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by

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Abstract:

China's record in reducing rural poverty has been nothing short of spectacular and should be a source of lessons for other countries. Rural poverty reduction is generally sought in the role of agriculture in contributing to farm incomes. However, non-farm employment in rural areas can also be a major contributor. Using detailed household survey data from *Hubei* province, we simulate the counterfactual of what rural households' incomes, poverty, and inequality would be in the absence of access to non-farm sources of income. Results show that, without non-farm employment, rural poverty would be much higher and deeper, and that income inequality would be higher as well. We find that education, proximity to town, neighborhood effects, and village effects are crucial in helping particular households gain access to these opportunities. We also find that those who stay as pure farmers have non-observable characteristics that make them much more productive in agriculture, implying positive selection on these characteristics. Moreover, participation in non-farm activities has a positive spillover effect on household farm production.

JEL Classification: D63, O15, Q12

Key words: Non-farm income, inequality, poverty, China

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1. Introduction

Halving world extreme poverty between 1990 and 2015 is the first Millenium Development Goal. With rural poverty accounting for some 75% of world poverty, meeting this goal requires reducing poverty in rural areas. Yet, many regions of the world are lagging in making a dent in rural poverty, particularly in achieving this within rural areas as opposed to through massive migration to the urban sector, at the risk of displacing poverty rather than reducing aggregate poverty. For this reason, understanding China's extraordinary success in reducing rural poverty over a short period of time is of considerable interest. In only 21 years (1980 to 2001), the incidence of rural poverty fell from 76% to 13% (Table 1 and Ravallion and Chen, 2004). Remarkably, this was achieved principally through a rise in incomes within rural areas, without extensive reliance on migration to urban areas. In deriving lessons from this experience, a key issue is to identify whether the decline in poverty was due principally to income growth derived from agriculture, or whether it was due importantly to the growth in rural non-farm sources of income. In addition, as rural income inequality increased from a Gini of 0.25 to 0.37 over the period, question arises as to whether this may have been due to the rising share of non-farm incomes in the total income of rural households. The observed massive shift toward non-farm incomes (the primary sector in Table 1 includes farming, forestry, animal husbandry, and forestry), that rose from 22% of rural household incomes to 51% over the period, implied an extensive sorting out of rural households between those who stayed as pure farmers and those who embraced mixed agriculture-non-farm activities. This raises the interesting question as to whether market signals, however incomplete they may be in a transition economy, maintained in agriculture those with intrinsic characteristics that make them be better farmers compared to those who diversified out of agriculture. Finally, off-farm incomes may create positive spillover effects on agricultural activities as they help defeat market failures in agriculture, particularly for credit and insurance.

Using data from a survey of rural households in *Hubei* province, we address these issues by showing that: (1) Rural non-farm incomes play an important role in the reduction of rural poverty relative to farm incomes; (2) non-farm incomes contribute to lower inequality in rural incomes; (3) those who stay in agriculture as pure farmers have non-observable characteristics that make them more productive in agriculture than those who diversify toward off-farm activities; and (4) participation in off-farm activities has positive spillover effects on households' agricultural activities.

To reach these conclusions, we consider non-farm income as a "potential substitute" for household earnings in agriculture, and simulate the counterfactual of how rural household incomes, rural poverty, and rural inequality would have been in the absence of access to non-farm activities for rural households. We carefully account for the existence of non-observable characteristics that may make particular households

differentially more productive in farm than in mixed farm-non-farm activities.

Many researchers have shown that non-farm activities have an important impact on the distribution of income in rural areas. This impact depends on the specific types of non-farm activities involved and on the capacities of different types of households to access these activities. For this reason, results vary across regions and differ according to methods of analysis. Most results, however, show that non-farm income is more unequally distributed than farm income.[1] While improving rural income as a whole, participation in non-farm activities is highly selective and thus tends to increase income disparities, particularly in poorer areas. However, other researchers have shown that non-farm incomes can be inequality-reducing, particularly as the proportion of non-farm income in total income increases.[2]

Studies for rural China have suggested that the rise in inequality since the beginning of the economic reforms has been largely due to the increasing share of non-farm income in total income.[3] They explain this by noting that: (i) the distribution of non-farm income is more unequal than that of farm income; (ii) there are significant disparities in chances of participating in non-farm activities across households; and (iii) households with high income are characterized by a high participation rate in non-farm activities and a high share of non-farm income in total income.

Our results thus contradict this proposition, as we find that rural non-farm incomes, while indeed quite selective across households, help reduce not only poverty but also inequality. This is because participation in non-farm activities differentially improves the income of the poorest households, while the best farmers remain in agriculture.

In the following section, we put our analysis in historical perspective by retracing the extraordinary development of non-farm activities in rural China. Section 3 presents the empirical strategy. Section 4 explain the data and section 5 the specification of the participation and income equations. Results are presented in section 6, and section 7 concludes.

2. Economic reforms and rural non-farm activities

The Chinese countryside has been characterized by economic autarky and traditional agriculture for a long time. Following the model of the former USSR, China gave priority to the development of heavy industry at an early stage of industrialization. Farmers were heavily taxed, allowing to transfer an enormous agricultural surplus to industrial investments. The real income of farmers was artificially lowered by the socialist price system, which over-priced manufactured products, creating high profitability

[1] See the results obtained by Barham and Boucher (1998), Elbers and Lanjouw (2001), Escobal (2001), Khan and Riskin (2001), Leones and Feldman (1998), Reardon and Taylor (1996), and Shand (1987).

[2] See the results obtained by Adams (1994; 1999), Adams and He (1995), Chinn (1979), Lachaud (1999), and Stark et al. (1986).

[3] See Bhalla (1990), Hussain et al. (1994), Knight and Song (1993), Yao (1999), and Zhu (1991).

in industry, while "squeezing" agriculture through the "price scissors" (Naughton, 1999). Before the reforms, in order to stabilize agricultural production, farmers were tied to the land in two ways: (i) through rural collectivization, and (ii) through the civil status system called "*hukou*".[4] Rural collectivization tightened the links between farmers' income and their daily work-participation in collective agriculture: a farmer earned "working-points" proportionately to the time spent on the collective land.[5] The civil status system consisted in codifying the supply of consumption goods and the access to jobs. Without acquiring the urban civil status, rural/urban migrants could not settle on a permanent basis outside their place of origin. These two rules divided Chinese society into two sharply contrasted segments: urban areas with a low incidence of poverty and rural areas with extensive poverty.

