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Relationship between light automobile imports and Mexico's economic growth, 1994-2019

Relación entre las importaciones de automóviles ligeros y el crecimiento económico de México, 1994-2019

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Abstract

The article seeks to obtain empirical evidence about whether it is economic growth that determines the increase in imports of light automobiles in Mexico, or vice versa, for the period 1994-2019. It seeks to contrast the hypotheses "Imports-led Growth (ILG)", and the "Growth-driven import (GDI)". For which a model of simultaneous equations is estimated, where the endogenous variables were the Gross Domestic Product and imports of light automobiles; while the default ones: the real peso / dollar exchange rate, real inflation, as well as total production, exports and the total sale of light vehicles, for which the two-stage least squares method (MC2E) was used. The results obtained allowed us to observe that the ILG hypothesis was fulfilled, indicating that it was the imports of light automobiles that influenced the economic growth of the country.

Imports, Economic growth, Automotive industry

Resumen

El artículo busca obtener evidencia empírica acerca de si es el crecimiento económico el que determina el aumento de las importaciones de automóviles ligeros en México, o viceversa, para el periodo 1994-2019. Se busca contrastar las hipótesis "*Imports-led Growth (ILG)*", y la "*Growth-driven import (GDI)*". Para lo cual se estima un modelo de ecuaciones simultáneas, en donde las variables endógenas fueron el Producto Interno Bruto y las importaciones de automóviles ligeros; mientras que las predeterminadas: el tipo de cambio real peso/dólar, la inflación real, así como la producción total, las exportaciones y la venta total de vehículos ligeros, para lo cual se utilizó el método de mínimos cuadrados en dos etapas (MC2E). Los resultados obtenidos permitieron observar que se cumplió la hipótesis *ILG,* indicando que fueron las importaciones de automóviles ligeros, las que influyeron en el crecimiento económico del país.

Importaciones, crecimiento económico, industria automotriz

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Introduction

Studies on the influence of international trade on economic growth date back to the theoretical approaches of the mercantilists in the 16th century, who stated that: "the accumulation of wealth was based on the surplus of exports over imports, maintaining in favorable terms the trade balance" (Gómez and Ramírez, 2017, cited by Cárdenas et al., 2019:1).

Later Adam Smith (1776) and David Ricardo (1817) raised the benefits that international trade brings to countries through absolute advantages and comparative advantages respectively. The first theory establishes that a country receives benefits from international trade by buying the good that costs it the most to produce and by selling the one that is cheaper to produce; While Ricardo, through comparative advantage, suggests that a country should specialize in the production and export of those goods that are easier to produce and import those that have a higher relative cost (Cárdenas et al., 2019: 1).

According to Velázquez (2009), sometime later, some studies under the new growth theory analyzed the influence of both imports and exports on economic growth; and they stated that: "the opening to trade provides access to imported inputs that introduce new technologies; increases the size of the market; increases innovation returns and raises a country's output through research-intensive specialization" (p. 61). On the other hand, they argue that exports influence trade because this sector has: "high productivity and potential in economies of scale, as well as positive externalities for the non-exporting sector in the form of specialization of knowledge, innovations in products and processes. and in technological changes" (p. 61).

That is why international trade has for centuries played an important role in the economic growth of countries, because not all have the same endowment of resources, nor with the knowledge or skills to produce all those goods and services that require (Cáceres, 2013a).

Hence the importance of trade, which allows nations to concentrate on manufacturing those goods in which it is more efficient than the rest of the countries, exporting the surplus and buying abroad the goods that it cannot produce efficiently and competitively (Cáceres , 2013b).

However, over time the studies that analyze the relationship between international trade and economic growth have focused mainly on examining the influence of exports on economic growth; However, although imports are also an important element in the economies of the countries, the causal relationship between them and economic growth has been little addressed at the international level. Specifically in Mexico, there is little empirical evidence on the subject both at the national and regional level and especially in the case of a specific economic sector; That is why this research seeks to contribute to the empirical analysis of this relationship, focusing on the automotive sector.

