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The Impact of Macroeconomic Variables on Agricultural Sector Exports in Emerging Economies of the BRICs and Iran

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Abstract

The main purpose of this study is to investigate the impact of economic variables on agricultural exports in emerging economies of the BRICs and Iran during the period 2009 to 2018. Therefore, in the first step, after presenting theoretical studies and research background, the econometric model of research is introduced. Accordingly, we consider the real agricultural export variable as a function of real exchange rate, inflation rate, as well as the ratio of total export to real GDP, and estimate by fixed effects method. The estimation results show that the variables of real exchange rate and net export to GDP ratio have a positive and significant effect on the real export rate of agricultural sector. On the other hand, in this study, the negative and significant effect of inflation rate on the amount of real agricultural export was also found. In the end, research suggestions and suggestions for future studies are provided.

Keywords: Agricultural Exports, Real Exchange Rates, Inflation Rate, Net Export to GDP Ratio, BRICs Agreement.

Introduction

One of the great challenges of the world today is the overpowering of powerful countries over developing and underdeveloped countries in terms of food security, with the implementation of a number of fiscal and economic policies by the group was named Bricks, but after joining South Africa, it was renamed Bricks. Although members of the BRICs Group are all in the category of developing countries or emerging economies, except Russia, they are generally distinguished from other countries these countries, especially in the agricultural sector. , All the weaker economic systems in the country are in fluctuation, while these hostile policies make the countries stronger, weaker and weaker. And such problems led to the formation of a group called Brexit in Brazil, Russia, India, China and South Africa in 1991 to counter this crisis. Initially

by economies with rapid and inclusive growth and influential global and regional affairs. The main goals of the BRICs Agreement are as follows:

1. Promote the status of developing countries and at the same time a force for global peace and security
2. Improving the economic situation and reforming the world financial system
3. Establish close monetary and business relationships with each other
4. Controlling exchange rate fluctuations, especially the devaluation of the dollar
5. Increase trade with each other
6. Foreign exchange cooperation
7. Reduce dependence on the European Union and the United States
8. South-South Development Bank Establishment Plan

Theoretical Foundations

The Brexit Treaty

The idea of forming a group, called Brick, was first proposed by Goldman Sachs in the second half of the century in order to predict the economic situation of the world and its superpowers in the next half century. . At the 9th UN General Assembly, the foreign ministers of Brazil, Russia, India and China began preparatory talks. After the summit, senior leaders at Brick attended five other diplomatic meetings (Yekaterinburg, Sao Paulo, Japan and London) to solidify the foundations of the group. The first Brexit meeting was held June 1 in Yekaterinburg, Russia, with representatives of Brazil, Russia, India and China represented by Luis Inacio Lula Dasilova, Dmitry Medvedev, Manmohan Singh and Ho Jintao, on topics such as how to improve the situation. The economic and financial system reform of the world focused. They also exchanged views on how to establish close monetary and business relationships with each other and to play a more effective role in world economic affairs. Following the Yekaterinburg leak, the leaders of the BRICs countries warned that reforms should be made to the world financial system in order to become an efficient, secure and stable system. Although these countries are not critical of the dominance of the US dollar in the current currency system (a case formerly criticized by Russia), they expressed concern at the dollar's depreciation. On March 4, the fourth meeting of the BRICs Group was held in New Delhi. Issues raised at the summit were increased trade exchanges, foreign exchange cooperation, reduced dependence on Europe and the United States, and the plan to establish a South-South Development Bank. South Africa made great efforts in the year 2 to join the Brick Group. The member states' foreign ministers agreed to a South African membership at a meeting in New York on September 7. The title of Brick was renamed after joining BRICs in South Africa. For the first time, President of South Africa, Jacob Zuma, participated on April 3 at the third meeting of the BRICS Organization. The member countries are Brazil, India, China, South Africa. (Tayebi et al., 2006)

