© 2016 IJSRST | Volume 2 | Issue 5 | Print ISSN: 2395-6011 | Online ISSN: 2395-602X
Themed Section: Science and Technology

Comparative Advantage of Fresh Agricultural Products for Export in Jiroft (Little India of Iran)

Mohsen Madahinasab

Department of agricultural science, Payame Noor University, Tehran, Tehran, Iran

ABSTRACT

Based on a wide range of native and foreign information banks and questionnaire resources, the current study accomplished use of a two-stage cluster sampling to investigate the comparative advantage and supportive coefficients of Exportable fresh fruit (citrus fruits and Cucurbits crops) from Jiroft in the south of Kerman Province, Iran, in the cultivation years 2012-13. After DRC (domestic resources cost) was determined via three currency scenarios (governmental, swapping and faire market). The results demonstrated advantage of producing citrus fruits in all the scenarios and Cucurbits crops in the two latter scenarios. Conforming to supportive coefficients, governmental interposition in crop market thwarts the subsidization process indirectly; the government's indirect or hidden taxes on the products had a negative impact on the so-called positive governmental supports. In all, this resulted in EPC<1, being reflected in the interchanging and faire market currency scenarios. Regarding the comparative advantage of producing these crops under the faire currency conditions, the more the government interferences through pricing and allocation of governmental currency, the more decrease happen in the comparative advantage; this has caused an inappropriate and unbalanced support for inputs and crops. Accordingly, if the real exchange rate is fixed and the governmental interference in pricing is reduced, an actual economic value will be gained with production of these crops.

Keywords: Supportive Policies, Policy Analysis Matrix, Cucurbits, Citrus Fruits

I. INTRODUCTION

Extensive lands, variety in weather conditions and potential human talents are characteristics which have provided Iran with a comparative advantage gained from production of many agronomical crops and shrubberies. Since these crops can be produced with a low currency rate and simple technology, a country's required currency can be obtained by producing and exporting crops with comparative economical advantage (Torkaman, 2004). Variety of climatic conditions in Iran increases the chance of producing such crops with comparative advantage in all seasons of the year; this is while they either cannot be produced or have no comparative advantage in other countries. Comparative advantage is an important measure for production, export and import planning first introduced by David Ricardo early in the 19th century; it is defined as the ability of a country or a region to produce goods with the least expenditure and most efficiency (Azizi and Yazdani, 2004), even though this advantage is not stable and will vary from goods to goods and time to time (Saii, 2011). Mehdipour (2006) proved the comparative advantage of cultivating potato in Iran and confirmed supportive coefficients for indirect taxes on crops and indirect subsidy for tradable inputs. Also, in a study by Karbasi et al., (2005), the comparative advantage of cotton production in Golestan Province, northern Iran, was proved via policy analysis matrix; despite government's supporting of input market, the crop producers were not supported and in fact the government's interference in the domestic market caused big losses to the producers. In another study by Mohammadi (2004) on oilseed comparative advantage indices in Fars Province, the comparative advantage of cultivating canola, sunflower and sesame was

confirmed via net social profit, domestic resource cost and cost to social profit ratio indices; the comparative advantage for canola was confirmed based on advantage efficiency, advantage scale and aggregative advantage index. Gonzales (1993) used DRC index, effective and nominal supportive rate and net social profit indices and showed that production of rice and maze in Indonesia had more comparative advantage than their import and that maze comparative advantage was higher than that of rice. It was clear that the government's supports had had a significant impact on the finished expense and price of agricultural products and on their market structure. On the one hand, economical investigations into governmental supports have indicated many diversions from many supportive activities by the government. On the other hand, as inculcated through the globalization process, in international markets countries with absolute production advantage from agricultural products, without any state interference and only based on competitive conditions, have more share of the market and profits made by trading these crops. Therefore, the recognition of the extent to which a government supports agricultural sector activities and research into diversions from crop production can lead to better planning for an increase in competitiveness and optimal use of resources (Balali and Karamatzade, 2007). According to Anania (1997), if a country, which imports a crop, grants specific amounts of subsidy per unit production to each producer, reduction in tariffs can as well reduce aggregate measurement of support in this country even if domestic support is increased.

II. METHODS AND MATERIAL

Using library resources, information from citrus fruits and Cucurbits producers and input market and crop sale activists and policy analysis matrix (PAM) (table 1), DRC (domestic resources cost: an index for the costs of production factors and domestic and foreign inputs used in crop production based on international prices), EPC (effective production coefficient: as an index for the impact of government's supportive actions on, i.e., pricing the crops and change in the amount of production), NPC (nominal protection of crop coefficient) and NPI (nominal protection of input coefficient) indices were calculated via three currency scenarios (governmental, swapping and faire market). Based on these calculations, governmental policies and regulations and rules about such crops are evaluated. The DCR index examines the social profitability of production of these crops from a national viewpoint regardless of crop sale markets. This index is calculated as follows:

Equation 1: $DRC= G/(E-F)$

Where G, E and F are calculated based on table 1.

