

An Investigation of Effective Factors on Export in Iran

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ABSTRACT

Iran economy is dependent to oil export. Iran economy has non-oil export as agricultural goods, traditional goods, technical and engineering services and some industrial goods. The aim of this paper is considering effective factors on export in Iran economy. For do it, we have used an empirical model for modeling main factors on export. Results indicate that Real exchange rate has a significant positive effect on export. Population and income per capita have a significant positive effect on export. Export with one lag has a positive effect on export in Iran. Interest rate has a negative effect on export. VAR estimation indicates that interest rate has a negative effect on export. Real exchange rate has a positive impact on export in Iran. VAR estimation indicates that CPI index has a positive effect on income per capita. Export with first lag has a positive effect on export. Income per capita with one lag has a positive effect on income per capita. Other variables have not significant impact on export and income per capita.

KEYWORDS: Export, Iran Economy, Cointegration, Impulse Response Function, VAR.

1. INTRODUCTION

Export of oil is one of the most exported commodities of Iran economy. Also, non-oil commodities are exported by Iranian companies as traditional goods and industrial goods.

Farokhian and et. al (2010) presented the effective factors on increasing the export from the standpoints of the Iranian exporters under a model. They found that four main factors influenced exports which were: Individual factor (education, experience, export knowledge, public communications), economical factor (export markets, governmental subsidies, export pricing, export marketing), environmental factor (rules and regulations, culture, technology, informal communications, political factor) and product marginal factor (design and packaging, quality of products, guarantee and after-sell services, distribution canals, products' brands). Carneiro and et. al (2011) concluded that the external environment, firm characteristics and firm strategy have important effect on export. They investigated 448 large Brazilian. Also, they have used A structural equation modeling (SEM) approach.

The aim of this paper is considering effective factors on export in Iran. We have used regression analysis. This paper is organized by four sections. The next section devoted to research method. Section 3 shows empirical results and in final section, we present conclusion.

2. RESEARCH METHOD

The aim of this paper is considering effective factors on export in Iran economy. For do it, we have used an empirical model for modeling main factors on export as following model:

$$Exp_t = \alpha_0 + \alpha_1 CPI_t + \alpha_2 Y_t + \alpha_3 ER_t + \alpha_4 Pop_t + \alpha_5 i_t + \varepsilon_t \quad (1)$$

Where Exp_t is export, CPI_t is consumer price index, Y_t is per capita income, ER_t is real exchange rate, Pop_t is population and i_t is interest rate. Sample of this study is period of 1970-2008. We have used data from website of central bank of Iran¹.

¹. www.cbi.ir

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3. EMPIRICAL RESULTS

First of all, we have tested variables that these variables are stationary or non-stationary. We have used Augmented Dickey Fuller test (ADF) for stationary test of variables.

Table 1. ADF Test for Variables

| Variables | P-Value (ADF Test) | Type of Test | Result of Test |
|-----------|--------------------|---------------------|----------------|
| Exp_t | 0.99 | Intercept and Trend | Non-Stationary |
| CPI_t | 1 | Intercept and Trend | Non-Stationary |
| Y_t | 0.83 | Intercept and Trend | Non-Stationary |
| ER_t | 0.40 | Intercept and Trend | Non-Stationary |
| Pop_t | 0.26 | Intercept and Trend | Non-Stationary |
| i_t | 0.91 | Intercept and Trend | Non-Stationary |

*. Results are based on Shuwarz Criteria.

Because of all variables are non-stationary. We tested Cointegration test for research model as following:

Table 2. Johansen Cointegration Test

Sample (adjusted): 1975 2006

Included observations: 32 after adjustments

Trend assumption: Linear deterministic trend (restricted)

Series: EX Y

Exogenous series: ER CPI I POP

Warning: Critical values assume no exogenous series

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|------------------------------|------------|--------------------|------------------------|---------|
| None * | 0.466606 | 29.42504 | 25.87211 | 0.0173 |
| At most 1 | 0.252513 | 9.313236 | 12.51798 | 0.1619 |

Trace test indicates 1 cointegratingeqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
|------------------------------|------------|------------------------|------------------------|---------|
| None * | 0.466606 | 20.11181 | 19.38704 | 0.0392 |
| At most 1 | 0.252513 | 9.313236 | 12.51798 | 0.1619 |

Max-eigenvalue test indicates 1 cointegratingeqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Date: 11/04/11 Time: 19:31