In accordance with the foregoing, the objective of this investigation consisted of obtaining empirical evidence about whether it is economic growth that determines the increase in imports of light automobiles or if, on the contrary, imports of this type of goods are the that influence the economic growth of Mexico, for the period 1994-2019. The hypotheses to be tested in this study were those referring to the relationship between imports and economic growth: the first refers to the hypothesis "Imports-led Growth (ILG)", which indicates that imports are responsible for increasing economic growth; the second is the "Growth-driven imports (GDI)" hypothesis, which states that it is economic growth that drives imports; referring specifically to imports of light automobiles in the country.

According to Briseño (2018), the automotive industry:

> It plays a strategic role within the Mexican economy, since it is in charge of the production of intermediate goods and final consumption, thereby generating a vast amount of jobs and thus contributing greatly to the country's Gross Domestic Product (GDP) (s / p).

Therefore, this industry is one of the ones that contributes the most to the economy of Mexico, and thanks to its high potential and dynamism, it is that for years it was the second most important economic sector in the country (Vicencio, 2007), after the food industry; However, according to Eduardo Solís, from the Mexican Association of the Automotive Industry (AMIA), while 25 years ago, the agri-food industry contributed 20.0% of manufacturing and the automotive industry only 6.0%, for 2018, for the first time Once, the automotive industry surpassed the food industry, contributing 20.7 and 20.3% respectively (González, 2019). The dynamism of the automotive sector is also reflected in the following figures, from 2010 to 2017 the national GDP grew 3.0%, that of the manufacturing industries by 3.4%, while the GDP of the automotive industry grew by 12.3% (INEGI, 2018).

The work presents the following sections: the first deals with the introduction previously addressed. In the second, the theoretical aspects are raised. In the third, the empirical evidence in Latin America on the causal relationship between imports and economic growth. The fourth section presents the methodology that allows empirical analysis. In the fifth block, the analysis of statistical and economic results is carried out. Finally, in the sixth section, the conclusions of the research are presented.

Theoretical aspects

As is well known, no country is currently totally closed to international trade, however, the first theoretical approaches to the relationship between international trade and economic growth date back more than 200 years (16th century) (Feal, 2008):

> since, from the beginning of economic thought, the performance of countries in terms of growth and well-being has referred to their degree of interaction with the rest of the world and mainly to their trade flows abroad. The first to address this discussion were the so-called mercantilist economists (1500-1750) (Gómez and Salazar, 2014: 26).

This current of thought established that international trade dealt with gains in terms of trade, since through this precious metals (gold and silver) were obtained and their accumulation allowed a State to consider itself economically rich and powerful, translating into a surplus trade balance (Guerra, 2001); Therefore, to justify the increase in wealth (economic growth, in current terms), the mercantilists fought for the promotion of exports to the detriment of imports (Gómez and Ramírez, 2017: 42).

These statements about the importance of international trade in economic growth were followed by those of Adam Smith (1776) and David Ricardo (1817), who were the first to address the: "issue of economic growth and the generation of wealth and, in particular the limits or restrictions faced by the expansion process of capitalist market economies" (Jiménez, 2011: 57).

According to Jiménez (2012), their concern for the limits of economic growth was based on the following, for Smith: "the expansion of internal markets could reach a limit, thus slowing the expansion of the economy" (p . 18), while for Ricardo: "the accumulation of capital, stimulated by profits, could reach a limit that he called the steady state" (p. 18); Therefore, to solve their concern about the limits to economic growth, both authors advocated the expansion of trade since for Smith: "it was the only way for a country to expand its markets" (p. 18), and for Ricardo: "it was the way to counteract the negative effects of the reduction of capitalist profits in the presence of the rentiers and / or of increases in the prices of food or wage goods" (p. 18). In addition, Cáceres (2013b) mentions that these approaches in favor of trade between nations are known as absolute advantages and comparative advantages, respectively.

