

**A MODEL OF PARENTAL INVESTMENT IN CHILDREN'S
HUMAN CAPITAL**

SKOPE Research Paper No 15 Spring 2001

L.Y. Yueh, St Edmund Hall, University of Oxford

**Oxford and Warwick Universities
Editor's Foreword**

SKOPE Publications

This series publishes the work of the members and associates of SKOPE. A formal editorial process ensures that standards of quality and objectivity are maintained.

Orders for publications should be addressed to the SKOPE Secretary, SKOPE, Warwick Business School, University of Warwick, Coventry CV4 7AL

Correspondence. L.Y. Yueh, Department of Economics, University of Oxford, Manor Road Building, Oxford OX1 3UQ, UK. Tel: 01865 281295, Fax: 01865 271094. E-mail: linda.yueh@economics.ox.ac.uk.

Abstract. Parents' decision to invest in children's human capital is motivated by returns to education and future transfers, which are both affected by perceived gender earnings differentials. To the extent that human capital is accumulated during a time in which the decision lies largely with parents, this model may contribute to understanding differential expenditure on the education of sons and daughters that cause human capital differences prior to entering the labour market.

JEL Classification Numbers. I20, J24, D9, D10.

Keywords. Education, human capital formation, intertemporal choice, household behaviour.

Acknowledgements. This paper constitutes the theory portion of a chapter of the author's doctoral thesis. The author wishes to thank John Knight and Ken Mayhew for their comments. Any errors are of the author's.

1 Introduction

The starting point of this model is to separate conceptually the case in which an individual decides to invest in human capital and the case in which the investment decision rests with his parents. Becker [3] in his book, *A Treatise on the Family*, identified the parental role in developing the human capital of children. This account was subsequently added as a chapter to the third edition of his *Human Capital*, published in 1993.¹ The investment in children's human capital, under credit constraints, necessarily entails forgone current consumption for the household. There is a strand of literature – intrahousehold resource allocation models – that can test the extent to which parents will forgo consumption to spend on children's education (see Deaton [9]; Haddad, Hoddinott and Alderman [12] for excellent overviews).

The motivation for this paper stems from our interest in issues of gender inequality in China and the reliance of parents on their children for support in old age. The degree to which expectations of returns from children will vary among societies, but we posit that parents invest in their children with an eye toward their own future utility as well as the utility of their offspring. These intertemporal considerations can potentially generate differential investments in the human capital of sons versus daughters that are unrelated to preference or bias particular to a society. Thus, we expect the model to have general applicability.

Our proposed model draws heavily from Becker [4]. There are two innovations in our approach, pertaining to the theory and to the empirical testing. The first is that the parental decision to invest in children's human capital is motivated by the returns that will accrue not only to the children, but also the portion of the returns that will generate transfers to parents in the future. Our results are largely identical to Becker, but we differ in positing that the investment decision can be motivated by considerations other than parents' altruism and children's guilt. The second innovation is to use the intrahousehold resource allocation approach to investigate the present costs (forgone consumption) and future benefits of these investments in children. This provides a direct empirical test of the investment calculus under borrowing constraints.

Departures from Becker

Becker [4] develops a three-period model as the next formulation of the parental investment decision in children's human capital. The primary difficulty in this approach is the reconciliation of making efficient investments in children and own assets in the second period with the third period expectation that relies on consumption generated from these forms of capital. Investment in children's human capital, unlike investment in pensions for instance, will not necessarily generate transfers for consumption. In this way, an efficient decision in the second period is inefficient in the third period. Becker resolves this by fashioning the utility

¹ See Becker [2]: 260-279.

function of both parents and children to be influenced by altruism and guilt, respectively. We take an alternative approach.

Formally, we present a three-period model with two rates of return – the rate of return to investments in children’s human capital that will accrue to the children (“personal rate of return”) and the rate of return to investments in children’s human capital that will accrue to parents in retirement in the form of transfers or old-age support (“familial rate of return”). Both of these are expected returns based on current market conditions. Accordingly, they suggest two potential pre-labour market explanations for parental discrimination among offspring that are not motivated by taste or a traditional preference for sons or altruism, but by an efficient use of resources.

First, we posit that parents will invest more resources in the child with greater returns. Future discrimination in the labour market will differentiate the rates of return to children’s human capital and parents acting efficiently will invest less in the child with lower returns (see Becker [3]²). Therefore, perceived gender earnings differentials will decrease the returns to education for daughters, *ceteris paribus*, and parents will invest less in the human capital of girls. In testing this hypothesis, the crucial variable is what we term the *personal* rate of return to education.