Sample (adjusted): 1975 2006

Included observations: 32 after adjustments

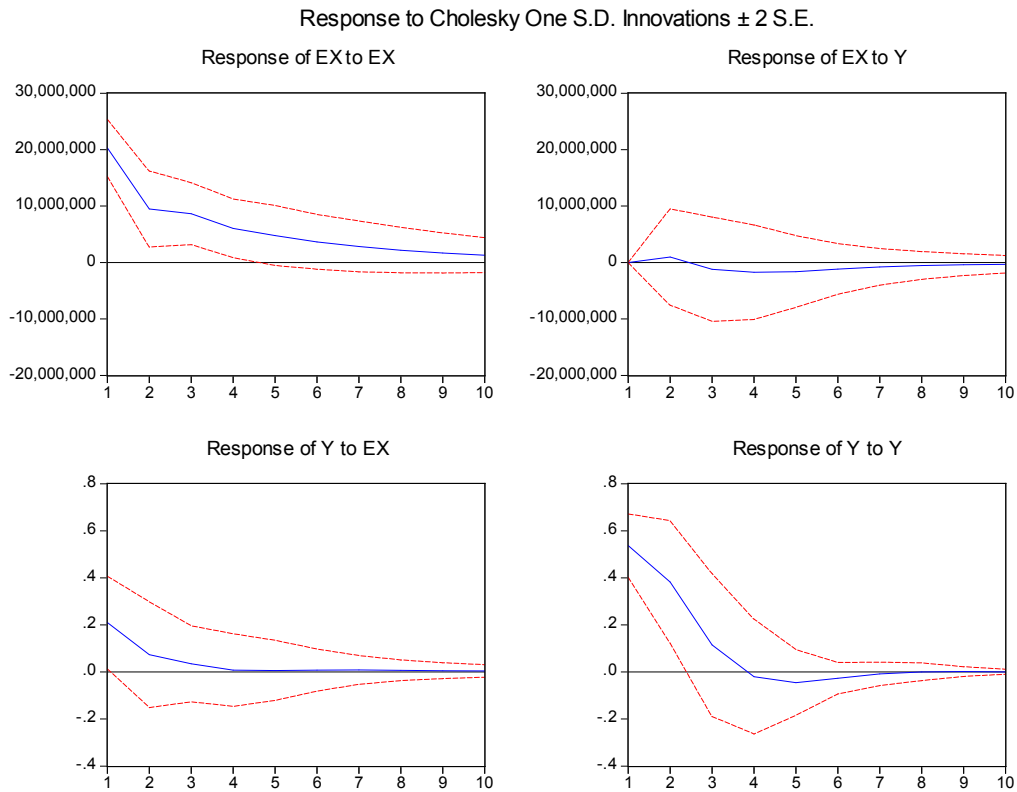
| Trend assumption: Linear deterministic trend (restricted) | | | | |
|---|------------|-----------|----------------|---------|
| Series: EX Y | | | | |
| Exogenous series: ER CPI I POP | | | | |
| Warning: Critical values assume no exogenous series | | | | |
| Lags interval (in first differences): 1 to 1 | | | | |
| Unrestricted Cointegration Rank Test (Trace) | | | | |
| Hypothesized | Trace | 0.05 | | |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.** |
| None * | 0.466606 | 29.42504 | 25.87211 | 0.0173 |
| At most 1 | 0.252513 | 9.313236 | 12.51798 | 0.1619 |
| Trace test indicates 1 cointegratingeqn(s) at the 0.05 level | | | | |
| * denotes rejection of the hypothesis at the 0.05 level | | | | |
| **MacKinnon-Haug-Michelis (1999) p-values | | | | |
| Unrestricted Cointegration Rank Test (Maximum Eigenvalue) | | | | |
| Hypothesized | Max-Eigen | 0.05 | | |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.** |
| None * | 0.466606 | 20.11181 | 19.38704 | 0.0392 |
| At most 1 | 0.252513 | 9.313236 | 12.51798 | 0.1619 |
| Max-eigenvalue test indicates 1 cointegratingeqn(s) at the 0.05 level | | | | |
| * denotes rejection of the hypothesis at the 0.05 level | | | | |
| **MacKinnon-Haug-Michelis (1999) p-values | | | | |

Results indicate that there is a long run relationship between variables. So, we estimated model as following:

| Table 3. Estimation Results | | | | |
|---|-------------|-----------------------|-------------|----------|
| Method: Least Squares | | | | |
| Date: 11/04/11 Time: 19:48 | | | | |
| Sample (adjusted): 1974 2006 | | | | |
| Included observations: 33 after adjustments | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | -55880582 | 76388567 | -0.731531 | 0.4710 |
| ER | 19766.89 | 3326.662 | 5.941960 | 0.0000 |
| POP | 2675.774 | 1554.464 | 1.721349 | 0.0971 |
| CPI | 243954.9 | 414994.1 | 0.587851 | 0.5617 |
| Y | 9562397. | 5728168. | 1.669364 | 0.1070 |
| I | -13452906 | 3442780. | -3.907571 | 0.0006 |
| EX(-1) | 0.595274 | 0.095246 | 6.249884 | 0.0000 |
| R-squared | 0.965832 | Mean dependent var | | 69724253 |
| Adjusted R-squared | 0.957948 | S.D. dependent var | | 92946962 |
| S.E. of regression | 19060329 | Akaike info criterion | | 36.54995 |
| Sum squared resid | 9.45E+15 | Schwarz criterion | | 36.86739 |
| Log likelihood | -596.0741 | Hannan-Quinn criter. | | 36.65676 |
| F-statistic | 122.4927 | Durbin-Watson stat | | 1.418927 |
| Prob(F-statistic) | 0.000000 | | | |