2.2.2 The role of agricultural export on economic growth

Agricultural exports accounted for a significant share of non-oil exports and enjoyed a significant currency position. Therefore, it seems necessary to investigate the factors affecting agricultural export supply. Iran's foreign trade flows are heavily dependent on foreign exchange earnings from oil exports. A look at Iran's trade

balance in different years shows that Iran is not in the right position in terms of world trade (Bank of Iran Statistics, 2010), So that if oil revenues are not included in the calculation of the trade balance, the trade balance will be negative for all years. This fact illustrates Iran's reliance on exporting oil products for foreign exchange earnings. Also, given the growing population and increasing domestic consumption of oil, future oil revenues will be scarce. Therefore, it is important to increase non-oil exports in order to secure the country's foreign exchange earnings and develop international interactions. In Iran, the general attitude about the type of export goods is such that due to the high value added, the export of the industrial sector has always attracted more attention from policy makers and less attention has been paid to the export of agricultural products.

On the other hand, since the establishment of a robust agricultural sector requires proper policies and these policies cannot be adopted without identifying and identifying effective and important factors, the present study aims to achieve agricultural self-sufficiency, food security, and dominance. On the global markets, further development and exchange in the agricultural sector, in order to achieve the goals of the development plans and the country's 20-year vision document, has developed a suitable methodology for identifying and analyzing factors affecting the trade of Iranian agricultural products. The value of agricultural exports as a sub-sector of export of non-oil products during the years 1360-87 from 167 million dollars in 1360 to 3250 million dollars in 2008 and also the share of export of non-oil products during these years from 2.6 The percentage increased in 1760 to 17.9% in 2008, which has been increasing over the years.

Research background

- Sohrabi Atar Fatima and Shizcheng Elham (1986), in a study entitled "The Impact of Selected Macroeconomic Variables and Post-Revolutionary Development Plans" believe that despite numerous reports indicating the positive impact of widespread use of export assistance on export growth, The impact of government development plans on agricultural exports has not been examined so far. In this paper, the impact of post-revolutionary development programs (1990-91) on agricultural export supply has been investigated by using the ARDL distribution autoregressive approach and using effective export exchange rates. The results show that the country's GDP, relative export prices, domestic consumption and development programs have significant effects on agricultural exports. The effect of effective export exchange rate on agricultural export supply is not significant. During the years of the Third Development Plan, there was the largest amount of exporting of agricultural products. While this amount declined in the fourth development plan.

- Banga (2007) in his paper examines the effect of foreign direct investment in agriculture carried out by the United States and Japan on Indian exports for the period 2016-2002 based on the panel data method. The results show that the investment made

by US companies directly, along with increasing export diversification and indirectly, has increased the domestic exports of agricultural products to India. However, the investment made by Japanese companies has not had a significant impact on the export of the country's agricultural sector to India.

- Johnson (2011) examined the relationship between foreign investment and agricultural exports in eight Southeast Asian countries, namely Hong Kong, Singapore, Malaysia, Taiwan, Indonesia, Korea, Thailand and China. For each country, he has a positive effect on the country's agricultural exports through both time series regression and panel data over the period 1995-1995. (Also, the Granger causality test shows the existence of a causal relationship between FDI and agricultural exports).

- Zheng and Fleming Ham (2012) study the causal relationship between economic growth rate and agricultural exports in China based on the monthly statistical data of China for the period 2011–2010 using Cointegration Method and Error Correction Model (ECM). Their results show that the relationship between economic growth rate and agricultural export is a two-way relationship. They also investigate the relationship between these variables using panel data method for different cities and regions. The results show that in regions with high economic growth rates (coastal areas) and low economic growth rates and agricultural sector exports (western regions) there is a two-way causal relationship between economic growth rates and agricultural exports, while There is no relationship in other parts of China.

