The impact of participation in non-agricultural activities on agricultural development

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ABSTRACT

In this study, the impact of participation in non-agricultural activities on agricultural development have been studied. To achieve the objectives, the data in this study is related to the years 2016-2017. The studied population consisted of all farmers of five villages adjacent to Khayyam industrial estate that includes 544 persons which have been chosen randomly as the sample. The sample size was 358 based on Cochran formula and random stratified proportional to population size was used to choose the people of these villages. The research method is Cross-sectional. The main research tool was a questionnaire in order to gather the necessary information. In order to test the hypothesis, linear regression analysis was used. The results showed that farmers’ participation in non-agricultural activities based in the industrial estate of Khayyam decreases agricultural production, reduces farmers’ incomes, reduces farmers’ demand for production inputs, reduces input purchasing power by farmers and decreases agricultural investment in the agricultural sector.

Key words: Agricultural agents, Economic factors, Environmental factors, Physical factors, Social factors.

INTRODUCTION

Industrialization increases the volume of investments in the agricultural sector which helps an increment in modernize agriculture sector and, consequently, production increment (Karbasi and Khaksar, 2003). Rural industrialization has led to the development of the rural economy and will solve the unemployment problem to some extent by absorbing part of the village population (Sundar, 2009). Also linked with the agricultural sector provides its growth (Cheng, 1989). For this reason, industrialization has an important place in strategies and policies in developing countries (Dutta, 2004). Therefore, these countries have included rural industrialization strategy in their development programs since the mid-1970s (Rezvani, 2011). Industrial policy in these countries is looking for increment in the production and job creation.

Industrialization theory in rural areas is a catalyst to create sustainable jobs and works as a last resort to solve the problem of poverty in rural areas and now is a potential factor in order to solve the problem of unemployment and appeasing factor in rural areas (Samal, 1997). Industrial Estates play a crucial role in supporting the development of agricultural production and rural incomes and the vital role mainly is applied in two ways: firstly act as centers for collecting and marketing of farm produce; secondly, being responsible for production of inputs required for agriculture (Chenggang and Suwen, 2011). Meanwhile, one of the industrialization methods of rural areas is to establish industrial estates in rural areas which can adjust problems of the rural population in terms of increasing production, increasing income, providing employment and operate efficiently and effectively in reducing poverty and income inequality (Pashazadeh, 2012). The main objective of this study was to investigate the effects of Khayyam industrial estate on the economy of agricultural sector in Neyshabur city to determine if the establishment of estate affected livestock production and agriculture, livestock production and agricultural prices, the income of farmers, farmers’ demand to productive inputs such as labor, water, land, etc., farmers’ access to productive inputs, average input purchasing power by farmers and the agricultural investment in agriculture sector. Finally to be able to recognize the potential of the estate and to provide a plan to use it correctly, so that the farmer’s economic situation would improve every day.

Intensive studies have been carried out on the establishment of the industry and its impacts in geographical areas. The following are some of the studies inside and outside the country: Kiyani et al (2015), showed that the most important effects of the factory over Shahnjrjryn are
among social and economic factors, including increased employment, economic development in the region, improving facilities and services, the development of side jobs, improved rural income, and satisfied people with the increased quality of rural roads. Also environmental factors, including the destruction of agricultural lands, sabotage of agricultural land, contamination of soil, reducing agricultural productivity and noise pollution are in next levels. Sajasighidari et al (2015), showed that in general, non-agricultural entrepreneurs have positive effect on components of all three dimensions of economic, social and environmental quality of life. Bandani et al (2015), showed that the mean score in total non-farmers is more and this means that non-farmers believe more agricultural activities impact on the developmen and et al (2014), showed that in most social and cultural measures especially the relationship with the media and benefit from insurance services, industrial estate could lead to positive change in the situation of rural workers. Barghi et al (2014), showed that the establishment of Aghqala Industrial Estate economically has significant effects on the development of their surrounding rural areas and, economically significant difference was observed in other components of the studied areas except ‘welfare and purchasing power.

Mirlotfi and Molanoruzi (2014) in a study showed that there are significant differences between the equality assuming of the social, economic and health infrastructure components in treatment, recreation and leisure, education, employment, income, infrastructures and housing facilities of employed villagers in industrial Estate before and after employment in Khayyam industrial estate.

