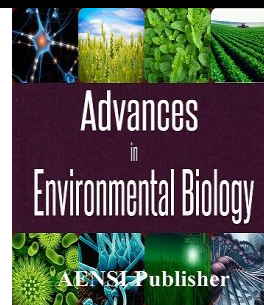




AENSI Journals

Advances in Environmental Biology

ISSN-1995-0756 EISSN-1998-1066

Journal home page: <http://www.aensiweb.com/AEB/>

Investigating Factors Affecting the Export of Barberry in Iran

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ARTICLE INFO

Article history:

Received 25 October 2014

Received in revised form

26 November 2014

Accepted 29 December 2014

Available online 15 January 2015

Key words:

Export, ARDL (collective) Analysis, Net Exports.

ABSTRACT

The purpose of this study was to determine the factors influencing export of barberry. Therefore, using the so-called ARDL analysis, the role of these agents was assessed in long-term and short-term. The studied period was from 1981 to 2010. The used model included the amount of export, the proportion of international prices to domestic prices, exchange rate, production, GDP and net exports. Based on the results, in the long-term, the production variable at 1%, the proportion of international to domestic prices and the exchange rate at level of 5% and net exports at level of 10%, have a significant effect on export supply of barberry. In short-time, one percent increase in the exchange rate leads to 0.359 percent decline in exports and one percent increase in price leads to 1.171 percent decline in its export. Policies that affect the export of barberry, only after one period, leave their effects and align short-term trends of changing in export of barberry with its long-term trends.

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To Cite This Article: Mzhgan Kargar, Farzaneh Taheri and Nematollah Mosavi, Investigating factors affecting the export of barberry in Iran. *Adv. Environ. Biol.*, 8(21), 1191-1195, 2014

INTRODUCTION

In developing countries, exports of agricultural products are concerned to provide the necessary foreign currency for the industry and consumer sectors of society [7]. Iran is greatly dependent on oil export revenue and whenever the discussion of non-oil exports is raised, the traditional and agricultural products exports are induced in mind. Over the past three decades, the traditional and agricultural products exports allocated more than 80 percent of non-oil exports to it self [10].

Donyadideh showed that in the country, the price elasticity of supply and the elasticity of production capacity are positive for mentioned products. In addition, the role of increase in domestic production has been quite obvious on increase in the value of exports of these products [5]. Farhadi showed that the effective exchange rate of export is not significant on the export supply of agricultural products [6].

Sarwar and Anderson, the results showed that product price, income, production and pricing of competing products can significantly affect America's exports of Soya products. Also, real fluctuations of exchange rate significantly affected the demand for America's Soya exports [16].

Mattson *et al.* believe that the factor affecting the export of beef and pork from Canada to America, besides exchange rate, is the Canada - America price difference and trade restrictions on the Free Trade Agreement of Canada - America [11].

Seyoum showed that the overall performance of America's exports has a significant and positive impact on exports of stakeholder sectors and manufacturing groups in America. On the other hand, the necessity of understanding the relationship between the receiving government funds can help to increase America's export performance, because it can have a great impact on exports [17].

The results of Beak *et al.* also indicate that exchange rate plays a determining role in agricultural trade in the long and short terms which has different effects on different countries [3].

Prasanna showed that foreign direct investment in India has had a positive impact on export performance and suggests to policy makers to provide a background to attract more foreign direct investment and evaluate ways to achieve this goal [15].

Due to the mentioned items, this study, beside of studying the process of barberry export, tried to analyze factors affecting its export supply as well.

