

Determination comparative advantage of main agricultural products in Fars and Mazandaran provinces during 2006 to 2010

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ABSTRACT: Fars and Mazandaran provinces because of climatical diversity and climate risk can have comparative advantage in context of agricultural products. In this article, comparative advantage in production some agricultural products, including: barley, grain corn, grain, wheat, beans, and canola and analysis of relations among them, have been identified. In this study, index of Revealed comparative advantage (RCA) for determination comparative advantage of production has been used. Datas are in form of time series and concerning years during 2006 to 2010 and are collected through statistical publication of Ministry of Agricultural. Using RCA index showed that Fars province in production agricultural products such as corn, wheat, and beans had comparative product advantage and Mazandaran province in production agricultural products such as grain, and canola had comparative products advantage. So, development and agricultural improvement of cultivation these products will have positive results for national and regional economy.

Keywords: comparative advantage, agricultural products, revealed comparative advantage

INTRODUCTION

Export development and increasing its diversity depends on production strength and competition agricultural products produced in world market and competition power of agricultural products also is affected by factors such as their price and quality. One of the indexes which used for measuring competition power of products of a country in world market is index of comparative advantage. Based on this index, if a country or region have several factors and inputs of production and can produce the goods with lower cost and cheaper than other areas, and offer to world market, will have comparative advantage in production of that goods and can keep its export market against its competitors. Other concept of comparative advantage is comparing production of product in different regions of a country and estimates its circumstances relative to other regions. This concept is more physical and prices have no role in its determination (Mohammadi, 2005).

Comparative advantage can be reviewed from different aspects in contexts of production, export or offering and also demand. In context of production factors such as abundance of manpower, capital and technology, will determine comparative advantage. In context of export or offering, decreasing packing costs, transport, insurance, marketing, advertisement, and cause comparative advantage. Comparative advantage in context of production may loss because of posing costs of transport, insurance and packing and increasing finished price of goods. Of course, every comparative advantage, is not a permanent privilege and constant and it is possible during the time transfers from one region to other region or one country to other country and inside a section from one product to other product. This transfer is gradual and by using favourable policies can be protected or empowered (Haji Rahimi, 1997).

In context of comparative advantage studies and researches have been done which some of them are mentioned.

Mousa Nejad and Zarghami (1994) in a research plan have reviewed comparative advantage of some main products in 1992. In this research defined that irrigated and rainfed wheat, grain corn, cotton and onion, white beans and wax bean have comparative advantage, but potato, rice, lentil, red bean, irrigated barley, rainfed barley and sugar beet have not comparative advantage.

Azizi and Zibae (2001) with determination comparative advantage of Iran rice (case study of Gilan, Mazandaran and Fars provinces) got this result that Gilan and Mazandaran provinces in rice production have comparative advantage relative to countries like Syria, Turkmenistan, Thailand, Australia and Kuwait, but

relative to countries like India, Azerbaijan, Vietnam, Pakistan and Uruguay have not comparative advantage. Fars province only relative to Syria, Turkmenistan, and Thailand has comparative advantage.

Salimifar and Mirzaee Khalilabadi (2002) have reviewed comparative advantage of Iran in production and export of pistachio. Obtained result states that Iran is still having comparative advantage in production and export of pistachio.

Mirzaee et al (2003) by study comparative advantage export of chicken in Middle East obtained result that Iran country in context of chicken export has comparative advantage.

Mohammadi (2004) by review of comparative advantage of oily grains showed that based on index social net benefit ,cost of internal resources and ratio of cost to social benefit and by application effecting prices of exchange rate ,products of canola, sunflower, and sesame have comparative advantage and product safflower has not comparative advantage.

Karbasi and colleagues (2006) in a study comparative advantage of most important agricultural products of Kerman province in 2006-2007 with use of internal resources cost indexes ,social net benefit ,economic advantage have been reviewed. Required statistics and information of this study has been collected from Agricultural organisation of Jahad Kerman province and foreign trade yearbook .Results of study have shown that Kerman province in producing and export of irrigated wheat ,grain corn ,pea, sugar beet and potato has comparative advantage, so more attention to producing mentioned products and supporting them has particular importance .

Mehrabi Basharabadi (2007) has studied political effects and comparative advantage of agricultural products in Kerman province .Results of his study showed that in 2005 most comparative advantage in Kerman was related to onion and water melon .Also, nominal support of product market and also effective support of wheat and barley production is not in favour of producers.