Poorramezan and Akbari (2014), in a study showed that establishment of rural industries and their relationship with the agricultural sector have positive and significant effects on supporting different stages of production, bolstering the rural economy, increasing the level and diversity of production and preservation of agricultural land and rural perspective.

Portaheri et al (2014), in a study found that economically, the estate affected its surrounding villages and the greater impact was discussed on poverty reduction and diversification of economic activities. Shurmyj and Asadiazizabadi (2013), in a study showed that the most important effects of settlements were development of marketing services, economic recovery of corporates and increased level of service in the region. Five factors of production, market, investment, services, education and consulting and communication have explained 58.37% of the variance related to the effects of settlements. Bozajmehri et al (2012), in a study showed that most economic indicators such as levels of employment, income, etc. have significant differences in the sample groups and rural workers employed in settlements had a better economic situation. Tavakol and Nozari (2012), showed that industrial development and technological developments of Parsian gas refinery in Hoories district in Mohr estate have followed conflicting results. On the other hand, creating sustainable income, employment and infrastructural facilities, provided opportunities and great potential for the villagers.

MATERIALS AND METHODS

Research method: Present study is applied, developmental research and the method was descriptive - analytical. The main research tool is a questionnaire in order to gather the necessary information to test the hypothesis. The study population consisted of all farmers of villages that are adjacent to Khayyam Industrial Estate which included 5444 farmers. The sample size was estimated as 358 based on Cochran formula. In this study, the simple linear regression model is used to test hypotheses.

Research Hypotheses:
1. Construction of Khayyam Industrial Estate increases livestock and agriculture production in the region.
2. Construction of Khayyam Industrial Estate increases livestock and agricultural production prices in the studied region.
3. Construction of Khayyam Industrial Estate increases farmers’ income.
4. Construction of Khayyam Industrial Estate increases demands of farmers for productive inputs such as labor, water, land and etc.
5. Construction of Khayyam Industrial Estate increases farmers’ access to produced inputs.
6. Construction of Khayyam Industrial Estate increases average purchasing power of inputs by farmers in the region.
7. Construction of Khayyam Industrial Estate decreases farmers’ agricultural investment in the area.

Test Hypotheses Model and Research Variables:

\[ y_i = a + \beta w_i + \beta x_i + \mu_i \]

where:
- \( W \) is dummy variable equal to one if the household participate in non-agricultural activities and zero if the household does not participate in these activities.
- \( X \) is the vector of control variables such as age, gender, level of education of household head and etc.
- \( Y_i \) is dependent variable that differs in the different hypothesis and includes: agriculture and livestock production, prices of agricultural products, farmers’ incomes, demand of farmers to productive inputs, farmers’ access to productive inputs, purchasing power of agricultural inputs, and agricultural investment in agriculture sector.
RESULTS AND DISCUSSION

Testing first hypothesis:
“Construction of Khayyam Industrial Estate increases livestock and agriculture production in the region”.

Results by linear regression method demonstrate that the effect of participation in non-agricultural activities on the production of agricultural area was (-0.14), according to the probability of t-statistic this variable is significant at 95% level of confidence so this hypothesis is not confirmed (Table 1).

Testing second hypothesis:
“Construction of Khayyam Industrial Estate increases livestock and agriculture production prices in the region”.

Results demonstrate that the effect of participation in non-agricultural activities on livestock and agriculture production prices was negative (-0.04), according to the probability of t-statistic this variable is significant at 95% level of confidence so this hypothesis is not confirmed (Table 1).

Testing third hypothesis:
“Construction of Khayyam Industrial Estate increases farmers’ income in the region”.

Results demonstrate that the effect of participation in non-agricultural activities on farmers’ income was negative (-0.11), according to the probability of t-statistic this variable is significant at 95% level of confidence so this hypothesis is not confirmed (Table 1).

Testing fourth hypothesis:
“Construction of Khayyam Industrial Estate increases demands of farmers for productive inputs such as labor, water, land and etc”.

Results demonstrate that the effect of participation in non-agricultural activities on demands of farmers for productive inputs such as labor, water, land and etc. was negative (-0.14), according to the probability of t-statistic this variable is significant at 95% level of confidence so this hypothesis is not confirmed (Table 1).

