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The effect of family property income on labor supply: Evidence from China[☆]

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ABSTRACT

This paper discusses the impact of family property income on labor supply. We use a Heckman two-stage model to solve the selection problem and CFPS data to conduct an empirical test. Depending on the estimation results of the Heckman two-stage model, family property income reduces the probability of employment and lowers the labor supply. Additionally, the negative effect on younger workers is greater than that of elder workers. As family property income is growing rapidly in China, how to inspiring young workers to join in the labor force will become a problem that society must face.

1. Introduction

Before reform and opening up policy, a collectivist ideology dominated China, and most families had little private property and property income. However, following reform and opening up policy, along with the privatization and marketization of the state-owned economy, family property entered a period of rapid growth. In addition, with property now accessible through capital markets, families can obtain property income, such as rent, interest, and dividends. Family property income can improve living standards but can also weaken people's willingness to work and thus reduce the labor supply. Moreover, the negative effect on younger workers is much greater than that on elder workers. In the coming decades, with the development of capital markets, the share of property income in total income will become increasingly larger, and its impact on labor supply may continue to increase. Especially, as China's demographic dividend gradually disappears, this new trend will have a long-term influence on the labor market in China. Therefore, research on the effect of family property income on the labor supply is significant both theoretically and practically.

Research on the labor supply began in the 1930s. [Robins \(1930\)](#) first stated that labor supply influenced by both substitution effects and income effects. If substitution effects outweigh income effects, there will be an increase in the labor supply, and vice versa. [Becker \(1965\)](#) elaborated on the relationship between consumption, family production, and labor through the introduction of time in a model that became the basis of modern labor-income-consumption research ([Kesselman, 1969](#); [Orley & Janmes, 1974](#)). Moreover, Becker's model is the main foundation used by empirical economists in explaining changes in the labor supply ([Hoynes, 1996](#)) and the basis for

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tax policy studies (Bloom & Michalopoulos, 2001; Danziger, Haveman, & Plotnick, 1981; Eissa & Liebman, 1996; Heckman, 2000; Keane & Moffitt, 1998).

In labor supply theory, property income, as non-labor income, negatively affects the labor supply. However, due to a lack of data about family property income, research into the effect of family property income on the labor supply has not yet matured in China. Additionally, the existing research has focused predominantly on the social security system and tax aspects to analyze the behavior of the labor supply (Zhang, Chuang, & Peng, 2011). Less effort has focused on the effect of family property income on the labor supply. Although some studies have focused on family income, no further research has conducted on family property income (Fei, 2015).

Therefore, this paper seeks to utilize CFPS (China Family Panel Study) data to empirically analyze the impact of family property income on the labor supply and examine differences in the impact of family property income on different generations of workers. The specific questions are (1) will be the increase in family property income significantly reduce labor supply? (2) What is the average effect? (3) Is there a difference between the effects of the growth in family property income on elder and younger workers? Given the measuring method, and because labor supply decision-making behavior gives rise to the selection problem, a simple least squares regression will likely be subject to estimation errors. Therefore, this article uses the Heckman two-stage model to solve the selection problem and CFPS data for empirical testing. Answers to the above questions can deepen our understanding of the effect of family property income on labor supply in China today. Moreover, after the end of the demographic dividend, it is of practical significance to study the effect of family property income on the labor supply. The remainder of the paper organized as follows. The second part will establish a model with family property income and derive the effects of property income on labor supply. The third and fourth parts will test hypotheses, using CFPS data and the Heckman two-stage model for empirical testing, and compare differences in the effects of family property income on different generations of workers. The final part concludes the paper.

2. Theoretical model and hypothesis

This paper introduces family property income into Becker's labor supply model using the constant relative risk aversion coefficient (CRRA) utility function to examine the influence of family property income on labor supply.

Becker's labor supply model assumes that people are rational and optimizes their utility through consumption choices. This article assumes that the individual derives utility from consumption C and leisure $1 - L$ (where L is labor supply time). If the ratio of the utility of leisure to consumption goods is θ , then the utility function can be represented as:

$$U = U_1(C) + \theta U_2(1 - L) \quad (1)$$

The matrix C indicates the amounts consumed of a range of products. Assuming that consumer spending is good, the greater the consumption, the greater the gain in utility; that is, $U_1'(C) > 0$ and $U_2'(1 - L) > 0$.

When the ratio of the utility of leisure to consumption goods $\theta > 1$, the utility of leisure is higher. When $0 < \theta < 1$, the utility of consumption is higher.

Employing the constant relative risk aversion coefficient of the utility function in its basic form, the utility function can be further converted to

$$U(C, L) = C^{1-\alpha} / (1 - \alpha) + \theta (1 - L)^{1-\beta} / (1 - \beta) \quad (2)$$

where α and β are relative risk aversion coefficients, with the following definition:

$$\alpha = -CU_1''(C) / U_1'(C); \beta = LU_2''(1 - L) / U_2'(1 - L) \quad (3)$$

Because $U_1'(C) = dU_1(C) / dC < 0$, the change in the marginal utility of consumption $U_1'(C)$ is the reverse of the change in consumption C . The smaller the value of α , the smaller the fall in the marginal utility for an increase in consumption and, thus, the more willing the individual to increase the quantity of consumption. The smaller the value of β , the smaller the fall in the marginal utility for an increase in leisure and, thus, the more willing the individual to increase leisure. At the same time, workers face a budget constraint:

$$C \leq \omega L + a \quad (4)$$

where ω is the wage rate, L is working time, a is property income, and C is consumer goods. Compared to a situation in which there is no family property income, family property income will cause the budget constraint to move upward and to the right. Even if the worker reduces the quantity of labor supply, he or she can still achieve the same level of utility.

The rational consumer will maximize utility subject to the budget constraint set. We construct the Lagrange function as follows:

$$L(C, L, a) = C^{1-\alpha} / (1 - \alpha) + \theta (1 - L)^{1-\beta} / (1 - \beta) + \lambda (C - \omega L - a) \quad (5)$$

The first-order partial derivatives of L and L , set to 0, are as follows:

$$\partial L(C, L, A) / \partial C = C^{-\alpha} + \lambda = 0 \quad (6)$$

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