Original Research Article

Estimation of Import Demand Elasticities, In the BPCG Model and the Import Demand Function (Case study of Iran)

Abstract

In this study, the demand elasticities of import are estimated, with two approaches, the balance of payments constrained growth **(BPCG)** or Thirlwall model and the import demand function, by using data in Iran during the period 1980 to 2018 and ARDL method.

According to BPCG model, economic growth is equal to the ratio of export growth to income elasticity of import demand, so it is related to the growth of exports and income elasticity of import demand in the long run. Based on this model, if national income increase and the income elasticity of import demand is high, the imports increase, the effect of export growth and consequently economic growth decreases.

The results showed that in the long run, the income elasticity of import demand in BPCG model is equal to 0.04 and based on the import demand function is 0.34 and the relative price elasticity of import demand (the ratio of import price to domestic price) is -0.52. Therefore, imports in Iran have been more affected by price than income effects.

Due to the smaller amount of income elasticity of import demand in both models and based on the BPCG model, the greater income elasticity of import demand, reduces the effect of export growth coefficient, it can be concluded that the magnitude of this elasticity has not been a constraint to Iran's economic growth. Given the significant impact of prices on imports, economic planners shouldfocusonincreasingthecompetitivenessofdomesticproducts.

JEL Classification: O11, O 41, C22

Key words: The balance of payments constrained growth (BPCG) model, Thirlwall Law, Income .elasticityofimportdemand,Priceelasticityofimportdemand

1-Introduction

Imports are one of the most important components affecting the gross domestic product (GDP) and balance of payments, the reduction of which compared to exports, leads to an improvement in the trade balance and thus increase production and economic growth. The purpose of this study is to estimate and compare the elasticities of import demand in two approaches, the import demand function and the balance of payments constrained growth **(BPCG)** model, that first was proposed by Thirlwall A. P(1979). According to this model, economic growth is related to the growth of exports and income elasticity of import demand in the long run, and is approximately equal to the ratio of export growth to income elasticity of import demand, which is known as the dynamic multiplication factor of Harrod trade. In this

model, economic growth is sustainable only when the growing demand for imports finance with export earnings; therefore economic growth is limited to the balance of payments. The experimental validity of the Thirlwall model has been tested in different countries in the last three decades. Also, most experimental studies confirm the validity of this model. BPCG model has not been used to calculate income elasticity in previous studies.

Given that countries tend to increase exports and limit imports in order to improve balance of payments and increase economic growth, identifying and measuring effective factors of imports can be useful in this regard. Figure (1) shows the gross domestic product (GDP), exports of goods and services and imports in Iran, to the fixed price 2004 during the period 1976 to 2018. As can be seen, the GDP trend has been in line with trend of exports and imports.

The elasticities of Iranian import demand have been estimated using both mentioned approaches. In the import demand function, relative price (the ratio of the price of imported goods to the domestic price) and income are considered as independent variables. With increasing relative price, imports decrease. On the other hand, the higher the domestic inflation, lead to decrease this ratio and the competitiveness of domestic production compared to similar foreign products reduce. Another variable is income that the coefficient of this variable in the import demand function shows the income elasticity of import demand, which determines the amount of change in import as a result of change in income.

