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Import Demand for Intermediate Goods in Mexico: 1993-2018

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Resumen

Las importaciones de bienes intermedios en México representan el 80% del total de las importaciones, y están estrechamente relacionadas con las exportaciones y la producción para la demanda interna. El objetivo de este trabajo es proporcionar las elasticidades de la demanda y del precio real de intercambio de los OMG en México. Como primer paso, se utilizó un Modelo de Corrección de Errores Vectoriales (VEC); sin embargo, esta estimación mostró problemas de endogeneidad. Como segundo paso, se construyó un Modelo de Variables Instrumentales, que presentaba problemas de multicolinealidad entre las variables. Por lo tanto, se estimaron dos VEC separados para las relaciones MIG-Exportaciones y MIG-Demanda Interna; los coeficientes son estadísticamente significativos en ambos modelos. Los resultados demostraron que las exportaciones contribuyen muy poco al PIB mexicano, las exportaciones muestran una demanda inelástica de bienes intermedios y una alta propensión a la importación. Las importaciones intermedias para el consumo interno también muestran una elevada elasticidad importadora (pero inferior a la unidad) y una propensión mucho menor a importar; por lo tanto, esta porción de la economía tiene más posibilidades de aplicar con éxito políticas para aumentar el contenido nacional.

Abstract

Imports of Intermediate Goods (MIGs) in Mexico represent 80% of the total imports, and there are closely related to exports and production for domestic demand. The aim of this paper is to provide demand and real exchange price elasticities of MIGs in Mexico. As a first step, a Vector Error Correction Model (VEC) was used; nevertheless, this estimation showed endogeneity problems. As a second step, an Instrumental Variables Model was constructed, having multicollinearity problems between variables. Therefore, two separated VECs were estimated for the relations MIG-Exports and MIG-Domestic Demand; coefficients are statistically significant in both models. Results demonstrated that exports contribute very little too Mexican GDP, exports exhibit an inelastic demand for intermediate goods and high propensity to import. Intermediate imports for domestic consumption also show a high import elasticity (but less than unity) and a much smaller propensity to import; therefore, this portion of the economy has more possibilities to successfully implement policies to increase national content.

Key words: VEC, Imports, Intermediate goods, Mexico

Códigos JEL: F02, F14, F15.

1. Introduction

Given the adverse influence that may have excessive imports, on economic growth, especially in the developing countries such as Mexico, it is essential to correctly quantify the elasticity of demand for imports and the propensity to import. According to Santos-Paulino (2002), to identify the main variables that affect the behavior of imports can help economic policymakers to design and evaluate the sustainability of an economic strategy. The estimation of demand for imports provides important policy addresses, such as the sensitivity of import demand to changes in income and relative prices.

Import management is a crucial issue for developing countries in their quest for economic growth, and in this regard, Mexico is not an exception. INEGI (2020) database shows that Mexican exports a value equivalent to 30% of GDP, and imports even more significant amount, which produces an endemic current account deficit. More than 80% of total Mexican exports go to the USA, and slightly over 80% of exports are manufactured products. Nevertheless, the impact of exports on the rest of the economy is minimal. This happens because the import content of exports is very high. Mexico has been growing for the last 38 years at an unacceptable rate. Between 1980-2018, the average growth rate of GDP per capita was 0.9%, and the weight of manufacturing in total GDP went from 18% in 1980 to 16.5% in 2018.

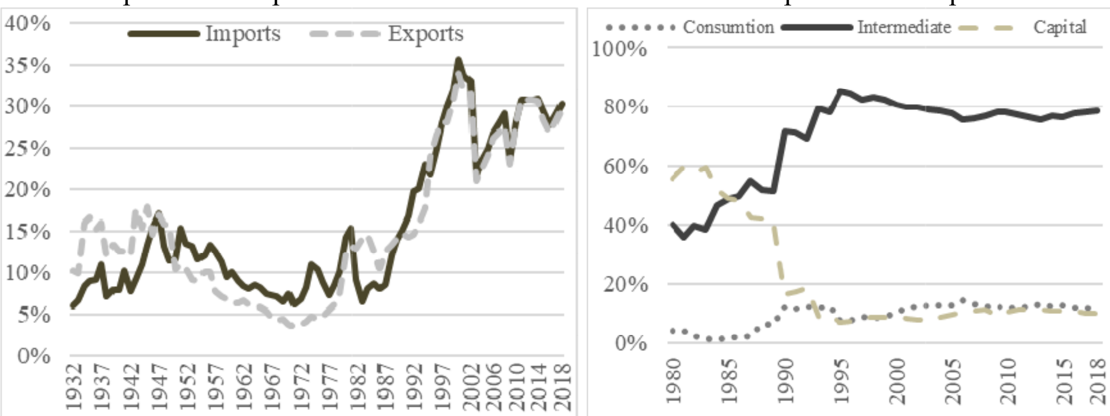
Industrialization seeks two objectives: increase economic growth and achieve commercial surpluses; these surpluses neutralize interference by rating and international financial agencies, giving greater economic autonomy. Developing countries with a high proportion of manufacturing value-added in GDP, such as China (30%), South Korea (27%), Thailand (26.5%), Malaysia (25%) and Singapore (20%), show trade surpluses exceeding 5% of GDP; and high rates of income growth per capita, from the lowest, higher than 3%, and up to 6% in the case of China (WB, 2020).

In contrast, developing countries that followed neoliberal policies are de-industrializing. In Latin America, for example, countries such as Argentina and Brazil, with levels of manufacturing value-added in GDP around 30% in 1980, are in 2018 at levels of 13% and 10%, respectively. This deindustrialization was accompanied by large current account deficits. In 2018, in Argentina, the current account deficit was 5% of GDP, Brazil's 0.5%, and in Mexico of 1.7%. These two trends are rigging a slow growth of *per capita* income. During the period 1980-2018, average annual growth for Argentina, Brazil, and Mexico rates were 0.8%, 0.7%, and 0.9%, respectively (WB, 2020).

Mexico's economic integration with the global markets has strengthened, especially in the last four decades, and Mexico's openness ratio (percentage of imports and exports in GDP) rose to its peak of 70% in 2000 compared with 11% in 1970. In 2018 this figure was reduced to 60% (See Figure 1 Panel A). During this period, imports of capital goods were reduced from 60% of total imports in 1983 to 10% in 2018; at the same time, intermediate goods in total imports increased from 40% to nearly 80% in 2018 (see Figure 1, Panel B). This shift was created as the country abandoned the government-led growth strategy and entered at the globalization movement, first by lowering tariffs unilaterally and later joining in the North American Free Trade Agreement (NAFTA).

