

**IMPACT OF INDUSTRIAL GROWTH ON
AGRICULTURAL DEVELOPMENT: A CONTRASTING
VIEW-A CASE STUDY IN DIBRUGARH DISTRICT OF
ASSAM, INDIA**

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Abstract

Industrial growth and agricultural development are very crucial to every economy. Interdependence of both sectors is also an important field to study. Many literatures are there to support the view that industry and agricultural sector contribute to each other in a positive way. This can be generally cited as agricultural sector providing raw materials to industrial production and creating demand for industrial goods and industrial sector providing inputs to agriculture and the industrial workers creating effective demand for agricultural goods. Though such types of interlinkages are practically available in the developing countries like India but are it always applicable to the developing economies is a matter of question. This article is trying to find out both positive and negative impact of industry on agriculture and vice versa by taking into account a block (Barbaruah development block) of Dibrugarh district of Assam, India. The article finds out that, despite having positive interlinkages of industrial growth in agricultural development, industrial growth hampers agricultural development in the form of agricultural production, land use, labour availability and migration etc. especially in some corners of developing countries like India.

(Keywords: Industrial Growth, Agricultural Development, interdependence, effective demand, developing countries, India)

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Introduction

Traditionally there is an acceptable statement that there is a positive linkage between industry and agriculture. Hirschman stated that “Each sector has linkages with the other sector in the economy, in the sense that it either purchases inputs from them from the production of its output or provides to them as inputs, its own output. Thus the expansion of any sector’s output will, through technological interdependence, lead to expansion of output of the other sectors”. Agriculture supplies various inputs to the industry as raw materials or intermediate products needed by the agro based industries. On the other hand, industries supplies agricultural machinery and inputs and thereby contribute to agricultural modernization. Agriculture growth also influences the output of industrial consumer goods through change in demand due to change in price. But these statements are conventional and most of them mention the types of industries that directly affect agriculture or vice versa. But we can’t generalize the statement. Because these statements does not give any kind of proper explanation about the industries which don’t have any kind of direct relation to agricultural sector. For example, plastic industry, iron and steel industry, cloth industry, toy making industry etc. moreover, they fail to give insight into agricultural labour supply change, land use pattern, wage and price fluctuation or change due to industrial development in a particular region. Therefore this study tries to examine the impact of these kinds of industrial impact on agriculture.

Review of Literature

Agriculture industry interlinkages and their impact to each other has been an area of interest for many economists and researchers since long time. In many developing countries it has been a long debated issue.

Thirlwall has stated that, agriculture, after coming out from the subsistent level, become a co-partner of the industrial sector and starts contributing each other in a positive way. Industrial sector in one hand creates demand for the agricultural goods and also absorbs the surplus labour of agriculture whose productivity in the agricultural fields are negligible. It helps to raise the productivity of agriculture. On the other way, agriculture also provides a market for industrial goods.

He further analysed that, the transfer of resources from agriculture to industry may be in the form of capital or labour or both. He is of the opinion that there is no difficulty in releasing labour from agricultural sector to industry in a labour abundant developing country. But very interestingly he is commenting that such release of labour from agriculture to industry may be harmless 'except during the harvest time'. So there is a clear indication that at harvest time, there may be labour shortage in agriculture if too much labour migrated from agriculture to industry. This indication may have great consequence in some places.

The higher wages of industrial sector compared to agriculture, which attract the agricultural labour may be because of various reasons. In this analysis, Thirlwall stated that a share of it goes to compensate the non-monetary benefits of rural life and job uncertainty in the industrial sector. These two points are crucial for our analysis because it made it clear that people enjoy some non-monetary benefit in traditional rural-agrarian background and also enjoys income uncertainty in some extent compared to the industrial sector.

Rangarajan (1982) had discussed the links between agriculture and industry and found three types of interlinkages - production linkages, demand linkages and savings/investment linkages. In the production linkages, he stated that agriculture and industry are linked to each other through the input output relationship. The output of agriculture provides inputs for many industries. He is also mentioning that, at India's present stage of development, the production linkages are not strong. The demand linkage between the two sectors, according to him, is dependent on terms of trade. He also stated that, agricultural performance may affect the

economy by influencing savings and investment. The savings of govt. will be influenced by influenced by agricultural output, industrial output and the terms of trade.