- Yang et al. (2016) in a study entitled "Agricultural Capital Flow, Stock Market and Economic Growth in Developed and Developed Countries: Comparative Analysis" Using GMM Method, Investigate the Effect of Investment in Agriculture through Capital Market They have studied economic growth in developing and developed countries in the years (2001-2001) and found that investment in agriculture has a positive effect on growth while external debt and inflation have a negative effect on growth in all. There are countries under study. Although the results of this study indicate that stock markets may be important channels or prominent institutional factors through which they affect capital flow and economic growth.

- Mahdavi Adeli et al. (2011), in an article, examined the effect of foreign direct investment on export in Iran using the co-integration method during the period 1972-2008. The results indicate a positive short-run relationship between foreign direct investment and non-oil exports while the relationship between foreign direct investment and total exports and oil exports is negative. In the long run, the relationship between foreign direct investment and total exports, as well as negative non-oil exports, and the relationship between foreign direct investment and oil exports is positive.

- Booley (2015), in a study entitled, The Impact of R&D on Brexit Economic Growth, believes that today's scientific and industrial societies have come to the conclusion that organizations rely on R&D

and innovative activities within They can achieve higher economic growth along with other variables affecting economic growth rates (such as foreign direct investment, net exports, government spending and energy consumption, capital accumulation, etc.). The results of this study showed that R&D variable has a positive and significant effect on the economic growth rate of BRICs members along with other positive variables.
- Beijing Lu (2017), this article analyzes the phenomenon of the BRICs group and its conversion to BRICs. Since the first summit, whose final declarations focused mainly on economic, financial and commercial issues, group attention has broadened its horizons, including health, agriculture, environment, international relations. BRICs's approach seems to represent a new pattern of inter-state relations based on cooperation, transfer of experience and "soft" policy. Given the difficult classification of this "entity", the author proposes that we consider it more as a network, where hegemonic power is not unique, but where different countries' communications are relevant to the topic discussed at the summit. Global is different.

Research methodology

The purpose and hypotheses of the research

The purpose of this study is to investigate the impact of economic variables on the amount of real agricultural exports in emerging economies member of BRICs and Iran. Based on the test of the following hypotheses:

Hypothesis 1: Real exchange rate variables have a significant impact on the real exports of the agricultural sector of the member states of BRICs and Iran.

Hypothesis 2: The variable ratio of net exports to real GDP has a significant effect on the real exports of the agricultural sector of the member states of BRICs and Iran.

Hypothesis 3: Inflation rate has a significant impact on real agricultural exports of the member states of BRICs and Iran.

Type of research method and data source

This research is an applied research type in terms of purpose classification. According to the data, this research is descriptive or non-experimental and, of course, is ex-post facto and correlation. Post-event research is also called causal-comparative research. In the post-event research, the researcher examines the probable cause of the dependent variable. Since independent and dependent variables have occurred in the past (small quantities of these variables during the years 2009–2009), this type of descriptive research is called post-event research. On the other hand, in correlation research (bivariate correlation, regression analysis and variance analysis) the relationship between variables is analyzed based on the purpose of the research. Therefore, it can be said that according to regression analysis with the nature of panel data and fitting the mentioned models, the research is correlation.

On the other hand, data on the trend of financial variables for the sections (6 countries surveyed) were obtained from the database section of the World Bank website and of course the model estimation and

hypothesis testing was done by Eviews.10 software.

Research model and variables

Based on the purpose and hypotheses of the research, the following variables have been considered for the econometric model based on the panel data approach of Yu Quan Zhang (2014):

Dependent variable: Real agricultural export (AGEXPORTit) country Ith year

And the independent variables are:

1. The net export-to-GDP ratio (NX / GDPR) of country I is in year t as the degree of openness of the economy and is shown in the summarized model (No. 2) with NEit.

2- Inflation rate (INFit) of country I in year t shown in the model summarized with ICit.