Here, the ratio of DRC to the subtraction of income and costs of tradable inputs is measured based on shadow prices. If DRC is < 1, a given region gains more comparative advantage from producing a crop than importing it (Briones, 2014). The EPC index evaluates the profitability of producing these crops under governmental rules and regulations and policies from producers' point of view. It measures the ratio of crop production added value based on market prices to product added value in terms of shadow prices; and it simultaneously shows the effects of government's interference in input and crops, if EPC> 1, government has supported crop production and if < 1, government has harmed it, if EPC=1, government's interference has had no effect or there has been no interference at all. EPC is calculated as follows (Yao, 1997):

Equation 2: $EPC= (A-B)/(E-F)$

Where A, B, E and F are calculated based on table 1.

Table I - policy analysis matrix (PAM)

Benefit	Expenses		Income	The basis for calculating
	tradable factors	Internal sources		
D	B	C	A	Based on market prices
H	F	G	E	Based on shadow prices
L	J	K	I	Difference

Source: Agricultural Economics and Development

The NPC (nominal protection coefficient) index measures the ratio of income based on market prices to income based on shadow prices. If it is > 1, indirect subsidy has been granted to crop production and if it is < 1, indirect tax has been imposed on the crop production. If it equals 1, it means that the government has neither supported nor if imposed anything on it. NPC is measured by this relationship:

Equation 3: $NPC= A/E$

(A) And (E) are calculated based on table 1.

The coefficient of nominal protection input (NPI) measures the ratio of tradable input cost based on market prices to trading input costs based on shadow costs. If it is > 1, there is an indirect tax imposed on the used inputs; but if it is <1, the government has granted indirect subsidy to the used inputs. If it is=1, NPC can be calculated by equation 4 (Masters and WinterNelson, 1995).

Equation 4: NPI= B/F

Using tables 1, B and F are calculated. For evaluating the policy analysis matrix (PAM), the shadow prices are needed in addition to crops and inputs market prices (table 1). To determine the shadow price of Cucurbits and citrus fruits, their international prices must be considered. To reach the latter price, their market prices could be modulated, though cost and non-cost disruptions may occur during the process of obtaining an international price. To avoid any disruption, the following parameters must be calculated to determine the shadow price and reach a point of certainty: FOB (free on board) price, real exchange rate and costs of carrying and loading crops and commodities from farm to the border of the country (Sagheb, 2005). To determine the shadow price, inputs are divided into two parts: (1) tradable inputs (for exchange): fertilizer, chemical pesticides, seed and machinery. (2) non-tradable inputs (domestic): human workers, lands, water, manure.

The price of tradable inputs is obtained by import CIF, real exchange rate and costs for transportation and unloading of the commodities or crops from the edge of the border to the farm (Sagheb, 2005). To determine the shadow costs of such non-tradable inputs as land and human worker, a suitable opportunity cost was considered. That is, to obtain the opportunity cost of each input, we produced conditions under which the highest cost was paid for the use of input in production or the highest return on input was gained due to participation in production; this cost equaled the input shadow price (Salimifar and Mirzaii Khalilabadi, 2002). However, water input receives subsidy price. Therefore, to calculate its shadow cost, these factors must be included: mean annual consumption of water per hectare and finished expense per water cubic meter (this cost was known based on the information given by experts in Water and Wastewater Co. in Kerman Province) (Sagheb, 2005). Manure shadow price is deemed equal to its market price because manure is a subsidiary product and there is no interest, economic surplus or subsidy involved in it.

In this study, three possible scenarios including artificial exchange rate of governmental currency, swapping exchange rate (bank) and faire market exchange rate formed the basis for calculating the required parameters for an ultimate determination of DRC, NPC, NPI and EPC indices.

The computational framework for tradable and non-tradable input costs as well as the return income per crops under study on the basis of shadow prices and market prices were calculated by the Excel software, version 2013, was used for the calculations Each cost within the above three scenarios.

III. RESULTS AND DISCUSSION

The import crops from citrus fruit and Cucurbits family are orange, green cucumber (greenhouse and tunnel culture) and watermelon (tunnel and outdoor cultivation); costs and revenues means resulted from production and sale were calculated using an average of different cultivation methods.