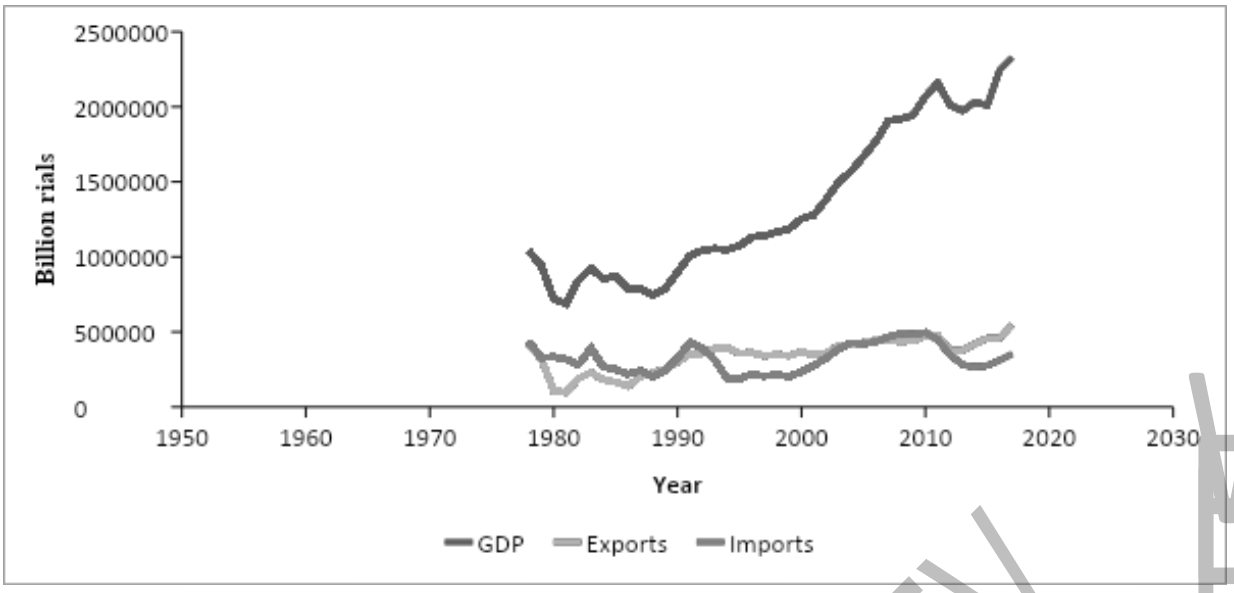

Figure (1): GDP, Export of goods and services, Import in Iran, Fixed price of 2004,The period 1976 to 2017

Source::Central Bank I.R.R. (CBI), National accounts

The second approach for calculating the income elasticity of import demand is BPCG model.Based on this model, if national income increase and the income elasticity of import demand be high, the imports increase, reduces the effect of export growth coefficient and decreases economic growth. Given the effects of price and income on imports, examining these factors can help economic planners to increase the competitiveness of domestic products, improve balance of payments and achieve sustainable economic growth. To confirm Thirlwall model in Iran, the income elasticity of import demand in this period (1976 to 2018) should not be significantly elastic, to increase the effect of the exports coefficient.

2- Literature Review

The import demand function represents the factors that affect a country's imports. This function is introduced by Equation (1) which is as follows (Safari, 2016)

$$M = f(P, P^*, R, Y) \qquad (1)$$

Where in:

M: Import P: Domestic price level P*: Foreign price level R: Exchange rate

Y: National Income

In this regard, imports are directly related to national income (Y) and domestic prices (P) and indirectly related to foreign prices (P*) and exchange rates (R).

In other words, assuming the stability of other conditions, with the increase in domestic prices, foreign goods are cheaper than domestic goods, and therefore the demand for imports increases and vice versa. With the increase in foreign prices, foreign goods are more expensive than domestic goods, and as a result, the demand for imports decreases, and vice versa. With the increase in the exchange rate, because more domestic money has to be paid to buy each foreign currency, foreign goods are more expensive than domestic goods and the demand for imports is reduced and vice versa. Finally, with increasing national income, consumption, and demand, including import demand, increase, and vice versa.

In experimental studies, Equation (1) is considered as a linear and logarithmic equation and the coefficient related GDP indicates the income elasticity of import demand, and the coefficient related to prices is the price elasticity of import demand.

The income elasticity of import demand can also be estimated in the BPCG model. This model that proposed by Thirlwall , which is based on the Keynesian approach and focuses on the role and importance of aggregate demand in the process of economic growth. In this model, export is considered as one of the components of aggregate demand, and the income elasticity of import demand affects economic growth. Thus, increasing this elasticity reduces the effect of the coefficient of the exports increase. Therefore, assuming the growth rate of exports and the income elasticity of import demand, the growth of GDP is consistent with the long run current balance of payments.