3- Real exchange rate (RER) of country I in year t

Based on the above variables and also the following econometric model is based on the panel data approach.

$$AGEXPORTit = C + \beta1 (nx / GDPR) It + \beta2infIT + \beta3RERit + \varepsilon it \quad (1)$$

And if we show the first independent variable with NEit and the second with ICit:

$$AGEXPORTit = C + \beta1NEit + \beta2ICit + \beta3RERit + eit \quad (2)$$

Estimating the model and testing the research hypotheses

In this section, estimating the model and testing the research hypotheses is done in the following steps:

- Resilience Test (Reliability or Unit Root) in Panel Data

Before estimating the model in the first step, in order to avoid false regression, we investigate the validity of the research model variables. To perform this test, a single root method is used in panel data, namely, the Levine, Lane, and Chow (LLC) test. The H0 hypothesis in this test indicates the existence of a single root and a non-root. The results of this test are given in Table (1).

Table 1. Panel Unit Root Test Results (LLC), Pattern Variables

Variable	probability	statistic test	statistic value
AGEXPORTit	-11.332	0.0000	Stable
IC	-12.811	0.0000	Stable
NE	- 12.214	0.0000	Stable
RER	- 14.2142	0.0000	Stable

Source: Research Findings

According to the table above, for the dependent and independent variables of the LLC test the unit root performed at the level (referring to the surface, is the original time series without differentiation) with probability zero (less than 5%) and significant. Be. Therefore, the false non-regression is confirmed. It should be noted that since the variables are at the mana level there will be no need for co-integration tests.

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- Linear test (correlation between independent variables)

In econometrics, it has always been argued that there is a line in the nature of regression models. But what is important is that the line is not complete and there are, of course, favorable diagnostic conditions. It is also important to note that increasing sample size can alleviate this problem. Therefore, as the panel data, it comprises a combination of time and cross-section, the number of observations (sample size) increases markedly, thereby reducing the coherence problem.

- Selection of Appropriate Estimation Method for Research Models

In order to test the hypotheses, we estimate the research model under different conditions and in each case we perform the relevant tests to select the desired model and perform all analyzes and tests based on the selected model. The choice of approach in the econometric field of panel data depends on the combination of tests (joint effects), fixed effects, or random effects depending on the relevant tests performed in the next section.

- F-Lemmer test (combined method or fixed effects) for research model

The F-Lemmer test was used to investigate the presence of individual effects or differences between cross-sectional features across the origin. In the F-Lemmer test, the H0 hypothesis is defined as being the same width of the intersections of all the cross sections (no individual effects), which must be rejected by the fixed effects model and if accepted by the ordinary least squares method. Model used. In this study, according to Table (2), the results of F Limer indicate the existence of individual effects and the need to use panel data for the research model.

Table 2. Summary of the F-Layer Test Method

	Redundant Fixed Effects Tests		
	Pool: Untitled		
	Test cross-section fixed effects		
Prob.	d.f.	Statistic	Effects Test
0.0000	3	11.021453	Cross-section F

Source: Research Woven

As Table (2) shows, prob is <0.05 and the calculated value of the F -merline statistic is significant. Therefore, the null hypothesis that the data are synthetic is rejected, and the opposite assumption that the FE method is appropriate for model estimation is rejected.

- Hasman test (fixed effects or random effects) for the research model

Once the F-Lemmer test has determined that the width of the source is not the same for the different sections, the next step is to distinguish between two alternative models, the fixed effects and the random effects of the Hausman test. In the Hussman test, H0

hypothesis independence is the explanatory variable of the disturbance component, and if it is rejected the consistent effects method and the random effects method are incompatible, and the constant effects model must necessarily be used. The results of this test are presented in the table below.

Table No. 3. Summary of the Hassman Test Metho

	Correlated Random Effects - Hausman Test		
	Pool: Untitled		
	Test cross-section random effects		
Prob.	Chi-Sq. d.f.	Chi-Sq. Statistic	Test Summary
0.0021	2	6.214003	Cross-section random

Source: Research Woven

As table # 3 shows, prob is <.05. Therefore the H0 hypothesis is rejected and the fixed effects approach is considered as a desirable method for estimating the research model.

