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Analysis on Behaviour Differentiation and Motive of Rural Households in the Process of Industrialization

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Abstract Based on the survey data of fixed rural observation points in China, this paper researches the behaviour of rural households in the process of industrialization. It analyses the forcing of industrialization process on non-agricultural-transformation behaviour of rural households and motive in detail. The results show that with the development of industrialization, the rational farmers allocate resources according to the goal of income maximization, and the behaviour of rural households differentiates in income. The forcing of industrialization on behaviour of rural households mainly comprises labour distribution of rural households, land inputs of rural households and employment of rural labour forces; the factors of forcing of industrialization on non-agricultural-transformation behaviour of rural households are largely reflected in pull and push.

Key words Industrialization, Behaviour of rural households, Motive analysis, China

Industrialization is a historical category, and a stage that the national economic development is bound to experience. Industrialization is viewed as a process of traditional agricultural society transforming into industrial society. The industrial development is not in isolation, which affects the development of agriculture, and is also limited by agricultural development. In poor countries, agriculture is usually in the position to be taxed; the agriculture in countries with developed industrialization is usually in the position to be protected^[1]. Economic growth and modernization need rapid growth of "urban industry", but the city plunders capital, labour forces and other resources in rural areas. After the family management system was established in 1984, the rural households in China literally obtained autonomy in management. Although the start-up phase in China's industrialization is the First Five-Year Plan initiated in 1953, only after obtaining autonomy in management will the behaviours of rural households be impacted by economic development, therefore, the study of impact of industrialization on behaviour of rural households should begin from this period. By industrialization classification standard of Chenery, Kuznets and other scholars, in conjunction with GDP per capita estimated by Guo Keshu, since 1993, it has entered the first stage of industrialization^[2], and by the same way for measuring, it entered medium term of industrialization in 2000.

The existing researches on relationship between industry and agriculture have made clear judgement, and analysed the impact of industrialization on agriculture, but there is a dearth of researches on impact of industrialization on behaviour of rural households. Therefore, I choose 1993 as the starting point, to analyse the impact of industrialization on behaviour of rural

households and the motives.

1 The forcing of industrialization process on behaviour of rural households

The rural households are rational, whose behaviour of management is the rational response to change of themselves and the external environment. With the development of industrialization, the trend and mode of behaviour of rural households are bound to change. The rural household capital, and labour supply selection also divert from single agriculture to agriculture, industry and service industry. Increase in non-agricultural investment and non-agricultural employment opportunities will bring about change in growth of total annual income and income structure of rural households. The change in rural household income and income structure will further prompt the rural households to reasonably allocate their own resources to obtain more incomes. From the time series data, the rural households at stage of industrialization tend to input their own resources to non-agricultural industries to get higher income; from cross-sectional data, as to the rural households affected by industrialization deeply, with poor endowment of agricultural resources, their course of non-agricultural-transformation is earlier than that of other rural households. The behaviours of rural households in the process of industrialization can be shown in the following three aspects.

1.1 The forcing of industrialization process on labour distribution of rural households

Labour is the most dynamic economic factor of rural households. There is strong correlation between labour distribution, and gross annual income and income structure of rural households. The labour distribution of the rural households tends to depart from agriculture and gradually turn to non-agriculture, and the proportion of non-agricultural labour is large, in direct proportion to total household income of farmers. According to the statistical data concerning rural households in the period 1993–2009 from fixed rural observa-