Figure 1: Mexican Foreign Trade

A: Imports and Exports as a % of GDP B: Composition of imports



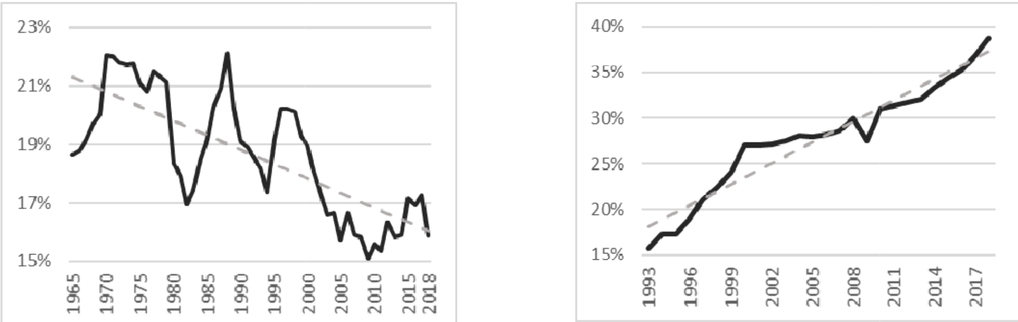
Source: Historical Statistics of Mexico (INEGI, 2020).

The adoption of NAFTA included open borders for foreign capital (FDI); thus, Mexico dismantled its industrial programs and specialized in the labor-intensive parts of the fragmented production process that was swiping the World. That originated a low national content in exports as well as production for local consumption, and it means that since then, the increase in exports has a low impact on economic growth; Ibarra (2011) defines the Mexican current economic growth model as the export of imports. This explains the reduced need for capital equipment and the increased dependence on imports to produce for local consumers and exports. (See Figure 2 Panel B).

Figure 2: Declining Mexican Manufacturing Sector and Growing Dependence on Foreign Intermediate Goods.

A: Manufacturing Value Added as a % of GDP

B: Intermediate imports as a % of total intermediate goods used in the economy.



Source: World development indicators (WB, 2020) and System of National Accounts (INEGI, 2020).

Most of the FDI inflow in the manufacturing industry was towards the automotive sector. Foreign automotive companies carried out a high amount of good intermediate imports, including engines and software according to their global supply chain strategies. The problem with FDI is that transnational corporations do not have any interest in creating a local supply chain of intermediate goods or contribute to research and development in Mexico. They satisfied their supply needs with a foreign network of suppliers, which they know and trust, and they could be imported thanks to trade agreements such as the NAFTA (USCMA), EU-Mexico Global Agreement, and Economic Partnership Agreement Mexico-Japan. Alternatively, Mexico has special agreements with firms from Asian countries where Mexico do not have trade agreement through the WTO.

For the last 36 years, there has not been a serious effort from the part of the government to induce the production of Mexican components that compete with imports. Mexican manufacturing sector is dominated by transnational corporations without any significant regulation by the government. Mexico is a prominent exporter of manufacturing goods, but as seen in Figure 2, there is a clear declining tendency of manufacturing value-added as a percentage of GDP since 1985. This paradox is explained once it is recognized that Mexican exports are labor-intensive activities, which include the assembling of foreign parts with little value-added. 40% of Mexican intermediate demand is satisfied with imports giving little room for linkages with the rest of the country.

This paper attempts to contribute to the literature by providing demand and real exchange price elasticities of MIGs in Mexico. To the best of our knowledge, there is no study in the literature estimating income and price elasticities of intermediate imports for Mexico. The remainder of the paper is organized as follows: Section 2 provides brief literature review; Section 3 presents the specification of the general model; Section 4 describes the data set and its sources, construct two instrumental variables and determines that all variables that the model used are of the same order of integration, all are I(1);

Section 5 develops an estimate two vector autoregressive models; Section 6 discusses the results, and Section 7 concludes.

2. Literature review

In the broad literature on import determinants, studies analyze determinants of imports at the aggregated and disaggregated levels by using different econometric techniques. Indeed, the aggregated models can be divided into two.

Some models estimate import demand as a function of aggregate income-expenditure. Reinhart (1995) estimated equations of imports and exports to several countries in Africa, Asia, and Latin America. For Mexico, the author provides evidence that data series of imports, exports, national income, income from trading partners of Mexico, and relative prices of imports and exports from the country are consistent with processes *I(1)* and which, according to the case, are evidence of cointegration. In his analysis for Mexico, Senhadji (1998) characterized imports, income, and the relative price of imports as variables *I(1)*; However, unlike Reinhart (1995), He did not find evidence of Cointegration.

Cardero and Galindo (1999) estimate the equation of imports from Mexico and analyze whether this displayed structural stability over the period 1983-1995. The authors found evidence, in this period, that the relative price of imports is characterized as a process *I(0)*, while the imports and income can be characterized as processes *I(1)*. Also, they found two cointegrating relationships in the equation for imports and determined that the largest eigenvalue associated does not show structural instability.

Bahmani-Oskooee and Hegerty (2009) estimate the equations for imports and exports in Mexico between 1962-2004. In addition to the classic regressors adding two dichotomous variables: one for the accession of the country to the General Agreement on the Tariffs and Trade (GATT) and another accession to NAFTA; They estimate and found the existence of the respective cointegration among variables. The authors found a related cointegration of both exports and imports. Also, his paper explains that permanent dichotomous variables are statistically significant and suggest the possibility of changes in the behavior of trade flows in response to GATT and NAFTA.

Cermeño and Rivera (2016) analyze flows of international trade in Mexico during the period of NAFTA. According to the imperfect substitute goods model, they estimate imports and export equations using a cointegration test with monthly data for the period 1994-2014. The authors found cointegration for each equation of the trade relationship. In both cases, price elasticities and income estimated long-term are significant, and their signs are consistent with economic theory. On the other hand, Mexican imports are elastic concerning the product, which is indicative of the high dependence of the Mexican economy on imported inputs.

Some other authors take aggregate import as a function of disaggregated income-expenditure, namely, consumption, investment, and exports components (Tang (2005); Zhou and Dube (2011); Chani and Chaudhary (2012); Modeste (2011)). In these studies, the rationale of disaggregating income-expenditure is explained as avoiding aggregation bias, which results from the use of a single aggregate expenditure variable in the import function, when different macro components of final expenditure are used they produce different impacts on imports. On the other hand, disaggregated models estimate disaggregated import demand functions mostly under Broad Economic Classification (BEC) namely, capital goods, intermediate inputs, and consumption goods imports (Çakmak, U., Gökçe, and Çakmak, O.A. 2016.; Togan and Berument (2007), Akal (2008); Aldan, Bozok and Günay. (2012); Thaver, Ekanayake, and Plante (2012); Oktay and Gözgör (2013); Xu (2002)).

Finally, in the literature, of aggregated intermediate goods demand, there are very fewer studies, Ueda (1983) for Japan; Stirböck (2006) for Germany; Uğur (2008) and Colak, Tokpunar and Uzun (2014) for Turkey; Goldberg et al. (2010) for India; Hye (2008) for Pakistan; Glover and King (2011) for Central America.

3. Specification

The choice of the form of the demand function is a frequent problem when researchers are estimating models of aggregate demand for imports. The theory of international trade does not give many clues about the appropriate form of the specification or the estimation of demand equations of imports. Two of the most used functional forms are linear and logarithmic.

