



<ARTICLE> Worker's Behavior in Economic Transition

メタデータ	言語: eng 出版者: 公開日: 2009-08-25 キーワード (Ja): キーワード (En): 作成者: Miyamoto, Katsuhiro メールアドレス: 所属:
URL	https://doi.org/10.24729/00000909

Journal of Economics, Business and Law

Volume 3 Spring, 2001

Worker's Behavior in Economic Transition

By Katsuhiko Miyamoto

1. Introduction

In 1986, Mr. Gorbachev started the political and economic reforms "Perestroika" in the USSR. And Mr. Yeltsin developed the free economic policy and the market economic policy since 1992. On the other hand, China gradually started the free economic policy since 1978 and adopted the new economic policy Socialism "Market Economy" in 1992. Thus, many old socialist countries started to change from the planning economic system to the free market system. But, it is not so easy for these countries to change their economic system in the short period. They are suffered from the sequelae of inefficiency of the old socialist economic system. The countries in the economic transition have many economic problems. In this paper, we will analyze the behavior of workers in firms under the condition of economic transition.

2. Economic Model 1

In a transitional economy, the government has less authority to each economic agent than in a planning economy. Each economic agent became to behave freely in order to maximize each objective function. Firms maximize the profit function and workers maximize the utility function. Workers in

firms want to get their jobs by which they can obtain more salary and bonus.

The representative worker wants to maximize his utility function. It is assumed that the utility function depends on the consumption of consumer goods (c) and leisure (l).

$$U = U(c, l). \quad (1)$$

The utility function has the following characters.

$$\begin{aligned} U_1 &> 0, & U_{11} &< 0, \\ U_2 &> 0, & U_{22} &< 0, \\ U_{12} &= U_{21} > 0. \end{aligned} \quad (2)$$

The representative worker has each budget constraint. The budget equation is as follows,

$$p \cdot c = wL + B. \quad (3)$$

p is price of consumer good, w is wage rate and L is labor hour. B is bonus and is assumed that bonus is dependent upon the difference the output (Y) between the norm (\bar{Y}). α is bonus parameter and N is number of laborers.

$$B = \frac{\alpha}{N}(Y - \bar{Y}). \quad (4)$$

We assume that the production function depends upon total labor hour. As usual, it is assumed that marginal productivity is positive and diminishing marginal productivity.

$$\begin{aligned} Y &= F(NL). \\ \frac{\partial F}{\partial NL} &= F' > 0, \quad \frac{\partial^2 F}{\partial (NL)^2} = F'' < 0. \end{aligned} \quad (5)$$

The total hour of the representative worker (\bar{L}) is divided up labor hour (L) and leisure hour (l).

$$\bar{L} = L + l. \quad (6)$$

The utility function of the representative worker is as follows.

$$U = U\left[\frac{1}{p}\left\{wL + \frac{\alpha}{N}(F(NL) - \bar{Y})\right\}, \bar{L} - L\right]. \quad (7)$$

The representative worker maximizes his utility function under the condition of budget constraint. The equilibrium first condition is,

$$U_1(w + \alpha F') = p \cdot U_2. \quad (8)$$

The equation means that the marginal utility of consumption is equal to the marginal utility of leisure in equilibrium.

The equilibrium second condition is as follows,

$$U_{11}\left[\frac{1}{p}(w + \alpha F')\right]^2 - \frac{2U_{12}}{p}(w + \alpha F') + U_{22} + \frac{\alpha NF'' U_1}{p} = -H < 0. \quad (9)$$

As the equilibrium second condition is negative, then H is positive.

(Comparative static analysis)

Next, we will analyze the effects on the equilibrium value of labor hour by small change of economic parameters.

The effect of a change of consumption good's price on the equilibrium labor hour is indefinite. In a market economy, it is natural that an increase of consumption good's price brings an increase of equilibrium labor supply. But in a transitional economy, it is not definite. If $U_{ij} \doteq 0$, then $\frac{\partial L}{\partial p} < 0$, that is, an increase of consumption good's price decreases labor supply,. It is inverse to the phenomenon in a market economy.

$$\frac{\partial L}{\partial p} = \frac{-pU_1(w + \alpha F') - U_{11}\left\{wL + \frac{\alpha}{N}(Y - \bar{Y})\right\}(w + \alpha F') + pU_{21}\left\{wL + \frac{\alpha}{N}(Y - \bar{Y})\right\}}{p^3 H}.$$

(10)

The effect of a change of wage rate on the equilibrium labor hour is indefinite, too. But if $U_{ij} \doteq 0$, then $\frac{\partial L}{\partial w} > 0$, that is, an increase of wage rate increases labor supply. This is the same phenomenon in a market economy.

