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The Impact of Governmental Price Policy on the Economic Returns of the Barley Crop Farmers in Jordan

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Abstract
The objective of this study was to analyze the impact of governmental price policy on barley production in Amman governarate, Jordan. Using a quantitative mathematical analysis method; policy analysis matrix (PAM) approach. In this study, primary data were collected by personal interviews to farmers in the target area while secondary data were collected from different resources. According to the Policy Analysis Matrix (PAM) approach, results showed that the values of the nominal protection (NPC) and effective protection coefficients (EPC) for barley 1.79 , 3.94 respectively. Thus, a clear government intervention was observed;.there was a subsidy for agricultural producer .
Keywords: Barley, Price Policy, Nominal Protection Coefficient, Effective Protection Coefficient.

1. Introduction

Agricultural sector could be considered as one of the most productive sector which is not only considered as a source of income, but also as a way of life, a system of national food security, social hub and such a way to rural development (Ministry of Agriculture,2011), contributed 3% to the gross domestic product (GDP) and with a fixed basic prices (Ministry of Agriculture, 2016): this low of cotribution could be explained by the increase in the other sectors. The sector is closely related to local economic activities which contributed with about 27% of GDP, (Ministry of Agriculture, 2009).

Barley is one of the oldest grain crops that was planted 10,000 years ago in the Mediterranean region, as food for both humans and animals (Harlan, 1995). Barley (*Hordeum vulgare*) is one of the most important cereal crops in Jordan. It is mainly produced in Jordan in the rainfed areas.The area of Jordan is about 89 square kilometers, of which over 90% are arid area arid receives less than 200 mm annual rainfall, were it is the only possible alternative. The importance of barley to the animal production sector comes from being the main source of feed grains. For this reason, it is considered as an important strategic crop. Indeed, it is an important source of animal feed. Therefore, it is necessary to increase the interest in studying this crop and to focus on agricultural policy makers, to co-integrate plant and animal production. Jordan's imports of barley reached to 960359 tons, while the self-sufficiency rate of barley was (31.4%) (Department of Statistics, 2016). In 2014 Jordan imported 99% of its cereals, or 915000 tons of whaet and 720000 tons of barley, as the population grew with the arrival of Syrian refugees (USDA, 2014). The local production of the barley crop is fluctuating and small. This is in addition to the limited area of cultivated area, where the area cultivated for barley was 959454.3 dunums for the year 2017. (Department of Statistics, 2017). The government's is very concerned in the producers of the barley crop, which is the purchase of farmers' production at prices that encourage international prices and sell them to citizens at low prices. In so doing, the government aims at increasing the production of barley, Supporting the farms and stimulating the production and the cultivation of larger areas.

Hence this study was conducted to identify the impact of the price policy of the government on the economic returns of barley farmers in Jordan. This was to investigate the impact of the price policy of the state on the economic returns of the farmers who produce barley. This was achieved through testing such price policy and the extent to which the state is intervening in the production of parley through supporting the price of barley and encouraging farmers by ensuring the production inputs at prices below their real cost or to purchase the crop at prices higher than world prices and whether there are taxes imposed on the imports that compete with the crop or on the production and trade of the crop. Thus, the objective of this study is to aanalyse the impact of the government price policy in the economic return to farmers of barley production in jordan by estimating the most improtant protection coefficients that utilized.

2. Review of Literature

Salem (1996) studied the of impact of wheat policy on dry land wheat production in the Republic of Yemen. The results of the study indicated that dry land wheat production is economically feasible, and Yemen has a comparative advantage of producing it. The Nominal Protection Coefficient (NPC) of tradable inputs (NPCI) for dry land Barley was 59% and the value of the subsidy for the tradable inputs and domestic factors for dry land wheat was 3098 Yrs/ton.

Al-Nsour and Al-Kadi (2002) studied the analysis of agricultural policies affecting some of fruit tree crops in the high lands of Jordan through spcecifying a copmarative advantege and measures of economic protection .

The results showed that there is subsidy for agricuteral producers. The study recommend the impotance of encourging planting grape and apple since they enjoy a copmarative advantage and lead to enhance the economic efficiency of agricultral resources in the high land in jordan.

In their study, Bedwan and Al-Nsour (2004) , Policy Analysis Matrix approach was used to help elucidate the interactions of many policies that influence agricultral incentives.The results have proved that there are incentivesto encourage farmers to produce some the crops in Deir Alla region. The measures of production indicate that the presence of taxing for outputs and subsidization for one or more input for all kinds of irrigated vegetables and citrus.The study recommended to develop a database line on local, regional, and international markets.

Dumais, Ruaw, & Talumingan (2002) studied the impact of government policy on clove production in minahasa regency. The PAM analysis of cloves is the first of its kind in Indonesia. Its objectives are two-fold: (1) determine the breakeven point from which the impact of the government's planned clove tax can be evaluated, and (2) determine the efficiency of the clove production system under a variety of farming systems and ecological zones. Due to an unusually high clove price in 2001 (Rp. 70,000 per kilogram), the government's proposed Rp. 2,000 per kilo price was only 2.8% of the farmer's profits. If the government used these revenues to carry out research on clove production, especially fertilizer application, and created an effective extension service, the tax could lead to greater profits in the future. Farmers, of course, fear that the tax revenues will simply disappear into operational expenses. They also fear that the price of cloves will revert to long-term trends that are half the price registered in 2001. Divergences between private and social prices in clove production are minimal. International clove prices taken from the c.i.f. price at Bitung port, North Sulawesi Province. Inputs such as fertilizer receive no subsidies in Indonesia. The conclusion for all varieties in all ecological zones is that clove production is an efficient use of agricultural resources in Minahasa Regency.