5.4- Estimation of research model based on selected fixed effects (FE) method for testing research hypotheses

In this section, based on the previous discussion on the above mentioned method, the model estimation is done. Table (4) shows the results of the estimation of the first research model for the years 2009–2009.

$$AGEXPORTit = C + \beta 1NEit + \beta 2ICit + \beta 3RERit + \varepsilon it \quad (1)$$

Based on the results of the estimation of the research model it is shown that according to the positive sign for the coefficients of real exchange rate (RER), the ratio of net export to real GDP (NE) and inflation rate (IC) and prob probability less than 0.05 They can be said that these variables have a significant positive effect on the real agricultural export variable (AGEXPORTit) of the member states of BRICs and Iran.

Table 4. Estimation results of the research model to test the main hypothesis

variable	coefficient	Statistical t	Prob
C	9.62	6.21	0/0000
RER	4.053	-3.22	0/0023
NE	7.25	-4.32	0/0001
IC	2.51	-2.56	0/0214
Regression statistics	Adjusted R2 = 0.91	DW =1.84	Significance of the whole regression Prob =0.000

Source: Research Findings * 5% significance level

In a more comprehensive interpretation of how the research model variables are influenced and significant (with the aim of testing the main hypothesis), we can analyze and interpret each of the variables as follows.

- Testing Hypothesis One: This hypothesis states that the real exchange rate (RIR) variable has a significant and positive impact on the real agricultural exports (AGEXPORTit) of the member states of BRICs and Iran.

For real exchange rate (RER), according to the computational coefficient of this variable, the positive effect of this variable is on the real export of agricultural sector. According to the estimation of the research model, it is observed that one unit increase in the RER variable increased the actual export of the agricultural sector by 4.53 units. (That is, the first hypothesis can be accepted).

- Testing Hypothesis 2: This hypothesis states that the variable ratio of net exports to real gross domestic product (NE) has a significant and positive effect on the real exports of the agricultural sector (AGEXPORTit) of the member states of BRICs and Iran. On the impact of the net export to GDP (NE) variable, the research model estimates that the coefficient of the mentioned variable has a positive effect of 7.25 units on the real agricultural export variable which is significant with prob <0.05. (That is, the second hypothesis can be accepted).

- Test Hypothesis 3: This hypothesis states that the inflation rate (IC) variable has a significant and positive impact on the real agricultural export variable (AGEXPORTit) of the member states of BRICs and Iran. Inflation variable (IC) is another factor that has attracted the attention of experts, since inflation rate increases economic uncertainty and export costs, so we expect a negative impact on the dependent variable. The results of the estimation of the research model are in line with this theoretical discussion and have been confirmed. It is also observed for the variable IC (inflation rate), which is also negative and completely significant (prob equal 0.0214). That is, one unit increase in IC caused a 2.51% decline in real agricultural exports. (That is, the third hypothesis can be accepted).

Therefore, in general view, it can be said that the coefficients of the estimated model of research, exactly in line with the theoretical and paper-based expectations and background, had a positive and significant effect on the research of real agricultural export (dependent variable). Therefore, all three main hypotheses of the research can be accepted.

It is also worth noting that given the high F and probability of zero for the whole regression, it can be said that the model has 100% overall significance. The results of the estimation of the research model as well as the adjusted coefficient of determination (R2) of 91% and the Watson camera (DW) statistic of 1.84 respectively indicate goodness of fit of the model and the absence of acute autocorrelation.