The economic reforms that began in the late 1970s brought huge changes to rural areas. First, the collapse of the system of "People's Communes", as well as implementation and generalization of the Household Responsibility System (HRS),[6] gave greater freedoms to farmers: they could freely allocate their time and choose their income strategies and productive activities. Second, the agricultural reforms strongly increased agricultural production and the supply of grains in markets, which enabled people living in urban areas without the urban civil status to purchase food in free markets. It finally led to abandoning the rationing system. Since 1984, the market for food became gradually more open, and housing in cities became marketable. These two factors enabled farmers to enter cities and stay there permanently, without changing their civil status. Third, with the development of various non-state enterprises, the urban labor market was gradually established, making it possible for rural/urban migrants to seek jobs and to earn their living in cities. In addition, the development of urban infrastructure required extra labor for construction, and the diversification of consumption resulting from the improvement of living standards created niches for a multiplicity of thriving small businesses. All these factors led to an increase in the demand for labor in urban areas, which induced a vast movement of agricultural labor from rural areas to cities.

Given heavy population pressure on the land, agricultural labor productivity continued to stay at a very low level. Stagnant and low rural incomes strongly encouraged farmers to abandon working the land. However, even though a food shortage was no longer a threat, the government continued to control rural/urban migration with several direct or indirect measures for three principal reasons. First, urban residents were not willing to share their relatively higher living standards with rural residents. Second, urban infrastructure was not capable of supporting a great exodus to cities due, in particular, to the limited capacity of public facilities. Finally, urban areas also suffered from serious unemployment due to the

[4] See Davin (1999).

[5] See McMillan et al. (1989).

[6] See de Beer and Rocca (1997); Zhu and Jiang (1993).

reform of State Owned Enterprises (SOEs), and had difficulties in absorbing more labor. The push factors from the countryside were strong, but the pull forces in cities were weak. In response to this, farmers spontaneously developed non-farm activities in rural areas, which do not suffer from the same land shortage as urban areas, to also reap the benefits of industrialization. As a result, non-farm activities developed rapidly in rural China, and absorbed a large quantity of surplus agricultural labor seeking better job opportunities and higher incomes.[7] This form of labor mobility has been called "leave the land, but not the village" by some researchers (Fei, 1989), that is to say, non-farm participants work outside their land plots but do not move out of their places of origin. This allowed to absorb local labor surpluses through the development of local non-farm sectors.

The rural non-farm sectors consist essentially of the Township and Village Enterprises (TVEs) and the rural private economy represented by "specialized households". The TVEs, including all the non-SOEs in rural areas, basically constitute the rural non-farm sector in China. Most of the TVEs are labor-intensive, absorbing large segments of surplus labor. Their independence from agriculture, since their main objective is not to serve agriculture, made them have something in common with their urban counterparts, while investing in low-profit products which the latter were unwilling to produce. The TVEs were thus both complements to and competitors with urban industry. Flexible modes of operation and low-wage labor made the TVEs very competitive. Their rapid growth can also be explained by the high proportion of privately-owned enterprises in TVEs.

The "specialized households", who participate in non-farm as well as in farm activities, are the other component of the non-farm sectors. Rather than allocate labor to less profitable grain production, many of these households chose to rent their land, negotiating share-cropping arrangements or lending their land to kinsmen or neighbors who agreed to assume responsibility for the contracted grain quota. Some pooled their capital and labor power to form joint-stock companies or small private cooperatives in their villages and nearby market towns. These private ventures contributed to the rapid pace of rural industry following market reform. Many also specialized in commercial activity as merchants, distributors, peddlers, and shopkeepers. Some researchers found that one third of individuals in certain areas belong to specialized households (Nee and Young, 1991).

Starting in 1978, the rural non-farm sector experienced record-high growth, with non-farm employment increasing from 28.3 to 171.7 millions and their percentage in the rural population from 9.2% to 35.1%. A number of studies have shown that the rural non-farm sector is playing an important role not only in the rural but also in the national economy (Islam, 1991; Islam and Jin, 1994). In certain industries, the TVEs have had the leading role. For example, in the construction materials industry, the shares of TVEs

[7] See Aubert (1995), Banister and Taylor (1990), Byrd and Lin (1994), Goldstein and Goldstein (1991), and Zhou (1994).

measured in production value and employees are 74% and 69%, respectively (Zhou, 1994).

Rural/urban migration, and development of the rural non-farm economy, deeply transformed the structure of rural household incomes. Non-farm activities gradually became an importance source of income for rural households, and served as an engine of growth for rural areas.

Many studies have shown that inequality has widened noticeably since the beginning of the economic reforms, at the same time as aggregate household income increased. Based on a county-level survey, Knight and Song (1993) find that the distribution of non-farm income is more unequal than that of farm income. Hussain et al. (1994), comparing the distribution of farm and non-farm income, concluded that the more unequal distribution of non-farm income is a key factor explaining the rise in inequality in household income. Their conclusion implies that, with the continuing transfer of rural workers to non-farm sectors, income inequality in rural areas will continue to worsen. These results are confirmed by several other studies (Bhalla, 1990; Zhu, 1991; Yao, 1999). These studies suggest that the sharp increase in inequality in rural household incomes should be mainly attributed to differences in skills, knowledge, and capital endowments which created disparities in chances to participate in and earn from non-farm activities. With further economic development, the resulting differences in capital accumulation and in know-how are expected to further widen inequality. Additionally, regional differences in the growth of rural non-farm sectors, the development of TVEs in particular, are also among important reasons resulting in greater inequality.

In the following sections, we take into account interactions in the participation in various productive activities and analyze the impact of non-farm income on poverty and inequality using data from a rural household survey.