The initial study of the Thirlwall model is based on the Harrod (1933), dynamic foreign trade multiplication factor, which determines long run economic growth. The initial model consists of three equations:

$$X_t = \eta(p_{ft} + e_t - p_{dt}) + \varepsilon Z_t \quad (2)$$

Equation (2) is a function of export demand in which:

X_t : Real export growth rate , p_{ft} : Import price growth rate , e_t : Nominal exchange rate , p_{dt} : Domestic price growth rate

Z_t : Global real income growth rate

$(p_{ft} + e_t - p_{dt})$: The rate of change of real exchange relationship

η : Price elasticity of export demand ε : Global income elasticity of export demand

$$m_t = p\left(\quad - p \quad - \right) + \quad (3)$$

Equation (3) is a function of import demand in which:

m_t : Real import growth rate : Real domestic income growth rate

ψ : price elasticity of import demand : income elasticity of import demand

$$p_{dt} + X_t = p_{ft} + m_t + e_t \quad (4)$$

Equation (4) shows the equilibrium condition of the balance of payments. Also, assuming that relative prices remain constant in the long run, $(p_{ft} + e_t - p_{dt}) = 0$ it means that the role of prices in the international market competition is minimized. With the above assumption and placing relations (2) and (3) in relation (4), the following relations are obtained:

$$= \rightarrow \varepsilon = \quad (5)$$

$$= \frac{\varepsilon}{} \Rightarrow = \left(\frac{1}{}\right)$$

The relation (5) shows the real long run economic growth rate, which Y_t is directly related to the real export growth rate (X_t) and inversely related to the income elasticity of import demand (□).

Equation (5) is called Harrow dynamic foreign trade multiplication factor, which is the basis for estimating experimental works and also can be written in the form of:

$$\text{□} = \text{□}\text{□} \qquad (6)$$

The empirical studies on the balance of payments constrained growth (BPCG) model have only examined the growth model in countries and the coefficient of income elasticity of demand in these models has not been studied. The income elasticity of demand has been calculated based on the import demand function. This relationship is expressed as Equation (7):

$$Mt = f(Yt, Pt, Pt^{*}) \qquad (7)$$

In the relation (7):

M_t: imports, Y_t: national production or income, P_t : domestic prices and Pt* is foreign prices.

Of course, most studies use the ratio of the price of imported goods to the price of domestic goods. For example, studies such as Houthakkar & Magee (1969), Mohsin Khan(1975), Biswas & Ram(1980), can be mentioned. But in another group of studies, non-market factors are introduced in determining the import of developing countries, and according to them, imports are made for the reason that domestic production cannot meet domestic demand or are made due to factors other than Price including the difference in quality between imported goods and domestically made goods. That is why it is said that imports are not sensitive to price variables. Also, in Equation (8), the moderation and reaction of the variables explaining the import without any delay are assumed. While in practice, due to the presence of any of the determining factors, imports may be interrupted. The possibility of an interruption indicates that a change in the import balance at one time leads to a change in imports at the same time and several periods after that time. Thus, imports at one time (t) depend on the balance of imports at the same time and several periods before that. Besides, imports are also affected by periodic factors. For example, the studies Ball, Eaton & Steaur (1966), Haynes & Stone(1983), can be mentioned.

In some other experimental studies, the components of GDP have been placed in the import equation (Equation 7). The import demand model in this case is as follows:

$$LMt = \sigma + \beta_1 LCGt + \beta_2 LIt + \beta_3 LXt + \alpha LRPt + \varepsilon_t \quad (8)$$

In the relation (8), LMt represents the natural logarithm of imports of goods and services, LCGt represents the logarithm of total consumption expenditures (the sum of government consumption expenditures and private consumption expenditures, LIT represents he natural logarithm of good investment expenditures (including gross capital formation and changes in inventories), LXt represents the natural logarithm of total exports of goods and services; LRPt represents the natural logarithm of relative prices (the ratio of the import price index to the domestic price index); and it is the disruption component of the model. For example, Giovannetti, G.(1989), Tang, TC(2003), Narayan & Narayan(2005). In the following, a number of these studies are reviewed in more detail.

Balassa(1967), examines trade flows in the European Common Market using income as the only explanatory variable and explains how the potential effect of revenue elasticity on export supply and import demand on domestic and foreign trade creation. The findings of this study show that per capita income does not have the expected effect on gross trade.

