

## WOMEN'S WORK AND THE DEMAND FOR CHILDREN IN HONG KONG

YUE-CHIM WONG

### I. INTRODUCTION

**I**N this paper I study two interrelated aspects of the behavior of married women in Hong Kong that are living with their spouses—the behavior of fertility demand and work supply. Fertility behavior is characterized as a demand for both a certain quantity and quality of children. Quantity is operationally defined as the number of living children and quality as the average educational attainment of the children in terms of school years attended. If a woman decides to join the labor force, then her work behavior is characterized as a choice of either one of two forms of working arrangement. The *in-firm* work arrangement necessitates the worker to perform her tasks in the firm, which is typical of most modern jobs. The *out-firm* work arrangement allows the worker to perform her tasks anywhere she chooses, i.e., outside the firm; she can, for example, take it home.

The modern economic analysis of the work behavior of married women within the family context began with the work of Mincer [4], and has since developed rapidly; up-to-date surveys of this literature have been made by Killingsworth [3] and Heckman and MaCurdy [2]. The major novelty introduced in this paper which has not been previously studied is the distinction between in-firm and out-firm work arrangements. The characteristic feature of out-firm work suggests that it may be an attractive form of employment for women who have to spend a considerable amount of time taking-care of their children at home. This arrangement represents an intermediate step between in-firm work and total withdrawal from the labor force, and the decision to accept such a work arrangement would depend on, among other things, previous and expected fertility patterns.

In order to understand the fertility decisions of women, I rely on the theory developed by Becker [1]. Since this is well-documented elsewhere it will not be repeated here in detail. The most important point to note is that child-rearing is a very time-intensive activity for the mother. Hence, an increase in the market productivity of a married woman's time would reduce her demand for children, because the value of her time has increased. Furthermore, the demand for

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TABLE I  
 PERCENTAGE DISTRIBUTION OF POPULATION AGED 5 AND OVER  
 BY SCHOOLING AND SEX IN 1961, 1971, 1976, AND 1981

Schooling	Male				Female			
	1961	1971	1976	1981	1961	1971	1976	1981
None	12.7	11.7	10.1	8.6	41.8	30.5	27.3	23.1
Primary	61.8	56.9	50.0	41.9	45.3	49.1	44.3	37.5
Secondary	23.0	28.7	36.4	42.9	12.1	19.5	27.0	35.3
College	2.5	2.7	3.5	6.6	0.8	0.9	1.4	4.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Hong Kong, Census and Statistics Department, *Hong Kong Census: Main Report*, various issues.

children may be realized more in the form of quality than quantity, implying a tradeoff between quantity and quality components. This is because market productivity is often positively correlated with home productivity, hence, the cost of quantity will rise relative to the cost of quality. This is rather standard analysis. However, if out-firm work is introduced into the picture, then we have a new twist. The distinctive feature of out-firm work is that it allows a woman to perform both market and home work at the same time. This reduces the cost of having children. It may also be argued that the simultaneous production of market and home services at the same time may not result in the same quality of child-care provided. If this is the case, then the effect on the increase in demand for children may be expressed more in the form of quantity than in quality.

Throughout this paper I use simple economic models to interpret the findings. The quantity and quality components of fertility behavior, and the in-firm and out-firm work arrangement choices are studied within the framework which explicitly recognizes their mutual interdependencies. The econometric techniques may appear somewhat involved for some readers, but can be easily understood heuristically. I will not go into the technical details.

## II. THE HONG KONG CONTEXT

The last two decades have been a period of rapid economic growth for Hong Kong. Public subsidies to schooling resulted in a rapid increase in educational capital formation. Table I gives the distribution in percentages of the population over the age of five, by years of schooling for both men and women from 1961 to 1981. The fraction of men with no schooling fell from 12.7 per cent to 8.6 per cent; and those with college education rose from 2.5 per cent to 6.6 per cent. For women, the fraction with no schooling fell from 41.8 per cent to 23.1 per cent; and those with college education rose from 0.8 per cent to 4.1 per cent. The most impressive gains were clearly made by the women. The profound changes in the schooling of women had the effect of increasing the market value

TABLE II  
 PERCENTAGE LABOR FORCE PARTICIPATION RATE IN 1961, 1971, 1976, AND 1981

Age	1961		1971		1976		1981	
	Male	Female	Male	Female	Male	Female	Male	Female
15-19	54.3	47.9	50.4	56.4	43.0	47.2	45.2	42.6
20-24	89.2	51.1	90.2	69.5	87.8	71.8	90.9	79.7
25-34	97.8	33.9	98.4	39.6	97.7	47.7	98.3	56.8
35-44	98.3	38.0	98.6	38.7	98.4	42.9	98.6	53.4
45-54	96.9	42.1	96.6	38.9	95.0	39.6	96.0	46.7
55 and over	73.6	20.7	70.1	24.1	61.1	22.4	60.3	24.9
Overall (15 and over)	90.4	36.8	84.7	42.8	80.4	43.6	82.5	49.5

Source: Same as Table I.

of time of women relative to men. This brought about very significant changes in labor force participation behavior between the sexes, and also in the fertility behavior of women.