In this way, according to Cáceres (2013a), Adam Smith observed in the: "foreign trade the possible benefits for those nations that practice it" (p. 59), for him, both exports and imports (foreign trade) were important to increase the wealth and well-being of the inhabitants of a country.

On the other hand, according to Gómez and Ramírez (2017: 44), David Ricardo, assigned to imports an essential role in the English economy,

> who in his work Principles of Political Economy and Taxation gave theoretical support to the abolition of restrictions on the importation of cereals in England, in order to avoid the gloomy steady state, thus addressing the concepts of diminishing marginal returns and comparative advantage. (Gómez and Salazar, 2014: 26).

Later the formulations of Heckscher (1919) and Ohlin (1924) allowed to perfect and complement the Ricardian theory (Feal, 2008); Since the aforementioned approaches, together with those of these: "have made it possible to affirm that countries acquire from abroad those goods that intensively use the relatively scarce domestic factor of production, because they generate a lower opportunity cost and thus they reach a macroeconomic equilibrium "(Gómez and Salazar, 2014: 26).

Thus, under the premise raised by the mercantilists regarding the favorable trade balance, a significant number of investigations have been carried out in recent decades regarding the causal relationship between exports and economic growth (Gómez and Ramírez, 2017: 42).

Even so, in recent decades, some studies have focused on analyzing the import-economic growth relationship and effect; In this sense, some authors such as Lee (1995) and Ugur (2008) have directed their research to: "demonstrate that the introduction of foreign capital goods and technology encourages the development of countries, especially those that are developing" (Cited by Cárdenas et al., 2019: 1).

On the other hand, in the short term imports can have a negative influence on economic growth, since an increase in these damages external demand, approaches that go hand in hand with the ideas put forward by authors from the Cepalina school headed by Prebish (1950); as well as by Thirlwall (1979) with his so-called "Thirlwall's Law". However, in the long term, authors such as Griswold (2010), Li et al (2003) give imports an important role in the growth of economies.

On the other hand, some authors such as Khan (1975), Khan and Ross (1977) and Bahmani-Oskooee and Gobinda (2004) "are based on Marshallian demand functions" (p. 43) since they suggest that the import of goods and services, depends, among other factors, on income (GDP); therefore, his ideas revolve around the fact that it is the GDP that "determines the level of future imports in a country or region and not vice versa" (Cited by Gómez and Ramírez, 2017: 43).

According to Gómez and Salazar (2014), Khan's model (1975):

> It has a microeconomic foundation, as it is based on the neoclassical consumer demand theory ... and is consistent with the macroeconomic approach of the international trade triangle ... which explains the purchase of goods abroad based on income and the comparative advantages of an economy (p. 27).

Empirical evidence in Latin America

As mentioned in the introductory section, studies on the relationship between international trade and economic growth have focused mainly on the analysis of the influence of exports on economic growth; However, despite the fact that imports have also played an important role in the economies of the countries, these studies have been carried out less frequently. Among the most recent research for Latin America are the following:

Machuca et al. (2020), in their research to determine the relationship between Ecuador's GDP and imports generated by the country, implemented a VARMA model; Furthermore, according to the authors, to "capture the causality of imports towards GDP, the expanded import demand must be considered as an autoregressive vector model (VAR)" (p. 1). The study period was from 2003 to 2018. It was found that "Ecuadorian GDP depends on the imports generated by the country" (p. 14), in the period studied.

For their part, Cárdenas et al., (2019), sought to obtain empirical evidence about the impact of the composition of imports on "economic growth in Colombia for the period 1994: Q1 - 2016: Q4" (p. 1), the study focused on the effect of imports of capital goods, consumption and raw materials on economic growth. For this they used "models (VAR), Granger causality and impulse response functions" (p. 2), to observe the impact and causality relationship of the different types of imports on GDP:

> The results reveal that the composition of imports has a positive impact on GDP in the first period, maintaining variable effects in the short and long term, however, only imports of capital goods have a statistically significant and positive impact in the short term. ... this work supports the theory of Mutreja, Ravikumar and Sposi (2017), that imports of capital goods have a positive impact on GDP growth, which propose that by increasing imported capital goods above national ones, production would increase national (Cárdenas et al., (2019: 1, 14).