3. Methodology

To allow for the most flexible form of interaction between off-farm and farm activities, we separately consider two farm income regimes: households participating only in farm activities, regime 0; and households participating in both farm and non-farm activities, regime 1. We start by introducing the notation used in this section. Let y_{0i} be the total income (also equal to the farm income) for each individual *i* in regime 0. We assume a linear model for its logarithm:

$$\log y_{0i} = E \log y_{0i} + \mu_{0i} = \beta_0 X_i + \gamma_0 \hat{\lambda}_i + \mu_{0i} ,$$

where $E \log y_{0i}$ is expected log-income conditional on observed characteristics and regime participation, X_i are observed characteristics of the households, $\hat{\lambda}_i$ (defined later) is function of observed characteristics and observed regime participation, and μ_{0i} accounts for unobserved characteristics. Estimation of this model will give an estimated expected log-income:

$$\hat{E}\log y_{0i} = \hat{\beta}_0 X_i + \hat{\gamma}_0 \hat{\lambda}_i$$

from which one can derive an estimated expected income $\hat{E}y_{0i} = \exp\left(\hat{E}\log y_{0i} + 0.5\,\hat{\text{var}}\,\mu_{0i}\right)$. Using the estimation results, we also generate a predicted unobserved term $\hat{\mu}_{0i}$, and derive the predicted log-income and corresponding income:

$$\hat{\log} y_{0i} = \hat{\beta}_0 X_i + \hat{\gamma}_0 \hat{\lambda}_i + \hat{\mu}_{0i} \qquad \text{and} \qquad \hat{y}_{0i} = \exp\left(\hat{\log} y_{0i}\right).$$

Similar expressions are defined for the farm income in regime 1, y_{1i}^a.

3.1. Effect of non-farm income on poverty and inequality

To identify the impact of non-farm income on inequality and poverty, we compare the observed household income distribution with a counterfactual income distribution without non-farm activities. We first estimate household income equations from observed values; then use the income equations to simulate what household incomes would be if the household only participated in farm activities; finally we compare the simulated and observed income distributions, and derive the contribution of non-farm income to poverty and inequality.

We are interested in predicting the total income for each individual *i* in regime 0, y_{0i}. For non-participants in non-farm activities, this is the observed income; for participants, this is the predicted income they would earn if they were not participating in non-farm activities. This prediction requires (i) the estimation of a model of farm income under regime 0, and (ii) using the estimated conditional mean and variance of income to generate a counterfactual predicted income $\hat{y}_{0i}$ for household *i*.

Estimation of the farm income in regime 0 is done with a standard selection model:

$$\begin{cases} P_i^* = \alpha Z_i + \varepsilon_i, \qquad P_i = 1\left(P_i^* > 0\right) \\ \log y_{0i} = \beta_0 X_i + \mu_{0i}^*, \quad \text{observed for } P_i = 0 \end{cases} \tag{1}$$

where P_i^* is a non-observed continuous latent variable and P_i is an observed binary variable, equal to 1 if the household participates in the non-farm activity; Z_i and X_i are vectors of independent variables of the participation and income equations; and $\left(\varepsilon_i, \mu_{0i}^*\right)$ are unobserved terms following a bivariate Normal distribution. This distributional assumption on the unobserved terms implies that, conditional on group participation:

$$E\left(\log y_{0i} \middle| P_i\right) = \beta_0 X_i + \gamma_0 \lambda_i ,$$

$$\text{with } \lambda_i = E\left(\varepsilon_i \middle| P_i\right) = \begin{cases} -\phi\left(\alpha Z_i\right) \big/ \left(1 - \Phi\left(\alpha Z_i\right)\right) & \text{for } P_i = 0, \\ \phi\left(\alpha Z_i\right) \big/ \Phi\left(\alpha Z_i\right) & \text{for } P_i = 1. \end{cases} \tag{2}$$

The Inverse Mills Ratio (IMR), λ_i, measures the expected value of the contribution of the unobserved characteristics to the decision to participate, conditional on the observed participation (Heckman, 1979).

The model is estimated with the two-step Heckman procedure. From the estimated probit equation (1), we compute an estimated value $\hat{\lambda}_i$ for λ_i, by replacing α by its estimated value $\hat{\alpha}$ in equation (2). The log-income in regime 0 is then estimated on the group $P_i = 0$:

$$\log y_{0i} = \beta_0 X_i + \gamma_0 \hat{\lambda}_i + \mu_{0i}\,, \tag{3}$$

with $E\left(\mu_{0i} \middle| P_i\right) = 0, \text{var}\left(\mu_{0i} \middle| P_i\right) = \sigma_0^2$. For this sub-sample of observations, y_{0i} is total household income (equal to y_i).

Using estimated parameters, we can now predict individual log-income, $\widehat{\log} y_{0i}$, for all households *i*. Equation (3) includes two terms: a conditional expected value, $E \log y_{0i} = \beta_0 X_i + \gamma_0 \hat{\lambda}_i$, based on the observable characteristics of the household, and an unobserved term μ_{0i}.[8] A prediction of the conditional expected value of farm log-income in regime 0 is given by:

$$\hat{E} \log y_{0i} = \hat{\beta}_0 X_i + \hat{\gamma}_0 \hat{\lambda}_i\,.$$

To generate unobserved terms for the group of participants, we construct a random value:

$$\hat{\mu}_{0i} = \hat{\sigma}_0 \Phi^{-1}(r)$$

where $\hat{\sigma}_0$ is the estimated standard error of μ_{0i} for the group of non-participants, r stands for a random number between 0 and 1, and Φ^{-1} is the inverse of the cumulative probability function of the standard normal distribution. For the non-participating households, we use the observed residual.

Combining these two terms gives a predicted log-income in regime 0 for all households:

$$\widehat{\log} y_{0i} = \begin{cases} \log y_i = \hat{\beta}_0 X_i + \hat{\gamma}_0 \hat{\lambda}_i + \hat{\mu}_{0i} & \text{for } P_i = 0 \\ \hat{\beta}_0 X_i + \hat{\gamma}_0 \hat{\lambda}_i + \hat{\mu}_{0i} & \text{for } P_i = 1 \end{cases} \tag{4}$$

and the corresponding predicted income $\hat{y}_{0i} = \exp\left(\widehat{\log} y_{0i}\right)$ in regime 0.

Having simulated the income obtained if a household only participated in farm-activities, we can study the effect of non-farm income on rural poverty and inequality. We calculate, respectively, the Gini of the observed incomes, $G(y_i)$, and that of the simulated incomes, $G(\hat{y}_{0i})$. If $G(y_i)$ is inferior to $G(\hat{y}_{0i})$, non-farm incomes reduce income inequality, and vice versa. Following the same idea, we study the impact of non-farm income on poverty, measured by the class of P_α indices (Foster et al., 1984). Standard errors

[8] Note that using only the conditional expected values for predicting incomes would underestimate the variance in income, and lead to an artificially low income inequality among predicted incomes compared to observed incomes.

and confidence intervals for the Gini index and the P_α indices are obtained by bootstrapping the procedure over 100 replications.