Conclusions and Suggestions

The result of testing the main research hypotheses

According to the results of the research model estimation for the target countries showed that:

1- Given the positive sign for coefficients of real exchange rate (RIR) and net export-to-

GDP (NE) ratio in this model and prob probability less than 0.05, it can be said that these variables have a positive and significant effect on exports. They have a real agricultural sector. These results are in line with the results of the baseline article and some of the studies reviewed in the research background and indicate that the first and second hypotheses can be accepted.

2- On the other hand, as inflation rates increase, economic uncertainty and export costs increase

So we expect a negative impact on the dependent variable. The results of the estimation of the research model are in line with this theoretical discussion and have been confirmed. It is also observed for the variable IC (inflation rate), which is also negative and completely significant (prob equals 0.0329). That is, one unit increase in IC caused a 2.51% decline in real agricultural exports. (That is, the third hypothesis can be accepted).

Research suggestions

1- Considering the positive and significant impact of RER and NE variables on real agricultural exports, it is suggested that the countries under review strengthen these two indicators with relevant economic policies such as enhancing the competitiveness of Iranian goods to improve the real agricultural exports. .

2- Considering the significant negative impact of variable IC on real agricultural exports, it is recommended that the countries under review by controlling inflation rate through their respective economic policies (monetary and fiscal adjustment) to improve the real agricultural exports.

References

- Sohrabi Atar, F & Tizcheng, E. (1986). The Impact of Selected Macroeconomic Variables and Post-Revolutionary Development Plans on Exports of Agricultural Products Agricultural Economics Research, Volume 9, Number 3, pp. 260-249.
- Mahdavi, A, Mohammad, H. Kazemi, A. F & Mohammadi, Sh. (2011). Investigating the Effect of Foreign Direct Investment on Exports in Iran (1352 to 1387)" , 19th year, number 3, spring and summer of 2012.
- Tayebi, K. & Babaki, R. (2006). The Role of Economic Openness in the Effect of Foreign Direct Investment (FDI) on Asian and Oceanic Exports: A Lesson for the Iranian Economy", Business Research Quarterly, No. 48, Fall 2008 , Pp. 68-39.
- Azerbaijan, K. Shahidi, A. & Mohammadi, F. (2007). Investigating the Relationship between Foreign Direct Investment, Trade and Growth in the Framework of an Autonomous Model with Extended Delays", Economic Research Quarterly, no. 2, pp. 17-1.
- Komijani, A. & Abbasi, M. (2004). Explaining the Role of Factors Affecting Foreign Direct Investment in Iran", Journal of Economic Research, No. 73, pp. 69-105.
- Manafnejad, P. (2003). Analysis of the Impact of Foreign Direct Investment on the Economic Development of Developing Countries (Host)"
- Banga, R. (2007). The Export-Diversifying Impa Foreign Direct Investments in Indian Agricultural Sector, Indian Council for Research on International Economic Relations, New Delhi Working Papers, No, 110.

- Yang Ch., Zubaidi Baharumshah A., Yusop Z. & Shah Habibullah, M. (2016). "Agricultural Investment Sector, Stock Market and Economic Growth in Developed and Developing Countries: A Comparative Analysis" Japan and the World Economy, Vol .22, PP. 107-117, Acsess: http://www.sciencedirect.com.
- Boly, V., Morel, L., & Renaud, J. (2015). Towards a Constructivist Approach to Technological Innovation Management: An Overview of the Phenomena in French SME's.
- Johnson, A, (2011). FDI and Agricultural Export Sector: the Case of the High Performing EastAsian Economies,Working Paper,Series in Economics and Institutions of Innovation with number57.
- ZHANG, Y.Q,., CAI, Y.X., Beach, R.H. & AMcCARL, B. (2014). Modeling Climate Change Impacts on the US Agricultural Exports: Journal of Integrative Agriculture, Volume 13, Issue 4, April 2014, Pages 666-676.
- Zhang, Q. and Felmingham, B. (2017). "The Relationship Between Economic Growth Rate and China`s Agricultural Export Sector ".China Economic Review, (12):82-99.