Second, parents are also concerned with transfers when they retire. This *familial* rate of return is based on the rate of return from expected transfers to parents in retirement that is a proportion of the future household income of their children. Household income of the children comprises their earned income, which is related to parental investment in their human capital, their spouse’s income, and any other sources of nonlabour income.³ In making the trade-off decision this period, parents will consider which child is likely to support them or provide larger transfers in their retirement. For instance, in rural China, parents have traditionally relied on sons for provision of care in old age since daughters often marry into other families and even other villages, making support unlikely (see Croll [7]). This also leads to the proposition that because girls marry into another family, the investment in their human capital accrues not to the natal family but to the in-laws upon marriage so that the investment is not recouped sufficiently (see Parish and Willis [16]⁴). This notion of unrecouped investment may be the cause of current conditions from which parents form expectations of transfers.

² Becker [3] makes the argument that parental investments in human capital will reinforce differences in innate ability because parental utility is maximised when marginal returns across investments are equal. Thus, children with more innate ability will have a higher rate of return to their human capital and parents will invest more in them than less able children to equalise their marginal rates of return. By the same reasoning, we will show that expected earnings have the same effect on parental utility.

³ Becker [2] does not incorporate considerations of marriage and fertility in his model of parental investment in children’s human capital, but believes it would be useful to do so.

⁴ Parish and Willis [16] find in Taiwan that bride price (the gifts and cash payments from the groom’s to the bride’s family) exceeded dowries (the gifts given by the bride’s to the groom’s family) for the 1940-1949 and 1950-1959 cohorts, but not for later cohorts.

There is another factor that may influence the investment decision if transfers are provided by the future household of the child rather than by the child alone. Owing to favourable assortative mating (Becker [3] there are larger potential returns to investments in daughters than sons in terms of the children's future household income.⁵ Becker hypothesises that individuals with more educational attainment will tend to marry others with similar or better educational backgrounds. The same gender earnings differential that decreases the personal rate of return to the human capital of girls would simultaneously suggest that if favourable assortative mating occurs, girls who attain a certain level of education will be more likely to marry a primary income provider with comparable or better education, higher returns to his human capital and more expected earnings. This will generate the same or larger expected future household income for daughters than sons based on the assumption that parents do not invest in their potential children-in-law. Any augmentation of their children's expected future household income through marriage enters into the parental investment calculus through anticipating larger amounts of transfers. Parents will invest more in the child with a greater likelihood of marrying a comparably educated spouse, *i.e.*, daughters, even if the likelihood of making future transfers to parents is the same for all offspring.

Therefore, considerations of both the personal and familial rates of return exist in the parental decision to invest in the human capital of their children and may generate differences between sons and daughters that are efficient and unrelated to taste. These effects will overlap in the parental investment calculus and one return may dominate the other depending on the magnitude of the differences in the respective returns. The formal model is as follows.

2 A Model of Human Capital

An individual lives for three periods – he is a child in the first period, an adult with two children in the second period, and a retiree in the third period.⁶ As a child in the first period, his utility is comprised of consumption that includes his parents' investment in his human capital. In the second period, he is a parent who produces income, consumes, makes transfers to his parents, and invests in his children. In the third and final period, he is a retiree who does not earn income and whose utility is comprised of consumption only, which is a function of transfers from his children and returns from assets, such as pension schemes.

The utility of parents in the second period will depend on their consumption (comprised of their expenditures minus transfers to their parents, savings to invest in assets for retirement and spending on children's education) and the present discounted value of the future income of

⁵ Becker [3]: 164 recognises the effect of assortative mating on investment in children's human capital when he stated: "The optimal investment in children depends on the propensity to invest in children, an important parameter of the analysis. This propensity is positively related to the fraction of family income spent on children, rates of return on investments in children, and the degree of assortative mating...." He does not explore the implications.

