The Effect of Real Exchange Rate on Iranian Non-Oil Exports

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ABSTRACT

The need to pay attention to the exchange rate as one of the key issues of macroeconomic policy in the economic literature of any country is essential. The exchange rate represents the value of each country's currency and reflects the relationship between the domestic economy and the outside world, so proper regulation of the exchange rate, considering its changes and the factors influencing it in any circumstances can be a subject for discussion. On the other hand, increasing non-oil exports has been the main economic policy of the Iranian government in recent decades. To get rid of the single-product economy, the development of non-oil exports is an indispensable necessity for the Iranian government. In this study, using the appropriate model, the econometric method of VECM is used to investigate the short and long term effects of real exchange rate on Iranian non-oil exports during 1978-2008. This model uses productivity as a non-price factor alongside price factors and the results show that in this time interval, the effect of real exchange rate, world income, GDP, exchange rate and labor productivity (in the sector Non-oil) has been positive on non-oil exports

Keywords: *Real Exchange Rate, Non-Oil Exports, Global Income, GDP, Exchange Relationship, Productivity.*

INTRODUCTION

In the international economy, it is important to distinguish between nominal and real exchange rates. While the nominal exchange rate is a monetary concept, it measures the relative value of two currencies. The real exchange rate is a real variable that examines the relative price of commercial and non-commercial goods. Real exchange rates are a good measure of a country's competitiveness in world markets (Edwards, 1988). In fact, the real exchange rate measures the cost of domestically produced commercial goods. An increase in the real exchange rate makes the production of commercial goods more profitable and shifts resources from non-commercial sectors to commercial goods production. The real exchange rate decline reflects an increase in the cost of producing domestically produced goods, and if there is no change in relative prices elsewhere in the world, this real exchange rate decline reflects the weakening of the international competitiveness of domestically produced goods. In fact, in this case, the country produces less efficient products than the rest of the world, which would weaken the country's external position, so one of the main barriers to diversification and growth in non-oil exports could be a natural decline in real exchange rates from He knew the time of the presence of oil in the Iranian economy.

Non-oil exports are one of the major economic issues in oil-rich countries, where the diversity and expansion of exports versus single-product exports is discussed. Iran is also one of the countries most heavily dependent on oil revenues, and any fluctuations in oil prices will cause problems, including lower export earnings. Therefore, increasing non-oil exports and increasing the country's share in world trade and international markets, therefore, has been considered as one of the most important economic goals in order to reduce the economy's heavy dependence on oil revenues and therefore has always been of interest to economists. The exchange rate is a variable that affects how macroeconomic policy making, especially non-oil exports, affects foreign exchange policies, therefore, foreign exchange policies have always played an important role.

Therefore, considering the effect of exchange rate and non-oil exports, this paper examines the effect of real exchange rate on non-oil exports in Iran by applying VECM econometric method during 1978-2008; Other studies have been calculated and the major trading partners of Iran

have been considered during the period under review and non-oil labor productivity has been modeled as a non-price variable to examine its impact on non-oil exports along with price factors. Take it. To this end, the following hypothesis is examined and tested.

- The real exchange rate has no effect on Iran's non-oil exports.

Therefore, this paper will include five sections that examine the relationship between Iranian real exchange rate and non-oil exports. The first section is devoted to the introduction. The second section reviews the literature on the subject including theoretical foundations of research and review of past studies. In the third section, the model used, the variables present, and the econometric technique are introduced. In the fourth part, the model is estimated and in the fifth part conclusions and suggestions are presented.

THEORETICAL FOUNDATIONS OF RESEARCH

Changes in currency systems over the past few decades have made the present day the emergence of the real exchange rate as a key variable in economic policy. If the real exchange rate is properly adjusted in the equilibrium direction, it can have a positive effect on the economy, and, contrary to the deviation and intensity of its fluctuations, it can have a negative effect on the economic performance.

