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Test of Permanent Income Hypothesis in Relation to the Theory of Household Labor Supply Behavior

by Keiichiro Obi

The aim of this article is to test "permanent income hypothesis" in relation to household's supply behavior of labor.

Notation

U: household's utility indicator

y: income in constant price

Λ: leisure

μ: participation rate of household's members' other than principal earner (head of household) in each household, where $\Lambda = 1 - \mu$ holds.

$\hat{I}$: anticipated amount of principal earners' income.

w: anticipated wage rate of non principal earners (household members other than principal earners).

d: discount rate of household's future income

e: discount rate of non principal earners' earning.

f: discount rate of principal earners' income

N: number of household members excluding principal earner

  Subscript 1: refers to current time period

  Subscript 2: refers to future period

Along with Modigliani-Brumberg model, let utility indicator function be,

1) $U \propto y_1{}^{\alpha_1} y_2{}^{\alpha_2} \Lambda_1{}^{\beta_1} \cdot \Lambda_2{}^{\beta_2}$.

where, α_1, α_2, β_1, β_2 are parameters. Identity,

2) $y_1 + d y_2 = \hat{I}_1 + f \hat{I}_2 + w_1 N \mu_1 + e w_2 N \mu_2$

holds. Maximizing (1) under the constraint (2) equations of demand for current and future income and those of supply of current and future labor are obtained:

3·1) $y_1{}^* = \dfrac{\alpha_1}{\Gamma} (I + N w_1 + e N w_2)$

3·2) $y_2{}^* = \dfrac{\alpha_2}{\Gamma} (I + N w_1 + e N w_2)$

3·3) $\mu_1{}^* = \left(1 - \dfrac{\beta_1}{\Gamma}\right) - \dfrac{\beta_1}{\Gamma} \dfrac{I}{N w_1} - \dfrac{\beta_1}{\Gamma} \dfrac{e w_2}{w_1}$

3·4) $\quad \mu_2{}^* = \left(1 - \dfrac{\beta_2}{\Gamma}\right) - \dfrac{\beta_2}{\Gamma}\dfrac{I}{Nw_2e} - \dfrac{\beta_2}{\Gamma}\dfrac{w_1}{ew_2}$

where,

$\Gamma \equiv \alpha_1 + \alpha_2 + \beta_1 + \beta_2, \quad I \equiv \hat{I}_1 + f\hat{I}_2.$

$\mu_1{}^*$ in (3·3) stands for the adjusted supply of labor for the level of permanent income $\hat{I}_1$ and $\hat{I}_2$. While, observed value of current principal earners' income will, as far as "permanent income" hypothesis is plansible, should be consist of permanent component $\hat{I}_1$ and transitory component $I_1{}^r$. Replacing left hand side of (3·3) by current obsrved participation rate, μ_1, and replacing $\hat{I}_1$ in the right hand side by $\hat{I}_1 + I_1{}^r$, we get,

4) $\quad w_1\mu_1 = \left(1 - \dfrac{\beta_1}{\Gamma}\right)w_1 - \dfrac{\beta_1}{\Gamma N}(\hat{I}_1 + I_1{}^r + f\hat{I}_2) - \dfrac{\beta_1}{\Gamma}ew_2$

where, observed principal earners' income be,

5) $\quad \mathring{I} = \hat{I}_1 + I_1{}^r.$

The assumptions of Modigliani-Brumberg-Friedman could be written as,

6) $\quad \hat{I}_2 = k_0 + k_1\hat{I}_1 \qquad (k_1 \geqq 0)$

and

7) $\quad I_1{}^r = \lambda_0 + \lambda_1 I_1{}^0 \qquad (\lambda_1 \leqq 1)$

k_0, k_1, λ_0, and λ_1 being parameters.

Applying 7) to 5), we get

8) $\quad \hat{I}_1 = (1 - \lambda_1)\mathring{I}_1 - \lambda_0.$

From 6), 7), 8) and 4), relation expected to hold under "permanent income hypothesis."