According to Leamer and Stern (1970), it is possible to specify the equation of import demand, which relates the demanded amount of imports with income, the price of imports, and the price of domestic substitutes. The equation of demand for imports in time t is as follows.

$$M_t = f(Y_t^n, P_t^f, P_t^d) \qquad (1)$$

Where M_t is the quantity of imports, Y_t^n is the national nominal income, P_t^f is the price index of imports, and P_t^d, is the domestic price index of domestic goods. The ordinary Marshallian demand function points out that equation 1 is homogeneous of degree zero in prices and nominal income, implying the absence of monetary illusion and allows us to express imports based on real income and relative prices. Therefore, the restricted function is expressed in function of real income and relative prices as follows:

$$M_t = g(Y_t, R_t) \qquad (2)$$

Where $Y_t = Y_t^d/P_t^d$ the real national income, and $R_t = P_t^f/P_t^d$. The ratio between the prices of imports to domestic goods, expressed in the same currency, i.e., the real exchange rate. Such demand for imports implicitly restricts that the effect of the two prices on demand is the same, but with opposite sign. The linear version of aggregate demand for imports is:

$$M_t = \alpha_0 + \alpha_1 Y_t + \alpha_2 R_t + \varepsilon_t \qquad (3)$$

Where α_0 is the term constant in the regression, α_1 is the marginal propensity to import, α_2 is the coefficient that measures the impact of relative prices to import demand, and ε_t, is the random independent term. According to economic theory, it is expected that $\alpha_1 > 0$ and $\alpha_2 < 0$. However, Goldstein and Khan (1976) argued that imports represent the difference between domestic consumption and production, if production grows faster (slower) than the consumption in response to an increase in real income, imports may decrease (increase) as real income increases, resulting in a coefficient α_1 with a negative sign (positive).

In logarithms, import demand is expressed as:

$$lnM_t = \beta_0 + \beta_1\, lnY_t + \beta_2 lnR_t + u_t \qquad (4)$$

Where ln represents the natural logarithm and u_t, is the error term. According to economic theory, it is expected that $\beta_1 > 0$ and $\beta_2 < 0$; Although, as it mentions, β_1 maybe negative.

In previous research, Khan and Ross (1977), Boylan, Cuddy, and O´Muircheartaigh (1980) and Doroodian, Koshal, and Al-Muhanna (1994) argue that the specification of the logarithmic form is preferable when estimated import demand functions, since these forms of estimation allows interpreting the coefficients as elasticities of the dependent variable respect to the independent variable. This formulation is also useful because it can mitigate the problem of heteroscedasticity.

Considering that the imported intermediated goods are used to produce exports as well as to produce goods and services for the domestic market, this paper proposes to model the Mexican demand for intermediate goods a modified version of equation (4).

$$lnMIG_t = \beta_0 + \beta_1 \ln X_t + \beta_2 \ln D_t + \beta_3 \ln R_t + u_t \qquad (5)$$

Where MIG is total import demand for intermediate goods, *X* represents total gross exports, and *D* is total gross domestic demand. Since the gross value of production is total domestic demands plus gross exports ($GVP \equiv D + X$), $D = GVP - X$. And R_t and u_t are defined as before.

One of the problems in estimating equation (5) is the problem of endogeneity: gross exports include value-added plus intermediate goods, and domestic demand also is formed by value-added plus intermediate goods. Moreover, intermediated goods are formed by domestic and foreign intermediate goods. Therefore $\ln X_t = f(lnMIG_t) \rightarrow lnX_t = f(u_t)$, by the same token $\ln D_t = f(lnMIG_t) \rightarrow lnD_t = f(u_t)$. Therefore, as presented, equation (5) do not comply with OLS assumptions; therefore the estimation needs to replace X_t and D_t with instrumental variables.[1]

[1] Instrumental variables are used when an explanatory variable of interest is correlated with the error term, in which case ordinary least squares give biased results. The instrument must be correlated with the endogenous explanatory variables, conditionally on the other covariates. If this correlation is strong, then the instrument is said to have a strong first stage. A weak correlation may provide misleading inferences about parameter estimates and standard errors. The instrument cannot be correlated with the error term in the explanatory equation, conditionally on the other covariates. In other words, the instrument cannot suffer from the same problem as the original predicting variable. If this condition is met, then the instrument is said to satisfy the exclusion restriction (Nichols, 2006).

For the instrument, this paper proposes the following export demand and domestic demand functions:

$$lnX_t = a_0 + a_1 lnGDP_t^{USA} + e_t \quad (6)$$

$$lnD_t = b_0 + b_1 lnGDP_t^{MEX} + \varepsilon_t \quad (7)$$

Where GDP_t^{USA} and GDP_t^{MEX} are, respectively, the gross domestic product of the USA and Mexico.

4. Data

Data for Mexican real gross value of production, gross domestic product, exports, and imports of intermediate goods were obtained from INEGI (2020) and Banco de Mexico (2020). These series are expressed in millions of Mexican Pesos (Constant 2013 MXN$), and there were converted to dollars using the average peso-dollar exchange rate of 2013. The real exchange rate is the weighted average of the real exchange rate of Mexico with 111 countries and was obtained from Banco de Mexico (1993=100).[2] GDP for the USA were obtained from Economic Research, Federal Reserve Bank of St. Louis (FRED, 2020). Except for real exchange rates, all variables are expressed in billions of US 2013 dollars. All series are reported in quarterly data and covers the 1993q1 to 2018q4. The model has 104 observations. Finally, all variables were seasonally adjusted using the moving average method to smooth out short-term fluctuations and highlight longer-term trends.

In order to avoid spurious regressions in the process of obtaining the instrumental variables, This paper runs a test of the level of integration of the lnX_t, lnD_t , $lnGDP_t^{USA}$ and, $lnGDP_t^{MEX}$. The results are presented in Table 1.

Table 1. Phillips-Perron test statistic (levels)

Variable	Intercept	Trend and Intercept	None
lnX_t	-1.8347	-2.7939	4.2264
lnD_t	-1.1197	-2.4051	2.5010
$lnGDP_t^{MEX}$	-0.5552	-3.0395	3.6551
$lnGDP_t^{USA}$	-2.2543	-1.8276	6.6137

Note: the critical values of the Phillips-Perron test with intercept, trend and intercept and none to the significance levels of 1%, 5% and 10% are, respectively: -3.495021, -2.889753, -2.581890; -4.049586, -3.454032, -3.152652; -2.587607, -1.943974. -1.614676. Source: author's estimation

[2] Recall, lower values of R means that the local currency is overvalued: $R = P^f/P^d$

Table 2. Phillips-Perron test statistic (first differences)

Variable	Intercept	Trend and Intercept	None
lnX_t	-8.6649	-8.7837	-7.6618
lnD_t	-6.5897	-6.9441	-3.6567
$lnGDP_t^{MEX}$	-10.1423	-10.0936	-9.2147
$lnGDP_t^{USA}$	-6.5897	-6.9441	-3.6567

Note: the critical values of the Phillips-Perron test with intercept, trend and intercept and none to the significance levels of 1%, 5% and 10% are, respectively: -3.495677, -2.890037, -2.582041; -4.050509, -3.454471, -3.152909; -2.587831, -1.944006, -1.614656. Source: author's estimation

Since all four variables are of the same order of integration, we estimate equation (6) and (7) to obtain instrumental variables $\widehat{lnX_t}$ and $\widehat{lnD_t}$. The estimation of equation (6) uses a dummy variable for the period 2008Q4-2009Q1 to represent the 2008 crisis and its aftermath.

$$\widehat{lnX_t} = -9.078119 + 2.258467 lnGDP_t^{USA} - 0.163987 Crisis_{2008} \tag{8}$$

Where $Crisis_{2008}$, is a dummy variable for the 2008-09 crisis. R2 = 0.976829. Figure 3 panel A shows the observed and forecast values of lnX_t which is the instrument.