Methodology:

In this study, following the Tambi study, the below export supply function was used which has a two-way logarithmic form:

$$\ln EX_{it} = \alpha_0 + \beta_1 \ln P_{it}^d + \beta_2 \ln P_{it}^e + \beta_3 PR_{it} + \beta_4 VWT_{it} + \beta_5 GDP_{it} + \beta_6 ER_{it} + u_{it}$$

Where EX_t is the value of exports in year t (in tons), P_t^d the wholesale price index reflecting the domestic price index, P_t^e overall export price which is measured through the export unit value index, PR_t the domestic production of goods (in tons), VWT_t represents the net value of world trade (net exports), GDP_t is Gross Domestic Production, ER_t is exchange rate and u_t is the linear random sentence which has a normal and random distribution and a zero mean and constant variance. In the above equation t represents the year and i represent the goods [19].

First, the stability of entire explanatory variables was assessed through Augmented Dickey-Fuller tests. The data used in this study included time series data. Time series data of selected products including Licorice and Barberry was collected from Statistical Yearbook of Iran Customs. Time series data included amounts of export variable, domestic prices, and the value of exports, Iran's GDP, net exports and currency during the period 1981-2010. Analysis of the used equations was conducted using the software Eviews and Microfit.

Finding:**Reliability and non- reliability of variables in Barberry product:**

In this study to measure the reliability and the existence of unit roots, the test of Augmented Dickey - Fuller (ADF) was used and the optimal lag length has been selected based on Schwarz - Bayesian criterion (SBC). The results showed that the absolute calculated value of the test of Augmented Dickey - Fuller (ADF) for variables of currency, exports and domestic production rates, were reliable and variables of proportion of global prices to domestic prices, the net value of exports and GDP, were smaller than the absolute value of the critical statistic and as a result, they were in reliable level and with one time calculating the difference of variables, the Augmented Dickey - Fuller (ADF) associated to them, becomes larger and the reliability of the variables is confirmed (Table 1).

Table 1: Results of ADF test for the variables in the model in surface.

Variable name	Through latitude and procedure	
	Lags	Statistic t of Augmented Dickey - Fuller (ADF)
Ler	0	-3.8
Lex	0	-3.559
Ly	0	-3.888
Lp	1	-4.960
Lvwt	1	-5.138
LGDP	1	3.57

* Source: research findings

Among the variables used in barberry export supply, the variable the proportion of Barberry's world prices to its domestic prices, the value of net exports and gross domestic product, after one time calculating difference, showed durability from themselves while other variables are in durable level. To determine the optimal number of variables' lags due to the small sample size, the Schwarz - Bayesian Criterion (SBC) was used. The results showed that with the exception of gross domestic product, all variables are statistically significant.

Variables, export value and net exports value with a lag at 5 percent, variables the proportion of world prices to domestic prices and production at 1% and the exchange rate variable at 10%, are statistically significant. R2 of the above model indicates that 94% of change in exports has been explained by the variables existent in the model. ARDL estimation results in Table (2) represent a long-term equilibrium relationship between the variables in the model and the variable of the amount of exports.

Table 2: Detailed results of a model of Barberry export supply, 1981-2010, ARDL (1, 0, 0, 0, 0, 1).

Coefficient		Coefficient	SD	statistic t
β_1	Export with one lag	EX(-1)	0.355**	2.204
β_2	the proportion of world prices to domestic prices	P	-0.755***	-3.150
β_3	Exchange rate	ER	-0.359*	-1.949
β_5	Production	Y	0.968***	3.912
β_6	gross domestic product	GDP	-0.353	-1.489
β_7	Net exports	VWT	0.011	0.364
β_8	Net exports with one lag	VWT(-1)	0.091**	2.646
-	Latitude	C	3.233	1.353
Statistics			R^2	DW
			0.94	2.02
				F
				45.163

* Source: research findings

* And ** and *** respectively are significance at 10, 5 and 1%

The results (Table 3) showed that, A represents the Lagrange multiplier test on the remaining serial correlation which has a χ^2 (1) distribution and with statistic F (19, 1), that here verifies the lack of remaining serial correlation. B is Ramsey test with the distribution χ^2 (1) and statistic F (19, 1), which checks the modified form of model in a proper way.