H.S Houthakker & S.P. Magee(1969), examined the behavior of 15 developed countries in an article entitled Price and Income Elasticity in World Trade. They have expanded the import demand model of Balasa(1967), by including an additional explanatory variable of the price level (the ratio of the import price index to the wholesale price index of the importing country). They conclude that along with revenue growth, countries in which the income elasticity of demand for imports exceeds the revenue elasticity of demand for exports and the domestic and foreign growth rates are approximately the same are likely to show trade deficits.

Mohsin. S. Khan (1974), tested the import demand model expressed by Houthakker and Magee for Venezuela in 1974 during the 1953-72 period based on the OLS method. He shows that the two variables of real income and relative prices can largely explain the changes in Venezuela's imports during the period. In the same year, he once again tested the model of import demand and export supply for 15 developing countries during the years 1951-69. He concludes by estimating the equations of import demand that price elasticities are generally high, indicating that relative prices have significant effects on imports of the

developing countries. This model does not support the theories previously expressed about developing countries concerning that imports are inelastic to changes in relative prices.

The study of Murray, T., & Ginman, Peter J.(1976), is one of the studies that has helped to understand the characteristics of the import demand model. This study shows that the import demand model includes income, import price index, and the price index of domestic products is an alternative to imports. The import demand model of this study includes the explanatory variable of income, the import price index, the domestic price index for tradable products, and the domestic price index for non-tradable products separately. According to this study, there is an argument that the traditional import demand model, which uses the price ratio or RP, is more appropriate for estimating the import demand for certain goods. However, when the parameter is estimated based on total import demand, RP will be an inappropriate explanatory variable.

Datta, D. and Ahmed, N.(1999), estimate the import demand function using the long-term convergence method and use the quarterly statistics for the period 1974-1994. In addition to the GDP variable and relative prices, they have included the foreign exchange reserve variable and the virtual variable as independent variables in the model. The results show that there is an equivalence relationship between the model variables and imports are inelastic concerning foreign exchange reserves and relative prices and with elasticity to GDP. Besides, the coefficients have meaning and their sign is as expected.

Wang, Y.H., & Lee, J.D.(2012), estimate the import demand function for China using the ARDL method. The results show that domestic income has a positive and significant effect on imports. Contrary to theory, the real effective exchange rate has a negative coefficient, which indicates that a decrease in foreign competitiveness reduces the level of imports in China.

Panahi et al.(2017), in an article entitled Estimation of Price and Income elasticities of drug import demand in Iran, have estimated the import demand model during the period 1992 to 2016 using the ARDL method and almost ideal quadratic demand system. The results show that the income elasticity and price elasticity of drug imports are both smaller than one and the income elasticity is greater than the price elasticity.

Nwogwugwu et al (2017), examined the price and income elasticities of import demand using Nigeria data from 1970 to 2013 based on the ARDL method. Long run coefficients show that price and income

elasticities of import demand are around 0.03 and 0.55, respectively, during the period under review, and real GDP is the main component of import demand.

Alttoa.Mrkous(2018), has estimated the import demand model using the ARDL method. The results show that in the short run, import demand is elastic to price, while the sensitivity of demand to income is not statistically significant but in the long run, import demand for income was elastic and price sensitivity was not statistically significant.

Ntshwanti. N, Creamer. K (2020), in an article entitled External Constrained Growth: A test of the application of the Thirlwall Law in South Africa to test, using seasonal export and import information during the 1960s until 2009, using the ARDL method, they examine the performance of South Africa's exports and imports to effectively explain the rate of economic growth. In the absence of structural failure and then with structural failure, they realized that growth in the South African economy could be limited by the trade balance.

3- Model Estimation

The elasticities of import demand in Iran are estimated by two approaches. The first is calculated based on the BPCG model and the second is calculated based on the import demand function, statistical data are based on the fixed price of 2004 and related to the period 1980 to 2018, because at the time of review, the officially published statistics are available until 2018. In the following, estimations are explained separately.