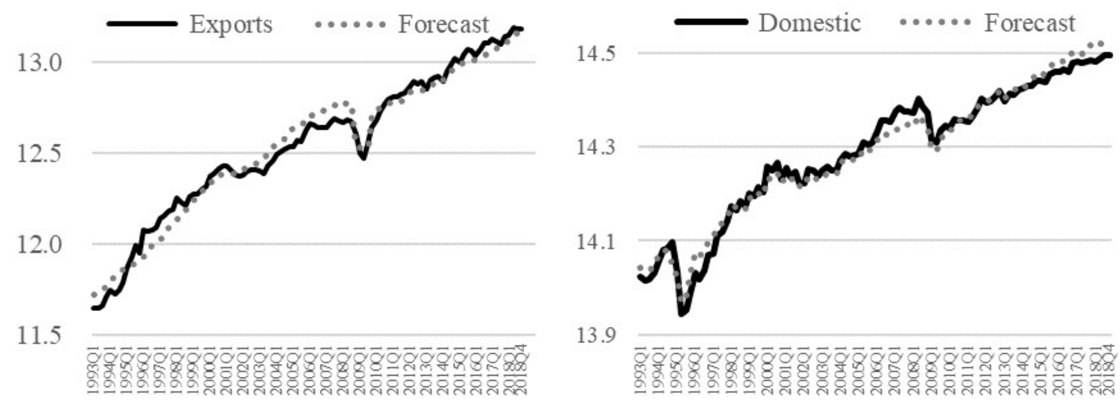
The estimation of equation (7) uses a dummy variable for the period 1994Q4-1995Q3 to represent the 1994 crisis.

$$\widehat{lnD_t} = 3.142939 + 0.801988 lnGDP_t^{MEX} - 0.034775 Crisis_{1994} \tag{9}$$

Where $Crisis_{1994}$ is a dummy variable for the 1994-95 crisis: 1994q4, 1995q1, 1995q2, 1995q3 =1. R2 = 0.980760. Figure 3 panel B shows the observed and forecast values of lnD_t

Figure 3: Instrumental Variables $\widehat{lnX_t}$ and $\widehat{lnD_t}$

A: lnX_t B: lnD_t



Source: author's estimation

Test of collinearity between $\widehat{lnX_t}$ and $\widehat{lnD_t}$ concludes a high degree of collinearity (table 3). Thus, equation (5) could not estimate directly using instrumental variables

Table 3. Collinearity between $\widehat{lnX_t}$ and $\widehat{lnD_t}$

Dependent Variable: $\widehat{lnX_t}$			Method: Least Squares	
Sample: 1993Q1 2018Q4			Included observations: 104	
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-25.49039	1.029016	-24.77161	0.0000
$\widehat{lnD_t}$	2.661815	0.072017	36.96077	0.0000

R-squared: 0.930522 Adjusted R-squared: 0.929841

Source: author's estimation

Instead, the model estimates two separate equations:

$$\ln MIG_t = \beta_0 + \beta_1 \widehat{\ln X_t} + \beta_3 \ln R_t + u_t \quad (10)$$

And

$$\ln MIG_t = \beta_0 + \beta_1 \widehat{\ln D_t} + \beta_3 \ln R_t + u_t \quad (11)$$

Using the Philips-Perron test, tables 4 and 5 reports that all variables have the same order of integration *I(1)*. Thus, the VEC model is the correct method to estimate equations 10 and 11.

Table 4. Phillips-Perron test statistic (levels)

Variable	Intercept	Trend and Intercept	None
$ln\hat{X}_t$	-1.701161	-2.070307	4.643329
$ln\hat{D}_t$	-0.530482	-2.921970	3.509370
$lnMIG_t$	-2.124900	-2.209419	3.682476
lnR_t	-2.416571	-2.441255	-2.326734

Note: the critical values of the Phillips-Perron test with intercept, trend and intercept and none to the significance levels of 1%, 5% and 10% are, respectively: -3.495021, -2.889753, -2.581890; -4.049586, -3.454032, -3.152652; -2.587607 -1.943974. -1.614676.

Source: author's estimation

Table 5. Phillips-Perron test statistic (first differences)

Variable	Intercept	Trend and Intercept	None
$ln\hat{X}_t$	-8.300857	-8.545032	-7.363969
$ln\hat{D}_t$	-8.770516	-8.720341	-8.097782
$lnMIG_t$	-10.12532	-10.51482	-9.180217
lnR_t	-9.718287	-9.671822	-9.755982

Note: the critical values of the Phillips-Perron test with intercept, trend and intercept and none to the significance levels of 1%, 5% and 10% are, respectively: -3.495677, -2.890037, -2.582041; -4.050509, -3.454471, -3.152909; -2.587831, -1.944006, -1.614656.

Source: author's estimation

5. Estimation of the VEC models

Using the vector error correction method, this paper estimates equation (10) and (11).

A. Estimation of equation (10)

As a first step, the estimation of VEC runs a VAR using $lnMIG_t$, $\widehat{lnX_t}$ and lnR_t to find the optimal lag length using several criteria.