Here, the LM statistic represents the specified accuracy of the model (according to the statistics) and D represents heteroscedasticity Variance with distribution χ^2 (1) and statistic F (26, 1) that the results show homoscedasticity variance of remaining. Therefore, based on the results of above cognitive tests, the statistical validity of results is confirmed.

Table 3: Results of cognitive tests.

Statistics	Statistic LM	Statistic F
A : Serial Correlation	1578 [0.209](1) CHSQ	1.135[0.300] (19,1)F
B : Functional Form	0.008 [0.928](1) CHSQ	0.005 [0.941] (19,1)F
D : Heteroscedasticity	0.026[0.871] (1)CHSQ	0.024[0.877](26,1)F

* Source: research findings

Long-term analysis of the function of Barberry export supply through ARDL:

To evaluate the long-term relationship between the variables specified in the pattern of export supply, the self-explanatory model with Distributed Lag is used. To determine the optimal number of lags associated to each of the variables used in the model, given the relatively small sample size, the Schwartz - Bayesian Criterion was used. Accordingly, in the best selected model by software Microfit 4.0, the maximum optimal lag was considered 2. After determining the optimal number of lags compared to model variables, it is possible to obtain long-term and short-term relationships of the barberry export supply. Coefficients related to long-term equation are presented in Table (4).

Table 4: Results of the estimation of the long-term model of barberry export supply, 1981-2010.

	Coefficient name		Coefficient	SD	Statistic t
β_2	the proportion of world prices to domestic prices	P	-1.171**	0.508	2.306
β_3	Exchange rate	ER	-0.556**	0.235	-2.360
β_5	Production	Y	1.501***	0.337	4.454
β_6	gross domestic product	GDP	-0.548	0.455	-1.203
β_7	Net exports	VWT	0.160*	0.065	2.645
-	Net exports with one lag	C	5.014	4.412	1.136

* Source: research findings

The results of the estimation of the long-term relationship between the variables of ARDL model show that the proportion of world prices to domestic prices and the exchange rate at 5%, production variable at 1% and the net exports variable in at 10%, have a significant effect. The long-term elasticity of exports compared to the exchange rate in this section is equal to -0.556. This means that a one percent increase in the exchange rate leads to 0.556 percent decline in exports.

In fact, the increase in domestic purchasing power cause to decline in domestic currency and increase in exchange rate which is accompanied with decline in domestic purchasing power, in recent years we, have seen an increase in the exchange rate, as a result, increase in exchange rate leads to increase in goods prices in the domestic economy and can increase the domestic price level and causes that exports of goods be faced with problems. Thus increasing the exchange rate can reduce exports and this is among the indirect effects of exchange rate on the export supply. Long-term elasticity of exports, the proportion of world prices to domestic prices is equal to -1.171 in this part. This means that a one percent increase in price leads to 1.171 percent decline in exports.

GDP is one of the other variables in the model, so that a one percent increase in GDP leads to 0.548 percent decline in exports. Regardless of the statistical significance of the estimated coefficients, if policies be in a way that parallel to the increase in GDP, export structures and areas to be strengthened and leads to the creation of conditions affecting the export of barberry, then one percent increase in GDP can cause 0.00003 percent increase in exports of the product.

Another variable, is the net exports variable which is statistically significant at 10% level. Significant net exports or trade balance would lead to more emphasis on export fields and resulted in a positive impact on exports.

The short-term analysis of the Barberry export supply function by method (ECM):

Error correction model is related to the export supply function. Coefficients of the estimated error correction model which in the short-term, represent the relationship between the export supply variable and the independent variables, they are provided in Table (5).

Table 5: Results of short-term estimation of the Barberry export supply model, 1981-2010.