Peña (2019), studied "the relationship between imports and economic growth in 10 countries of the Latin American region (Argentina, Bolivia, Brazil, Chile, Costa Rica, Ecuador, Guatemala, Mexico, Peru and Uruguay), between the period 1988 to 2016 "(p. 1). Imports were considered both in an aggregate manner and disaggregated "into four main categories; raw materials, consumer goods, intermediate goods and capital goods "(p. 1); likewise, "they were further disaggregated to work separately on imports from 11 different categories; raw materials for agriculture, chemicals, food, fuel, machinery and transport equipment, manufacturing, metal and minerals, plastic and rubber, glass and stone, textiles, wood "(p. 1). The study was developed using panel cointegration techniques, analyzing the causality tests using the vector error correction model. The results obtained refer to empirical evidence in favor of the ILG hypothesis, since it is found that, in the long term, there is a positive relationship between aggregate imports and the economic growth of the countries of the region.

Regarding disaggregated imports, a positive relationship was only found between imports of intermediate goods and GDP growth in the countries under study, in the long term; for the other disaggregated categories (raw materials, consumer goods and capital goods), their imports do not determine the growth of the countries.

Arias and Muñoz (2019), in their thesis work entitled: Main macroeconomic determinants of imports in the countries of the Andean Community (CAN), aimed to "examine the relationship between the main macroeconomic variables and imports for the countries CAN members, taking as endogenous variables: GDP, exchange rate, inflation, consumption and foreign direct investment" (p. 2). Multivariate econometric models of time series were estimated to establish the relationship between variables, for the period that includes the second quarter of 2000 to the fourth of 2017. Likewise, a VAR model was estimated, "from the percentage variation of each of the variables mentioned with the exception of inflation" (p. 62); and an error correction vector model (VEC). The authors found that:

> There is a relationship between the variations in the real exchange rate index and the percentage change in imports in the case of Colombia and Ecuador,... while, in the long term, the relationship between the variation in GDP and the change is similar. percentage of imports for Colombia, Peru and Ecuador, while in Colombia, Bolivia and Ecuador there is a long-term relationship between the variation in FDI and the variation in imports (Arias and Muñoz, 2019: 63).

For Gómez and Ramírez (2017), their objective was to obtain empirical evidence about whether imports drive economic growth (GDI hypothesis) or if, on the contrary, economic growth determines the increase in imports (hypothesis ILG), applied in the department of Cauca, for the period 1960-2013. To carry out their study, they used a cointegration analysis and later an SVAR analysis, with impulse response functions that allowed us to observe the future behavior of imports and GDP. The results showed that the hypothesis is fulfilled for this region:

GDI and not ILG, since the causal relationship between GDP per capita and imports in Cauca goes from the first to the second and not vice versa, a result corroborated by the standard VAR model and the SVAR ... an important implication of what was found In the model, it is that the department of Cauca must grow in order to import, and not import in order to grow. For this reason, the recent figures on the behavior of its economy are not surprising, showing higher growth in both GDP per capita and imports Gómez and Ramírez (2017: 55-56).

Gómez and Salazar (2014) studied "the behavior and long-term determinants of imports for the departments of the Colombian Pacific coast ..., because local productive development and domestic consumption are also sustained by purchases abroad" (p. 24). To do this, these authors implemented:

> an import demand model that includes a cointegration analysis and an error correction method, which determines at a practical level which are the economic variables that must be taken into account to stimulate imports in the Colombian Pacific (p. 24).

The results they obtained showed that, with the exception of the department of Chocó, in all the territories studied "there is a stable long-term relationship between total imports, the exchange rate and GDP, as well as a positive impact of the liberalization processes. economic in departmental purchases abroad" (p. 24). The authors mention that:

> In the long term, imports in the Colombian Pacific (except for Chocó) are inelastic in relation to the real exchange rate, and elastic in relation to income. This reveals a high dependence on imports in the economies that make up the region, since, regardless of the rise in prices, demand remains considerably stable over time, while, if levels of economic activity increase, purchase levels abroad rise more than proportionally (p. 35).