In an open economy, the real exchange rate is an important variable that influences domestic and foreign economic policies and economic developments because of its interplay with other economic variables. Therefore, the exchange rate is also a variable that can affect the performance of the economy and the economic variables. Economists agree that stabilizing the real exchange rate at an inappropriate level and deviating from the equilibrium path will dramatically reduce national welfare through its adverse impact on macroeconomic performance.

The issue of exchange rate regulation is one of the most complex issues in developing countries because the determination of the national currency value of a country in foreign currency must be in such a way as to harmonize the domestic economy with the international economy. Now, if the exchange rate is not adjusted in line with economic changes and changes, it causes deviation of the real exchange rate and improper regulation of it, causing undesirable orientations in domestic macroeconomic policies.

Over the past few decades, economists and policymakers have frequently studied the performance of real exchange rates in Third World countries and often believe that some countries' inappropriate exchange rate policies exacerbate international debt crises, aggravating the sector's situation. Agriculture, the imbalance in the trade balance, the failure of adjustment and adjustment policies to address economic problems. Economists agree that stabilizing the real exchange rate at an inappropriate level and deviating from the equilibrium path will dramatically reduce national welfare through its adverse impact on macroeconomic performance.

Debates about adopting and implementing appropriate exchange rate policies are now expanding in developing countries; empirical studies conducted in many countries, especially in Asian and African countries, show a strong correlation between deviations of the real exchange rate from equilibrium and there are performance indicators such as exports and economic growth. The policy of devaluation of foreign currency against foreign currencies will increase the price of foreign goods relative to domestic goods, thereby enhancing competitiveness between domestic and international industries, thereby shifting foreign spending to domestic goods.

Kurdish. But the success of implementing a domestic currency devaluation policy in upgrading business balance is largely dependent on keeping demand in the right direction and with the right capacity to respond to this increase in supply. In international economics, and according to world trade theory, a country's depreciation causes the price of a country's export commodities to be reduced in foreign markets and in terms of its currency, resulting in buyers and consumers buying more of them. While traditional views suggest that the domestic currency devaluation policy is driving the expansion of production, theoretical debates emphasize some of the contractionary effects. If the Marshall-Lernerb condition is not met then the devaluation of the domestic currency will lead to a decrease in the level of production. The depreciation of the domestic currency, assuming an initial trade deficit in the economy, reduces real national income and leads to a decrease in aggregate demand.

An examination of Iran's share of world trade volume over the last two decades shows that

Iran's share of world exports has not been significant. This has made the development of non-oil exports necessary to reduce the country's economy's dependence on oil revenues. From the macro point of view, the Keynesian effect of export can also be mentioned; according to Keynes's theory, since exports are part of the total demand of the economy, its increase has an indirect effect through the acceleration factor on domestic production and consequently non-oil exports as a direct effect. But studies in different countries show that all developing countries face the problem of not using their production capacities optimally. Now, if external demand (exports) forms in the domestic economy, it is natural that unused capacities can be exploited. Increasing production capacity for non-oil exports will affect employment, stagnation and inflation. The development of non-oil exports can also be beneficial to governments from a political and social point of view.

As such, important and central variables, such as non-oil exports, depend on price factors (such as the exchange rate), but some basic and real variables are needed to operate the price system as a signaling mechanism and resource allocation. That is, if appropriate legal and social institutions are created in the economy, endogenous knowledge and productivity, institutionalized quality, innovation and innovation grow, individual and monopoly economic powers be restricted, disruptions and barriers arise.

Eliminate the dynamic interaction of sectors, in which case the price system acts as a good opportunity and privilege and performs the important task of transferring information without cost, marking economic factors and better allocating resources. Therefore, non-price factors such as productivity, appropriate rules, technical, scientific and managerial competitiveness are complementary to price factors such as exchange rates and interact with each other and increase their effectiveness. Thus, unless institutional, scientific, and managerial contexts are not provided, productivity, innovation and quality are not emphasized, political and social institutions are not created, optimal pricing and resource allocation are not created, and price changes may not yield the desired results. And even worsen the situation even in conditions of economic instability (Shakeri 2004).

