature: Transportation infrastructure investments have a positive impact on economic growth (Aschauer, 1989), by comparing the logistics infrastructures of sub-Saharan African countries and developing countries, it has been concluded that infrastructure investments contribute to economic growth (Boopen, 2006), when the data of 69 countries are examined, it is seen that logistics performances affect economic growth positively (Bozma , Başar, & Aydın, 2017).

Depend upon the extant literature the following hypothesis is constructed:

H3: Logistics performance index has a positive effect on GDP per capita

3.4. The Mediator Role of Score-Starting a Business in the Relationship between Logistics Performance Index and GDP per capita

The intermediary role of Score-Starting a Business (SSB) between logistics performance and GDP per capita is interrelated with the other two parameters. With the increase in GDP per capita by force of the economic growth of the country, investments in logistics investments increase and the SSB process becomes easier in terms of time and money with increasing logistics investments. While stability increases in the country where logistics performance and

economic growth are maintained, the country continues to attract foreign direct investment by becoming a center of attraction, and in this case, new business establishments decrease in time, procedure, and cost. Therefore, increasing logistics investments is of critical importance especially for developing countries. Countries that can establish a business more easily and produce at more affordable costs with increasing logistics performance are accelerating economic development and becoming more competitive in international markets. The effect of increasing gross domestic product on the general price level of the country plays a strengthening role in the competitiveness of countries. With the increase of the country's exports, the GDP increases, and the country invests more in logistics activities. The increase in the welfare level of persons facilitates the establishment of a new business both psychologically and in terms of time and cost, with the effect of trust in the country. With government incentives, procedures are reduced and business establishment processes are facilitated.

Depend upon the extant literature the following hypothesis is constructed:

H4: score-starting a business has a mediator role on the relationship between logistics performance index and GDP per capita

4. Research Method

The Baron and Kenny approach was used to conduct the mediator analysis. When the below mentioned circumstances are true, a variable, in the opinion of Baron and Kenny, acts as a mediator (Baron & Kenny, 1986):

The mediator variable changes as the independent variable changes. When the mediator and independent variables are analyzed simultaneously, the effect of the independent variable on the dependent variable is reduced or eliminated. Changes in the mediator variable lead to changes in the dependent variable.

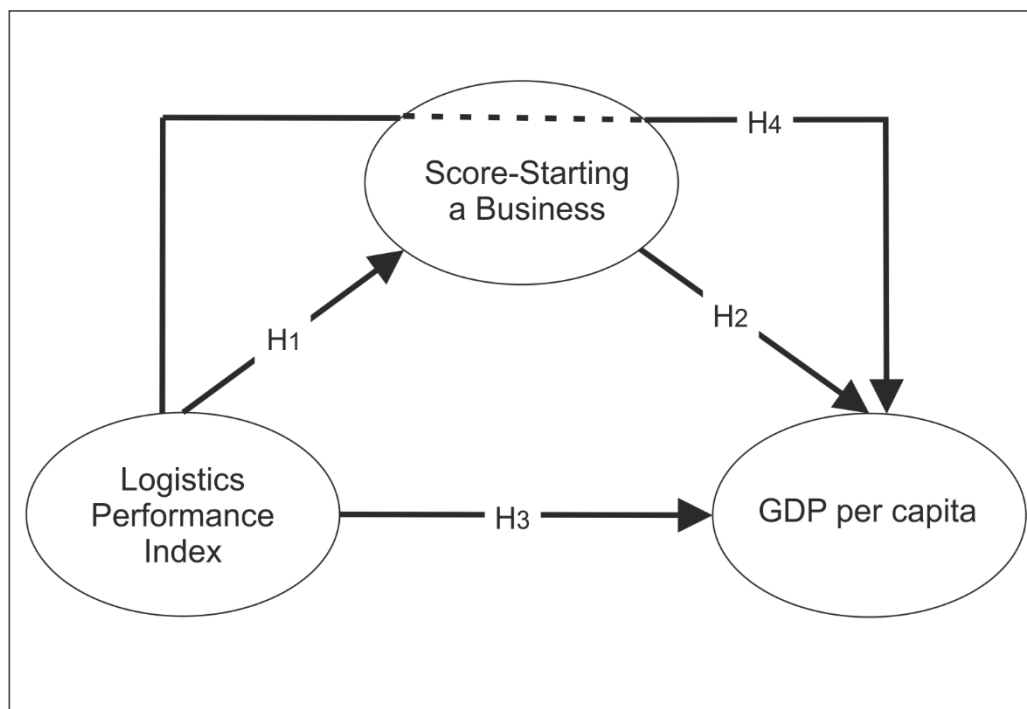


Figure 1. Conceptual Model

The conceptual model for the study is displayed in Figure 1. The hypotheses are tested using hierarchical regression. Regression models are as follows among dimensions which are logistics performance index (LPI), score-starting a business (SSB) and GDP per capita (GDP):