tion point office of Ministry of Agriculture of China^[3-4], the number of permanent residents in rural areas tends to decline after China enters the stage of industrialization. In early stage of industrialization, the number of permanent residents in rural areas declines significantly, and in medium term of industrialization, the number of permanent residents in rural areas is relatively stable. In 2009, the average number of permanent rural residents in each household was 3.92, a drop of 15 percentage points compared with 4.5 in 1993. Although the number of permanent residents tends to decline, the rural labour forces tend to rise. From the relative number, it rises from 60% in the early stage of industrialization to more than 70% in the medium term of industrialization. Taking the year 1993 as base period, in farm family labour forces, the number of rural labour forces who received vocational education with the educational background above high school grew by 6.1% and 5.9% respectively on the average in the year 2009. It can be seen that with the development of industrialization, the number of labour forces that can be provided by rural household increases and human capital is improved. In other words, the labour that can be provided by rural households for economic activity increases and the quality of labour is enhanced. It increases the total annual household income of farmers, and the total annual income of rural households rises from 9 276 yuan in 1993 to 38 390 yuan in 2009. In the early stage of industrialization, it rises by 9.0% annually, and in the medium term of industrialization, it grows by 9.5% annually. With increase in gross annual household income, the income structure of the rural households also undergoes profound changes. The absolute number of various incomes is increasing, but the change of relative number can reflect changes in the structure. The share of total agricultural operation income of the rural households in total income decreased by 13.2 percentage points, and the share of food income in total income decreased by 8.3 percentage points; the absolute number and relative number of labour input of the rural households to grain crops also show a downward trend. On the contrary, the share of non-agricultural income or non-grain income of the rural households in total income grows year by year, which is consistent with the fact that the contribution of food income to total annual income of rural households is getting smaller. Differences in income structure have a great impact on behaviour of rural households. Taking food production as an example, the acceleration of industrialization process will lead to decline in agricultural comparative benefit and increase in opportunity costs of farmers' grain operating. Part of the rural households will give up food production due to lack of production power for grain crops, so the incessant decline in proportion of the rural households operating grain and share of grain growing will be an inevitable trend of behaviour of rural households in the process of industrialization. From the situation in the 1990s, the attitudes of rural households in different provinces towards grain growing are different. In Zhejiang, Jiangsu, Guangdong and other provinces, some grain growers abandon farmland or discontinue farming and let the farmland go out of cultivation, but in the three northeast provinces, it never out-

crops. It is because that the stages of industrialization development in different provinces are different. In this period, the secondary and tertiary industries in developed coastal provinces grow by leaps and bounds, and the level of industrialization is higher than that of other provinces. The impact of development of industrialization on the rural households is higher than that of other provinces, and in the mean time, the small area of farmland per household in these provinces is also one of the factors responsible for early occurrence of behaviour differentiation of rural households. If the phenomenon of grain growers abandoning farmland or discontinuing farming and letting the farmland go out of cultivation occurs across the country, it is bound to affect food production, and national food security. Therefore, in the process of industrialization developing to a certain extent, the labour distribution of the rural households needs reasonable guidance.

1.2 The forcing of industrialization process on land inputs of rural households

Land inputs have broad and narrow sense. Land inputs in broad sense, refer to material inputs taking land as the carrier, including materialized capital and labour. Land inputs in narrow sense, refer to the area of farmland that the rural households use for planting. In the process of industrialization, the change trend of land management area of the rural households reflects the attitude of the rural households towards farming, with regularity. The area of farmland operated by rural households has assumed downward trend on the whole since 1993. In 1993, the area of farmland per household was 5 382 m², and it decreased to 4 749 m² in 2009. The total planting area of crops declined from 7 297 m² per household in 1993 to 6 096 m² in 2009. The ratio of area of grain planting to total planting area of crops declined from 81.8% in 1993 to 76.5% in 2009. Prior to 2004, this ratio was always in a downward trend, and in the period 2004 – 2009, it hovered between years. Affected by the process of industrialization, the farmers' land inputs into planting and especially the grain are decreasing, indicating that the attractiveness of farming for the rural households is weakening. And such trend is reflected clearly in the rural household data at initial stage of industrialization. According to logical reasoning, in the medium term of industrialization, the attractiveness of farming for the rural households should be weaker, which is inconsistent with the situation reflected from the statistics. It is because that since 2004, the central government has released a number of No. 1 documents on the settlement of issues concerning agriculture, farmer and countryside, and implemented a series of policies, such as abolishing agricultural taxes and offering subsidies for grain-growing of the rural households, abating the pace of behaviour differentiation of rural households. Therefore, the rural household data in the medium term of industrialization can not deny the judgment that the mid-industrialization deepens impact on the behaviour of rural households. The capital input into the rural households increases year by year, and the rise in price of agricultural means of production is the main reason. The growth rate of family operation investment of the rural households is lower than the growth rate of income of the rural house-

holds. In the light of the rural households with different income levels, the family operation investment of the rural households is no longer the first choice for investment of the rural households with high income. The ratio of cash investment of the rural households in planting to total investments of the rural households to agriculture, forestry, animal husbandry and fishery tends to decline. In 2008, it dropped by nearly 10 percentage points as against that in 1993. This shows that as to the investment in agriculture, forestry, animal husbandry and fishery, the rural households are more willing to put money into many channels other than farming. It can be said that the development of industrialization makes the comparative benefits of industry and agriculture change profoundly, and attractiveness of agriculture for rural labour forces and capital become weaker and weaker. Non-agricultural-transformation trend of behaviour of rural households is the inevitable choice industrialization development brings to the rural households under the established conditions of land scale.