Table II gives the labor force participation rates of both men and women from 1961 to 1981, in various age groups. The labor force participation rate of men was quite stable for those between 20 and 55 years of age, but declined considerably over time for both younger and older men. The overall labor force participation rate of men above the age of 15 declined from 90.4 per cent to 82.5 per cent in the two decades. For women the labor force participation rate rose in all age groups above 20 years of age. The overall rate rose from 36.8 per cent to 49.5 per cent during the same period. Except for the very large magnitudes, these changes are similar to those found in most growing economies. One observes over time a rising level of educational attainment and labor force participation among women, especially in the younger age groups. One finds also a greater incentive among women than among men to postpone their age of marriage. The mean age of first marriage was 20.9 for women who married in 1961, and rose to 21.8 in 1976. The corresponding figure for men was much more stable, rising from 25.2 in 1961 to 25.4 in 1976. More dramatic is the rate of decline in fertility. The crude birth rate per thousand population fell from 35.0 in 1961 to 17.7 in 1976. The numbers reflect the improvement in the market opportunities of women, which make delayed marriages and fewer children more attractive.

An even more remarkable result appears when we divide the workers into in-firm and out-firm groups. Table III gives the percentages of out-firm workers in the labor force by age group for both men and women from 1961 to 1981. In 1961 and 1971 the fraction of out-firm workers in the labor force was negligible. But the percentages rose dramatically in 1976 and 1981 for the women in the age groups over twenty-five years of age. In other words, there was a tremendous increase in the fraction of married women who joined the labor force as out-firm workers. Throughout this period, the fraction of male

TABLE III  
PERCENTAGE OF OUT-FIRM WORKERS IN THE LABOR FORCE

Age	1961		1971		1976		1981	
	Male	Female	Male	Female	Male	Female	Male	Female
15-19	0.32	0.84	0.14	0.25	0.46	0.98	0.22	0.45
20-24	0.41	1.05	0.15	0.20	0.70	1.83	0.26	1.00
25-34	0.59	1.91	0.21	0.32	1.07	11.37	0.45	7.16
35-44	0.70	2.01	0.26	0.48	1.75	18.59	0.89	11.58
45-54	0.78	1.30	0.31	0.39	1.63	10.74	1.07	6.49
55 and over	0.57	0.86	0.37	0.48	2.13	8.33	1.31	5.49
Overall (15 and over)	0.62	1.50	0.25	0.34	1.30	7.44	0.68	5.05

out-firm workers remained much more stable with no discernable secular trend. They were always a negligible fraction of the labor force, responding perhaps to temporary economic conditions. The tremendous growth of out-firm workers in the mid-seventies was probably demand induced through the expansion of the garment, toy, and plastic product industries. These were particularly susceptible to out-firm work arrangements. Since then the demand boom has slowed down, as has the number of out-firm workers. Although out-firm work in Hong Kong's export oriented economy is largely demand-determined, the role of out-firm work in shaping the female labor force and women's fertility behavior is independent and can be explored separately. As such, our findings may have relevance to other economies where out-firm work is or can be important, and need not be determined by international markets.

### III. DATA

The relationships between fertility and the work behavior of married women will be analyzed using a 10 per cent sample of the 1976 By-Census of the population in Hong Kong. This sample was chosen because it contained extremely detailed information on the maternity behavior of women. The entire data set contained information on approximately 10,000 households. A list of the variables used in the present study is given in the Appendix.

In the study of labor force behavior, a sample of all Chinese women who were living with spouses who were working heads of households between the ages of twenty and fifty-nine was used. This gave a sample size of 4,156 individuals. In the study of fertility, the sample size was further reduced to women between the ages of thirty-five and forty-nine. This assured that most women in the sample had completed their fertility. Older women were not included because the census did not contain maternity history information for women of fifty or older. The resulting sample size was 2,462, of which 234 had no surviving child at the time of survey.