$$\frac{\partial L}{\partial w} = \frac{pU_1 + U_{11}(w + \alpha F')L - pU_{21}L}{p^2H}. \quad (11)$$

The effect of a change of bonus parameter on the equilibrium labor hour is indefinite. If $U_{ij} \doteq 0$, then $\frac{\partial L}{\partial \alpha} > 0$, that is, an increase of bonus parameter increases labor supply. This is the natural case in any economic system.

$$\begin{aligned} \frac{\partial L}{\partial \alpha} = \\ \frac{\frac{1}{N} U_{11} (Y - \bar{Y})(w + \alpha F') + pF' U_1 - pU_{21}(Y - \bar{Y}) \frac{1}{N}}{p^2H}. \end{aligned} \quad (12)$$

An increase of worker's total hour increases labor supply and the representative worker gets more wage and bonus.

$$\frac{\partial L}{\partial \bar{L}} = \frac{U_{12}(w + \alpha F') - pU_{22}}{pH} > 0. \quad (13)$$

The effect of a change of number of workers on the equilibrium labor hour is indefinite.

$$\begin{aligned} \frac{\partial L}{\partial N} = \\ \frac{\frac{w + \alpha F}{N^2} \alpha U_{11} \{-(Y - \bar{Y}) + NLF'\} + \alpha pLF'' U_1 - \frac{\alpha pU_{21}}{N^2} \{-(Y - \bar{Y}) + NLF'\}}{p^2H}. \end{aligned} \quad (14)$$

An increase of norm increases labor supply. That is, an increase of norm brings a decrease of his bonus, then the representative worker wants to get more bonus and he works more.

$$\frac{\partial L}{\partial \bar{Y}} = \frac{-\alpha U_{11}(w + \alpha F') + \alpha p U_{21}}{p^2 NH} \quad (15)$$

3. Economic Model 2

As transitional economy developed, the economic system became to have uncertainty and risk. Each economic agent has to behave under uncertainty. In market economy, the volume of sale is uncertain, and then the profit is uncertain, too. Therefore the bonus to the representative worker is uncertain. In this section, we assume that the bonus to the representative worker is uncertain, that is, it has risk.

It is assumed that the bonus function is dependent upon the labor hour, norm and uncertainty (risk).

$$B = B(L, \bar{Y}, \theta) \quad (16)$$

θ is the measure of certainty, that is, $-\theta$ is the measure of uncertainty. We assume that an increase of labor hour brings more bonus, and an increase of norm decrease bonus, and an increase of uncertainty decreases bonus.

$$\begin{aligned} B_1 &> 0, & B_{11} &< 0, \\ B_2 &< 0, & B_{22} &> 0, \\ B_3 &> 0, & B_{33} &< 0, \\ B_{12} &= B_{21} = 0, \\ B_{13} &= B_{31} = 0, \\ B_{23} &= B_{32} = 0. \end{aligned} \quad (17)$$

The utility function of the representative worker is as follows,

$$U = U\left[\frac{1}{p}\{wL + B(L, \bar{Y}, \theta)\}, \bar{L} - L\right] \quad (18)$$

Under uncertainty the representative worker utility becomes the expected utility.

$$\begin{aligned} E\left[U\left(\frac{1}{p}\{wL + B(L, \bar{Y}, \theta)\}, \bar{L} - L\right)\right] \\ = \int_0^1 U\left[\frac{1}{p}\{wL + B(L, \bar{Y}, \theta)\}, \bar{L} - L\right] \phi(\theta) \cdot d\theta. \end{aligned} \quad (19)$$

$\phi(\theta)$ is a probability density function.

The representative worker wants to maximize his expected utility under the constraint of given total hour. The equilibrium first condition is as follows,

$$\frac{\partial E(U)}{\partial L} = E[U_1 - \frac{1}{p}\{w + B_1(L, \bar{Y}, \theta)\} - U_2] = 0 \quad (20)$$

The equilibrium first condition means that in equilibrium the expected marginal utility of consumption is equal to the expected marginal utility of leisure.

The equilibrium second condition is as follows,

$$\begin{aligned} \frac{\partial^2 E(U)}{\partial L^2} = E[U_{11} \cdot \frac{1}{p^2}(w + B_1)^2 - 2U_{12} \cdot \frac{1}{p} \cdot (w + B_1) \\ + U_1 \cdot \frac{1}{p} \cdot B_{11} + U_{22}] = E(D) < 0. \end{aligned} \quad (21)$$

As the equilibrium second condition is negative, then $E(D)$ is negative.