Table 6. VAR Lag Order Selection Criteria

Endogenous variables: $lnMIG_t$, $\widehat{lnX_t}$, and lnR_t. Exogenous variables: c

Sample: 1993Q1 2018Q4 Included observations: 96

Lag	LogL	LR	FPE	AIC	SC	HQ
0	156.6911	NA	8.17e-06	-3.2018	-3.1217	-3.1695
1	505.5438	668.6343	6.87e-09	-10.2821	-9.9616*	-10.1525*
2	515.8646	19.1363	6.69e-09	-10.3096	-9.7487	-10.0829
3	526.7295	19.4664	6.45e-09	-10.3485	-9.5471	-10.0246
4	538.9894	21.1993*	6.04e-09	-10.4164	-9.3746	-9.9953
5	548.8664	16.4616	5.96e-09*	-10.4347*	-9.1525	-9.9164
6	556.5654	12.3505	6.16e-09	-10.4076	-8.8850	-9.7921
7	559.3190	4.24508	7.08e-09	-10.2774	-8.5144	-9.5648
8	563.6369	6.38689	7.90e-09	-10.1799	-8.1765	-9.3701

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion
Source: author's estimation

The FPE and AIC criteria suggest five lags; the SC and HQ criterion suggests using two lags. The estimation adopts the FPE and AIC criteria. The next step is to perform the Juselius-Johansen (1990) test with five lags for $lnMIG_t$, $\widehat{lnX_t}$, and lnR_t. The estimation uses the model with no interceptor or trend and five lags. Tables 6 and 7 show the results of the Johansen Juselius test. The Johansen method suggests two statistics to determine the number of vectors of cointegration: the trace statistic and the test of the maximum eigenvalue. The critical values appropriate for the test are the Osterwald Lenmum (1992). The null and alternative hypotheses are tested using these statistics:

Table 7. Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Trace Statistic	(0.05) Critical Value	Prob**
None *	34.16896	34.16896	0.0001
At most 1 *	13.16793	13.16793	0.0031
At most 2 *	5.796967	5.796967	0.0118

Trace test indicates three cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values
Source: author's estimation

Table 8. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Max-Eigen Statistic	(0.05) Critical Value	Prob**
None *	21.00103	17.79730	0.0159
At most 1	7.370960	11.22480	0.2190
At most 2	5.796967	4.129906	0.0191

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: author's estimation

Johansen's cointegration test rejects the hypothesis of the non-cointegration vector at least at the level of five percent, thus indicating the presence of a cointegration equation. The presence of at least one relation cointegration between the variables in levels justifies the use of a VEC model, that is, a model that combines the short-term properties of economic relationships with long-term data information, in the form of a level provided by the Johansen test. The VEC model is represented in equation (12).

$$\Delta y_t = \beta_0 + \sum_{i=1}^{N} \beta_i \, \Delta y_{t-i} + \sum_{i=1}^{N} \delta_{1,i} \, \Delta x_{1,t-i} + \cdots + \sum_{i=1}^{N} \delta_{j,i} \, \Delta x_{j,t-i} + \sum_{i=1}^{M} \theta_i D_i + \varphi Z_{t-1} + \mu_t \qquad (12)$$

Where "y" is the dependent variable in the first equation of the VEC, x_i ,*i=1,..,4* are the variables that appear as dependent on the other equations of the VEC, but as independent in the first equation, D_i are exogenous variables for all the VEC and Z_{t-1}, is the residual of the cointegration equation. The error-correction term, φ, is related to the fact that the deviation of the last period of the long-run equilibrium (the error), it influences the dynamics of short-term of the dependent variable. Thus, the coefficient φ measures the speed of adjustment, to which $lnMIG_t$ returns to equilibrium after a change in the independent variables.

The results of the estimation of equation (10) appear in Table 9.[3] The R^2 is 0.71, above 50%, so the estimation had a good fit. Also, the results show that the first term of error correction, φ, has the expected sign and is significant: -0.012, (0.005), [-2.513]; this implies that the model returns to its equilibrium level at a rate of 11.82% per quarter. These results confirm that there exists a long-term joint *causality* of all independent variables towards import demand for intermediate goods.

[3] To achieve normality, the model uses seven dummy variables. D1:1995Q1, D2:1996Q4, D3:1997Q3, D4:2001Q3, D5:2003Q1, D6:2008Q2, D7:2008Q.

Table 9. $lnMIG_t$, $\widehat{lnX_t}$, and lnR_t VEC

Method: Least Squares (Gauss-Newton / Marquardt steps)				
Dependent Variable: D(LN(MIG))			Sample (adjusted): 1994Q3 2018Q4	
D(LN(MIG)) = φ *($lnMIG_{t-1}$ - 1.05750921662* $\widehat{lnX_t}$+ 1.17752156205* lnR_{t-1}) + C(2)*D(LN(MIG)(-1)) + C(3)*D(LN(MIG)(-2)) + C(4)*D(LN(MIG)(-3)) + C(5)*D(LN(MIG)(-4)) + C(6)*D(LN(MIG)(-5)) + C(7)*D($\widehat{lnX}$ (-1)) + C(8)*D($\widehat{lnX}$(-2)) + C(9)*D($\widehat{lnX}$ (-3)) + C(10)*D($\widehat{lnX}$ (-4)) + C(11)*D($\widehat{lnX}$ (-5)) + C(12)*D(LNR(-1)) + C(13)*D(LNR(-2)) + C(14)*D(LNR(-3)) + C(15)*D(LNR(-4)) + C(16)*D(LNR(-5)) + C(17)*D1 + C(18)*D2 + C(19)*D3 + C(20)*D4 + C(21)*D5 + C(22)*D6 + C(23)*D7				
	Coefficient	Std. Error	t-Statistic	Prob.
φ	-0.011824	0.004706	-2.512581	0.0141
C(2)	-0.242174	0.097889	-2.473978	0.0156
C(3)	-0.141647	0.095230	-1.487428	0.1411
C(4)	-0.131052	0.097115	-1.349447	0.1813
C(5)	-0.027215	0.093962	-0.289635	0.7729
C(6)	0.031875	0.084241	0.378381	0.7062
C(7)	1.003866	0.162902	6.162400	0.0000
C(8)	-0.077823	0.196392	-0.396264	0.6930
C(9)	-0.522029	0.200063	-2.609326	0.0109
C(10)	0.644836	0.204932	3.146587	0.0024
C(11)	-0.223793	0.169828	-1.317762	0.1916
C(12)	0.405480	0.067000	6.051907	0.0000
C(13)	0.002777	0.077323	0.035911	0.9714
C(14)	-0.007914	0.078892	-0.100316	0.9204
C(15)	0.074997	0.080516	0.931462	0.3546
C(16)	-0.032184	0.072301	-0.445134	0.6575
C(17)	-0.158209	0.032020	-4.940899	0.0000
C(18)	-0.057171	0.032290	-1.770528	0.0807
C(19)	0.106073	0.030780	3.446139	0.0009
C(20)	0.056547	0.030365	1.862213	0.0665
C(21)	-0.130176	0.030845	-4.220392	0.0001
C(22)	0.081377	0.032393	2.512180	0.0141
C(23)	0.073711	0.032417	2.273863	0.0258
R-squared	0.711880	Mean dependent var		0.014221
Adjusted R-squared	0.627365	S.D. dependent var		0.048340
S.E. of regression	0.029509	Akaike info criterion		-4.006364
Sum squared resid	0.065307	Schwarz criterion		-3.399688
Log-likelihood	219.3119	Hannan-Quinn criteria.		-3.760976
Durbin-Watson stat	1.893660			

Source: author's estimation

Where the cointegration equation is given by:

$$lnMIG_{t-1} = 1.05750921662 \ \widehat{lnX_{t-1}} - 1.17752156205 \, lnR_{t-1} \qquad (13)$$

The residual is given by:

$$Z_{t-1} \equiv lnMIG_{t-1} - 1.05750921662 \ \widehat{lnX_{t-1}} + 1.17752156205 \, lnR_{t-1} \quad (14)$$

This means that the long-run elasticity of imported intermediate goods respect to a one-unit change gross exports is 1.0576 and concerning the real exchange rate is -1.1775. To calculate the long run propensity of imports of intermediate goods with respect to a 1$

increase in exports: $m_X = \frac{dMIG}{dX}$; it was multiplied the elasticity result 1.058 by $\left(\frac{\overline{MIG}}{\bar{X}}\right)$, where the bar corresponds to the average value of the series MIG and X.[4] That is 1.058 (235,455.99/301003.67), and it gives the value $m_X = 0.78$.