3-1- Estimating the elasticity based on the BPCG model

To estimate the income elasticity of import demand, according to Equation (6) in theoretical foundations and Study of Nwogwugwu, et al (2017), it can be linearized and finally considered as a relation (9):

$$GEX_t = \delta + \pi GGDP_t + \omega \qquad (9)$$

Where in: GEX: Real export growth , GGDP: Real GDP growth

π: income(production) elasticity of imports δ: fixed component ω: error component

To estimate the equation (9), the method of autoregressive distributed lag (ARDL) has been used. This method is more efficient than other time series methods in small samples that have a small number of

explanatory variables. Banerjee & Inder (1993) using Monte Carlo simulations have shown that estimation in small bias samples may be significant. Therefore, it is more appropriate to use the ARDL model, which examines short-term dynamics. By using the Eviwes10 software to avoid estimating false regressions in the time series, the statics of the variables are first checked by the generalized Dickey-Fuller test.

Table 1: The unit root test of variables

Variable name	Dickey-Fuller test statistics	Prob	Result
GEX	-5.96	0.000	Static
GGDP	-10.4	0.000	Static

Source: research findings

Table (1) shows that both variables are at a static level and there is no unit root problem in the above time series. In the next step, the research model is estimated by the ARDL method. In this method, 3 criteria of Akaike (AIC), Schwartz-Bayesian (SBC), and Hannan Quinn (HQC) are used to determine the optimal lags. In samples with a volume of less than 100, the Schwartz-Bayesian criterion is used, which offers fewer interruptions and less degree of freedom than the other two criteria. In this study, the mentioned criterion has been used to determine the optimal lags.

The results for short run pattern estimation are presented in Table (2). Of course, in addition to the variables of relation (9), the dummy variable of implementation of economic development programs after the end of the war (DUM2), which is related to the years 1989 to 2018, has also entered the model.

Table (2) shows that the two variables of GDP growth and the dummy variable had a positive effect on export growth. To investigate the absence of the problem of variance of heteroscedasticity and autocorrelation, diagnostic tests are used, the results of which are shown in Table (3).

As shown in the table (3), the ARCH test shows that the probability obtained is more than 0.05 and it is concluded that there is no heteroscedasticity variance problem in the residual sentences.

Table 2: The estimation of Dynamic Short run Distributed lags Pattern with Schwartz-Bayesian criterion

ARDL (1,0)

Variable	Coefficient	Standard deviation	T statistics	Significance level
GEX(-1)	-0.05	0.17	-0.30	0.76
GGDP	0.04	0.050	0.767	0.4484
DUM2	0.11	0.061	1.736	0.0922
C	0.02	0.030	0.722	0.4757

Source: research findings

Table 3: Diagnostic tests

Test statistics	LM Version	F Version	Test result
Autocorrelation	CHSQ=11.16 Prob=0.0038	F(2,30)=6.74 Prob =0.004	There is autocorrelation
Heteroscedasticity	CHSQ(2)=1.67 Prob=0.196	F(2,30)=1.65	There is no heteroscedasticity

		0.207=Prob	

Source: Research Findings

Also, in the LM test, the probability obtained for the relevant coefficient is less than 0.05 and there is a problem of autocorrelation in the model. To solve the autocorrelation problem in the covariance coefficient matrix section, the White method was used and the model was re-estimated, the results of which are shown in Table (4). In Table (4) it is observed that the sign of coefficients is the same as in Table (2) and the statistical validity of the GDP growth coefficient, has increased.

Table 4: The re-estimation of dynamic short run distributed lags pattern with Schwarz-Bayesian and ARDL (1,0) for elimination auto-correlation with the White method

Variable	Coefficient	Standard deviation	T statistic	Significance level
GEX(-1)	-0.05	0.23	-0.232	0.82
GGDP	0.04	0.03	1.446	0.16
DUM2	0.11	0.105	1.022	0.31
C	0.022	0.017	1.301	0.202

Source: Research Findings

Table 5: The F-Bound test to check for a long run relationship

F-statistic	Lower Bound (1%)	Upper Bound (1%)
12.307	5.736	6.48

Source: research findings

Table 6: The estimation of the long run model with the Schwartz-Bayesian criterion, ARDL (1,0)