(Comparative static analysis)

Next, we will analyze the effects on the equilibrium value of labor hour by small change of economic parameters.

The effect of a change of consumption good's price on the equilibrium labor hour is indefinite. But, if $U_{ij} \neq 0$, the $\frac{\partial L}{\partial p} > 0$, that is, an increase of consumption good's price brings an increase of labor hour. This is an inverse conclusion in section 2.

$$\begin{aligned} \frac{\partial L}{\partial p} = \\ \frac{E[\frac{U_{11}}{p}(w + B_1)(wL + B) - U_1(w + B_1) + U_{21}(wL + B)]}{p^2 E(D)}. \end{aligned} \quad (22)$$

The effect of a change of wage rate on the equilibrium labor hour is indefinite, too. If $U_{ij} = 0$, $\frac{\partial L}{\partial w} < 0$. This is a different conclusion in section 2.

$$\frac{\partial L}{\partial w} = \frac{E\left[\frac{U_{11}}{p}(w + B_1)L + U_1 - U_{21} \cdot L\right]}{pE(D)}. \quad (23)$$

An increase of norm brings an increase of labor supply. That is, an increase of norm brings a decrease of his bonus, then the representative worker wants to get more bonus and he works more. This is the same conclusion in section 2.

$$\frac{\partial L}{\partial \bar{Y}} = \frac{E\left[\frac{U_{11}}{p}(w + B_1)B_2 \cdot B - U_{21} \cdot B_2 + U_1 B_{12}B\right]}{pE(D)} > 0. \quad (24)$$

An increase of worker's total labor hour increases labor supply and the representative worker gets more wage and bonus.

$$\frac{\partial L}{\partial \bar{L}} = -\frac{E\left[\frac{U_{12}}{p}(w + B_1) - U_{22}\right]}{E(D)} > 0. \quad (25)$$

The more the certainty increases, the less the representative worker works. That is, as the uncertainty increases, the representative worker's income is uncertain, therefore he has to work more in order to get more bonus.

$$\frac{\partial L}{\partial \theta} = \frac{-E\left[\frac{U_{11}}{p}(w + B_1)B_3 + U_1 B_{13} - U_{21} B_3\right]}{pE(D)} < 0. \quad (26)$$

4. Concluding Remarks

In this paper, we analyzed and compared the two kinds of economic models in economic transition. One is the economic model with no risk, and the other is the economic model with risk and uncertainty. The comparative static analyses are as follow. We could obtain the new conclusion about worker's behavior in the economic transition. The following table shows the effects on the equilibrium labor hour by a change of economic parameters.

Comparative Static Analysis

(case of $U_{ij} \cong 0$)

	No risk model	Risk model
Price up	indefinite (decrease)	indefinite (decrease)
Wage up	indefinite (increase)	indefinite (decrease)
Bonus parameter up	indefinite (increase)	—
Increase of total hour	increase	increase
Increase of workers	—	indefinite
Norm up	increase	increase
Increase of uncertainty (risk)	—	increase

References

1. Arrow, K.J., *Essays in the Theory of Risk Bearing*, North– Holland, 1970.
2. Bonin, J.P., “Work Incentive and Uncertainty on a Collective Farm,” *Journal of Comparative Economics*, Vol.1, pp.77–97, March, 1977.
3. Bonin, J.P., “The Transition in Comparative Economics,” *Journal of Comparative Economics*, Vol. 26, No.1, pp.1–8, March, 1998.
4. Miyamoto, K., “Collective Farm under Uncertainty,” *The Journal of Economic Studies*, Vol.33,No.3, pp.55–67, July, 1988.
5. Miyamoto, K., “State Enterprise under the State Enterprise Law,” *The Journal of Economic Studies*, Vol. 34, No. 2, pp.13–26, March, 1989.
6. Miyamoto, K., & Yu Jinping, “Macroeconomic Policy and Ownership Structure in a Mixed Transition Economy,” *Journal of Comparative Economics*, Vol.28, No.4, pp.762–785, December, 2000.
7. Murphy, K.M., A Shleifer and R.W. Vishny, “The Transition to a Market Economy: Pitfall of Partial Reform,” *Quarterly Journal of Economics*, Vol. CVII, No.3, pp.889–906, August, 1992.
8. Shaffer, M.E., “Do Firms in Transition Economies Have Soft Budget Constraints? A Reconsideration of Concepts and Evidence,” *Journal of Comparative Economics*, Vol. 26, No.1, pp.80–103, 1998.