Coefficient name		Coefficient	SD	Statistic t	
β_2	the proportion of world prices to domestic prices	dP	-0.755**	0.239	-3.150
β_3	Exchange rate	dER	-0.359*	0.184	-1.949
β_5	Production	Y	0.968**	0.247	3.912
β_6	gross domestic product	GDP	-0.353	0.237	-1.489
β_7	Net exports	VWT	0.011	0.031	0.364
-	Net exports with one lag	C	3.233	2.389	1.353
-	Coefficients of the estimated error correction	ecm(-1)	-0.644***	0.161	-4.0001
Statistics			R^2	DW	F
			0.71	2.03	8.416

* Source: research findings

As Table 5 indicates, coefficients of most variables in the short term, make sense as long term ones. The only difference is the lack of the significance of net exports. According to Table (5), in the short term, the exports value compared to the exchange rate at 10% and with a negative sign, was significant and equal to -0.359. This means that a one percent increase in the exchange rate causes 0.359 percent decline in exports.

In the short term, export value compared to the proportion of world prices to domestic prices is significant at 1% and equal to 0.755. This means that a one percent increase in price causes 1.171 percent decline in exports.

The coefficient of error correction is equal to -0.64 as well and means that policies which affect the export of barberry, only after a period, left their imprint and match the short-term trend of change in export of Barberry with its long-term trend. This emphasis with the help of the used explanatory variables, can explain 64% of changing in the export of barberry variable. Also, according to the F statistic, this is significant in the confidence level of 71%.

Discussion and Conclusion:

In this study, the barberry product exports were evaluated during the period 1981-2010. It was determined that their export have had a relative growth over time. But the fluctuations can be caused by fluctuations in production. Based on the findings, it was found that in the long-term, the exchange rate variable that can represent the orientation of government policy making in the field of export has a negative impact on the export of barberry. As previously mentioned, this influence can be raised from fluctuations and instability in the process of change in exchange rate.

This impact on Barberry is statistically significance at level of 5%. In the long term, the increase in domestic production can cause an increase in exports, so that the product of Barberry is statistically significant at level of 1% and is equal to 1.501. The important point about domestic production is the paying attention to certain conditions of producing pharmaceutical products and this affair reveals the necessity of more planning in the field of producing and exporting of these products. In the long term, also, the variable of the Barberry net exports is significant at level of 10% and with positive sign that the significance of net exports or trade balance causes more emphasis on exporting fields and resulted in a positive impact on exports.

Altogether, the effectiveness of mentioned factors on export in short term, is similar to their impact in the long term. According to the error correction term, it was cleared that the reaction of suppliers against applied policies is fast. Meanwhile, applying government's clear currency policies can be of special importance. It also can be said that the currency policies is of special importance on the export of medicinal plants and it is possible to use export potential of these products by adopting appropriate currency policies.

What is important about medicinal plants is the comparative advantage derived from natural conditions of production, because producing the most of these plants is dependent on specific climate and they have a unique production circumstances and this can lead to a competitive advantage for these products. Particularly that Iran has a high climate variety.

According to the obtained results, following suggestions are offered:

- Adopting export policies in a way that more attention is paid to reduce the fluctuation of exports.
- Making appropriate context and investing in knowledge and producing medicinal plants, parallel to the increase in GDP.
- Compiling clear currency policies to support exports
- Compiling export policies and providing clear information about these policies for producers and suppliers
- Due to attribution of production variable to exports, the attempt to increase in production is necessary and recommended.
- Production and the real exchange rate statistically impact on export supply, therefore, implementing the control and the consolidation policies of the real exchange rate (nominal rate and the domestic and imported inflation rates) and increase in production play an important role in increasing exports. On the other hand, clear

information about the future trend of the real effective exchange rate changes will enhance exports and maintain the position in the market.

- In the other dimension, the supply of export compared to price role, can be referred and also, the increase in domestic prices increases the profitability of sales of these products and reduces exports. Thus, the domestic price control is essential for the development of exports.

- GDP is effective on increase in Licorice exports. Thus, policies that accelerate economic growth and development of medicinal herbs lead to improving in the value of exports. In this context, increasing the productivity of agricultural production factors and using the production capacity of this sector, can improve exports.

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