The diagnosis of the residuals consists of three parts: a) autocorrelation test; b) heteroscedasticity test; and c) normality test. The analysis starts with the Breusch-Godfrey autocorrelation test with three lags. The test results appear in Table 10.

Table 10. Breusch-Godfrey Serial Correlation LM Test

Null hypothesis: No serial correlation at up to 5 lags

F-statistic	0.621157	Prob. F(5,70)	0.6841
Obs*R-squared	4.163379	Prob. Chi-Square(5)	0.5261

Source: author's estimation

Since the probability value, 68.4% is higher than the required 5%; the null hypothesis is accepted; that is, the model does not have a serial correlation in the residuals at the 5% confidence level.

Diagnosis continues with the heteroscedasticity test; the results of the Breusch-Pagan-Godfrey test appear in Table 11.

Table 11. Heteroskedasticity Test: Breusch-Pagan-Godfrey

Null hypothesis: Homoskedasticity

F-statistic	1.175995	Prob. F(25,72)	0.2910
Obs*R-squared	28.41411	Prob. Chi-Square(25)	0.2891
Scaled explained SS	13.93056	Prob. Chi-Square(25)	0.9629

Source: author's estimation

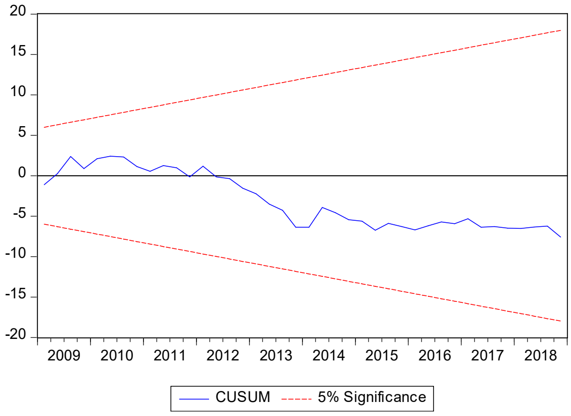
Since the probability of Obs * R-squared is 28.9%, higher than the 5% required, the null hypothesis cannot reject and conclude that the model does not have heteroscedasticity in the residuals.

Next, the normality test of residuals finds a value of 0.436 for the Jarque-Bera coefficient with a probability of 0.804. This value of 80.4% is higher than the 50% required, so the null hypothesis cannot reject and, therefore, conclude that the model presents normality in the residuals.

[4] The formula of elasticity is $\epsilon_{MIG,X} = \frac{dMIG}{\overline{MIG}}\frac{\bar{X}}{dX} = \frac{dMIG}{dX}\frac{\bar{X}}{\overline{MIG}}$

After verifying that the model is correctly estimated, the CUSUM test checks if the model is stable. This test tells if the CSUM line does not exceed the 5% limits, the parameters are stable. Figure 4 shows the results for this model, and since the limits are not exceeded, the conclusion is that the model is stable.

Figure 4: Stability Test



Source: author's estimation

Finally, Table 12 shows the variance decomposition of this model.

Table 12. Variance decomposition

Variance Decomposition of $lnMIG_t$*:*

Period	S.E.	$lnMIG_t$	$\widehat{lnX_t}$	lnR_t
1	0.038932	100.0000	0.000000	0.000000
2	0.053963	82.00042	15.15400	2.845579
3	0.069490	64.50696	30.84500	4.648041
4	0.077034	60.13597	34.25432	5.609705
5	0.082584	56.13204	38.78509	5.082871
6	0.086078	54.61935	40.70130	4.679351
7	0.088045	54.56610	40.82123	4.612668
8	0.090791	53.93152	40.82723	5.241250
9	0.093700	53.40839	40.22018	6.371425
10	0.096843	52.43234	39.99275	7.574912

Cholesky Ordering: $lnMIG_t$, $ln\hat{X}_t$, and lnR_t

Source: author's estimation

Table 12 shows variance decomposition for the variable $lnMIG_t$. In the short run, that is in quarter three, impulse or innovation or a shock of $\ln MIG_t$ accounts for 64.51% of the variation of the fluctuation in $\ln MIG_t$ (own shock). A shock to $ln\hat{X}_t$ can cause a 30.85% fluctuation in the $\ln MIG_t$, and a shock to $\ln R_t$ only causes 4.65% fluctuation on $\ln MIG_t$. In the long run a shock to $\ln MIG_t$ causes a 52.43% variation on $\ln MIG_t$ (own shock), a shock on $ln\hat{X}_t$ can contribute to 39.99 % in the variance of $\ln MIG_t$; the effect of a shock on $ln\hat{X}_t$ goes up from quarter three to quarter ten, this means that a shock of $ln\hat{X}_t$ increases with time, this means that $ln\hat{X}_t$ causes the fluctuations of $\ln MIG_t$. A shock on $\ln R_t$ contributes to 7.57% of the variation of $\ln MIG_t$ in the long run, this means that the effect of $\ln R_t$ on $\ln MIG_t$ also helps to explain fluctuations on $\ln MIG_t$, but to a lesser degree.

B. Estimation of equation (11)

This section continues with equation (11); first, the estimation of VEC runs a VAR using $lnMIG_t$, $\widehat{lnD_t}$ and lnR_t to find the optimal lag length using several criteria.

Table 13. VAR Lag Order Selection Criteria

Endogenous variables: $lnMIG_t$, $\widehat{lnD_t}$, and lnR_t. Sample: 1993Q1 2018Q4				Exogenous variables: C Included observations: 96		
Lag	LogL	LR	FPE	AIC	SC	HQ
0	274.0459	NA	7.08e-07	-5.6467	-5.5666	-5.6143
1	591.3393	608.1457	1.15e-09	-12.0695	-11.7490*	-11.9400
2	607.5278	30.0162	9.91e-10	-12.2193	-11.6583	-11.9925*
3	616.1632	15.4718	1.00e-09	-12.2117	-11.4103	-11.8878
4	632.0015	27.3870	8.70e-10	-12.3542	-11.3124	-11.9331
5	644.9559	21.5907*	8.05e-10*	-12.4365*	-11.1544	-11.9183
6	651.3811	10.3070	8.54e-10	-12.3829	-10.8603	-11.7674
7	655.4610	6.2899	9.55e-10	-12.2804	-10.5174	-11.5678
8	660.9657	8.1423	1.04e-09	-12.2076	-10.2042	-11.3978

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion
Source: author's estimation

The LR, FPE, and AIC criteria suggest five lags. The estimation adopts that criterion, and the next step is to perform the Juselius Johansen test with five lags for $lnMIG_t$, $ln\widehat{D}_t$, and lnR_t. The estimation uses the model with no interceptor trend with five lags. Tables 14 and 15 show the results of the Johansen Juselius test.