⁶ The model can be formulated with respect to any number of offspring.

their children and their next period's utility. The variables of interest are the children's future income associated with their earnings generated through returns to their human capital and the expected future household income of the children that will be the source of transfers to parents in the third period. Expected household income of the children is based on the children's own earned income, the income of their likely future spouses and any other sources.⁷

The utility function of parents of two children, a son and a daughter, in the t^{th} period is given by

$$U_t = u_t + \delta(W_{t+1}^m + W_{t+1}^f + U_{t+1}), \quad (1)$$

where u_t is their utility this period from consumption, W_{t+1}^m is the future income of their son, W_{t+1}^f is the future income of their daughter, U_{t+1} is next period's utility, and δ is the discount rate or subjective rate of time preference. The utility derived from their children is assumed to be separable from the utility produced by their own consumption. Utility next period, U_{t+1} , is comprised of consumption in the form of returns from savings invested in assets, A_{t+1} , and transfers from their son's future household, B_{t+1}^m , and from their daughter's future household, B_{t+1}^f .

Expected transfers from children is a function of parental investment in their human capital that generates earnings for the children in the third period, which is augmented by marrying spouses who earn income from their human capital. Parents do not invest in their likely children-in-law, but the future earnings of children's spouses will constitute a proportion of the children's future household income that is expected to generate transfers to parents in the third period. Thus, each yuan invested in the children's human capital will also generate transfers, yielding a return from this investment. This yield is more uncertain than that from assets and will carry a larger risk premium.

⁷ The optimising investment decision is made under uncertainty and is based on expected returns assessed from current market conditions, i.e., perceived earnings differentials and expected transfers. In other words, the first and third periods are purely consumption, in which retired parents consume in the latter and children consume in the first. To illustrate the implications of acting on perceived returns, if a child decides not to accept the investment of his parents, then he will not generate future income from investments in his human capital. Or, a child when he becomes an adult could decide not to make transfers to his parents. In which case, parents were wrong again to rely on current conditions in which there are transfers with the amount dependent on the children's future household income. These perceptions can be wrong, but parents take uncertainty into account when maximising utility in these models. There is a well-understood circularity in that perceived future earnings differentials will affect the current decision to invest in human capital. The same can be true for the decision to invest in children's human capital in the hopes of generating future transfers. There is empirical evidence in many societies where transfers are made to parents, and which may be implicit (e.g., parents living with children in old age). This could be a result of parents acting to recoup some of their investment if they were wrong in judging expected returns and they cannot otherwise consume in retirement. The decision to invest based on current conditions will take these transfers into account.

The marginal yield on assets, A_{t+1} , is R_a , while the marginal yields on investments in the human capital of the son and daughter with respect to the returns to their future income (R_h^m , R_h^f) and the portion of that which will generate transfers to parents in the next period (R_b^m , R_b^f) are respectively given by

$$R_h^m = \partial W_{t+1}^m / \partial \gamma_t^m, \quad (2a)$$

$$R_h^f = \partial W_{t+1}^f / \partial \gamma_t^f, \quad (2b)$$

$$R_b^m = \partial B_{t+1}^m / \partial \gamma_t^m, \quad (2c)$$

$$R_b^f = \partial B_{t+1}^f / \partial \gamma_t^f, \quad (2d)$$

where γ_t^m and γ_t^f denote the proportion of household income, Q_t , expended on the human capital of their son and daughter, respectively. Thus, the investment in the human capital of the children yields two forms of returns. One is that which accrues solely to the children, so that parents derive utility from their children's future income that is a result of having invested in their human capital. The second is indirect. There is utility associated with the human capital investment that will produce income for the children's future household, a portion of which will accrue to parents as transfers. In other words, the portion of the earnings generated from the children's human capital, augmented by their future household income, will comprise one source of financial support for parents' consumption in the third period. Thus, the parental decision is both motivated by the direct utility associated with their children's future income and also indirectly through expected transfers.⁸

The intertemporal budget constraint is

$$Z_t + \gamma_t^m + \gamma_t^f + A_{t+1}/R_a + B_{t+1}^m/R_b^m + B_{t+1}^f/R_b^f = PV(Q_t), \quad (3)$$

where $PV(Q_t)$ is the present value of parental household income, comprised of Q_t and expected Q_{t+1} . In other words, parental household income this period consists of expenditures (Z_t) that include consumption, transfers to their parents, savings invested in assets for retirement, and forgone consumption invested in children's education (γ_t^m and γ_t^f). Parental household resources next period (Q_{t+1}) is equal to the discounted value of all expected sources of consumption ($A_{t+1}/R_a + B_{t+1}^m/R_b^m + B_{t+1}^f/R_b^f$), i.e., assets and transfers, which are the result of savings and investment in children's human capital.