Testing fifth hypothesis:
“Construction of Khayyam Industrial Estate increases farmers’ access to productive inputs”.

Results demonstrate that the effect of participation in non-agricultural activities on farmers’ access to productive inputs was negative (-0.04), according to the probability that the t-statistic is less than 0.05 (p-value =0.0174), this variable is significant at 95% level of confidence so this hypothesis is not confirmed (Table 1).

Testing sixth hypothesis:
“Construction of Khayyam Industrial Estate increases average purchasing power of inputs by farmers in the region”.

Results by linear regression method demonstrate that the effect of participation in non-agricultural activities on average purchasing power of inputs by farmers in the region was negative (-0.19), according to the probability that the t-statistic is less than 0.05 (p-value =0.0003), this variable is significant at 95% level of confidence so this hypothesis is not confirmed (Table 1).

Testing seventh hypothesis:
“Construction of Khayyam Industrial Estate decreases farmers’ agricultural investments in the region”.

Results by linear regression method demonstrate that the effect of participation in non-agricultural activities on decreases farmers’ agricultural investments in the region was negative (-0.10), according to the probability that the t-statistic is less than 0.05 (p-value =0.0366), this variable is significant at 95% level of confidence so this hypothesis is not confirmed (Table 1).

In general, the results of regression analysis indicated that participation of farmers in production units located in the industrial estate decreases agricultural production, decreases prices of agricultural products, reduces

Table 1: The economic effects of participation in non-agricultural activities of Khayyam industrial town on agricultural sector in Neyshabur

<table>
<thead>
<tr>
<th>Variables</th>
<th>Regression coefficients</th>
<th>T-statistic</th>
<th>Probability statistic t (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in non-agricultural activities on agriculture production</td>
<td>-0.14</td>
<td>-5.52</td>
<td>0.0000</td>
</tr>
<tr>
<td>Participation in non-agricultural activities on agriculture production prices</td>
<td>-0.04</td>
<td>-2.04</td>
<td>0.0414</td>
</tr>
<tr>
<td>Participation in non-agricultural activities on farmers’ income</td>
<td>-0.11</td>
<td>-4.16</td>
<td>0.0000</td>
</tr>
<tr>
<td>Participation in non-agricultural activities on demands of farmers for productive inputs</td>
<td>-0.14</td>
<td>-5.47</td>
<td>0.0000</td>
</tr>
<tr>
<td>Participation in non-agricultural activities on farmers’ access to productive inputs.</td>
<td>-0.04</td>
<td>-2.00</td>
<td>0.0453</td>
</tr>
<tr>
<td>Participation in non-agricultural activities on average purchasing power of inputs by farmers</td>
<td>-0.19</td>
<td>-3.75</td>
<td>0.0003</td>
</tr>
<tr>
<td>Participation in non-agricultural activities on farmers’ agricultural investments</td>
<td>-0.10</td>
<td>-2.09</td>
<td>0.0366</td>
</tr>
</tbody>
</table>

Source: Findings
the income of farmers, reduces the demand of farmers to agricultural productive inputs, reduces farmers’ access to productive inputs, reduces purchasing power of inputs by farmers and reduces agricultural investment for the improvement of farmers. number of persons employed in production activities invest earned income in other businesses other than agricultural sector. So it can be argued that the establishment of Khayyam industrial zone in the study area would undermine the economy of the agriculture region.

PRACTICAL SUGGESTIONS
1. It is suggested that the government with guaranteed purchase of agricultural products leave the brokers and intermediaries aside this increase farmer share in final product prices and preventing farmers from leaving agricultural activities.
2. Most of the farmers employed in factories are illiterate people, working with a little wages in these units or may not be insured which is a threat to their job security. So, activity in the industrial units becomes their second job, not their main job. The development of industries that produce raw materials and will spur agriculture and farming in the region is suggested.
3. It is recommended that the organization of industries and mines or responsible organizations grant privileges and credits for investment in industries that welcome villagers to encourage them to invest in rural industries that have more interaction with the agricultural sector.
4. It is proposed that complementary industries for horticultural crops should be strengthen and spread due to several gardens in the area. In general, the link between these two parts for sustainable development of both parts seem essential.

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