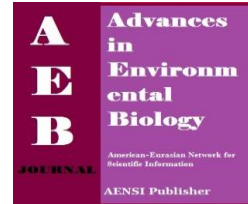




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Studying International Exports and Imports Based on Geopolitical Approach by Estimation of Gravity Panel Data Models (Case Study: Iran's Exports and Imports with the Countries around the Caspian Sea)

¹Ali Sorayaie, ²Morteza Valiollahpour, ³Shahin Behzadi, ⁴Pezhman Rashed

¹Department of Management, Babol Branch, Islamic Azad University, Babol, Iran

²Master of Business Administration-International Business Student, Islamic Azad University of Babol Branch, Morteza.

³Master of Financial Management Student, Islamic Azad University of Babol Branch.

⁴Master of Business Administration-International Business Student, Islamic Azad University of Babol Branch.

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ABSTRACT

In this study, macro economic impact of e-commerce development on GDP, total factor productivity, export factor productivity, imports and economic development, and welfare in Iran are studied by gravity model. Data is taken directly from the Chamber of Commerce of the Islamic Republic of Iran. GDP data, population (POP) and other gravity model's variables are taken from international financial statistics, UN, WTO, World Bank, IMF. In the first, we present generalities, definitions, and measurements' criterion of business with the theoretical fundamentals and economic literature. In the second part, we select appropriate model to estimate trade flow according to empirical studies in countries with the region approach. If we look at Iran's geographical location, we will find that It is connector of two full-energy regions, the Persian Gulf and Caspian Sea. Access to international waterways makes it as one of the poles of potential export. Iran must shift its way regarding foreign trade so that exports of manufactured goods, especially industrial products; electronic equipment, light industry and textile products and technology improve. At the end of the study, we discuss the results, strategies and economic policies of foreign trade, especially toward increasing export development and economic evolution.

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INTRODUCTION

The integration with the global economy requires the establishment of a more open environment for trade and investment and reassuring environment for domestic and foreign economic agents. Wisely use of strategic tools in planning organization according to global technology growth and global planning can help us to improve the efficiency of our business, active presence in the field of foreign trade and strengthen Iran in regional markets and ultimately prevents the commercial failure and vulnerability in the international arena [8]. When two countries remove their tariffs for each other products according to the agreement, but they keep this tariffs for goods imported from third countries, this causes improving exchanged profitability for businessmen of the two countries since then, both countries can produce each other products cheaper, importing them from each other instead of manufacturing inside. But it should be noted that in this case, the trade is deviated because now goods, which two countries buy from each other, were imported from other countries that were more efficient in manufacturing in the past, [10]. In the past few decades, the global economy could have great effect on economic [7]. cases such as European Community is a new kind of geopolitical structure [4]. This paper proposes a radically parsimonious empirical model which relies on observations of bilateral trade flow panel data only. The approach represents a structural gravity model which is consistent with a large class of isomorphic models of international trade [1,3].

2. Problem Statement:

Increasing economic and trade exchanges are signs of acceleration in the universal economy toward globalization today. We can observe such evidence of this globalization in largely reduced or even totally eliminate barriers to trade, foreign exchange restrictions, capital controls and the elimination of

Corresponding Author: Ali Sorayaie, Department of Management, Babol Branch, Islamic Azad University, Babol, Iran.
E-mail: a.sorayaie@yahoo.com

visas for citizens of some countries recently [6]. Therefore, for successful economic development and establishing a logical connection and the organic development of foreign trade and non-oil exports, Iran must immediately match its economy with global developments. This paper seeks to answer the following questions:

✓ What measures must we provide for exports and imports development in world trade according base on Geopolitical Approach?

3. Evidence, concepts, history and generalities of trade policy:

Some authors, to identify the effects of the order of trade, posed a formula as "trade intensity". Trade intensity is determined by the intra regional trade with a country's ratio of trade that regional or the share of non-regional trade. This ratio is measured collectively as the members of a regional trade arrangement. Measurement of the trade intensity shows whether intra regional trade increase is occurred due to trade of a region with the world or it's happened harmonious and balanced. In contrast, if the region's share in global trade and increasing trade intensity were fixed because of increasing intra regional trade, trade creation effect in a regional arrangement was exist.

Frankel [5] explains the most advanced form of standardized gravity equation that has a special emphasis on the role of geographical factors such as distance, borders and population as the bilateral trade flows. Virtual variables such as common language, proximity and historical communications also can be entered to the model to provide political- geography factors. Therefore the standard gravity equation used in this study is:

$$\ln X_{ij} = \alpha + \beta_1 \ln GDP_i + \beta_2 \ln GDP_j + \beta_3 \ln P_i + \beta_4 \ln P_j + \beta_5 \ln D_{ij} + \beta_6 \ln Z_{kij} + \varepsilon_{ij} \quad (1)$$

Where X_{ij} is the volume of bilateral trade (Exports) between the exporter j and importer i , GDP_i , GDP_j are GDP of exporting country i and importer j , P_i , P_j , P_i , P_j are population of exporter country i and importer j that P means the population, D_{ij} is the distance between the capital of exporting country i and importer j , Z_{kij} is a vector of dummy variables Z_k that shows the neighborhood (khaki bordered), a common language and a member of a commercial organization and other commercial agreements between exporting countries i and is the importer j , The value of virtual variables are typically binary for each of the above criteria $Z_k = 1$ and otherwise $Z_k = 0$.

4. Research objectives:

The main objectives of this study can be categorized in the following manner:

- Identifying the current state of world exports and imports due to geopolitical and geostrategic implications.
- Identifying the optimal conditions for the Iran trade capacity.