1.3 The employment of rural labour forces and concurrent business trend of rural households With the process of industrialization, the rural households reduce the agricultural labour, land inputs to farming and other production factors, and the non-agricultural employment trend of labour forces is evident. From the statistical data, the average absolute number of labour forces in each village was rising. In 1993, it was 807, and it rose to 1072 in 2009, an average annual increase of 2 percentage points. From employment of labour forces in each village, the number of labour forces mainly engaging in planting was decreasing. It decreased from 436 in 1993 to 397 in 2009, and the share in total number of labour forces in the village declined from 54% to 36%. The number of labour forces engaging in forestry, animal husbandry and fishery changed little. The number of labour forces engaging in non-agricultural industries (industry, construction, transport, business services and other services) increased significantly, from 181 in 1993 to 583 in 2009, average annual growth of 7.6%. The average number of labour forces in each village working elsewhere increased from 71 in 1993 to 323 in 2009, the average annual increase of 9.9 percentage points. The non-agricultural employment trend of labour forces led to changes in diversified operation of the rural households. The ratio of average number of households in each village purely engaging in farming to the total number of the rural households was decreasing, from 50% in 1993 to 37% in 2009. The proportion of the rural households mainly engaging in agriculture and secondarily non-agricultural industries basically remained at about 27%. The proportion of the rural households mainly engaging in agriculture and secondarily non-agricultural industries rose by 2 percentage points. The proportion of pure non-agricultural households rose by 8.2 percentage points, and the proportion of other households increased by 2.2 percentage points. To judge from the statistics and the status quo, the pure agricultural households have the trend to engage in diversified operation, and the agriculture-based households which adopt diversified operation have the trend to shift to non-agricultural industries, therefore, the number of non-agricul-

ture-based households which adopt diversified operation is increasing, and in the mean time, the number of pure non-agricultural households grows rapidly. Because statistics are averages, so the statistics can better reflect the general law of the rural household differentiation, but meanwhile, the averages also cover the regional differences. In eastern provinces of China, with low level of industrialization development and poor conditions of land resources, the growth rate of the rural household differentiation is higher than the national average.

2 Motive analysis of forcing of industrialization on behaviour of rural households

Industrialization is a long and complex process, and the industrial development will lead to changes in industrial structure, thereby affecting all aspects of the overall economy, such as human demand structure, and the level of productivity. The rural households seeking maximization of utility is the subjective factor responsible for changes in behaviour of rural households (utility refers to the consumers' satisfaction from the consumption of certain goods), whose manifestation form is that the rural households seek income maximization through their own behaviours. The development of industrialization enriches the variety of consumer goods and promotes quality, so that the improvement of level of utility maximization of the rural households is possible. The enhancement of the level of consumer demand of the rural households, effectively stimulate the rural households to seek higher income. Under the premise of seeking higher income, the rural households will change their behaviours. The development of industrialization is the objective factor responsible for changes in behaviour of rural households, and the impact of industrialization on behaviour of rural households can be embodied as the following two aspects.

2.1 The push of industrialization on non-agricultural-transformation behaviour of rural households The development of industrialization will generate the forcing to push labour and capital of rural households outside agriculture. First, the development of industrialization will bring about innovation in agricultural machinery and biotechnology, and the result of technological innovation causes part of the agricultural labour to be replaced, therefore, the rural households labour is surplus. Under the goal of maximizing income, the rural households labour extruded will be distributed to non-agricultural fields to obtain income. With the development of industrialization and decline in area of farmland, the technological advances to a certain extent replace the agricultural labour, therefore, the total labour needed by agriculture is bound to decline. In the case of disregarding idle labour of rural households, certain amount of labour will be extruded from agriculture to non-agricultural industries. Second, under the premise of a certain technical level, the land and inputs per unit area have the best input ratio. Before reaching the best ratio, increase in inputs will bring an increase in land yield. After reaching the best ratio, with continuous increase in inputs per unit area, the marginal returns of land inputs are diminishing. After exceeding a certain level, the marginal returns are negative, therefore, the material inputs

exceeding appropriate proportion is not economical. It can be said that in the case of established price of agricultural products, simply increasing the land inputs can not cause a substantial increase in income of the farmers. At the same time, as inputs of agricultural infrastructure are public goods, with non-exclusive characteristic, few rural households are willing to invest. Farmers' income growth reinforces the investment will of the rural households, and in the mean time, the land resource constraints force the rural households to put money into non-agricultural fields. The higher level the industrialization is, the more obvious the role of technological progress, land constraints and other factors is in pushing non-agricultural-transformation of behaviour of rural households. The thrust of the rural households, at the medium-term stage of industrialization, is greater than the thrust of the rural households at the initial stage of industrialization. Clearly, the development of industrialization promotes the advance of non-agricultural-transformation of behaviour of rural households.