Methodology

In this section, the econometric model is presented, and the variables used are described and specified.

Econometric model and description of the variables

The automotive industry is part of the country's manufacturing industry (within the secondary sector activities) (Briseño, 2018). Around 80.0% of the production of light vehicles produced in the country is destined for the foreign market, while 20.0% goes to satisfy the domestic market (INEGI, 2016). According to AMIA statistics (2018), from 1994 to 2018, this last percentage represents on average 50.0% of the units sold in the interior of the country, while the remaining 50.0% is satisfied with new imported vehicles. It is worth mentioning that, during the study period, total sales of light vehicles grew at an annual average growth rate (TCMA) of 3.7%. Along the same lines, since the entry into the North American Free Trade Agreement (NAFTA), exports increased, but so did vehicle imports.

Given the importance of the automotive industry not only for the foreign market but also for the domestic one, and in order to establish the causal relationship between light automobile imports and economic growth, an econometric model of simultaneous equations was used. The study was carried out for the period 1994 to 2019, with annual information. The variables of the system of simultaneous equations were the following:

Among the endogenous (M) are: GDP, imports of light automobiles for the domestic market of Mexico.

The predetermined variables (K) correspond to: a) the real peso / dollar exchange rate, which was obtained by deflating the nominal exchange rate, with the national consumer price index (INPC) base 2018 (DOF, 2018; INEGI, 2021); b) real inflation; c) total production of light vehicles for the domestic market in Mexico and d) exports of light vehicles; e) the total sale of light vehicles to the public in Mexico.

Formulation of the model

The structural form of the system of simultaneous equations was expressed as follows, given the interrelation of the endogenous and exogenous variables:

$$PIB_t = \alpha_0 + \alpha_1 ImpAut_t + \alpha_2 Xaut_t + \alpha_3 Vaut_t + \alpha_4 Inf_t + \varepsilon_i \qquad (1)$$

$$ImpAut_t = \beta_0 + \beta_1 PIB_t + \beta_2 ProdAutMi_t + \beta_3 Vaut_t + \beta_4 Xaut_t + \beta_5 E_t + \mu_i \quad (2)$$

Where: $\alpha_0,...., \alpha_n$; $\beta_{0,...,} \beta_n$, are the parameters to be estimated in each of the equations; ε_i and u_i, They are the error terms that are introduced in the models and that are distributed independently and identically with zero mean and constant variance; t, is the annual periodicity of the data (from 1994 to 2019); ⟦GDP⟧_t, refers to the GDP of Mexico (Millions of pesos in 2008); ImpAut, are the imports of light automobiles for the domestic market (Imported units); Vaut, corresponds to the total sale of light vehicles to the public in Mexico (Units sold); Xaut, indicates the exports of light vehicles (Exported units); Inf, real inflation in Mexico (%); ProAutMi, total production of light vehicles for the domestic market in Mexico (Units produced); Et, real exchange rate, peso / dollar (%).

Identification of the model

To carry out the identification of the structural equations of the system of simultaneous equations, the order condition was considered (Gujarati and Porter, 2010), in practice, this condition is generally adequate to ensure identifiability.

Equation number	K-k	m-1	K-k >= m-1	ID
1	7 – 3	2 – 1	4 > 1	Over identified
2	7 - 4	2 – 1	3 > 1	Over identified

K = number of predetermined variables in the model, including the intercept.
k = number of predetermined variables in a given equation.
m = number of endogenous variables in a given equation.

Table 1 Identification by order of the model of simultaneous equations
Source: Own elaboration, based on Gujarati and Porter, 2010

As shown in Table 1, both structural equations of the system of simultaneous equations turned out to be overidentified; Therefore, to estimate the structural parameters, the two-stage least squares method (MC2E) was used; using the statistical package Statistical Analysis System (SAS).