An analysis of the DRC results shows that Kerman Province has a comparative advantage in producing both citrus and Cucurbits (TABLE III & TABLE II). The DCR values for citrus fruits are 0.77, 0.31 and 0.21, for governmental, swapping and faire market currency rates, respectively, all being less than 1, thereby affirming the comparative advantage of producing such crops in this province (Table II).

TABLE II - COMPARATIVE ADVANTAGE INDEX OF PRODUCTION (DRC) AND NOMINAL PROTECTION COEFFICIENTS OF PRODUCT (NPC) AND INPUT (NPI) AND EFFECTIVE PROTECTION COEFFICIENT (EPC) ,2012-2013 CROP YEAR FOR THE CITRUS CROPS IN THE SOUTHERN OF KERMAN PROVINCE

Index	I. citrus crops		
	GC (USD), EQ to rials 12260	**SC (USD), EQ to rials 24750**	**FC (USD), EQ to 35,000 Rials**
DRC	0.77	0.31	0.21
NPC	1.34	0.58	0.40
NPI	1.70	1.03	0.77
EPC	1.23	0.49	0.33

Source: Calculations of the study
Governmental currency= GC; swapping Currency=SC; Faire Currency=FC and equivalent=EQ

Likewise, the DCR values for Cucurbits are 1.01, 0.29 and 0.19, respectively (TABLE III). Except for the governmental exchange rate, the two latter are less than 1, thereby showing a comparative advantage.

From this information it is clear that with no governmental interference the comparative advantage of producing such crops increases when the exchange price gets close to the real price. Under real conditions for the exchange price, that means exchange with faire price, the nominal protection coefficient (NPC) is 0.40 and 0.53 for citrus fruits and Cucurbits, respectively, indicating that the producer's income is far different from the global income originated from producing such crops (TABLE III & TABLE II). Such conditions show that the government's direct and indirect interferences in determining a sale price for these crops is somehow similar to receiving tax from producers. That is, a part of producer's income is lost to compensate for the subsidy on the produced commodity or to benefit wholesalers, dealers and probably consumers. Within the faire market currency rate scenario, the producer receives only 40％ and 53％ of the revenues from citrus and Cucurbits production, respectively (TABLE III & TABLE II, as NPC is calculated). Similarly, in the second scenario (swapping currency), using NPC the producer's revenue share was 0.58％ and 0.78％ from citrus and Cucurbits, respectively. Only through a governmental artificial exchange rate it is possible to reach NPC>1 (here the NPC for citrus is 1.34 and for Cucurbits is 1.90) (TABLE III & TABLE II). Under this condition, subsidy has indirectly been granted to the crops.

TABLE III - COMPARATIVE ADVANTAGE INDEX OF PRODUCTION (DRC) AND NOMINAL PROTECTION COEFFICIENTS OF PRODUCT (NPC) AND INPUT (NPI) AND EFFECTIVE PROTECTION COEFFICIENT (EPC) ,2012-2013 CROP YEAR FOR THE CUCURBITS CROPS IN THE SOUTHERN OF KERMAN PROVINCE

Index	I. Cucurbits crops		
	GC (USD), EQ to rials 12260	**SC (USD), EQ to rials 24750**	**FC (USD), EQ to 35,000 Rials**
DRC	1.01	0.29	0.19
NPC	1.90	0.78	0.53
NPI	1.74	1.10	0.85
EPC	2.09	0.61	0.39

Source: Calculations of the study

Governmental currency= GC; swapping Currency=SC; Faire Currency=FC and equivalent=EQ

The nominal protection input (NPI) at fair market currency rate (3500 Iranian Rial) for citrus fruits and different Cucurbits trees is 0.77 and 0.85 on average respectively. From the total cost paid by the state on the inputs in the global market, 23％ and 15％ are paid by citrus and Cucurbits producers, respectively; the remaining is not received under nominal support of producer (TABLE III & TABLE II). In other currency scenarios, this index becomes larger than 1, meaning that there has been an indirect tax imposed on these inputs. For instance, under governmental currency rate conditions, the inputs purchase cost 70 and 74% more expensively for citrus fruits and Cucurbits producers.

In the current study, the effective protection coefficient (EPC) was less than 1 at swapping and faire market currency rates; it is 0.33 and 0.39 for citrus fruits and Cucurbits, respectively at the latter rate. This coefficient was larger than 1 at the governmental currency rate: reaching 1.23 and 2.09 for citrus and Cucurbits, respectively (TABLE III & TABLE II). Due to government's policies and rules and domestic market status, of the added value of citrus fruits production and sale, citrus and Cucurbits producers in Kerman Province only had a share of 33 and 39 percent, respectively. Therefore, subsidies, indirect or direct protections and intangible taxes granted or imposed by the government's market regulation policies would lead to a reduction of producers' income or a total loss for them.