Variable	Coefficient	Standard deviation	T statistics	Significance level
C	0.02	0.015	1.345	0.18
GGDP	0.036	0.021	1.744	0.09
CointEq(-1)*	-1.053	0.168	-6.263	0.000

Source: research findings

The F-Bound test was used to investigate the existence of a long run equilibrium relationship. In the table (5), the value of F statistic is equal to 12.3, which is higher than the critical values of the upper and lower limits in the test, the null hypothesis of no long run relationship is rejected and there is a long run equilibrium relationship at 99% confidence level. Long run relationship coefficients are shown in the table (6). The error correction coefficient of the model in the last row of Table (6) is equal to -1.05, which is also statistically significant. Since the value of the mentioned coefficient is between 1- and -2, it shows that the gap between the short run and long run models, closes sinusoidally and in each period 1.05% of the desired gap disappears and the short run model converges towards the long run model. The long run equilibrium relationship is as follows:

GEX = 0.02 + 0.04 * GGDP (10)

According to Equation (10), the coefficient of GDP growth shows the income elasticity of import demand, is equal to 0.04. To evaluate the stability of the parameters and the variance of the model, the CUSUM test was used. Figure (2) shows the return path of the recursive residual does not go beyond the two lines and at the 95% confidence level, the hypothesis of the instability of the parameters is rejected. Therefore, long run permanent stability is acceptable for the parameters of the studied model, and no structural failure is observed in the model

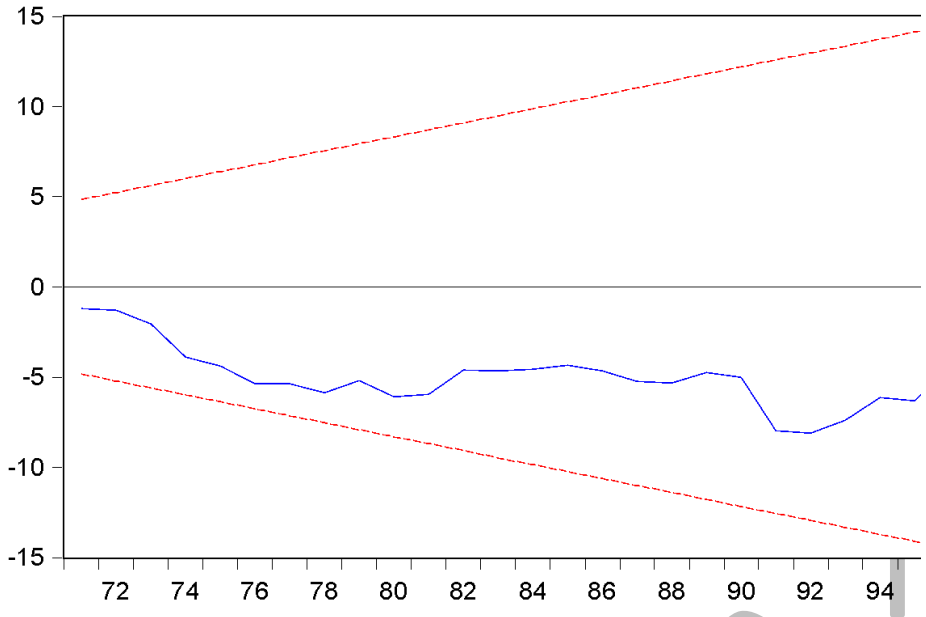

Figure (2): CUSUM Test in the BPCG model

3-2- Estimating the elasticities based on the import demand function

The import function is estimated in the following logarithmic form:

$$LM_t = \alpha + \beta LGDP_t + \gamma TT_t + \varepsilon_t \quad (11)$$

In the relationship (11):

L: logarithm t:time Mt: import amount GDPt: Real GDP

TTt: the ratio of the price of imported goods to domestic

β:income elasticity of imports demand

γ: relative price elasticity of imports demand α: fixed component εt: error component

Statistical information is according at the period 1980 to 2018 to the fixed price in 2004. First, the unit root test is examined and the results are shown in Table (7). In this table, it can be seen that the GDP logarithm and relative price are at a static level, but the import logarithm variable becomes static after a one-time difference.