Results

In this section, the statistical and economic analysis was carried out on the basis of the structural coefficients estimated from the LS2 method and its relationship with economic theory. Subsequently, the elasticities were interpreted.

Statistic analysis

The statistical analysis was based on the coefficient of determination (R^2), the value of the calculated F (Fc), the mean square of the error, the value of the partial t's for each of the estimators, from the analysis of the variance. To test the statistical significance of each of the fitted regression equations, the following sets of hypotheses were considered, H0: $\alpha 1 = \alpha 2 = ... = \alpha n = 0$ against Ha: $\alpha i \neq 0$; and H0: $\beta 1 = \beta 2 = ... = \beta n = 0$ against Ha: $\beta i \neq 0$.

Dependent variable	Independent variables			
Equation 1				
GDP	**ImpAut**	**Xaut**	**Vaut**	**Inf**
Coefficient	11.07581	2.710035	-5.87015	-75328.6
t_c	**2.09**	**10.7**	-2.47	**-3.17**
P-value	**0.0492**	**<.0001**	0.0223	**0.0046**
Correlation	**0.69567**	**0.95177**	0.6962	**-0.62617**
R^2= 92.77				
F-valor = 67.37				
Prob>F = <.0001				
Equation 2				
ImpAut	**GDP**	**ProdAutMi**	**Vaut**	**Xaut**	**E**
Coefficient	-0.00711	-0.37184	0.539937	0.020681	-1406.43
t_c	-0.45	**-3.76**	**13.32**	0.49	-0.47
P-value	0.6542	**0.0012**	**<.0001**	0.6316	0.64
Correlation	0.69567	**0.653**	**0.96708**	0.69451	-0.63231
R^2= 96.97				
F-valor = 128.39				
Prob>F = <.0001				

Table 2 Variance analysis
Source: Own elaboration with the output of the statistical package SAS

The results of the analysis of variance (Table 2), indicated that the value of the global test for the equation of economic growth (GDP) was the following: the Fc = 67.37 was higher than the Ft, 0.05 (4, 21) = 2.840 Therefore, the null hypothesis (Ho) was rejected in favor of the alternative hypothesis (Ha), according to which, at least one of the parameters estimated by the LS2E regression was different from zero. The GDP function according to the determination coefficient (R2) was explained in 92.77% by the variables included in the equation. The individual test of the independent variables of equation 1 indicated that the ImpAut, the Xaut, as well as the Inf, turned out to be statistically significant, since according to the values shown in Table 2, they presented a | t_c | = 2.09, 10.70, -3.17 respectively, which were greater than tt, 0.05 (21) = 2.08, so the null hypothesis is rejected in favor of the alternative.

Regarding the equation of light car imports for the domestic market (ImpAut), it was obtained that the value of the global test Fc = 128.39 was greater than the Ft, 0.05 (5, 20) = 2.711, so it was rejected the null hypothesis in favor of the alternative hypothesis, that at least one of the parameters estimated by the LS2 regression was different from zero. The coefficient of determination (R2) indicated that the equation of the ImpAut was explained in 96.97% by the variables included in it. On the other hand, derived from the individual test, both the variable Vaut and that of ProdAutMi, turned out to be statistically significant with values of | t_c | = 13.32 and -3.76; values that were each greater than tt, 0.05 (20) = 2.086, and the null hypothesis is rejected in favor of the alternative.

For both equations this implies that the estimated parameters of the independent variables are different from zero. In addition, as shown by the same Table, the p-value of each of the independent variables that were statistically significant in equations 1 and 2, was lower than the level of significance (0.05), with a confidence level of 95.0%.