2.2 The pull of industrialization on non-agricultural-transformation behaviour of rural households The pull of industrialization on the labour of rural households is embodied in two aspects; first, it expands the channels absorbing labour outside the agriculture; second, the difference of unit labour income leads to shift in the direction of labour supply. China's national condition of "large population, lack of land" determines that surplus labour exists in rural households. In the case of restricted employment of labour forces, the labour of the rural households is limited to land, which will inevitably leads to low productivity per unit of labour, and idle labour of rural households. The idle productivity of labour of households is zero. At this time, due to lack of the channels that labour is put into, the rural households can not increase income, and the development of industrialization brings more employment opportunities, and brings the demand for labour. At this time, due to lack of the channels that labour is put into, the rural households can not increase income, and the development of industrialization brings more employment opportunities, brings the demand for labour, which has strong attraction to idle labour of the rural households or the labour with low productivity, and part of labour will be pulled into non-agricultural fields. In the initial stage of pull playing role, the surplus labour of the rural households will be attracted to the secondary industry at low prices, so as to enhance the average labour productivity in society, indicating the liberation of productivity. Cheap labour has made great contribution to the development of China's industrialization at initial stage. With the further development of industrialization, under the role of pull, the rural households allocate their own labour, and the opportunity cost of the rural households engaging in agricultural labour. When the unit non-agricultural labour income of the rural households is higher than the unit agricultural labour income of the rural households, the rural households will give up agricultural production to engage in non-agricultural industries. In the mid-1990s, the phenomenon of the rural households abandoning farmland in China's eastern coastal provinces with developed industry, is a good example. Agricul-

tural labour is strongly constrained by resources, therefore, under scale constraints, the agricultural labour productivity is improved slowly, while the industrial labour productivity is improved rapidly. With the development of industrialization, such kind of pull is reflected in the comparative benefit of industry and agriculture, and the income of labour forces engaging in non-agricultural industries is higher than the income of labour forces engaging in agricultural industry, is the direct manifestation of generation of pull. In the long term, under the pull of industrialization, the rural households will choose to reduce or give up agricultural production.

3 Conclusion

On the whole, the differentiation in behaviour of rural households is a gradual process. In face of the impact of industrialization on the rural households, the rural households first through internal division of labour within the family adapt to the process of industrialization. When the internal division of labour of rural households can not achieve income growth, the whole labour forces or capital of rural households will be put into the industries with high profit. The particular system of China makes the differentiation in behaviour of rural households different from the labour force transfer theory of Petty Clark. Limited by the household registration system, the behaviour of rural households is in a large measure the distribution of household labour between industries, rather than the transfer of labour forces, forming a unique phenomenon of migrant workers. In the process of industrialization, under the income objective, the behaviour of the rural households will have the trend of non-agricultural-transformation. Non-agricultural-transformation of behaviour makes an increasing contribution to total income of rural households. The economic level of rural households, with big ratio of non-agricultural-transformation of behaviour, is significantly higher than that of other rural households. The push and pull of industrialization orientate the behaviour of the rural households in allocating resources, into non-agricultural industries. From the differentiation rate, at the medium-term stage of industrialization, the behaviour differentiation degree of rural households is greater than the behaviour differentiation degree of rural households at the initial stage of industrialization; from the regions with different development levels of industrialization, after the industrialization develops to a certain extent, non-agricultural industries absorb all surplus labour of the rural households, and the industrialization is further developed. The non-agricultural-transformation of behaviour of the rural households and the agricultural behaviour will generate substitution effect. When the development of industrialization causes big difference in comparative benefit between industries in one region, the unit non-agricultural labour income is much higher than the unit agricultural labour income, the substitution effect comes into play. The rational rural households will begin to give up agricultural production and investment, and turn to non-agricultural production and investment, resulting in the abandonment behaviour of the rural households. If this phenomenon occurs widely, it will be bound to affect supply security of agricultural

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