5. Research Methods:

We used Minitab 16 and EViews 7 software for analyzing data. Panel data, which are collecting based on firms, households and individuals, maybe be more accurate of similar data measuring in macro level [2]. We study Iran trade process of changing in 2004-2014. Data is taken directly from the Chamber of Commerce of the Islamic Republic of Iran. GDP data, population (POP) and other gravity model's variables are taken from international financial statistics, UN, WTO, World Bank, IMF.

6. Research Results:

Table one, show the value of Iran's export and import from Countries around the Caspian Sea.

Import Country	2003-2004			2013-2014		
	Value (Million\$)	Share (Percent)	Rank	Value (Million\$)	Share (Percent)	Rank
Azerbaijan	96.468	0.365	32	10.122	0.0516	55
Iran	-	-	-	-	-	-
Kazakhstan	284.607	1.076	22	14.810	0.0755	49
Turkmenistan	52.674	0.199	41	11.852	0.0604	52
Russia	1070.436	4.05	7	303.003	1.545	11
Caspian	1504.185	5.69	-	339.787	1.732	-
World	26453.4	100	-	19603.9	100	-
Exports	1993-1994			2013-2014		
	Value (Million\$)	Share (Percent)	Rank	Value (Million\$)	Share (Percent)	Rank
Azerbaijan	307.065	5.185	5	260.067	1.788	9
Iran	-	-	-	-	-	-
Kazakhstan	47.670	0.805	27	91.167	0.627	16
Turkmenistan	94.656	1.598	18	468.794	3.223	7
Russia	135.486	2.288	12	162.165	1.115	13
Caspian	584.877	9.876	-	982.193	6.753	-
World	5922	100	-	14543.07	100	-

Source Statistics: Islamic Republic of Iran Chamber of Commerce

Estimated results of gravity model by panel data include both FE and RE. The appropriate method is selected according to the F-statistic and Hausman test. We used Hausman tests to choose one of two methods, the fixed effects and random effects for determining. If the H0 is accepted, we prefer and select fixed effects and it is more appropriate and efficient. Otherwise, the fixed effects are selected. Regression results for gravity model, equation 1, are given in Table 2.

Explanatory Variables	Gravity Model by EC	
	Fix Effects*	Random Effects
Fixed	82.081	59.810
Population of Exporter	-7.313	-3.514
Population of Importer	-1.668	-4.037
GDP of Exporter	3.357	0.794
GDP of Importer	4.493	1.651
Distance	—	0.912
Virtual Variable	—	-9.210
R ²	0.92	0.91
Prob (F-statistic)	0.000	0.000
Number of Observations	150	150

All parameters are significant at 0.99

* According to the Hausman test, the model is panel data with fixed effects

Source: Results from this research

7. Conclusions and Recommendations:

R is about 0.92. GDP logarithm in two countries had a decisive role for determining these countries trade volume. The estimated coefficient β_1 and β_2 are significant in 3.357 and 4.493 for fixed gross variable and the result is matched with main hypothesis of the gravity model that increases by increasing trade economic size volumes. However, the estimated coefficient implies that increasing in GDP increases the volume of bilateral trade (Exports and imports) when all other variables are fixed in mentioned countries.

Research show that Iran should change its method in such a way that export, electronic equipments, advanced technology products and the way of its trade to the world be improved [9]. Practical suggestions for increasing the long-term objectives in the development of non-oil exports:

- ✓ Improving products quality and observing standards of target markets.
- ✓ Continuation of the peaceful foreign policy and develop peaceful relations with other countries base on regional geopolitics.

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Statistical Sources:

Most frequently used sources for statistics are:

EUROSTAT, Com ext and on-line databases

FAO, FAOSTAT Agriculture database

FAO, Production Yearbook

GTIS, Global Trade Atlas database

IMF, Balance of Payments Statistics

IMF, International Financial Statistics

IMF, World Economic Outlook database
OECD, Main Economic Indicators
OECD, Measuring Globalization: The Role of Multinationals in OECD Economies
OECD, Monthly Statistics of International Trade
OECD, National Accounts
OECD, Statistics on International Trade in Services
OECD/IEA, Energy Prices & Taxes
UNECE, Economic Survey of Europe
UNECLAC, Overview of the Economies of Latin America and the Caribbean
UNIDO, National Accounts Statistics Database
UNSD, Com trade database (for OECD members the UNSD-OECD Joint Trade Data Collection and Processing system)
UNSD, International Trade Statistics Yearbook
UNSD, Monthly Bulletin of Statistics
UNSD, Service trade database
World Bank, World Development Indicators

These sources are supplemented by national publications and other international databases and Secretariat estimates. Figures for total merchandise trade are largely derived from IMF. Data on merchandise trade by origin, destination and product are mainly obtained from Euro stat's Com ext database, the Global Trade Atlas and UNSD's Com trade database. Some inconsistencies in the aggregate export and import data for the same country or territory between sources are inevitable. These can be attributed to the use of different systems of recording trade, to the way in which for example IMF and UNSD have converted data expressed in national currencies into dollars, and revisions which can be more readily incorporated in the IMF data.

Statistics on trade in commercial services are mainly drawn from the IMF Balance of Payments Statistics. Data for European Union members, EU candidate and EU observer countries as well as the EU (27) aggregate are drawn from Euro stat's on-line database from 2004. For other economies that do not report to the IMF (e.g., Chinese Taipei) data are drawn from national sources. Estimations for missing data are mainly based on national statistics. Statistics on trade in commercial services by origin and destination are also derived from national statistics.

GDP series in current dollars are mainly derived from the World Bank World Development Indicators, supplemented in some cases with statistics from the IMF World Economic Outlook database.

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Closing date for merchandise trade statistics (Customs basis) and commercial services (Balance of Payments basis) is 15 July 2012. For foreign affiliate's trade in services statistics the closing date is 16 August 2012.