## IV. IN-FIRM AND OUT-FIRM WORK OF MARRIED WOMEN

In response to child-caring activities, a married woman in Hong Kong can choose among three alternatives in terms of work behavior. She can withdraw from the labor force and specialize in home production activities (denote this state 0), remain in the labor force as an out-firm worker (denote this state 1), or remain in the labor force as an in-firm worker (denote this state 2). In 1976, among women who were married to household heads aged twenty to fifty-nine, 24.1 per cent were in-firm workers and 7.5 per cent were out-firm workers; 68.4 per cent were not in the labor force. The average in-firm worker earned HK\$567 per month and worked forty-six hours a week. The average out-firm worker earned HK\$162 a month, 28.6 per cent that of the in-firm worker. Although hours of work information is not available for the out-firm workers, the earnings figures suggest that most of them are probably part-time workers.

The choice taken among the three alternative states for the married woman would depend on her reservation wage, her respective market wages as an in-firm or out-firm worker, and any fixed money and time costs that may be associated with working as an in-firm or out-firm worker. For trichotomous choices one can define the probability of being in state 0 as  $P_{0j}$ , in state 1 as  $P_{1j}$ , and in state 2 as  $P_{2j}$ . The probabilities would differ for any individual  $j$  but must satisfy  $P_{0j} + P_{1j} + P_{2j} = 1$ . These probabilities can be postulated to depend on a set of explanatory variables, and their effects on the probabilities can be estimated by specifying a statistical model. One such commonly used model is the trinomial logistic model which has been discussed by McFadden [5]. The maximum likelihood estimates of the model are given in Table IV. The effects of the explanatory variables on the probabilities are evaluated at the sample means and are given in corresponding columns of the table under the description "partial derivatives of probabilities."

The estimates show that a 10 per cent increase in the market productivity of the wife, as measured by her predicted log earnings (FLINC), increases her probability of working as an in-firm worker significantly, by 2.6 per cent; but it also decreases her probability of working as an out-firm worker, again significantly, by 1.3 per cent. This latter result suggests that out-firm work may not require a high level of market skills. The effect of an increase in home productivity of the wife, as measured by an additional year of schooling (FED), increases significantly by 0.4 per cent the probability of her being an out-firm worker; but has an insignificant negative effect on the probability of her being an in-firm worker.

The effect of a married woman's age (FAGE) significantly reduces the probability of both in-firm and out-firm work; the strength of this effect is greater for in-firm work. This may reflect both life-cycle and cohort effects. Since entry into the labor market entails certain fixed costs whose return can only be recaptured over a period of time, individuals in the earlier stages of their life-cycle will be more willing to bear such costs. It is interesting to note that

TABLE IV  
MULTIPLE LOGISTIC MODEL OF WOMEN'S WORK BEHAVIOR

	In-firm Worker		Out-firm Worker	
	Logit Coefficients	Partial Derivatives of Probabilities	Logit Coefficients	Partial Derivatives of Probabilities
CONSTANT	-2.766 (2.70)		16.021 (5.70)	
MLINC	-0.628 (8.13)	-0.106	-0.788 (5.60)	-0.035
FAGE	-0.032 (6.14)	-0.006	-0.039 (4.01)	-0.002
FED	-0.017 (1.16)	-0.004	0.064 (2.42)	0.004
FLINC	1.241 (7.16)	0.262	-1.903 (4.24)	-0.127
CHD:0-3	-0.790 (9.94)	-0.145	-0.235 (2.07)	-0.001
CHD:4-6	-0.401 (5.51)	-0.078	0.178 (1.82)	0.016
CHD:7-12	-0.031 (0.79)	-0.011	0.315 (5.68)	0.018
CHD:>12	-0.009 (0.43)	-0.003	0.066 (1.87)	0.004
-2 log likelihood ratio=6,334.26		n=4,156		

Note: Absolute *t*-values in parentheses.

the probability of entering into in-firm work is greater than that into out-firm work at a younger age, a fact that is consistent with the suggestion that fixed costs are lower for out-firm work. Husband's log earnings (MLINC) significantly reduce the probability of both in-firm and out-firm work; the effect is stronger for in-firm work. This shows that a husband's and wife's time substitute each other in home production. An income effect is also in operation which raises the shadow price of the wife's time, but is probably dominated by the substitution effect.

The effects of the children variables are most interesting. One may wish to think of the children variables as introducing fixed costs into decisions regarding work behavior. An additional child aged 0 to 3 has an extremely large and significant effect in reducing the probability (by 14.5 per cent) of being an in-firm worker. It has a much smaller but still significant effect in reducing the probability (by 0-1 per cent) of being an out-firm worker. An additional child aged 4 to 6 significantly reduces the probability (by 7.8 per cent) of being an in-firm worker, but marginally raises the probability of being an out-firm worker. An additional child aged 7 to 12 has an insignificant negative effect on the probability of being an in-firm worker. Additional children over 12 years of age again have no effect

on the probability of being an in-firm worker, but marginally increase the probability of being an out-firm worker. These results confirm two sets of hypotheses. First, young children demand much more of a mother's time and so reduce the probability of her becoming an in-firm worker. The effects are diminished as the children grow older. These findings are similar to most other findings on women's labor market behavior. Second, out-firm work is clearly an intermediate option between in-firm work and not working at all. A married woman can withdraw from the labor force partially when she has young children (aged 0 to 3), and make a partial return as soon as they grow slightly older.