Altahat (2015) studied the agricultutral policies which affecting Medjool date palm cultivation in Middle Ghors region, Jordan. Primary data were collected by personal interviews to farmers in the target area while secondary data were collected from different governmental offices. According to the Policy Analysis Matrix (PAM) approach, results showed that the Domestic Resource Cost Ratio (DRC) was less than one 0.27; which means that there was a comparative advantage in producing Medjool date palms. The measures of economic protection showed that there was a subsidy for agricultural producer in the Middle Ghors region because of the domestic resource price of this crop was less than the world price. Therefore, encouraging planting Medjool date palm will enhance the economic efficiency of agricultural resources in the Middle Ghors region in Jordan.

3. Methodology and Procedure

3.1 Primary and Secondary data

In this study Secondary and primary were used. Primary data were collected through farmrs personal interviews conducted during the Barley season of 2017. A structured questionnaire was prepared for this purpose. The sample size of 270 farmers was determined using the following formula (assuming that N= population is unknown):

n= p.q(Zx / e)2 (Dominick,1982)

Where

n= sample size

p= sample proporation that will occur

q= sample proporation that will not occur

Zx / 2= 1.96, the Z- value used in a 95% confidence interval

e = dgree of error (5.96%)

Assuming that p=.5 and q= .5

n= .5 *.5(1.96/.0596)2= 270

A desciptive economic and mathematical tools such as averages were used. Measures of economic protection abstracted from Policy Analysis Matrix (PAM),(Monke and Pearson,1989) in table (1) the measures of economic protection were defined, computed and used in the analysis.These measures are:

1-The Nominal Protection Coefficient (NPC): is estimated by dividing the revenue in private prices (A) by the revenue in social prices (E). If this ratio is less than one, it reveals the presence of taxes on output. An NPC greater than one indicates the presence of subsidies. When NPC is equal to one (in the absence of market failure), this reveals the absence of government intervention in output markets.

2- The Effective Protection Coefficient (EPC): is define as the ratio of value added in private price (A-B) to value added in social prices (E-F). It is another measure of incentives to farmer. This coefficient indicates the combined effects of policies in tradable-commodity markets (inputs and outputs). The EPC is useful measure because input and output policies, such as commodity price supports and fertilizer subsidies, are often part of a comprehensive policy package. An EPC of less than one indicates negative incentive effects of policy (a tax on farmers), whereas an EPC greater than one indicates positive effects of policy.

3.2 Study area

The study was carried out in Amman governorate. Rainfed barley area covered in the study is 245420.6 dunums, which is 25.6% of the total cultivated rainfed barley area in Jordan (959454.3 dunums). The production of rainfed barley in the study area reaches up to 6639 tons; 17.5% of the total production on the level of Jordan (37929.0 tons), (Department of Statistics, 2016).

4. Result and Discussion

Table (2) contains a summary for the policy analysis results of for Barleycrop production in Amman Governarate. The results were reported on a per dunum basis. Which have been dependable to get to the impact of agricultural price policy. It was found that revenue for Market prices (local) was higher than the revenue for social prices (global) and this means that there was a subsidy that equivalent to 43.3% of the social price to harvested dates. As it turns out that the tradable inputs received a financial support equal to 3.8% of the cost of the tradable economic production price, while there was a financial support for local resources equal to a rate of 11.8% of the cost for local resources and economic price. Therfore, the overall impact of the policy was in the favor of the producers.

Table (3) shows the measures of economic protection for for Barleycrop production in Irbed Governarate it was found that the Nominal Protection Coefficient for tradable output (NPC) was 1.79 which means that there is a subsidy for agricultral producers and that the adopted agricultural policy allows local market price to be larger than the international price. As far as that the Effective Protection Coefficient (EPC) was greater than one, which means there are incentives for farmers as a result of the positive impact for the policy of subsidy input and output.

Table (1): The Policy Analysis Matrix (PAM)

	Revenues	Costs	Profits	
		Tradable inputs	Domestic factors	
Private prices	A	B	C	D
Social prices	E	F	G	H
Policy effect	I	J	K	L

Source: Monke, E., and Pearson, S., 1989

The symbols (capital letters) stand for:

A: Total revenues in private price(market prevailing prices some times called financial prices).
B: Cost of tradable inputs (such as fertilizer and Chemicals) in private prices.
C: Cost of domestic factors (such as labor and capital) in private prices.
D: Private profit.
E: Total revenues in social price (prices that are adjusted to reflect government intervention).
F: Cost of tradable inputs (such as fertilizer and Chemicals) in social prices.
G: Cost of domestic factors (such as labor and capital) in social prices.
H: Social profit.
Private profit (D) = A-B-C
Social profit (H) = E-F-G
Output transfer (I) = A-E
Input transfer (J) = B-F
Factor transfer (K) = C-G
Net transfer (L) = D-H

Table (2): Policy Analysis Matrix for Barleycrop in Amman Governarate

	Revenues	Cost of tradable inputs	Cost of domestic factors	Profits
Private prices	67	26	15	26
Social prices	37	27	17	(6)
Effect of divergence & policy	29	(1)	(2)	32

Source: Calculated and tabulated from primary and secondary data.
-Figures in brackets ( ) are negative numbers.

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Table (3): Indicators of economic protection, Calculated For Barleycrop production in Amman governarate

Items	Value
NPC (A/E) = Nominal Protection Coefficient for Output	1.79
EPC{(A-B)/(E-F)} = Effective Protection Coefficient	3.94

Source: Calculated from Table 2.

5. Recommendations:

Based on the results of the study, the following recommendations were made:

1. Agricultural policy should foucs on growing dryland barley in its producrion areas.
2. Agricultural policy should continue subsidizing barley production.
3. Support the reasearch in the field of production increment and lowering cost.

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