Table 3 indicates effective factors on export in Iran. Real exchange rate has a significant positive effect on export. Population and income per capita have a significant positive effect on export. Export with one lag has a positive effect on export in Iran. Interest rate has a negative effect on export. Based on Johansen test, we estimated model based on VAR approach as following:

| Table 4. Vector Autoregression Estimates | | |
|--|--------------------------------------|--------------------------------------|
| Date: 11/04/11 Time: 20:37 | | |
| Sample (adjusted): 1975 2006 | | |
| Included observations: 32 after adjustments | | |
| Standard errors in () & t-statistics in [] | | |
| | EX | Y |
| EX(-1) | 0.448050 (0.16324) [2.74466] | -3.75E-09 (4.6E-09) [-0.80996] |
| EX(-2) | 0.254708 (0.18293) [1.39237] | 3.85E-09 (5.2E-09) [0.74198] |
| Y(-1) | 1800722. (7940775) [0.22677] | 0.711872 (0.22539) [3.15847] |
| Y(-2) | -4321079. (5670365) [-0.76205] | -0.286675 (0.16094) [-1.78121] |
| C | 84879560 (1.0E+08) [0.81725] | 6.910408 (2.94790) [2.34418] |
| CPI | 714536.2 (483766.) [1.47703] | 0.030832 (0.01373) [2.24548] |
| I | -11140231 (4151132) [-2.68366] | 0.116902 (0.11782) [0.99218] |
| POP | 184.2987 (2085.00) [0.08839] | -0.000124 (5.9E-05) [-2.09906] |
| ER | 21959.86 (3835.20) [5.72587] | 9.91E-05 (0.00011) [0.91063] |
| R-squared | 0.965596 | 0.898382 |
| Adj. R-squared | 0.953630 | 0.863037 |
| Sum sq. resids | 9.49E+15 | 7.645874 |
| S.E. equation | 20313615 | 0.576567 |
| F-statistic | 80.69191 | 25.41733 |
| Log likelihood | -578.5798 | -22.50092 |
| Akaike AIC | 36.72374 | 1.968807 |
| Schwarz SC | 37.13598 | 2.381045 |
| Mean dependent | 70469222 | 4.708995 |
| S.D. dependent | 94334058 | 1.557931 |
| Determinant resid covariance (dof adj.) | | 1.19E+14 |
| Determinant resid covariance | | 6.15E+13 |
| Log likelihood | | -598.8079 |
| Akaike information criterion | | 38.55050 |
| Schwarz criterion | | 39.37497 |
| http://userhome.brooklyn.cun Johansen.doc http://userhom | | |



Plot 1. Impulse Response Function

VAR estimation indicates that interest rate has a negative effect on export. Real exchange rate has a positive impact on export in Iran.

VAR estimation indicates that CPI index has a positive effect on income per capita. Export with first lag has a positive effect on export. Income per capita with one lag has a positive effect on income per capita. Other variables have not significant impact on export and income per capita.

Plot 1 indicates impulse response function. This plot shows response of export an income per capita to itself.

4. Conclusion

Iran economy is dependent to oil export. Iran economy has non-oil export as agricultural goods, traditional goods, technical and engineering services and some industrial goods. Iran is a founding member of OPEC and the Organization of Gas Exporting Countries. Petroleum constitutes 80% of Iran's exports with a value of \$46.9 billion in 2006. Iran's non-oil exports stood at \$16.3 billion in 2007, a rise of 47.2% over the previous year, and \$25 billion in 2010.

The aim of this paper is considering effective factors on export in Iran economy. For do it, we have used an empirical model for modeling main factors on export.

Results indicate that Real exchange rate has a significant positive effect on export. Population and income per capita have a significant positive effect on export. Export with one lag has a positive effect on export in Iran. Interest rate has a negative effect on export. VAR estimation indicates that interest rate has a negative effect on export. Real exchange rate has a positive impact on export in Iran. VAR estimation indicates that CPI index has a positive effect on income per capita. Export with first lag has a positive effect on export. Income per capita with one lag has a positive effect on income per capita. Other variables have not significant impact on export and income per capita.

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