Table 14: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob**
None *	35.15881	24.27596	0.0015
At most 1	9.744291	12.32090	0.1302
At most 2	4.113860	4.129906	0.0505

Trace test indicates one cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: author's estimation

Table 15. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Max-Eigen Statistic	0.05 Critical Value	Prob**
None *	25.41452	17.79730	0.0030
At most 1	5.630431	11.22480	0.3936
At most 2	4.113860	4.129906	0.0505

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: author's estimation

Johansen's cointegration test suggests that the hypothesis of the non-cointegration vector can be rejected at least at the level of five percent, thus indicating the presence of a cointegration equation. The presence of at least one relation of cointegration between the variables in levels justifies the use of a VEC model.

The next step is to estimate a VEC and then concentrate on the first equation. The results of the estimation of equation (11) appear in Table 16.[5] The R^2 is 0.76, above 50%, so it had a good fit. Also, the results show that the first term of error correction, φ, has the expected sign and is significant: -0.027, (0.005), [-5.373]; this implies that the model returns to its equilibrium level at a rate of 2.7% per quarter. These results confirm that there exists a long-term joint *causality* of all independent variables towards import demand for intermediate goods.

Table 16. Results of the $lnMIG_t$, $\widehat{lnD_t}$, and lnR_t VEC

Method: Least Squares (Gauss-Newton / Marquardt steps)
Dependent Variable: $lnMIG_t$ Sample (adjusted): 1994Q3 2018Q4

D(LN(MIG)) = φ *($lnMIG_{t-1}$- 0.892470804378* $\widehat{lnD_{t-1}}$ + 3.59377448724* lnR_{t-1}) + C(2)*D(LN(MIG)(-1)) + C(3)*D(LN(MIG)(-2)) + C(4)*D(LN(MIG)(-3)) + C(5)*D(LN(MIG)(-4)) + C(6)*D(LN(MIG)(-5)) + C(7)*D($\widehat{lnD_t}$ (-1)) + C(8)*D($\widehat{lnD_t}$ (-2)) + C(9)*D($\widehat{lnD_t}$ (-3)) + C(10)*D($\widehat{lnD_t}$ (-4)) + C(11)*D($\widehat{lnD_t}$ (-5)) + C(12)*D(LNR(-1)) + C(13)*D(LNR(-2)) + C(14)*D(LNR(-3)) + C(15)*D(LNR(-4)) + C(16)*D(LNR(-5)) + C(17)*D1 + C(18)*D2 + C(19)*D3 + C(20)*D4 + C(21)*D5 + C(22)*D6

	Coefficient	Std. Error	t-Statistic	Prob.
φ	-0.027136	0.005050	-5.373270	0.0000
C(2)	-0.109683	0.090326	-1.214292	0.2284
C(3)	-0.137347	0.094158	-1.458683	0.1488
C(4)	-0.179137	0.090732	-1.974359	0.0520
C(5)	-0.130712	0.088866	-1.470887	0.1455
C(6)	-0.064312	0.086796	-0.740953	0.4610
C(7)	0.235778	0.325068	0.725318	0.4705
C(8)	0.653333	0.302588	2.159148	0.0340
C(9)	0.929720	0.285658	3.254666	0.0017
C(10)	-0.210499	0.302381	-0.696140	0.4885
C(11)	0.303008	0.306639	0.988160	0.3262

[5] To achieve normality, the model uses six dummy variables: D1:1995Q1, D2:2000Q1, D3:2002Q2, D4:2003Q1, D5:2008Q4 and 2009Q1, D6:2009Q3.

C(12)	0.164646	0.051602	3.190712	0.0021
C(13)	0.156175	0.059074	2.643733	0.0100
C(14)	0.049750	0.055627	0.894362	0.3740
C(15)	-0.165659	0.058313	-2.840833	0.0058
C(16)	0.152577	0.055080	2.770123	0.0070
C(17)	-0.151173	0.028549	-5.295134	0.0000
C(18)	0.102873	0.029532	3.483423	0.0008
C(19)	0.149339	0.028779	5.189181	0.0000
C(20)	-0.151331	0.019763	-7.657275	0.0000
C(21)	0.142775	0.032780	4.355554	0.0000
C(22)	0.078468	0.028742	2.730096	0.0079

R-squared	0.760681	Mean dependent var	0.014221
Adjusted R-squared	0.694553	S.D. dependent var	0.048340
S.E. of regression	0.026716	Akaike info criterion	-4.212350
Sum squared resid	0.054245	Schwarz criterion	-3.632051
Log-likelihood	228.4051	Hannan-Quinn criteria.	-3.977631
Durbin-Watson stat	1.956861		

Source: author's estimation

Where the cointegration equation is given by:

$$lnMIG_{t-1} = 0.892470804378\ \widehat{lnD_{t-1}} - 3.59377448724\ lnR_{t-1} \quad (15)$$

The residual is given by:

$$Z_{t-1} \equiv lnMIG_{t-1} - 0.892470804378\ \widehat{lnD_{t-1}} + 3.59377448724\ lnR_{t-1} \quad (16)$$

This means that the long-run elasticity of imported intermediate goods respect to a one-unit change gross domestic demand is 0.892 and concerning the real exchange rate is -3.594. To calculate the long run propensity of imports of intermediate goods with respect to a 1$ increase in domestic demand: $m_D = \frac{dMIG}{dD}$; it was multiplied the elasticity result 0.8925 by $\left(\frac{\overline{MIG}}{\overline{D}}\right)$, where the bar corresponds to the average value of the series *MIG* and *D*. That is 0.8925 (235,455.99/1,620,188.84), and it gives the value $m_X = 0.13$.

The diagnosis of the residuals consists of three parts: a) autocorrelation test, b) heteroscedasticity test, and c) normality test. The analysis starts with the Breusch-Godfrey autocorrelation test with three lags. The test results appear in Table 17.

Table 17. Breusch-Godfrey Serial Correlation LM Test

Null hypothesis: No serial correlation at up to 5 lags			
F-statistic	1.386327	Prob. F(5,71)	0.2398
Obs*R-squared	8.716617	Prob. Chi-Square(5)	0.1209

Source: author's estimation

Since the probability value, 23.98% is higher than the required 5%; the null hypothesis is accepted; that is, the model does not have a serial correlation in the residuals at the 5% confidence level.

Diagnosis continues with the heteroscedasticity test; the results of the Breusch-Pagan-Godfrey test appear in Table 18.