Model 1: $GDP = \beta_0 + \beta_1.LPI + \epsilon$ (H3)

Model 2: $SSB = \beta_0 + \beta_1.LPI + \epsilon$ (H1)

Model 3: $GDP = \beta_0 + \beta_1.LPI + \beta_2.SSB + \epsilon$ (H2 and H4)

5. Measures and Sampling

Logistics performance index (LPI), score-starting a business (SSB) and GDP per capita (GDP) were used. It was unnecessary to assess the validity and reliability of the scales because secondary data were used. In this study, data from 76 countries for the years 2010-2012-2014-2018 are analyzed

6. Analysis Results

Initially, Baron and Kenny's method require significant relationship among the variables in the research model (Civelek, 2018). For this reason, Pearson correlation coefficients were obtained. As indicated in the Table 1, the relationships among variables are found as statistically significant.

Table 1. Correlation Coefficients

	LPI	SSB	GDP
LPI	1		
SSB	,390*	1	
GDP	,741*	,412*	1

* Correlation is significant at the 0.01 level

R and R2 values of the three models are shown in Table 2.

Table 2. Model Summaries

Models	R	R ²	Adjusted R ²	Standard Error of the Estimate
Model 1	0,741	0,549	0,548	16257,91592
Model 2	0,390	0,152	0,150	9,74613
Model 3	0,753	0,567	0,565	15954,34961

Table 3. ANOVA Tables

Models	F	Sig.
1 Regression	460,274	,000
2 Regression	67,915	,000
3 Regression	246,739	,000

In Table 3, ANOVA test results for the models are shown. ANOVA results proved that the models are statistically significant.

Table 4. Hypotheses Results

Relationship	Model 1	Model 2	Model 3
LPI → GDP	0.741*		0.684*
LPI → SSB		0.390*	
SSB → GDP			0.145*

Note: Regression coefficients are standardized.

*p<0.01

Sobel test was performed (Sobel, 1982) for evaluation of the results obtained from Baron and Kenny method. As shown in Table 5, Sobel test results are significant.

Tablo 5. Sobel Test Sonuçları

	Sobel Test Statistic	P
LPI → SSB → GDP	3.55416021	0,00

7. Conclusion

Findings in Table 4 demonstrates positive and significant relationship between LPI and SSB ($\beta_{\text{model2}}= 0.390$, $p< 0.01$). Therefore, H1 (logistics performance index has positive effect on score-starting a business) was supported. H2 (score-starting a business has positive effect on GDP per capita) was also supported ($\beta_{\text{model3}}= 0.145$, $p< 0.01$). H3 (logistics performance index has positive effect on GDP per capita) was supported ($\beta_{\text{model1}}= 0.741$, $p< 0.01$) and H4 (score-starting a business has a mediator role in the relationship between logistics performance and GDP per capita) was not supported ($\beta_{\text{model3}}= 0.684$, $p< 0.01$). The reason is that after the inclusion of the mediator variable into the model the effect of LPI on GDP did not disappear and the value of the β coefficient does not decrease. It was therefore concluded that SSB do not play mediator role between LPI and GDP. This result shows that even if no starting new business, logistics performance ultimately affects growth, it contributes to growth dynamically. As a result of analyses, the importance of logistics performance is once again recognized and the positive effect of logistics performance on growth supports previous studies which by (Uca, Civelek, & Çemberci, 2015), (Çelebi, Civelek, & Çemberci, 2015). This study has shown the direct and strong impact of logistics performance on growth. This means that no investment in logistics infrastructure is idle and its contribution to the country's growth is very important.

This study has an important limitation that can be addressed in future research: The data that constitute the source of the research belong to the data of the World Bank for the years 2010-2012-2014-2018. The data for 2020 are not included in the study data because the global Covid-19 pandemic in 2020 has deeply unsettle and changed all logistics activities and economies of countries. Therefore, 2020 data were not included in the study due to the concern that the results of the research would be distorted if they were included in the analysis. Analysis can be improved by including 2022 data in similar studies to be conducted in the coming years.

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