Table 7: The unit root test of variables

Variable	Dickey-Fuller test statistics	Prob	Result
LGDP	-6.67	0.00	At the data level with a static trend
LIM	-2.13	0.23	Nonstatic
LIM(-1)	-5.11	0.00	At the first difference level of static data
LTT	-3.15	0.00	At a static level with no trend and width from the origin

Source: research findings

According to the sample size, which is equivalent to 38 years, to select the degree of ARDL, the Schwartz-Bayesian criterion is used and the lags (3, 3, 1) is determined. In other words, up to three lags are obtained for the imports and GDP variables, and one lags is obtained for relative prices. The results for model estimation are given in Table (8). In the table, it can be seen that GDP with lag has a positive effect on imports, but the relative price variable both with current and lag has a negative effect on imports, in other words, the price effect has a faster effect on imports than the effect of income.

Based on the diagnostic tests and the results of Table (9), it is observed that the model lacks the problem of autocorrelation and heteroscedasticity of variance. Based on the F-Bound test, the statistical value is equal to 4.02, which at the 90% confidence level there is the long run equilibrium relationship. Which the long run relationship coefficients are represented in the table 10 and the long run relationship is as follow:

LIM = 7/96 + 0.34 LGDP-0.52 LTT (12)

In Equation (12) it is observed that all variables theoretically have the expected symptoms. The income elasticity of import demand is 0.34 in the sense that with an increase of one percent in GDP, import demand increases by 0.34 percent. The amount obtained for the

income elasticity of import demand based on the BPCG model was 0.04, which shows that according to the model, the reaction of imports to changes in income (production) is less. The elasticity of demand for the relative price of imports (the ratio of the price of imported goods to domestic) is equal to -0.52. In other words, with a one percent increase in the relative price of imports, the demand for imports has been decreased by 0.52 percent. The error correction coefficient of the model is equal to 0.64 and is statistically significant and shows that the adjustment of the deviation from the long run equilibrium relationship disappears after one period.

Table 8: The estimation of the dynamic dependent distributed lags pattern with the Schwartz-Bayesian criterion, ARDL (3,3.1)

Variable	Coefficient	Standard deviation	T-statistic and significance level (in parentheses)
LIM(-1)	0.82	0.172	(0.00) 4.89
LIM(-2)	-0.089	0.243	(0.72) -0.367
LIM(-3)	-0.4	0.19	(0.05) -2.09
LGDP(-1)	0.08	0.07	(0.13) 1.23
LGDP(-2)	0.13	0.07	(0.06)1.84
LGDP(-3)	0.14	0.07	(0.05) 1.99
LTT	-0.07	0.11	(0.5) -0.62
LTT(-1)	-0.26	0.13	(0.04) -2.1
C	5.13	2.1	(0.02) 2.46

Source: research findings

Table 9: Import demand model Diagnostic tests

Test statistics	LM Version	F Version	result

Autocorrelation	CHSQ (1)=1.93 Prob. (0.16)	F (1,24) =1.4 Prob(0.2)	There is no autocorrelation
Heteroscedasticity	CHSQ (1)=0.97 Prob.(0.32)	. F(1,32)=0.94 Prob.(0.33)	There is not heteroscedasticity

Source: research findings

To evaluate the stability of the parameters and the variance of the model, the CUSUM test was used. As can be seen in figure (3), because the return path of the recursive residuals is not out of range of two lines, at the 95% confidence level, the parameter instability hypothesis is rejected. Therefore, long run permanent stability is acceptable for the parameters of the studied model and no structural failure is observed d in the model**.**

Table 10: Long run model coefficients of import demand based on ARDL (3,3,1)

Variable	Coefficient	T-statistic and significance level (figures in parentheses)
LGDP	0.34	2.27 (0.03)
LTT	-0.52	-3.18 (0.00)
C	7.96	3.75 (0.00)
ECM(-1)	-0.63	-4.25 (0.00)