Table 18. Heteroskedasticity Test: Breusch-Pagan-Godfrey

Null hypothesis: Homoskedasticity			
F-statistic	1.344235	Prob. F(24,73)	0.1682
Obs*R-squared	30.03602	Prob. Chi-Square(24)	0.1836
Scaled explained SS	14.13882	Prob. Chi-Square(24)	0.9435

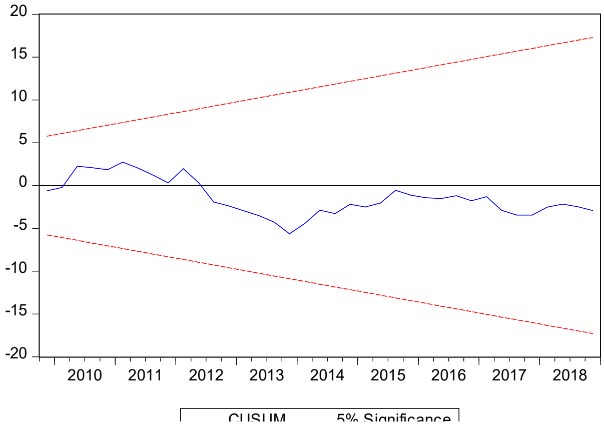
Source: author's estimation

Since the probability of Obs * R-squared, 18.4%, is higher than the 5% required, the null hypothesis cannot reject and conclude that the model does not have heteroscedasticity in the residuals.

Next, the normality test of residuals finds a value of 1.089 for the Jarque-Bera coefficient with a probability of 0.580. This value of 58.02% is higher than the 50% required, so the null hypothesis cannot reject and, therefore, conclude that the model presents normality in the residuals.

After verifying that the model is correctly estimated, the CUSUM tests check if the model is stable. This test tells if the CSUM line does not exceed the 5% limits, the parameters are stable. Figure 5 shows the results for this model, and since the limits are not exceeded, the conclusion is that our model is stable.

Figure 5. Stability Test



Source: author's estimation

Finally, Table 19 shows the variance decomposition of this model.

Table 19. Variance decomposition

Variance Decomposition of $lnMIG_t$				
Period	S.E.	$lnMIG_t$	$\widehat{lnD_t}$	lnR_t
1	0.027961	100.0000	0.000000	0.000000
2	0.037114	98.82441	0.454179	0.721414
3	0.044621	94.86220	2.265274	2.872527
4	0.052115	88.09800	8.690316	3.211683
5	0.057385	85.69726	11.42007	2.882673
6	0.062604	83.73744	13.35920	2.903366
7	0.067538	82.22690	14.33460	3.438501
8	0.073778	77.90731	16.69626	5.396433
9	0.079951	74.92968	18.23267	6.837650
10	0.086336	71.96882	19.58127	8.449908
Cholesky Ordering: $lnMIG_t$, $ln\widehat{D}_t$, lnR_t				

Source: author's estimation

Table 19 shows variance decomposition for the variable $lnMIG_t$. In the short run, that is quarter three, impulse or innovation or a shock of $\ln MIG_t$ accounts for 94.6% of the variation of the fluctuation in $\ln MIG_t$ (own shock). A shock to $\widehat{lnD_t}$ only cause a 2.27% fluctuation in the $\ln MIG_t$, and a shock to $\ln R_t$ causes 2.87% fluctuation on $\ln MIG_t$. In the long run a shock to $\ln MIG_t$ explains 71.9.8% variation on $\ln MIG_t$ (own shock), a shock on $\widehat{lnD_t}$ explains 19.58% in the variance of $\ln MIG_t$. The effect of a shock of $\widehat{lnD_t}$ increases significantly in the long run. A shock on $\ln R_t$ contributes 8.45% of the variation of $\ln MIG_t$ significantly more than in the short run. So, both variables are important in explaining $\ln MIG_t$.

6. Discussion

The import demand for intermediate goods, as a function of exports and real exchange rate, shows a unit elasticity concerning exports, reveals the fixed technical coefficients in the imported content to exports, ($lnMIG_{t-1} = 1.0575\widehat{lnX_{t-1}} - 1.1775\ lnR_{t-1}$); The marginal propensity to import intermediate goods of 1$ increase in exports is 0.78%; this means that exports contribute very little too Mexican GDP. In the case of the real exchange rate, the elasticity of imported intermediate good is 1.18, which means that a 1% increase in the real exchange rate reduces imports of intermediate goods for 1.18% and perhaps exports as well.

The import demand for intermediated goods, reveals an inelastic demand for intermediate goods with respect to domestic demand. The elasticity is 0.89, highest but less than unity. This result reflects the limited options for intermediate goods in the national market and the high dependence on imported goods to produce for the local market. Nevertheless, the marginal propensity to import intermediate goods with respect to an expansion in domestic demand is 0.13, which means that an expansion of domestic demand has more impact on GDP that an expansion in exports. The estimation of this demand function also reveals a high negative elasticity of imported goods with respect to the real exchange rate (3.59), and elasticity much higher than the corresponding demand of intermediate goods for exports. This means that imports of intermediate goods for domestic demand could be handled through manipulation of the real exchange rate, or even better, through a policy of import substitution of foreign intermediate goods for domestic production.

The most important result obtained from the econometric model is that exports have fixed coefficients of intermediate goods that are imported, which reflects itself in unitary elasticity of import demand for intermediate goods and low sensitivity to the real exchange rate. Second, the price elasticities of imports of intermediate goods for exports are slightly elastic with respect to the real exchange rate (1.17%). However, this possible beneficiary partial effect is compensated by the reduction in exports that the appreciation produces. So, there is little hope that Mexico will have a reduction of intermediate goods in exports since a large percentage of exports are manufactured goods, which are produced by transnational corporations who have their network of suppliers worldwide.

In the case of imports of intermediate goods for domestic demand, there is more hope. The import demand is slightly inelastic, and the price elasticity is high, which means that trough a support mechanism or an industrial policy advocated supporting local producers to provide inputs for producers that satisfy domestic demand, Mexico can increase the level of industrialization and growth.

7. Conclusions

Given the constraints, voluntarily accepted by the neoliberal governments by signing 12 trade agreements, and the current administration signing the T-MEC (new version of the old North American Free Trade Agreement), there is no possibility of industrializing its economy trying to increase the national content of exports through subsidies or other types of supports for inputs, those actions will be considered as unfair practices by the trading partners. The case of production for domestic consumption is different. Countries could promote the national content of domestic consumption trough commercial campaigns, incentives for firms that increase their local content. This incentive includes tax breaks, preferential credit, public recognition, etc.

This strategy will help to reindustrialize the country, investigating the expansion of existing firms, or helping to create new industries that eventually be competitive worldwide, and be able to compete with foreign suppliers of foreign inputs for exports.

The final message that this paper provides is that despite the limitations that trade agreements impose on México, there is a chance of establishing an industrial policy directed to promote the production of intermediate goods for domestic consumption. This will be the first step of the industrialization process that if it is well planned, with time, it will be transforming itself as it evolves, and that eventually could place the country in a position to renegotiate the rules of the game in the trade agreements that were imposed on ourselves.

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