SPECIFY THE PATTERN

Exports of each country as an important part of the balance of payments are affected by many variables, and the real exchange rate, as one of the most important and effective macro economic variables, has always been subject to changes in exports and thus in GDP. Therefore, following the model of Chitt et al. (2008) and Shakeri (1), the non-oil export model is refined to evaluate the impact of the real exchange rate on non-oil exports along with other factors, hence the non-oil export function. Oil for Iran is available as follows:

EXP= f (RER, GDP, WGDP, TOT, PRO, DW, De)

RER: Real exchange rate

GDP: GDP

WGDP: Global GDP (Global Income) is the weighted average of the income levels of the major trading partner countries of Iran.

TOT: Swap relationship

PRO: Workforce Productivity

DW: Virtual variable for war time (war time zero and years zero)

De: Virtual variable for the exchange rate) Change of the country's currency system to the managed float currency in year 1, year 1 and other years zero(

The real exchange rate variable can be calculated as follows [xxii]:

$RER = (E. CPI *) / CPI$

E: The nominal exchange rate is defined as the number of domestic currencies per foreign currency; when E rises, the national currency weakens.

CPI *: Outside Consumer Price Index

[xxiii] CPI: Consumer Price Index Inside

The Exchange Relationship is as Follows

$TOT =) Px / Pm). 100$

Px: Index of export commodity prices

Pm: Import Price Index

Productivity has a broad and broad meaning. In most cases, productivity is described as dividing the value of GDP by the working population, which is called labor productivity. In modern economic literature, productivity is described as a measure of the size of the contribution and contribution of all inputs to GDP, which is the total productivity of the factors of production [xxiv]. Here, the productivity variable (PRO) is obtained by dividing real GDP without oil by workers in non-oil economic sectors. Statistics

and data on Iran variables are extracted from the central bank time series database and data on outside Iran are extracted from the World Bank (2010)

According to the theoretical foundations of macroeconomics, the exchange rate has a direct and positive effect on exports, ie, exports increase directly with the increase in the exchange rate (devaluation of the national currency) (Branson 1979). This theory has been suggested by Dorodian (1999), Ch] (2000), Sirigo & Rajan (2002), Achi & Sekat (2002), Buck (2004), Hirgat & Zamakro (2005), Baloga & Co (2007), Dell (2007).) And Ariz et al. (2008) have been tested and validated .The theoretical expectation is that exports will increase as the real exchange rate (devaluation of the domestic currency) increases due to lower prices of domestic commodities compared to similar foreign commodities. On the other hand, as the trading side countries will increase and demand more and more goods as the level of income increases, so the relationship between the income of the major trading countries of Iran (global income variable) and non-oil exports is expected to be positive. The effect of the exchange relationship (ratio of export prices to import prices) on non-oil exports is positive. The trade-off is dependent on the index obtained from the trade, and the improvement of the trade-off stimulates export supply.

ESTIMATING THE IMPACT OF THE REAL EXCHANGE RATE ON NON-OIL EXPORTS

The VECM vector error correction model is used to estimate the model and investigate the relationship between non-oil exports and the real exchange rate, which is a self-recursive vector recursive model in which short-run relationships with long-run relationships are investigated. This template is generally defined

as follows:

$$\Delta X_t = c_1 + c_2 T + \rho X_{t-1} + \Sigma \beta_i \Delta X_{t-I} + \varphi W_t + \varepsilon_t$$

X_t: The vector of endogenous variables.

W_t: The vector is the exogenous variable.