Nematollah Akbari and colleagues (2008) have studied comparative advantage of agricultural products export in Esfahan province and by use of suitable indexes comparative advantage such as index of Lisner and Balasa has analysed comparative advantage of agricultural products in Esfahan province in comparison with country, Middle East and world. Time zone in this study is 1999 to 2003.

Main aim of this article is calculation comparative advantage of agricultural products export of province and comparing it with similar products in country, region Middle East and world. Results of calculations index Balasa in study of comparative advantage of agricultural products in Esfahan province compared with country, Middle East and world showed that apple has most comparative advantage among other products and after this in order tobacco, freezed vegetables, garlic, safflower, honey, apricots, almonds and tomato have comparative advantage respectively.

Hakimeh Hatf and colleagues (2011) ,have studied comparative advantage thirteen garden products export of Iran (pistachio, grape, date, apple, almonds, walnut, orange, peach, cherry, tangerine, kiwi, and lemon) in 1961 to 2007 . By use of present information in site of humiliate on agriculture organisation (FAO) and indexes X,RSCA,RCA, has been calculated and then predicted changes of these indexes for four course of time has been done. Obtained results stated that existence and non-existence of comparative advantage for different products in course of time under study.

Jaber and Thomson (1980) in context of study comparative advantage in Senegal country have been mentioned. They, in this study of global prices in conditions of lack of trust have used and showed that model of comparative advantage is reason lack of trust in performance and prices are changing and also, risk affect comparative advantage.

Masters and Winter-Nelson (1995) in a study have used DRC index and obtained the result that this index for comparing profitability different social activities is not suitable, because DRC mainly depends on internal resources and non-trade such as land and man power rather trading inputs .So, they recommended for comparing social benefit ability index of ratio social cost to benefit be used.

Yao (1997) with use of method matrix analysis policy of findings adjustment tried to reply to this question that whether Thailand by substitution soya and green pea in place of producing rice has made any benefit? In this study two region of north Thailand in agricultural years 1992-1993 have been chosen .Results showed that both regions rice production in view of benefit ability compared with two products (soya and green pea) has advantage, but farmers because of use of donated subsidies to inputs and high prices of soya and green pea, is following decrease of cultivation rice and substitution competitive products.

Because of climate diversity and competent geography, Iran has possibility and ability of production diversity which this issue especially in agricultural sector has been significant. Due to this it is expected that every province of country in production of part of agricultural products has comparative advantage. Fars and Mazandaran provinces by having several potentials specially benefiting natural resources and diverse climate can have important role in increasing agricultural products. Climate situation of these provinces by the

temperature, soil type and climate conditions are such that there is possibility of cultivation agricultural and garden products. This article will effort to identify comparative advantages of these provinces in production some of agricultural products and analysis relations among them.

MATERIALS AND METHODS

Researchers of region economics have used different methods for determination regional comparative advantages. Most important of these methods are:

Internal resources cost method (DRC), ratio cost to social benefit (SCB), revealed comparative advantage method (RCA), variable shares model (SSM) and location coefficient method (LQ). In many studies (RCA) index has been used for determination comparative advantage of special products or one part of economy or determination global standing of one product and its changes in time duration.

Studies of Unido, Akino, Krafts and Thoms, Nahalst and colleagues, World Bank, Lin, Brasilio and colleagues, Loots, Li and Yeetzaz are these reviews. As far as measuring comparative advantage agricultural products in regional level is concerned, use of every measuring methods mentioned with some modifications is possible. For example, because revealed comparative advantage index (Balassa,1988) as regard structural is very similar to location coefficient ,by way of this index and use of some agricultural economic statistics ,can measure comparative advantage. However, location coefficient or revealed comparative advantage method ,as are simplest methods and easily calculated ,are more than others in experimental researches specially in agricultural sector and subgroup of cultivation ,have been under consideration. Moreover, in world level these two methods have been conventionally used in application studies.

(Zhong & et al 1997, Li, 2000) In this study revealed comparative advantage (RCA) has been used for measuring comparative advantage of agricultural products. General form of this index is as follows:

$$RCA = (X_{ij} / X_{tj}) / (X_{iw} / X_{tw})$$

In above relation, X_{ij} is product in region, X_{tj} is total products in region under study, X_{iw} is product in country and X_{tw} is total products in country regarding desired product.