The allocation between investing in assets or children when contemplating consumption next period is determined by a first order condition equating the marginal yields on the three sources of income in the third period:

$$\delta A'_{t+1} + \delta B_{t+1}^{m'} + \delta B_{t+1}^{f'} = l_u/R_k = \delta U'_{t+1}. \quad (4a)$$

⁸ We assume transfers are expected given current conditions, but need not be. It may be that bequests to children are given instead. If transfers are not expected from children, parents may leave bequests that will increase the children's future income. It may be that parents are secure in having more than adequate assets to support their consumption in retirement, so they will gain more utility from leaving bequests to ensure that their children have additional future income with little or no expectation of transfers.

The yields on human capital are expected to decline as more resources are invested, $\partial R_h^m / \partial \gamma_t^m \leq 0$, $\partial R_h^f / \partial \gamma_t^f \leq 0$, $\partial R_b^m / \partial \gamma_t^m \leq 0$, and $\partial R_b^f / \partial \gamma_t^f \leq 0$, and will eventually equal returns to nonhuman capital, assets in this model, R_a assumed to be constant. Since $\partial R_h^m / \partial R_a < 0$, $\partial R_h^f / \partial R_a < 0$, $R_h^m > R_a$ and $R_h^f > R_a$, the returns from investing in the human capital of the children and assets toward retirement support will be equal. Thus, the marginal rate of return on all three forms of capital is denoted R_k .

The next first order condition maximises parental utility and determines their optimal consumption in periods two and three:

$$U'_t = \delta R_k U'_{t+1} = l_u, \quad (4b)$$

where l_u is the marginal utility of income.

The last first order condition determines investment in children's human capital in terms of the utility derived from the future income of the children:

$$\delta R_h^m W_{t+1}^{m'} = l_u, \quad (4c)$$

$$\delta R_h^f W_{t+1}^f = l_u. \quad (4d)$$

Combining the first order conditions gives

$$l_u / R_a = l_u / R_b^m = l_u / R_b^f = l_u / R_h^m = l_u / R_h^f, \quad (5)$$

which shows that the marginal rates of return on human capital in terms of both the children's future income and the expected transfers equal the return on assets when parents maximise their utility in both periods.

Parents will expend both financial and nonfinancial resources to invest in their children's human capital, including both direct investments, such as spending on education, and indirect investments, such as producing social capital that benefits the child (increasing family contacts) or spending time doing homework together (increasing positive environmental factors).⁹ Under credit constraints, all of these will involve expenditures of time and resources as well as forgone earnings.

It is straightforward to see how investments in the human capital of multiple children may differ given different returns to those expenditures. To maximise their utility, parents will invest more in the child with higher returns to his human capital and also more in the child with larger expected transfers. Equation (5) shows that the marginal yields on these investments are equal in equilibrium. If returns to the human capital of the son are higher than for the

⁹ Becker [3] believes that children benefit from the reputation and connections of their families. This is in line with the idea of social capital as offering opportunities to particular families and cultures (see Borjas [6] for findings that the "ethnic" capital of the parents affects the accumulation of human capital of children).

daughter, but expected transfers are larger from the daughter (on account of her marrying a spouse with higher returns to his human capital that parents did not invest in), then parents acting efficiently will consider both sets of returns and invest until the marginal yields are equal.

If daughters who attain a certain level of education benefit from more favourable assortative mating, then parents will invest more in daughters than sons. On the other hand, sons are expected to have higher returns to their human capital under current market conditions and should receive more investment. Both outcomes are consistent with efficiency insofar as there are two components of the yield from investment in children's human capital.

3 Empirical Testing

The hypotheses are as follows

The Personal Rates of Return Hypothesis: Given unequal rates of return to education for sons and daughters, parents will invest more in the human capital of the child with the greater expected future personal income.

The Familial Rates of Return Hypothesis: Given an equal likelihood of providing transfers, parents will invest more in the human capital of the child with the greater expected future household income.

The empirical analysis is in three parts. If we find boy-girl differences in household expenditures on children's education, then we will test our two hypotheses derived from our model of parental investment in children's human capital. The second part test the first hypothesis. We will estimate returns to education for working-aged individuals, which form the expectations for the cohort of school-aged children. If we find educational expenditure to be greater for the children with higher expected returns, then there is support for the "personal rate of return" hypothesis.