Economic analysis

This section presents the economic analysis of the estimated structural coefficients, in accordance with economic theory:

$$\widehat{PIB} = 10066734 + 11.07581\, ImpAut + 2.710035\, Xaut - 5.87015\, Vaut - 75328.6\, Inf \tag{3}$$

$$\widehat{ImpAut} = 18543.40 - 0.00711\, PIB - 0.37184\, ProdAutMi + 0.539937\, Vaut + 0.020681\, Xaut - 1406.43\, E \tag{4}$$

In equation (3) corresponding to GDP, of the economic variables included, those that resulted with the expected sign according to economic theory were ImpAut, Xaut and Inf, which presented a high correlation with GDP (Table two). According to the estimated parameters, there is a direct relationship between GDP and ImpAut and Xaut, respectively; as well as an inverse relationship between GDP and Inf. In this equation, only the Vaut in the domestic market did not present the expected sign according to economic theory since it was expected that when this variable increased the GDP would also increase, however, the sign obtained indicates the opposite.

In relation to equation (4), ImpAut, the variables Vaut, Xaut and E were those that presented the expected sign according to economic theory, also their correlation with respect to ImpAut was significant (Table 2). Therefore, by increasing the Vaut in the domestic market, as well as the Xaut, the ImpAut for the domestic market will increase, on the contrary, an inverse relationship was obtained between the E and the imports of these goods. On the other hand, GDP and ProdAutMi did not show the sign that was theoretically expected.

Statistics on the sale of vehicles to the public indicate that from 2001 to date the number of imported cars sold have been greater than those of national production; especially from 2016 to 2019, going from 55.0 to 66.0% respectively, with respect to the total sale of those years (AMIA, 2019). Therefore, on the sales side, the appreciation of the exchange rate would be expected to reduce the sale of automobiles in Mexico.

Economic interpretation of elasticities

In this section, the estimated parameters of the structural form of the model were considered for each of the variables studied.

$\varepsilon_{ImpAut}^{PIB} = 0.26861$	$\varepsilon_{PIB}^{ImpAut} = -0.29316$
$\varepsilon_{Xaut}^{PIB} = 0.40068$	$\varepsilon_{ProdAutMi}^{ImpAut} = -0.56798$
$\varepsilon_{Vaut}^{PIB} = -0.46550$	$\varepsilon_{Vaut}^{ImpAut} = 1.76548$
$\varepsilon_{Inf}^{PIB} = -0.05470$	$\varepsilon_{Xaut}^{ImpAut} = 0.12608$
	$\varepsilon_{E}^{ImpAut} = -0.09485$

Table 3 Elasticities of the model in its structural form
Source: Own elaboration

In Table 3, the elasticities are presented, which were obtained from the estimators of the simultaneous equations model, specifically those that resulted with the expected sign according to the economic analysis.

In the case of the GDP equation, before an increase of 10.0% in Inf, it will decrease by 0.54%. Likewise, the country will experience economic growth, by increasing ImpAut and Xaut by 10.0%, which will be 2.6 and 4.0% respectively.

The elasticities for the equation of the ImpAut indicated that these will increase by 17.6 and 1.2% respectively, as there is an increase of 10.0% in the Vaut and Xaut; while they will experience a decrease of 0.94% when the E.

Conclusions

This study aims to obtain empirical evidence about the influence of imports on Mexico's economic growth, applied to the automotive sector; That is, if it is economic growth that determines the increase in imports of light automobiles or if, on the contrary, it is imports of this type of goods that influence economic growth in Mexico, from 1994 to 2019.

According to the results obtained in the present investigation, the following was concluded: in statistical terms, according to the global test, both the GDP equation and the ImpAut equation were found to be significant.

Regarding the individual test, the variables included in the GDP equation that turned out to be significant were: ImpAut, Xaut and Inf. In the equation of ImpAut, the statistically significant variables according to the individual test were: ProdAutMi and the Vaut. All these significant variables presented a high correlation with respect to their dependent variables.

According to the hypotheses to be tested, referring to the relationship between imports and economic growth, in the case of the Mexican automotive industry for the study period 1994-2019, the hypothesis "Imports-led Growth (ILG); These results indicate that imports of light automobiles favor the economic growth of the country.

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