3.2. Contribution of non-farm activities to expected farm income

In this section, we further compare the two types of households. In particular, we are interested in assessing whether the households that diversified in non-farm activities would be better or worse farmers without diversification; whether having non-farm activities enhance or reduce farm incomes; and finally whether the households that diversify are those that benefit the most from diversification. To answer these questions, we use the expected farm income in each regime estimated for each household.

This method requires an estimation of the expected log-income from farming in each regime $\left(\hat{E}\log y_1^a, \hat{E}\log y_0^a\right)$ for the two population groups. The prediction of the expected log-income from farming $\hat{E}\log y_0^a$ in regime 0 was done in the previous section, since in that regime the total income is a farm income:

$$\hat{E}\log y_{0i}^a = \hat{E}\log y_{0i} = \hat{\beta}_0 X_i + \hat{\gamma}_0 \hat{\lambda}_i . \tag{5}$$

Similarly, we estimate an equation for the log-income from farming for the group of participants:

$$\log y_{1i}^a = \beta_1 X_i + \gamma_1 \hat{\lambda}_i + \mu_{1i} \quad \text{for } P_i = 1 , \tag{6}$$

from which we can derive the expected log-income from farming in regime 1:

$$\hat{E}\log y_{1i}^a = \hat{\beta}_1 X_i + \hat{\gamma}_1 \hat{\lambda}_i . \tag{7}$$

Using equations (5) and (7) and the estimated variance of μ_{0i} and μ_{1i}, and the method described in the previous section, we can predict the counterfactual expected farm income of the households that participate in non-farm activities based on regime 0, $\hat{E}y_0^a\big|_{P=1}$, and the expected farm income of the households that only participate in farm activities based on regime 1, $\hat{E}y_1^a\big|_{P=0}$. This allows some interesting comparisons:

a. The difference in expected farm income within regime 0 is measured by the difference between the average observed farm income $y_0^a\big|_{P=0}$ of the non-participating households with the average predicted expected farm income $\hat{E}y_0^a\big|_{P=1}$ for participating households. Note that the average of $\hat{E}y_0^a\big|_{P=1}$ is also a measure of the average predicted income $\hat{y}_0^a\big|_{P=1}$, since the unobserved error term has a conditional mean equal to 0. This difference tells us how the diversified households would fare relative to the pure farm households, were they to not participate in non-farm activities.

We can decompose this difference, at least in its log-income form, which is linear in characteristics:

$$\overline{\hat{E}\log y_0^a\big|_{P=0}} - \overline{\hat{E}\log y_0^a\big|_{P=1}} = \hat{\beta}_0(\bar{X}_0 - \bar{X}_1) + \hat{\gamma}_0(\bar{\hat{\lambda}}_0 - \bar{\hat{\lambda}}_1)\,. \tag{8}$$

The decomposition indicates the contribution of the observable and unobservable characteristics in the selection process. A similar decomposition can be done on the difference in expected farm log-income in regime 1:

$$\overline{\hat{E}\log y_1^a\big|_{P=0}} - \overline{\hat{E}\log y_1^a\big|_{P=1}} = \hat{\beta}_1(\bar{X}_0 - \bar{X}_1) + \hat{\gamma}_1(\bar{\hat{\lambda}}_0 - \bar{\hat{\lambda}}_1)\,. \tag{9}$$

b. The impact of participation in non-farm activities on household farm income is obtained by comparing the average observed farm income $y_0^a\big|_{P=0}$ with the average predicted expected income from farming $\hat{E}y_1^a\big|_{P=0}$, also a measure of the average predicted income $\hat{y}_1^a\big|_{P=0}$, for non-participating households, and similarly by comparing averages of $y_1^a\big|_{P=1}$ and $\hat{E}y_0^a\big|_{P=1}$ for the participating households.

4. The data

The data used in the present study come from the Survey on the Resettlement of National Highway Project III in *Hubei* province,[9] collected in January-February 1996. The survey contained 7,333 households with complete information. The households are distributed in 193 villages across 39 towns in 6 counties (districts) extending from the north to the south in the middle of *Hubei* Province, such as *Dawu*, *Xiaochang*, *Xiaonan*, *Dongxihu*, *Caidian*, and *Jiangxia*. The households lie in the zone extending about 60 meters from the highway over an *L*-shaped 330 kilometers long transept. Location of the highway is more concerned with technical problems than with the socio-economic status of the households involved. For this reason, we can consider the 7,333 households as a quasi random sample of those across the above counties (districts). In addition, the villages concerned in our survey are exclusively situated in rural areas due to the rule that the highway cannot pass through any town or city. Basic information on family members, household assets, household income, and expenditures in 1995 was recorded in the survey.

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[9] *Hubei* province, situated in central China, had a population of over 58.3 million in 1996. Its economy is dominated by heavy industry, light industry, and agriculture. In terms of demographic characteristics and socio-economic development, *Hubei* is in the mid to upper range among Chinese provinces. The National Highway Project III refers to the *Hubei* Section of the *Jingzhu* (from *Beijing* to *Zhuhai*) Highway, which is financed by a World Bank loan. In China, if resettlement is required for a project with World Bank funding, managed resettlement is required to make sure that the living standard of people affected by the project will not be diminished. Hence, once a preliminary design has been made for the project, a census is conducted on all households, profit and non-profit institutions, public facilities, and physical items within the affected area. For the project considered here, the census had there different parts: the first refers to the *Hubei* Section of the *Jingzhu* Highway which is North-to–South, located to the North of the Yangtze River; the second refers to the *Hurong* Highway (from *Shanghai* to *Chengdu*), which is East-to-West, located to the South of the Yangtze River; and the third refers to the cross section of these two locations. The survey, implemented under the supervision of a World Bank team, was done by the *Hubei* Transportation Plan & Design Institute.

The household income in the survey refers to the actual income earned from different sources in 1995, including monetary income or income in kind. Based on its sources, the income is classified into four types: (i) income earned from agriculture, forestry, livestock, and fishery; (ii) income earned from self-employment in non-farm activities such as industry, transportation, construction, and services, (iii) income earned from formal or informal wage, including salary, allowance, bonus, dividend, and other kinds of remuneration, and (iv) other non-productive incomes, such as pensions, transfers, grants/subsidies, rents, and financial income. In the present study, we consider (ii) and (iii) as non-farm household income.[10] Among the 7,333 households, 5,087 have both farm and non-farm sources of income; 1,954 have income exclusively derived from farm-related activities; 264 have non-farm activities as their exclusive means of income; and the remaining 28 have income neither from farm nor from non-farm activities. In the following regression analysis, only households with farm income are considered because we are interested in the mixed strategies (and less than 4% do not farm). In short, our sample is composed of 7,041 households with farm income.