However, in a multi-rate currency system, all events do not happen based on a merely one exchanged rate due to an interference of producers and traders' actions and some other abuses. As an example, a producer may receive inputs based on governmental currency rate and sell crops as s/he is under the pressure of government's hidden taxes; however, a trader may sell the same crop according to the faire exchange rating system or that an importer turns the exchange (resulted from crop sale) into Iranian Rial in fair market. In such a system, the producer has little share of the income from his/her own product sale. If the inputs are imported at a faire exchange rate, there will certainly be a double pressure on producers. Under such conditions, if we observe a similar comparative advantage for crop production, with a single-exchange rate of currency, perhaps crops

open a way to global markets and obtain real profitability.

The following parameters cause negative effects of government's rules and regulations on citrus and Cucurbits production and supply: currency rate, fluctuations in export rules and regulations, tariffs at inappropriate times, no on-time provision or announcement of import and export rules and, in general, non-clarity or temporary consumer protections. High losses at delivering market supply stages and invisible supports from other beneficial and non-beneficial components of value chain (e.g. transportation section, wholesalers and dealers) are important factors that reduce the producer's share in the margin of crop market.

IV. CONCLUSION

According to the results of our study, the following factors contribute to a better and more beneficial production of citrus fruits and Cucurbits under fair competition: stabilization of exchange rate as equivalent to its real rate, single exchange rate, decline in customs formalities for fresh crops, announcement of trading programs and rules at certain times of year with no shift in market, governmental non-interference: either directly or indirectly (neither granting subsidy nor receiving indirect taxes), avoidance of traditional marketing and dealing, making progress through modern and competitive markets and finally obtaining a knowledge of other countries' business rules and regulations.

The above procedures increase the efficiency of marketing and market supply of citrus fruits and Cucurbits; this way there would occur a more development of market margin to the benefit of producer; a removal of non-generative or destructive groups from the supply market path and a triggering of higher production and economy.

V. REFERENCES

[1] Anania, G. 1997. Policy choices and interdependence of country decisions in the implementation of the 1994 GATT Agreement on agriculture. European Review of Agricultural Economics, 24(2): 161-181.

[2] Azizi, J. and Yazdani, S. 2004. Determining the comparative advantage of main horticultural products of Iran. Agricultural Economics and Development, 12(46): 41-73.

[3] Balali, H. and Karamatzade, A. 2007. Supportive indices of production and export walnut product in the world market. Paper presented at the Sixth Conference of Agricultural Economy of Iran, Ferdowsi University of Mashhad.

[4] Briones, R.M. 2014. Estimates of Domestic Resource Cost in Philippines Agriculture.

[5] Gonzales, L.A. 1993. Economic incentives and comparative advantage in Indonesian food crop production (Vol. 93). Washengton. D.C: Intl Food Policy Res Inst.

[6] Karbasi, A., Karimkoshte, M. and Hashemitabar, M. 2005. Comparative Advantage irrigated cotton production in Golestan Province. Agricultural Economics and Development, 13(50): 51-86.

[7] Masters, W.A. and WinterNelson, A. 1995. Measuring the comparative advantage of agricultural activities: domestic resource costs and the social cost-benefit ratio. American journal of agricultural economics, 77(2): 243-250.

[8] Mehdipoor, E. 2006. Comparative Advantageof potato production in Iran. Agricultural Sciences, 12(1): 15-25.

[9] Mohamadi, D. 2004. Determining the comparative advantage of oilseeds and investigating the problems of production in Fars province. Agricultural Economics and Development, 12(47): 125-151.

[10] Sagheb, H. 2005. Evaluation of supportive policies in the agricultural sector using Policy Analysis Matrix: A Case Study of kiwi in northern Iran. The Quarterly RESEARCH REVIEW of Commerce, 9(35): 153-176.

[11] Saii, M. 2011. Effect of Protective Policies onComparative Advantage of the Most Important Vegetables in Jiroft Area. Journal of Economics and Agricultural Development, 25(2).

[12] Salimifar, M. and MirzaiiKhalilabadi, S. 2002. Production and ExportComparative Advantage of Iran's Pistachio. Agricultural Economics and Development, 10(38): 7-28.

[13] Torkaman, N. 2004. Marketing matters of dates in Iran. Business reviews, 4(6): 82-93.

[14] Yao, S. 1997. Comparative advantages and crop diversification: a policy analysis matrix for Thai agriculture. Journal of Agricultural Economics, 48(1-3): 211-222.