The final part of the empirical testing will investigate the second, "familial rate of return," hypothesis. The same gender earnings differentials that are generating unequal returns to education for sons and daughters can cause parents to invest more in daughters if they are more likely to marry a primary income provider through more favourable assortative mating. Even if daughters and sons have similar probabilities of providing transfers, parents anticipate a larger return from spending on their daughter's education than their son's because they do not invest in their children-in-law. A final source of evidence is from the models of unitary versus joint household decision-making. If households make expenditure decisions as one entity, then there is an expectation that transfers will be from the future household income of the children regardless of who earns the income.

3.1 Intrahousehold Resource Allocations Models

We use this approach to model the decision of parents to forgo consumption to spend on education as a measure of direct investment in children's human capital. Intrahousehold resource allocation models sought to disaggregate the expenditure decision of a household (see Doss [11] for an overview). Studies of developing countries suggest the importance of the age-gender composition of the household in resource allocation decisions. They tend to find that expenditure patterns favour males (see Deaton [9]; Alderman and Gertler [1] find that provision of medical care for girls is a luxury good in that it is more income elastic than for boys in Pakistan; DeTray [10] finds in Malaysia that the demand for girls' schooling is more income elastic than that of boys; Behrman and Knowles [5] find that the education of girls is a luxury good in Vietnam). Household expenditures are also thought to differ with the degree of influence of women, suggesting a joint decision-making model (see Haddad, Hoddinott and Alderman [12]). For instance, Song [17], in a study of rural China, finds that greater female bargaining power changes expenditure patterns in favour of health care and education, but does not reduce the pro-boy discrimination in these expenditures (see Knight and Song [14] for similar findings that female bargaining power does not increase expenditure on the education of daughters but benefits sons).

3.1.1 Unitary Household Decision-making Model

We follow the formulation of Deaton [9]. The equation for the proportion of household expenditure on the e^{th} item is given by

$$\gamma_t^e = \beta_0 + \beta_1 \ln(Z_t/n) + \beta_2 \ln(n) + \sum_{g=1}^{G-1} \beta_3(n_g/n) + \beta_4 X_t + \varepsilon_t, \quad (6)$$

where γ_t^e denotes the share of household expenditures spent on the education of children, Z_t is total household monetary expenditure, n denotes household size, n_g is the number of individuals of age-gender demographic group g , $\sum n_g/n$ represents the proportion of individuals of demographic group g in the household, X_t is a vector of control variables, and ε_t is the error term.

3.1.2 Joint Household Decision-making Model

This alternative formulation takes into account potential bargaining as between parents concerning the education of their children. A proxy for relative bargaining power is included. The proportion of household expenditure on the e^{th} item is now given by

$$\gamma_t^e = \beta_0 + \beta_1 \ln(Z_t/n) + \beta_2 \ln(n) + \sum_{g=1}^{G-1} \beta_3(n_g/n) + \beta_4 X_t + \beta_5 E_t^m + \varepsilon_t, \quad (7)$$

where E^m_t denotes the years of education of the mother as a ratio of the total years of education of both spouses. This is a proxy for female bargaining power, among other possible specifications.

3.1.3 Interpreting Patterns of Intrahousehold Resource Allocation

As explained by Deaton [8], because we do not have data regarding actual expenditure on the education of boys and girls but only on all the children in the household, the analysis is based on a correlation between the number of boys and girls in the household and the amount of forgone consumption. This is evidenced through the variable, $\sum n_g/n$. Thus, from both the unitary and the joint decision-making formulations of the model, the coefficient β_3 indicates whether there exists a differential pattern of household expenditure among offspring. If we find β_3 to be significant and different for boys and girls, then we will attempt to explain these findings through our two hypotheses.

3.2 Rates of Return to Education

To investigate the first hypothesis, we estimate returns to education using a Mincerian type formulation of the logarithm of earnings as the dependent variable and a set of personal and other characteristics as the independent variables (Mincer [15]). Following Knight and Li [13], we alternatively estimate earnings functions in which the independent variables include the levels of completed education. The coefficients of each level of education term will indicate the marginal returns to each additional level of education attained.

3.3 Assortative Mating

The second hypothesis derives from the implications of favourable assortative mating, *that is*, individuals of comparable educational attainment are more likely to marry each other (Becker [3]). If this holds, then there is support for the expectation that investing in daughters will generate more transfers than from sons, given the same gender earnings differentials that are causing unequal returns to education. This would be strengthened if we were to find that household expenditure decisions are made not through bargaining, but as a household unit. Then, the source of the income is not as important in decisions on spending or transfers.