ε_t: Vector of error sentences

The process

c_1: constant values vector

Static Testing of Research Variables: In estimating model coefficients using time series data using econometric methods, it is assumed that the model variables are stable. A time series variable is stable when its mean, variance, and covariance remain constant over time and are not a function of time. The presence of inanimate variables in the model causes the t and F tests to be inadequate and lead to fake regressions. Therefore, in dealing with time series, variables are first tested for reliability. One of the most important tests for static (reliability) tests is the unit root test. The generalized Dickey-Fowler test is used to ensure the static or non-static time series variables used in the model (growth rates of variables ranging from 1 to 2 years) and the results are summarized in Table 1. On the other hand, given the real exchange rate variable, there is a expectation of a structural failure due to the implementation of the exchange rate equalization policy in year 2, so special care should be taken in the single root test (according to Prone's 1989 theory). Therefore, the Peron test is used to detect the static or non-static of these variables. The results of the test (shown in Table 1) show that the existence of a single root in the real exchange rate was not caused by a structural failure and this variable has a single root. Once the difference is static.

Table1. *Generalized Dickey-Fuller test results for the level of variables studied*

Degree of maneuverability	Peron		ADF		Variable name
	Critical statistics	**T statistics**	**Critical statistics**	**t statistics**	
	3.64-	6.26-	3.67-	6.05-	EXP
	3.64-	3.87-	3.67-	3.89-	GDP
	3.64-	4.76-	3.67-	5.08-	WGDP
	3.64-	5.78-	3.67-	6.39-	RER
	3.64-	4.38-	3.67-	3.84-	TOT
	3.38-	4.55-	2.96-	3.86-	PRO

Thus, the cumulative degree of all the variables in the model were first-order that were static with a one-time difference. Therefore, since all variables are I, the Johansson's method of convergence can be used. In fact, this method

involves testing and determining the co integration relationships between time series variables and showing the long-run relationships between variables. Then, based on the vector error correction model, the short-run

relationships between the model variables are calculated.Co-ordinate analyzes by Johansson and Joselius require the VAR pattern to be interrupted, based on Akaic criteria (AIC, Schwartz Bayesian (SBC), and HQCN (HQC). The vector regression itself has done so, based on what is shown in Table 1 on the basis of the Acaic, Schwartz Baynes, and Hanan Quine criteria, the Grade 2 can be accepted based on the minimum value of this test.

Table2. *The result of the test for determining the degree of self-regression vector*

Pause	Acaic	Schwarzenegger	Henanquin
0	34.6	65.6	47.6
1	-49.2	-6.1	-19.2

2	-32.3	-82.1	-8.2
3	-3	-7.0	-2.2
4	-02.3	-24.0	-2

After determining the degree to obtain the long-run relationship between variables, the number of covariance vectors should be determined based on the effect test and the maximum eigen value, and the existence of coherence and long-run relationships between the variables should be investigated. After identifying and estimating the normalization and normalization vectors of these vectors, the significance of the coefficients is examined. As shown in Table 1, based on both statistics, there is a 1% coincidence vector among the variables in the model.

Table3. *Results of the test for determining the number of cointegrating vectors*

Effect test				Test the maximum eigenvalue			
H0	H1	Computational Statistics	Statistical table at 95% confidence level	H0	H1	Computational Statistics	95% confidence level table statistics
r=0	r=1	2.79	8.62	r=0	r≥1	6.38	31
r≤1	r=2	4.38	42.8	r≤1	r≥2	2.18	25.6
r≤2	r=3	24	25.9	r≤2	r≥3	10.8	17.2
r≤3	r=4	11.2	12.1	r≤3	r≥4	10.3	12.4

The results of the co integration vector based on the normalized variables are presented in Table 1.

De	DW	PRO	TOT	WGDP	GDP	PER	Variable
67.0	-95.0	12.3	1.68	0.95	0.944	64.0	Coefficient
8.2	-04.3	89.4	3.21	27.2	3.107	12.4	

In interpreting the estimated model, the first step is to adapt the coefficients of the model coefficients to the theoretical expectations. It can be seen that in the above model, the sign of all coefficients is consistent with economic theories. So that:

The real exchange rate coefficient indicates that by increasing the real exchange rate by one percent, non-oil exports will increase by 0.64 percent, indicating a positive effect of this variable on non-oil exports. This result is consistent with Kendill's theory that the policy of devaluation of the currency against foreign currencies increases the price of foreign commodities relative to domestic commodities, thereby enhancing competitiveness between domestic and international industries and increasing foreign commodity spending. Side of the domestic goods will move consistent. Comparing this result with Dr. Shakeri's study also shows the proximity of the results that in the short run the effect of the real exchange rate on non-oil exports is less than the long-run value that can be due to inflation so that the increase in non-oil exports due to the increase in real exchange rate with inflation As a result of rising real exchange rate to some extent neutral. Iran's GDP has a positive impact on non-oil exports, with non-oil exports increasing by 0.94 percent, increasing by one percent. World GDP has a positive and significant impact on Iran's non-oil exports. Increasing production in these countries means increasing their incomes and increasing their demand for goods and services. This, in turn, will increase demand for Iranian goods. Estimates of the world's GDP are positive as non-oil exports increase by 0.95 percent with a variable percent increase. Pahlavi has also experienced this positive effect in estimating the export demand function.

According to Squeezy and Gusawa's theory that exports are a function of world income level, consumers will consume more and more of their domestic and foreign goods as income levels increase, so the income levels of major trading partner countries play an important role in determining export value and value.The relationship of exchange and labor productivity also had a positive effect on non-oil exports, with the increase in the ratio of export price index to import price index (exchange ratio) increasing non-oil exports from the supply

channel and increasing non-oil exports by 1.68 percent. In other words, as the exchange rate increases, the incentive to export will increase. Labor productivity also increases non-oil exports by 3.12 percent if one percent increase, according to Shakery. Non-price factors, such as productivity, are complementary to price factors, such as complementary exchange rates, and interact with each other, thus enhancing their effectiveness. As technology knowledge and production management become more competitive, non-oil exports will increase. The virtual variable of war also shows that it has had a relatively stable and significant negative effect on non-oil exports, which, given the estimated coefficient of this variable and its related statistics, is evident in the limiting role of the imposed war on the non-oil export process. The imaginary exchange rate variable has a positive effect on non-oil exports as well. In fact, the exchange rate consolidation in years 1 and 2 and the use of a managed floating exchange rate in year 2 have stabilized the exchange rate in the market which in turn has a positive effect on exports. In many studies, the negative effect of exchange rate volatility on exports has been proven .Next, the Vector Error Correction Model (VECM) is used to estimate the short-run relationship between the variables. The estimation results are presented in Table 5 using this model:

ECM	D_e	D_w	PRO	TOT	WGDP	GDP	PER	C	Variable
-273.0	94.0	-59.0	015/0	409.0	11.0	359.0	347.0	05/0	Coefficient
-390.0	26.2	-1.3	027.0	984.4	05.2	852.1	66.1	1.5	t Statistics

As the estimation equation of the error correction model shows, the coefficient of the error correction is negative, meaningful, and consistent with the theory, and the value of this coefficient indicates that 5% of the equilibrium error will be eliminated in each period. In this short-run estimation by error correction model, the exchange rate coefficient is positive and significant, meaning that the domestic currency devaluation policy can be a policy to encourage non-oil exports. Iran's and the world's GDP, the relationship of exchange and labor productivity have a direct impact on non-oil exports. In other words, increasing each of these variables increases non-oil exports.

CONCLUSION

Developing countries' export growth in single-product economies, including Iran, has a special place, so identifying the determinants of non-oil exports and how they relate to non-oil exports can help economic policy makers and governments in meeting non-oil export goals. . This paper examines the impact of the real exchange rate on non-oil exports, the results of which are summarized as follows:

Non-oil exports have had a positive effect on the real exchange rate, in other words, increasing the real exchange rate improves exports, thus, the research hypothesis that the effect of the real exchange rate on non-oil exports is ineffective is not accepted. Gross domestic product has also had a positive impact on non-oil exports. Increasing production capacity in the country will increase production in various industries including export sectors. So increasing production will not only supply domestic demand, but also increase export supply. Increasing global income has also driven demand for non-oil exports from major exporting countries. An increase in the exchange of labor and productivity also increases the incentive for producers to export goods, thereby increasing non-oil exports.

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