5. Specification of the participation and income equations

Two major categories of factors determine a household's decision to participate in non-farm activities: first, the factors that affect the relative return and risk of agricultural production; second, the factors that determine the capacity to participate in non-farm activities, such as education, access to credit, etc. (FAO, 1998). We can assume that these two sets of factors are determined by the household's endowment in physical and human capital, and by the environment where it is located. In the participation equation, we introduce the following independent variables:

(i) The household's per capita land area. For a rural household, land is the main form of physical capital. It is exogenous as land is allocated administratively, with no reallocations due to participation in off-farm activities.

(ii) The average number of years of schooling of household members 15 years old and above, and its square term. Many researchers have shown that households with higher education level engage more in non-farm activities, and that human capital has an important effect on the level of non-farm income achieved.

(iii) The distance between the household's residence and the county's capital city. With help of the milestones along the highway, the distance between the household and the county's capital is measured exactly. In rural China, the county's capital city is typically the most important political, economic, and

[10] Under the HRS, the limited cultivable land was divided among rural households, resulting in very small plots. In general, no households need hire extra labor. Hence, in rural China, off-farm income earned in agricultural wage employment, is extremely rare.

cultural center for households in the county, and is also the place where non-farm industries and markets are located. For this reason, distance to the capital has a vital effect on participation in non-farm activities.

(iv) The peer effects on participation in rural non-farm activities. Peers' participation in non-farm employment has a large impact on an individual's ability to engage in this type of employment. For a particular household, peers are defined as all neighbors surrounding the household within a certain area. Ideally, the area would be a circle with the household as the center. In our survey, due to the location of households relative to each others along the proposed highway, we only know the characteristics of households on the diameter of the circle. So we have to suppose that all households within the circle are homogenous, and their characteristics can accordingly be proxied by that of households on the diameter. Formally, the peer effect for household i is defined as:

$$I_i(x) = \sum_{|d_j - d_i| \le a} x e^{-|d_j - d_i|} \Big/ \sum_{|d_j - d_i| \le a} e^{-|d_j - d_i|} \qquad j \neq i, \tag{10}$$

where x is a variable such as participation in rural non-farm activities (which is endogenous) or its determinants such as peers' per capita land area and average number of years of education; d_i is the location of household i, and d_j that of neighbor j. Take education as an example. We consider as peers all the neighbors whose distance to household i is inferior or equal to a kilometers. Formula (10) represents the average of peers' education level, weighted by their distance to household i. According to this definition, the closer the neighbor is to household i, the more his contribution is to $I_i(x)$. The value of $I_i(x)$ is also affected by the parameter a, which determines the geographical coverage of peer effects. Generally, the village is at the bottom of China's administrative pyramid. In our calculation, the average length of village territories along the highway is 1.87 kilometers. So we take $a = 1$, which means that the peer effect covers two kilometers.

(v) Village fixed effects. These variables capture the impact of local economic development on non-farm activities and income. The 193 villages in the survey are scattered along a north-to-south line extending from the north of *Hubei* to the provincial capital *Wuhan*. Accordingly, the village fixed effects reflect, to a certain extent, the metropolitan radiation of *Wuhan*.

For the income equation, we introduce the following independent variables: (i) The number of workers in the household. We define as workers household members who are at least 15 years old and in the labor force. (ii) The household's land area and its square. (iii) The number of dependents 6 years old or over. According to Zhao (1999), dependents play the role of safeguarding the household's right to land by supplying a minimum amount of farm labor. (iv) The distance between the household and the county capital. (v) Village fixed effects.

Table 2 presents descriptive statistics from the sample of households. Average household income in the

sample was 11,809 *yuans* in 1995, or 2,508 *yuans* per capita, which is higher than the national average.[11] Households that participate in non-farm activities have a higher income (12,886 *yuans*) than households that only participate in farm activities (9,006 *yuans*). Farming remains, however, the main source of rural household income. The average household farm and non-farm incomes are 7,576 *yuans* and 4,233 *yuans*, respectively. Non-farm income accounts for 35.9% of total income. The lower part of Table 2 summarizes household characteristics. The differences between the two groups of households are significant. In terms of human resources, the average number of workers per household that participates in non-farm activities is 3.0, higher than that of households that only participate in farm activities (2.7). Also, the average number of years of education of household members 15 years old and above of the former (7.0) is higher than that of the latter (6.2). However, for land endowments, the situation is the opposite. Either in total or per worker, land area possessed by households that do not participate in non-farm activities is greater than that of households that participate. Land area per worker is 3.3 *mu* hectare, roughly approaching the national average,[12] In terms of location, households that participate in non-farm activities are on average closer to the county capital than those that do not participate. In summary, households participating in non-farm activities are located closer to the county capital, are richer in work force, have higher educational attainment, and control less land than households specialized in farming.

With regard to income distribution, the Gini of the observed total income including earnings from non-farm activities is 0.41, compared with 0.45 for income excluding earnings from non-farm activities. The gap between the two values suggests that participation in non-farm activities helps reduce inequality in the distribution of rural incomes.

6. Results and discussion

The results of our analysis are presented in three parts. First, we estimate the participation and income equations. These two equations allow us to (1) identify the determinants of participation in non-farm activities and of total income, and (2) simulate income if the household does not participate in non-farm activities. Second, we compare the Gini and poverty indices. Third, we study the sources of farm income difference between the two groups of households, and examine the effect of participation in non-farm activities on agricultural income.

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[11] Data from the *China Statistics Yearbook 1997* indicate that non-farm earnings accounted for 36.8% of rural households' total income and that per capita income reached 2,338 *yuans* in 1995. In 1995, the exchange rate was 8.35 *yuan*/US$.

[12] Based on data from the *China Statistics Yearbook 1997*, the land area per rural worker was 3.27 *mu* in 1995. 1 *mu* = 1/15 hectare.

6.1. Estimation of the participation and income equations

Table 3 reports the estimates of the participation equation in non-farm activities, using the Probit model. We find that the household's per capita land area plays a negative role on participation in non-farm activities. The remarkable contrast between limited arable land and abundant farm workers made a large labor surplus appear with implementation of the HRS. The labor surplus kept per capita income very low, pushing the rural workforce to look for alternatives to just farming their land.