Saikia(2011) has discussed the agriculture industry interlinkages in Indian context. He has cited the positive linkage between agriculture and industry. Agriculture provides raw materials to industry (agro based) and industry makes them final product and some industries provide agricultural machinery and inputs like fertilizers, pesticide etc. agriculture also influence the industrial output through demand and agriculture generates surplus of savings, which can be mobilized for investment in industry.

Rattso and Torvick (2003) have discussed the negative impact of discriminatory treatment to agriculture sector for the sake of industrial development. They wrote that, many countries in Sub-Saharan Africa discriminated against agriculture to promote industry after independence. The domestic terms of trade were found against agriculture by the price fixing of monopoly marketing boards. This policy was assumed to reduce labour cost of industry and was combined with overvaluation of the currency, protectionism and priority rationing of imported inputs to industry. The region got the worst of both worlds- stagnation in both agriculture and industry. Export oriented agriculture has been held back, and import dependent industries have suffered because of the foreign exchange constraint.

Jha, in his article also analysed the intelinkages between agriculture and industry. He has stared the models of Lewis, Kalecki and Kaldor to examine the relationship in Indian Context. The barriers created by stunted agricultural growth for industrial development have constituted a recurrent theme in debates on Indian economic policy. This essay brings out these debates in terms of the disproportionality caused by the desperate rates of industrial and agricultural growth. It examined the continued relevance of the agriculture-industry linkage to understand the stagnation in the farm sector since the early 1990's. Instead of focusing on agriculture per se, the discussion attempts therefore to unravel the links that bind agriculture and industry, both analytically and empirically for India.

Objectives

The objectives of this paper is

1. To study the impact of industrial growth on agriculture, mainly on agricultural labour supply, land use pattern and price fluctuation.
2. To know the negative impact of industry on agriculture, especially those industries which don't have direct relationship with agriculture.
3. To know the change in income and expenditure as a result of employment diversification from agriculture to industry.

Methodology

The methodology adopted for this paper is based on primary sources of data. The primary data is collected from three types of industrial workers from one of the development block under Dibrugarh District of Assam (**Barbaruah Development Block**). The names of the industries are **Behiating Iron Industry (Millennium Mutalloys Pvt. Ltd)**, **Behiating Plastic Factory (R.D. Policos Pvt. Ltd.)** and **ongoing BCPL (Brahmaputra Crackers and Polymers' Ltd.)**. The rationale for choosing this block out of the 7 development block of Dibrugarh District is that, this block is a little bit advanced in case of industrial establishment which will be beneficial for our study as we are interested in studying the impact of industrial growth on agriculture. The above mentioned industries are selected purposively because it is noticed that the industrial workers of these industries are also the agricultural workers of the nearby villages which will be very crucial for our study in knowing the impact of industrial growth on land use and labour supply in the agricultural sector and vice versa. The survey has been done in the nearby villages of the industrial area purposively by selecting total of 30 households whose at least one member is working in the above industries.

A brief profile of Dibrugarh district and Barbaruah development block

Dibrugarh district is one of the prominent districts of the state of Assam under India. Situated at upper Assam, it has a total area of 3,381 km². According to 2011 census it has a population of 1,327,748. Population density is 390/km². It has 76.22% literacy rate and a sex

ratio of 952 per 1000 male. It has the total no. of villages 1361, development block 7, Gaon Panchayat 93 and 1 Zila parishad. Though the main source of revenue of this district is tea gardens and oil but majority of the population is preoccupied with farming of rice, sugarcane, pulses and fish culture. It is one of the moderately industrialized towns with a few big industries and a number of small and medium scale industries. It has some medium scale manufacturing industries, besides having rice and oilseed mills and some coal mining and petroleum production industries.