Source: research findings

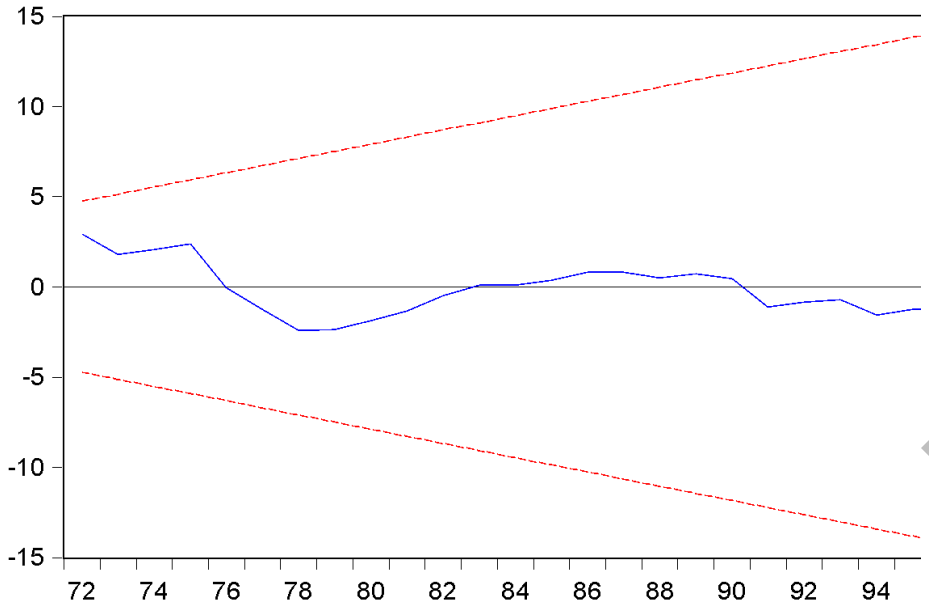

Figure (3): CUSUM Test in demand function

4- Conclusions and Recommendations

The elasticity of import demand in Iran during the period 1980 to 2018 was estimated in the framework of two approaches, BPCG model and import demand function. Based on BPCG model, economic growth is related to the growth of exports and income elasticity of import demand in the long run. In this model if national income increase and the income elasticity of import demand be high, the imports increase and reduces the effect of export growth coefficient and decrease economic growth.

After check the statics of the variables by the generalized Dickey-Fuller test, the models was estimated by using the ARDL method. The results showed that in the long run, the income elasticity of import demand based on the BPCG is 0.04, while the amount of elasticity based on the import demand function is 0.34. The relative price elasticity of import demand is -0.52, in other words, with a one percent increase in the relative price of imports, the demand for imports has decreased by 0.52 percent. Therefore, imports in Iran have been more affected by price effects than the income effects and the relative price variable have had

the greatest impact on imports in Iran and as the price of imported goods becomes more expensive than domestic goods, the amount of imports has decreased.

By comparing the income elasticity of import demand from the two models, it is observed that, the amount of elasticity obtained is low. Given that according to the BPCG model, the greater income elasticity of demand is a constraint on economic growth because in these circumstances, with increasing national income, the amount of imports increases and the effect of increasing the export coefficient decreases, it can be concluded that the amount of this elasticity has not created a constraint on Iran's economic growth during the period under review. Also due to the income elasticity of import demand in the study period (1976to2018)notbesignificantlyelastic,theThirlwallmodelconfirminIran.

Since Iran's imports are more affected by price effects than income effects, and given the significant impact of prices on imports, economic planners should focus on increasing the competitiveness of domestic products .In this regard by creating the necessary infrastructure for production and supporting domestic investors and producers in the international arena through appropriate exchange rate and tariff policies to help reduce the cost ofdomesticgoods.

Economic policymakers also need to reduce the income elasticity of import demand, especially for non-essential goods. This is possible by supporting domestic producers and increasing competitiveness and improving the quality of domestic products. On the other hand, support for the export of high value-added goods instead of the export of raw materials is emphasized, which have the least impact on the growth of domestic production. Taken together, these factors lead to improved balance of payments and sustainable economic growth.

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