Results indicate that there exists a quadratic relation with decreasing returns between a household's average number of years of education and participation in non-farm activities. According to this relation, the probability of non-farm participation reaches its maximum at 10 years of education, which is higher than the average number of years of schooling. This result confirms T. W. Schultz' (1964) well known observation that education is more important in non-farm activities than in traditional agriculture.

Participation in non-farm activities is negatively associated with distance to the county capital. In the hierarchy of Chinese governance, a county is a relatively independent basic administrative unity. For Chinese farmers, "going to town" or "going to the market" typically means "going to the county capital". The county capital is usually the place where most of the TVEs are located, making proximity easier for farmers to find non-farm jobs.

Regarding peer effects, we introduce first in regression 2 the average of peers' decision on participation in non-farm activities. Confirming the importance of peer effects, this variable plays a positive role on a household's participation in non-farm employment. However, it is obvious that a household's behavior and that of its peers are both determined by some common factors. As a result, the average of peers' decision is an endogenous variable. To deal with this, we use a reduced form equation (regression 3) by replacing the average of peers' decisions with the exogenous variables of regression 1, such as peers' per capita land area, average number of years of education, and its quadratic term. The average of peers' distance between the household and the county capital is dropped because this average distance is highly correlated with that of the household. We find that the average of peers' per capita land area does not influence a household's decision on participation in non-farm activities, but that their education level has a positive effect. In short, results show that peers' participation in non-farm employment has a positive impact on a household's ability to engage in that type of employment.

Table 4 shows the estimates of the farm income equations in each of the two regimes, with regression 3 of Table 3 as the selection equation. In regressions 4 and 6, all the independent variables of the participation equation are added in order to validate the variables with which we identify participation.

We find that the number of workers significantly increases household farm income. The results shed light on the inverted U relation between land area and income. However, income begins to decrease when the land area reaches 59 *mus* and 39 *mus* in the two regimes, respectively, which are far higher than the

average value. Farm income, hence, increases with land area. As expected, the number of dependents plays a positive role in farm income. The distance between the household and the county capital does not influence the farm income of pure farm households; but it has a positive effect on the farm income of households participating in non-farm activities. Education does not influence the farm income of households whether they participate in farm activities or not, indicating again the low return to education in traditional agriculture.

The IMR reflects the correlation between the unobserved terms in the participation and the income equations. In Table 4, the coefficients of the IMR are negative. Since the selection criterion is "participates in non-farm activities", the IMR is negative in regime 0 for the pure farm households and positive for the participating households. The selection effect thus implies that, conditional on observed characteristics, pure farm households have a higher farm income than an average household would have in their regime. In other words, there is positive selection in the decision to stay in agriculture. By contrast, for households that participate in non-farm activities, the negative effect of the IMR suggests that these households have a lower farm income than a pure farm household would if it were in this regime.

The results of regression 5 are used to predict what the income of households that participate in non-farm activities would be if they only participated in farm activities.

6.2. Non-farm income, inequality, and poverty

Having predicted the income of households that participate in non-farm activities, under the condition that they only participate in farm activities, we now compare the distribution of predicted income with that of observed income. Table 5 shows the results of the simulation and the bootstrap statistics.

We find that the Gini index of the observed income is lower than that of predicted income in the absence of non-farm activities. This suggests that participation in non-farm activities reduces income inequality. In the absence of non-farm incomes, the Gini of total household income would increase by 36.8%.

We also find that, as measured by total household income, participation in non-farm activities raises importantly the average living standard. In order to examine the effects of non-farm income on poverty, we must specify a poverty line. We use the poverty line set by Ravallion and Chen (2004) for rural areas, which is equal to 786 in 1995.

Results in Table 5 show that non-farm incomes lead to a decline in the incidence of household poverty (P_0) from 68.9% to 10.9%, in the depth of poverty (P_1) from 39.2% to 2.9%, and in the severity of poverty (P_2) from 26.3% to 1.2%. The strong impact on depth of poverty suggests that participation in non-farm activities reduces the income gap among the poor. And impact on the severity of poverty, which assigns higher weights to the poorest of the poor, suggests that participation in non-farm activities

improves the well-being of the poorest disproportionately. In other words, the gain in poverty reduction due to participation in non-farm activities goes disproportionately to the poorest households.

Using the estimators of Kernel density, we illustrate the income distribution of two kinds of households under different scenarios. Figure 1 shows that, in the absence of non-farm activities (in regime 0), the income distribution of households that participate in non-farm activities (population B) would be to the left of that of the pure farm households (population A): the average income of the former would be much lower than that of the latter. When population B participates in non-farm activities (regime 1, becoming population C), the center of the distribution of their incomes moves to the right, beyond that of the households that only participate in farm activities (population A), and inequality in their total income distribution declines. It is hence the households who would be the poorest with only farm activities that benefit from non-farm activities and, with access to the non-farm activities, their incomes are on average higher than those of pure farm households and the distribution of their incomes narrower.

6.3. Farm income difference between two groups of households

Following the methodology presented in Section 3.2, we can predict for each household participating in non-farm activities the farm income obtained in regime 0; we can also predict for each household that participates only in farm activities the farm income it would obtained in regime 1. Table 6 shows the results. Comparisons of observed farm incomes with their counterfactuals in the other regime allow us to derive two conclusions. The first is that the agricultural income of households who participate in non-farm activities, had they stayed only in farm activities (2,383 *yuan*), would be much less than that of households that are pure farmers (9,006 *yuan*). Hence, the farmers that stayed in agriculture are the best farmers, and their farm income premium is large (278%). This is also true if they participated in non-farm activities. In this case, their farm income would be 13,702 *yuan* compared to the observed farm income of households that participate in non-farm activities (7,027 *yuan*), implying a 95% premium.

The second conclusion is that participation in non-farm activities creates spillover effects on farm incomes. For those who participate in non-farm activities, spillovers raise farm income from 2,383 *yuan* to 7,027 *yuan*, a 195% income gain. If households that only participate in farm activities were to participate in non-farm activities, their farm income would increase by 52%, from 9,006 *yuan* to 13,702 *yuan*. Hence, participation in non-farm activities helps raise total factor productivity in agriculture, expectedly by helping relax the constraints on agriculture imposed by the pervasive credit and insurance market failures that characterize a transition economy. Hence, farm and non-farm incomes are not only substitutes in time use, but also complements through the spillovers effects of non-farm incomes on farm incomes.