Analysis of Data and Findings

Employment Status

This study seeks to identify different issues relating to the impact between agriculture and industry. In this context it is necessary to know the employment status of the surveyed household. The following table shows the employment status of the sample households on individual basis.

Table-1: Employment Status of Respondents

Types of Occupation	No. of Respondents	Percentage
Unskilled	31	22.6%
Semiskilled	36	26.3%
Cultivator	2	1.4%
Business	3	2.2%
Service	1	0.7%
Other	6	4.4%
Unemployed	58	42.3%
Total	137	100%

Source: Field Survey

From the above table it is observed that majority of the workers are semiskilled in nature and they are working in the nearest industrial estate. From this table, it is also observed that only 0.7 percent households are service holders and 1.4% are cultivators.

Land Distribution

Land distribution can tell a clear picture of agricultural and other allied activities of the rural household. Therefore in the study, it was tried to know the distribution of land of the household along with the lease in and lease out quantity of land.

Table-2: Land Distribution of Households

a) Homestead land

Land(in Bighas)	No. of household possessing land	Percentage of households
0 to 2	25	83.33%
2 to 4	3	10%
4 to 6	2	6.67%
6 to 8	0	0%

b) Cultivable land

Land(in Bighas)	No. of household possessing land	Percentage of households
0 to 2	16	53.33%
2 to 4	9	30%
4 to 6	5	16.67%
6 to 8	0	0%

- 1 bigha=14400 ft²(1337.8 m²) (this is the measurement in Assam, in some other parts of India, the measurement differed)

Source: Field Survey

From the above table it is clear that more than 83% households have homestead land in less than 2 bighas. 30% households hold cultivable land in an average of 2 to 4 bighas. The cultivable land area is less than 2 bigha or nil in almost 53% of the households because these households of kakoti gaon (A village under Barbaruah Development block) lose their cultivable land because of BCPL industrial establishment. In our study it was observed that almost 30% of the household possessing cultivable land lease out their land due to either inefficiency of small holdings or due to labour shortage. The main reasons for leasing out land are stated as labour shortage by over 23% households and financial problem by almost 7% household. So it can be said that the industrial activity is creating labour shortage in agricultural sector as the working individuals of these households are engaged in nearest BCPL activities. The wages given by BCPL to these workers are higher than they can expect in agricultural activity. Moreover they don't have to face any kind of uncertainties as that of agricultural practices in terms of price fluctuation, overproduction or underproduction or crop failure. Therefore they are opting for wage labourers in the industrial activity thereby leasing out their land.

Economic Activity

In the study a comparative analysis of change in household activities in a period of 5 years have been taken.

Table-3: Change in Household Activity

Activity	2007-08	2012-13
Agriculture only	66.7%	0%
Industry only	6.7%	46.7%
Tea only	3.3%	0%
Non Farm only	6.7%	0%
Agriculture & Industry	3.3%	33.3%
Agriculture & Tea	10%	0%
Agriculture & Business	3.3%	0%
Industry & Tea	0%	13.3%
Industry & Business	0%	6.7%
Total	100%	100%

Source: Field Survey

From the above table, it can be understood that household solely engaged in agricultural activities are coming down from 66.7% to 0% over the 5 years. This is because most of these households' members are now engaged in industrial work also. That's why, household engaged in solely industrial activity increased upto 46.7% from only 6.7% in 2007-08. Moreover households engaged in agriculture and industry both also increased upto 33.3% from merely 3.3% in 5 years ago. This can clearly show how industrial setup and activity has drastically changed the dependence on agriculture gradually.

Income Aspect

The study revealed that incomes of the households are increasing over the years due to their industrial work along with agricultural practices. In case of some households, sole dependence on industrial activity also bringing higher income. Some income change is due to agriculture coupled with business or agriculture and tea planting.

Table-4: Household Income per Year (In Rs.)