With attention to above relation if value of index (RCA) equals to one, regional product is equal to national products and regional products is responsive of demand. In this case region will not import and export desired product. If index value is bigger than one, producers have excess which will export this excess product of themselves and if index value is less than one, we are facing shortage of offer and they will import desired product.

RESULTS

This study showed that ,Fars province in production of agricultural products ,corn, wheat, and bean had comparative advantage of production and Mazandaran province in agricultural products ,grain and canola had comparative advantage of production .So, Fars province has the ability to export agricultural products ,corn, wheat and bean to Mazandaran and vis-a-vis Mazandaran province also has the ability to export agricultural products ,grain, canola to Fars province (Tables 1 to 5).

Table 1. Production of selected crops in the Fars province during 2006 to 2010

	2006	2007	2008	2009	2010
Grain	162231	254326	77870	138245	187414
Grain corn	628193	753035	614156	423042	370564
Paddy	226297	222202	113728	105012	142179
Wheat	2185309	2519946	1235171	1396649	1329276
Bean	45849	43235	22379	55950	37965
Canola	29291	53341	20504	8831	5533
Total	3277170	3846085	2083808	2127729	2072931

Table 2. Production of selected crops in the Mazandaran province during 2006 to 2010

	2006	2007	2008	2009	2010
Grain	35237	32610	19584	92932	61188
Grain corn	2782	3325	220	4054	3893
Paddy	938732	1003205	972145	1038661	1256958
Wheat	123779	112435	152297	166938	118630
Bean	731	1117	914	1472	2116
Canola	64919	44298	65621	39940	60947
Total	1166180	1196990	1210780	1343997	1503732

Table 3. Production of selected crops in country of Iran during 2006 to 2010

	2006	2007	2008	2009	2010
Grain	2956032	3103981	1547394	3446227	3579589
Grain corn	2166130	2361299	1777494	1642656	2144943
Paddy	2612174	2664237	2183962	2253416	3012739
Wheat	14663745	15886609	7956647	13484457	15028789
Bean	208286	223303	183073	181372	254106
Canola	315090	356890	264282	164019	200452
Total	22921457	24596319	13912852	21172147	24220618

Table 4. The comparative advantage of production of selected crops in Fars province during 2006 to 2010

	Grain	Grain corn	Paddy	Wheat	Bean	Canola
2006	0.38383	0.20283	0.60591	1.0423	1.54074	0.64964
2007	0.52397	2.0394	0.53337	1.01439	1.2488	0.95586
2008	0.33591	2.30700	0.34764	1.0364	0.81596	0.51764
2009	0.39915	2.5627	0.46368	1.03063	3.0712	0.53617
2010	0.61174	2.01874	0.55137	1.03344	1.74547	0.32164

Table 5. The comparative advantage of production of selected crops in Mazandaran province during 2006 to 2010

	Grain	Grain corn	Paddy	Wheat	Bean	Canola
2006	0.2342	0.0251	7.0635	0.16591	0.06828	4.0509
2007	0.21586	0.0288	7.737	0.1454	0.1033	2.5517
2008	0.14538	0.00140	5.1149	0.21993	0.05703	0.28536
2009	0.42477	0.03879	7.2612	0.19502	0.12733	3.8385
2010	0.27532	0.02913	6.72045	0.12714	0.13346	4.9008

CONCLUSION

Therefore, with attention to obtained results some proposals raised that can be useful .These proposals are:

- 1- Decreasing production cost is an important factor in increasing comparative advantage. As a result investment for increasing productivity of man power is effective in increasing comparative advantage.
- 2- Regarding products which have been self-sufficiency, it is better to think of their quality(suitable packing, marketing,...) enabling to target external markets in addition to internal markets.
- 3- In order to developed cultivation products which have not production comparative advantage we must increase performance in unit area of these products ,in this context enhancement of awareness level of farmers by way of education technical aspects in different steps of cultivation, growing and harvesting (by attention to suitable time for cultivation, suitable plowing, correction and improvement of irrigation methods, use of chemical toxins and fertilizers and using suitable methods for harvesting and) is necessary.
- 4- Provincial needs products which have comparative advantage in products must be provided from other provinces which have comparative advantage in this product and specially neighboring provinces (for decreasing decay for the products with high putrescible and also decreasing transport cost) and area under cultivation and remaining factors of production must be allocated to cultivation and production products which have high comparative advantage.

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