Table 7 presents a decomposition of the difference in expected (log) farm income between the two

groups of households within each regime. We find that the relative farm income between pure farm households and those participating in non-farm activities is more important in regime 0 than in regime 1. As to the farm income gaps, they are mainly explained by the IMR, both in regime 0 and in regime 1. In other words, non-observable attributes exist that widen, via selection effect, the farm income gap between the two groups of households. These non-observable attributes may include farm production experience, land quality, access to market information, and other factors that cannot be proxied by observable variables. A second important source of farm income gaps is the village fixed effects. These fixed effects could, as mentioned earlier, capture the impact of local economic development, including the price levels where households live and the differential metropolitan influence of *Wuhan*.

7. Conclusions

Owing to the rapid growth of non-farm activities, major changes have been observed in rural China since initiation of the economic reforms. Whereas farming remains the main source of income for rural households, non-farm income is playing a more and more significant role in total income. Our study shows that 72% of rural households obtain non-farm incomes, accounting on average for some 36% of total household income. The average income of households that participate in non-farm activities is higher than that of households that only participate in farm activities. Non-farm activities not only absorbed a large quantity of surplus rural labor, but also significantly improved the rural standard of living.

In response to the four issues raised in the introduction, our results first show that non-farm income as a whole, considered as a "potential substitute" for farm income, tends to have an egalitarian effect on earnings in rural China. This result is different from those of many other studies that have attributed to non-farm incomes a role in increasing inequality.

Second, our results indicate that participation in non-farm activities noticeably reduced rural poverty. It also considerably reduced the depth and severity of poverty, suggesting that participation in non-farm activities not only narrowed the income gap among rural poor households, but also disproportionately improved the income of the poorest households. In rural China, in the wake of implementation of HRS, the household has become a basic economic unit. Land allocation is based on household size. With no ownership but only usufruct of the land, a land market does not exist. Hence, farm income is relatively fixed because it is extremely difficult to increase farm size. Therefore, non-farm activities serve as a solution for the absorption of rural surplus labor. Participation in non-farm activities provides rural households with an additional source of income, improving their living standards and narrowing income gaps as well.

A back to the envelope calculation, that assumes that the poverty rate for the sample analyzed would have been 75.7% in 1980 as in the rest of rural China (Table 1), indicates that 87% of the decline in rural

poverty between 1980 and 1995 could be attributed to non-farm activities, and the 13% balance to on-farm activities. Since our sample of rural households has a lower poverty rate than rural China as a whole (8.7% in 1995 compared to 20.4% according to Ravallion and Chen, 2004), the poverty rate in 1980 may have been lower as well. In this case, the 87% share of poverty reduction attributed to non-farm activities would be an under-estimate. It is thus safe to conclude, for lessons learned from the Chinese experience, that non-farm activities have had an overwhelming role in explaining the spectacular achievement in rural poverty reduction in the area under study.

Third, we find that education, proximity to a town, neighborhood effects, and village effects are crucial in helping specific households gain access to these opportunities. We also find that those who stay as pure farmers have non-observable characteristics that make them much more productive in agriculture, implying positive selection on these non-observable characteristics. Since selection works in screening the best farmers to stay in agriculture, consolidation of land use by these better farmers would be a source of efficiency gains (unless there exist strong diseconomies of scale, which is unlikely at this level of farm size).

Fourth, our results show that participation in non-farm activities has a positive spillover effect on household agricultural production. In China, as in many other developing countries, the rural credit and insurance markets are seriously deficient. As a consequence, the conflicts between cash shortage and agricultural investment, and between risk-taking and aversion to risk, must be solved internally to the household through the strategic use of their own resources (Stark, 1980). Without doubt, participation in non-farm activities is a smart choice in a second best world of failing markets. The income obtained from non-farm activities helps enhance the investment capacity in farm activities, mitigate income fluctuations, play the role of an insurance system, and thus favor household agricultural production as well.

As mentioned earlier, the development of rural non-farm sectors in China was a spontaneous response of farmers to market opportunities, not a government planned arrangement. The aggregate of individual behaviors benefited rural society by reducing inequality and poverty, as our results indicate. In this sense, rural non-farm activities, as a self-regulating process, coincide with socioeconomic development. The weakness of the HRS was uncovered since the 1990s: even though it increased farm productivity for quite a long period, the division of land into small plots seriously impedes agricultural modernization. Given China's geography and existing technology, agricultural development in the short run cannot mainly rely on land area increase or on technical improvement, but on consolidating plots and allocating them to experienced farmers. Obviously, abandoning the land for better alternatives is the main option for the great majority of surplus rural workers. Non-farm activities will, consequently, continue to play a critically important role in rural development and poverty reduction in China, but increasingly for landless rural households relocated in county capitals as opposed to mixed farming households.

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Table 1 - Growth and composition of rural household incomes

Year	Per capita income of rural households (1980 yuans)	Proportion of income by source (%)				Poverty headcount (%)	Gini coefficient
		Income earned from productive activities			Other incomes		
		Primary sector	Secondary sector	Tertiary sector			
1980	191	78.2	10.1	0	11.7	75.7	0.25
1990	357	74.4	10.3	11	4.2	29.2	0.30
1995	465	63.2	18.2	12.4	6.2	20.4	0.34
2000	617	50.4	26.6	17.5	5.5	13.0	0.36
2001	643	49.2	22.5	22.6	5.7	12.5	0.37

Sources: National Bureau of Statistics of China, 2003; poverty headcount and Gini coefficient from Ravallion and Chen, 2004.
1995 is the year of the survey used here.

Table 2 - Descriptive statistics

	All households	Households that participate in non-farm activities	Households that do not participate in non-farm activities	Difference
Household income (*yuan*)[1]				
Total income	11809	12886	9006	3879***(11.45)
Farm income	7576	7027	9006	-1980***(-7.92)
Non-farm income	4233	5859	-	-
Income earned from wage-paying activities	1842	2549	-	-
Income earned from self-employment activities	2391	3310	-	-
Other income	452	403	579	-177***(-3.90)
Household characteristics				
Number of workers	2.9	3.0	2.7	0.3***(9.31)
Number of years of education	6.8	7.0	6.2	0.8***(13.01)
Land area (*mu*)[1]	9.7	9.1	11.4	-2.3***(-10.47)
Per capita land area (*mu*)	3.3	3.0	4.2	-1.2***(-13.81)
Number of dependents	1.4	1.4	1.3	0.1**(2.07)
Distance between the household and the county capital (km)	12.6	12.4	13.2	-0.8***(-4.57)
Number of observations	7041	5087	1954	

t-statistics are in brackets. *** significant at 1%; ** significant at 5%; * significant at 10%.