Income(Rs)	2007-08	2012-13
0-20000	3.3%	0%
20000-40000	13.3%	3.3%
40000-60000	50%	13.3%
60000-80000	10%	20%
80000-100000	6.7%	23.4%
100000+	16.7%	40%
Total	100%	100%

Source: Field Survey

Looking through the table it can be said that the incomes of the households are showing a rising trend over the years. The number of households having low annual income has been reducing in the period and they are entering to the category of higher income compared to the

early years. This is basically due to the comparatively high wages offered by the industrial sector. It is generally higher than the profit and income of traditional agriculture practices.

Table-5: Household Expenditure per Year (In Rs.)

Exp.(In Rs)	2012-13
Up to 36,000	6.7%
36,000-72,000	43.3%
72,000-1,08,000	26.7%
1,08,000-1,44,000	20%
1,44,000-1,80,000	3.3%

Source: Field Survey

On the expenditure side, most of the households (43.3%) are concentrating on the expenditure level of 36,000-72000 Rs. As incomes of 40% households are 1 lakh above, they are saving some amount of money each year after indulging themselves in the industrial works.

Out of the sample households, 83.4% households are stating that they are attracted by industrial wages. 66.7% households are stating the reason as higher wages in industries compared to agricultural wages and 16.7% households are stating that industrial wages are regular than agricultural wages.

Labour shortage is a major problem as stated by majority households. 25 households out of 30 are stating labour shortage as a major problem in continuing agricultural activities. 23 households are stating Industrial employment as a cause of this.

Almost all households of Kakoti Gaon are stating that BCPL has taken out land from them. These lands are mostly agricultural. 13 households of my sample survey are stating that they are getting compensation for that.

11 households are stating agricultural diversification due to industrial activity. They have left agricultural practices due to time shortage or labour shortage and started small tea planting. The labourers needed for that activity is hired from the nearest tea garden labourers.

Almost all households are stating that the price of agricultural products are going up due to low supply and high demand from industrial officials and increased income due to industrial activity of the local people.

Findings

Industrial growth has both positive and negative impact on agriculture. Our study mainly found some negative impact of industrial growth in agricultural sector. The findings can be summarized as under

1. Due to higher and sure shot industrial wage the unskilled and semi skilled workers are migrating to industrial sector thereby leaving their traditional agricultural practice. Therefore their lands are sometimes unutilized or underutilized or lease out.
2. The people who are leasing in land (small in number) no doubt are able to use modern techniques due to large scale operations but they are facing labour shortages due to migration of labour to industrial sector.
3. As a positive impact, due to industrial establishment, the income of the people are rising considerably, thereby increasing effective demand for agricultural goods and therefore the limited number of farmers are now able to get high returns on there product.
4. It is not that only agricultural sector is suffering from the labour shortage problem, but also in some cases, the industries are complaining that, they are also facing labour shortage in the pick agricultural period.
5. The establishment of BCPL has resultant huge aviction. Some of the avicted parties have got compensation in the form of money, job and sometimes a small piece of homestead land. But due to lost of agricultural land, the agricultural production of this region is suffering.
6. As the income source given by the BCPL establishment work to the local people are mostly unskilled and semiskilled and of temporary nature, their increasing income flow are not sustainable. It will create a huge unrest in the near future as they already lost their agricultural land or given up agricultural activity forever.

Conclusion

Economists like Nurkse, Lewis in their theory of transformation of agricultural labour from agriculture to industry are supporting the view that agriculture and industry have positive interlinkages and one can help the growth of the other. But from this study it is also revealed that, there are some negative impacts of some industrial growth on agriculture. Though the incomes of the surveyed households of the study are increasing after their engagement in industrial activity, at the same time, they are leaving their agricultural practices or giving less importance to it which is affecting the agricultural sector. Industrial development is also creating agricultural labour shortages, land shortages.

Moreover, most of the people engaged in industrial activity are unskilled or semiskilled in nature. So they are only casual workers of the industries. So their income source is not sustainable. If they are fired in long time, will they be able to regain their agricultural practices and prior income stream? This is the question of the hour and policy should be developed in such a way so that agricultural and industrial development can go on simultaneously without adversely affecting each other.

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