9) $\quad N\Lambda_1 = N\left(1 + \dfrac{w_2e}{w_1}\right)\dfrac{\beta_1}{\Gamma} + \dfrac{\beta_1}{\Gamma}[1 + fk_1(1-\lambda_1)]\dfrac{I_1{}^0}{w_1} - \dfrac{f(k_1\lambda_0 - k_0)\beta_1}{\Gamma_1}\dfrac{1}{w_1}$

is obtained. Making use of "family income and expenditure survey" stratified by principal earners' income, parameters c_1, c_2 and c_3 of regression equation,

10) $\quad N\Lambda_1 = c_1 N + c_2\dfrac{\mathring{I}_1}{w_1} + c_3\dfrac{1}{w_1}$

can be estimated. Household's are grouped by principal earners' income size.

It would be admittedly assumed w_2/w_1 be approximately constant among groups of households. Hence,.

11) $\quad c_1 = \left(1 + \dfrac{w_2e}{w_1}\right)\dfrac{\beta_1}{\Gamma}$

12) $\quad c_2 = [1 + fk_1(1 - \lambda_1)]\dfrac{\beta_1}{\Gamma}$

13) $\quad c_3 = -f(k_1\lambda_0 - k_0)\dfrac{\beta_1}{\Gamma}.$

From 12), 13), 6), and 7), it is observed

14) $\quad \dfrac{c_2}{c_1}\left(1 + \dfrac{ew_2}{w_1}\right) \geqq 1$

must be held. Estimates of c_2 and c_1 are 0.953 and 0.0781 respectively for 1954, 0.907 and 0.0713 for 1956. Incerting these values to (14), we get $w_2/w_1 \geqq 11$, approximately. Hence, even if we assume such a long planning periods of household behavior as ten years, the anticipated annual growth rate of nonprincipal earners' wage rate is not less than 60%. This calculated rate of growth is not consistent with those reported in the questionaire survey by economic planning agency in which 40% of Clerical workers anticipate annual growth rate of wages less than 5%.

It would be concluded, as far as Modigliani-Brumberg and Friedman's specification is concerned, adequacy of permanent hypothesis in household labor supply behavior is dubious.

A Fundamental Approach to the Problems of the Developing Countries

——Through the Examination of the Recent Development of Economics of Foreign Aid——

by Hiroaki Fukami

The 1960's are the years when the whole process of economic development has come to be seen as a world-wide pattern in which the already developed countries formed a wealthy, fully modernized 'North' and the developing continents formed the underdeveloped, uncertain 'South'. And this contrast (the North-South problem) gives rise to a tremendous crowd of studies about the 'South'. But they cannot dispel any ambiguity out of the North-South problems and also establish any common or uniform theory. Rather, there are so many divergent views about even the fundamental problems, that is, what are or how to define the developing countries, why we should approach them and which way the basic course of their development is heading.

In this paper, the writer tries to study these fundamental problems through the examination of the recent development of economics of foreign aid.

Economics of foreign aid is to analyze systematically the problems of

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economic aid in line with economic theories. It is thought to be constructed with three basic analyses, namely: (i) factor analysis of aid=why the advanced countries should give aid or why aid is necessary for the developing countries, (ii) analysis of the determination of the size of aid=how much aid should be provided or is possible by the advanced countries and (iii) effect analysis of aid=what effects aid has on both aid-providing and aid-receiving countries.

Keeping abreast with the recent development of economics of aid, the writer, first, on the basis of factor analysis, discusses the basic ideas on or approaches to the problems of the developing countries, and then, through size-determination analysis of aid, explores the basic attitude or propositions that may be warranted for the true understanding of the problems, and clarifies their theoretical and political implications.

Some of the conclusions of such a reflective survey are that the present state of analyses of the problems of economic development is, to say the least, in confusion; that the basic ideas and approaches are still at a stage of growing in the dark and yet to be clarified; and that there are conflicts and contradictions in the basic attitude toward understanding the problems of the developing countries. Hence there is a need for a basic reappraisal of the whole problems. The writer concludes that such a reappraisal would be the essential precondition for any further development of the study of the developing countries.