4 Conclusion

The proposed model of human capital posits that insofar as expenditures on children's education entail forgone consumption, parents are likely to be efficient rather than altruistic in their decisions. This is reinforced by the expectation that parents will live in retirement and will depend on transfers from children, as well as on assets, for consumption.

Our model of parental investment in children's human capital considers two returns that motivate parental choices regarding expenditure on children's education. Future labour market discrimination will cause investment to differ for sons and daughters. Given perceived gender earnings differentials, parents will invest more in the human capital of sons, in accordance with standard returns to education analyses. A second consideration in our model is expected transfers. Even if all offspring have an equal probability of providing transfers, favourable assortative mating will generate higher returns from investments in daughters than in sons. This is owing to the same gender earnings differentials that will cause daughters to marry spouses with higher returns to human capital and augment their future household income more than for sons. We thus expect that parents will invest more in the human capital of daughters. These two effects are simultaneous and there will be a range over which one effect dominates the other.

In conclusion, our approach to parental investment in children's human capital is not dependent on altruism or guilt but on two sets of returns. The circular nature of perceived future labour market discrimination will affect the investment decision in counteracting ways. Finally, we propose a direct test of human capital models by measuring forgone consumption.

References

- [1] Alderman, H. and P. Gertler. 1997. Family Resources and Gender Differences in Human Capital Investments: The Demand for Children's Medical Care in Pakistan. *Intrahousehold Resource Allocation in Developing Countries: Models, Methods and Policy*. L. Haddad, J. Hoddinott and H. Alderman, eds. Baltimore: The Johns Hopkins University Press.
- [2] Becker, G.S. 1993 [1964]. *Human Capital*. Chicago: University of Chicago Press.
- [3] Becker, G.S. 1981. *A Treatise on the Family*. Cambridge, Massachusetts: Harvard University Press.
- [4] Becker, G.S. 1993. Nobel Lecture: The Economic Way of Looking at Behavior. *The Journal of Political Economy* 101(3), 385-409.
- [5] Behrman, J.R. and J.C. Knowles. 1999. Household Income and Child Schooling in Vietnam. *The World Bank Economic Review* 13(2): 211-256.
- [6] Borjas, G.J. 1992. Ethnic Capital and Intergenerational Income Mobility. *The Quarterly Journal of Economics* 107(1), 123-150.
- [7] Croll, E. 1994. *From Heaven to Earth*. London: Routledge.
- [8] Deaton, A. 1989. Looking for Boy-Girl Discrimination in Household Expenditure Data. *The World Bank Economic Review* 3(1), 1-15.
- [9] Deaton, A. 1997. *The Analysis of Household Surveys*. Baltimore: The Johns Hopkins University Press for The World Bank.
- [10] DeTray, D. 1988. Government Policy, Household Behavior, and the Distribution of Schooling: A Case Study of Malaysia. *Research in Population Economics* 6, 303-336.
- [11] Doss, C.R. 1996. Testing Among Models of Intrahousehold Resource Allocation. *World Development* 24(10), 1597-1609.
- [12] Haddad, L., J. Hoddinott and H. Alderman, eds. 1997. *Intrahousehold Resource Allocation in Developing Countries: Models, Methods and Policy*. Baltimore: The Johns Hopkins University Press.
- [13] Knight, J. and S. Li. 1996. Educational Attainment and the Rural-Urban Divide in China. *Oxford Bulletin of Economics and Statistics* 58(1), 83-117.
- [14] Knight, J. and L. Song. 2000. Differences in Educational Access in Rural China. Presented at the American Economics Association Annual Meeting, 7-9 January 2000. Boston, Massachusetts, USA.

- [15] Mincer, J. 1974. *Schooling, Experience, and Earnings*. New York: Columbia University Press.
- [16] Parish, W.L. and R.J. Willis. 1993. Daughters, Education, and Family Budgets: Taiwan Experiences. *The Journal of Human Resources* 28(4): 863-898.
- [17] Song, L. 1999. In Search of Gender Bias in Household Resource Allocation in Rural China. Mimeo. Presented at the Workshop on Income Distribution and the Labour Market in China, St. Edmund Hall, Oxford, April 13-14, 1999.