[1] One *yuan* = 0.12 US$; one *mu* is equal to 1/15 hectares.

Table 3 - Estimation of the participation equation (OLS)

Endogenous variable = 1 if household participates in non-farm activity	Regression 1	Regression 2	Regression 3
Per capita land area	-0.024***	-0.022***	-0.023***
	(-3.87)	(-3.61)	(-3.66)
Average number of years of education	0.247***	0.247***	0.255***
	(9.13)	(9.11)	(9.35)
Average number of years of education squared (/100)	-1.200***	-1.199***	-1.260***
	(-5.53)	(-5.51)	(-5.76)
Distance from the household to the county capital (/100)	-4.102***	-2.849***	-3.738***
	(-4.20)	(-2.76)	(-3.75)
Peers' average characteristics ($I_i(x)$)			
Participate in non-farm activities		1.235***	
		(6.32)	
Per capita land area			-0.005
			(-0.27)
Average number of years of education			0.455**
			(2.30)
Average number of years of education squared			-0.033**
			(-2.11)
Village fixed effects	Yes	Yes	Yes
Constant term	-0.196	-1.082***	-1.624**
	(-1.03)	(-4.52)	(-2.55)
chi2 for joint significance of peers' characteristics			5.69
Degrees of freedom			3
Prob > chi2			0.128
Maximum likelihood in log	-3492.952	-3472.699	-3490.091
Pseudo-R^2	0.148	0.153	0.149
Number of observations	6903	6903	6903

t-statistics are in brackets. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table 4 - Estimation of the farm income equation (Probit)

Endogenous variable: logarithm of farm income	Regime 0 Participate only in farm activities		Regime 1 Participate in non-farm activities	
	Regression 4	Regression 5	Regression 6	Regression 7
Number of workers	0.148***	0.158***	0.144***	0.144***
	(9.39)	(12.41)	(15.42)	(19.61)
Land area	0.028***	0.025***	0.034***	0.036***
	(4.61)	(4.89)	(7.61)	(9.88)
Land area squared (/100)	-0.021**	-0.021**	-0.047***	-0.046***
	(-1.99)	(-2.00)	(-5.76)	(-5.71)
Number of dependents	0.131***	0.134***	0.094***	0.093***
	(11.19)	(11.76)	(12.15)	(12.46)
Distance from the household to the county capital(/100)	-0.002	-0.037	1.870***	1.811***
	(0.00)	(-0.03)	(2.90)	(3.80)
Per capita land area	-0.007		0.003	
	(-0.79)		(0.41)	
Average number of years of education	-0.009		-0.020	
	(-0.16)		(-0.48)	
Average number of years of education squared (/100)	0.021		0.044	
	(0.07)		(0.19)	
Peers' average characteristics ($I_i(X)$)				
Per capita land area	0.010		0.055***	
	(0.72)		(4.61)	
Average number of years of education	-0.150		0.119	
	(-0.88)		(1.02)	
Average number of years of education squared	0.012		-0.008	
	(0.88)		(-0.90)	
Inverse Mills Ratio	-0.802**	-0.729***	-0.501*	-0.270***
	(-2.37)	(-10.82)	(-1.79)	(-3.25)
Village fixed effects	Yes	Yes	Yes	Yes
Constant term	7.744***	7.373***	7.465***	7.784***
	(16.12)	(39.14)	(13.47)	(76.25)
R^2	0.604	0.603	0.463	0.460
Number of observations	1942	1942	4961	4961

t-statistics in brackets. *** significant at 1%; ** significant at 5%; * significant at 10% .

Table 5 - Comparison of income distribution with and without non-farm activities

	Income in the presence of non-farm activities		Income in the absence of non-farm activities	
Gini coefficient	0.412		0.566	
Bias	…		-.004	
Standard error	0.005		0.023	
95% confidence interval	0.403	0.423	0.520	0.605
Average total income (*yuan*)	11809		4215	
Bias	8.32		101.87	
Standard error	147.91		265.27	
95% confidence interval	11517	12100	3867	4890
FGT index (%)				
P_0 - poverty incidence	8.73		66.78	
Bias	-0.01		-1.37	
Standard error	0.34		3.14	
95% confidence interval	8.00	9.37	58.86	70.48
P_1 - poverty depth	2.38		37.22	
Bias	-0.01		-1.19	
Standard error	0.11		3.90	
95% confidence interval	2.18	2.57	28.55	43.21
P_2 - poverty severity	1.00		24.57	
Bias	-0.01		-0.86	
Standard error	0.06		3.52	
95% confidence interval	0.89	1.11	17.15	30.37
Number of observations	7041			
Number of replications	100			

"…" means that the absolute value is inferior to 0.001.

Table 6 –Average farm income of the two groups of households in each regime

	Regime 0 Participate only in farm activities	Regime 1 Participate in non-farm activities
Households that only participate in farm activities $(P_i = 0)$	9,006 *yuan* ($\overline{y_0^a \mid_{P=0}}$, observed income)	13,702 *yuan* ($\overline{\hat{E}y_1^a \mid_{P=0}}$, simulated income)
Households that participate in non-farm activities $(P_i = 1)$	2,383 *yuan* ($\overline{\hat{E}y_0^a \mid_{P=1}}$, simulated income)	7,027 *yuan* ($\overline{y_1^a \mid_{P=1}}$, observed income)

Table 7 – Decomposition of farm income difference by regime

	Regime 0 Participate only in farm activities ($n = 0$)	Regime 1 Participate in non-farm activities ($n = 1$)
Farm income difference between two groups of households, $\overline{\hat{E}\log y_n^a\big\|_{P=0}} - \overline{\hat{E}\log y_n^a\big\|_{P=1}}$	1.33	0.67
Contribution of the various variables to farm income difference (%)		
Number of workers	-3.9	-8.3
Land area	3.0	8.6
Number of dependents	-0.7	-1.2
Distance from the household to the county capital	…	2.7
Village fixed effects	25.3	31.2
Inverse Mills Ratio	76.3	67.0

"…" means that the absolute value is inferior to 0.1.

Figure 1 - The total income distribution of two groups in different regimes