It is important to recognize that by allowing the worker to have control over both when and where to work, out-firm work has additional features of flexibility over and above those associated with part-time jobs. These features are of great value to women whose shadow price of time may be high because of young children, but whose market wages are low. Although the model that has been estimated does not incorporate life-cycle aspects of the decision-making process, it is not unlikely that for most women out-firm work may only be a temporary form of work arrangement, which is chosen during or immediately following the maternity period. This would facilitate market activities and investment in market skills or their preservation in a way that would have been more difficult if out-firm work had not been available as an alternative.

## V. FERTILITY OF MARRIED WOMEN

Becker [1] applied an expanded version of his household production theory to the analysis of the interaction between quantity and quality in the demand for children. Family size is interpreted as a multidimensional goal. One obvious dimension is the number of births a couple has, while the other can represent any of a number of a child's attributes that parents may value. These latter qualitative attributes may include child health or survival, school achievement, adult earnings and socioeconomic status. Becker postulated that quantity and quality are substitutes because an increase in the number of children will raise the cost of providing for the same average quality, and an increase in the average quality will raise the unit cost of having an additional child.

The importance of such a framework is that the effects of family wealth—a husband's market and home productivities and a wife's market and home productivities—on the demand for children can be interpreted as consistent. Tables V and VI give estimates of the regression models for the demand for quantity and quality of children. These were performed on married women aged thirty-five to forty-nine with spouses present. Table V uses the sample of all such women and Table VI restricts the sample to those women who had at least one surviving child at the time of the survey. As the results are quite similar the ensuing discussion will not distinguish between them. In the empirical model, quantity is proxied by the number of children who are still alive at the time of the survey (CHDLIVE) and quality is proxied by an index of average child schooling level (CHDEDUC) (see Appendix for definition). Both reduced

TABLE V  
DEMAND FOR CHILDREN REGRESSIONS: WOMEN AGED 35-49, SPOUSE PRESENT

Dependent Variable	CHDLIVE		CHDEDUC	
	First Stage	Second Stage	First Stage	Second Stage
CONSTANT	-5.744 (5.23)	7.776 (3.60)	1.300 (9.04)	1.264 (9.79)
FED	-0.074 (5.82)	—	0.008 (4.82)	0.007 (4.22)
FLINC	1.046 (6.11)	—	-0.092 (4.10)	-0.082 (4.33)
FAGE	0.021 (2.12)	0.040 (2.49)	0.002 (1.58)	0.002 (1.75)
FMYR	0.002 (2.57)	0.002 (1.36)	-0.0003 (0.26)	
PR/INWK	-3.736 (7.83)	-3.002 (4.71)	0.043 (0.69)	—
PR/OUTWK	6.791 (9.94)	6.367 (5.87)	-0.060 (0.67)	—
CHD:TWIN	0.399 (4.44)	0.209 (1.40)	-0.019 (1.64)	-0.013 (1.09)
CHD:DEAD	-0.485 (3.83)	-0.910 (3.97)	-0.043 (2.60)	-0.050 (3.02)
CHD:M>F	0.411 (13.92)	0.339 (6.64)	-0.007 (1.92)	—
CHD:F>M	0.500 (17.33)	0.388 (7.00)	-0.012 (3.06)	—
SUBHOME	0.437 (5.59)	0.387 (3.14)	-0.004 (0.36)	0.004 (0.38)
OWNHOME	0.422 (4.80)	0.780 (5.31)	0.035 (2.99)	0.041 (3.50)
MED	-0.040 (4.18)	0.033 (1.45)	0.007 (5.32)	0.006 (4.80)
MLINC	0.018 (2.38)	0.259 (3.35)	0.001 (1.68)	0.012 (5.71)
MAGE	0.123 (2.97)	0.032 (3.04)	0.001 (1.77)	0.002 (2.07)
CHDLIVE				-0.015 (9.79)
CHDEDUC		-9.920 (4.18)		
R <sup>2</sup>	0.378	0.193	0.074	0.074
n	2,462	2,462	2,462	2,462

Note: Absolute *t*-values in parentheses.



TABLE VI  
DEMAND FOR CHILDREN REGRESSIONS: WOMEN AGED 35-49,  
SPOUSE PRESENT, AT LEAST ONE CHILD LIVING

Dependent Variable	CHDLIVE		CHDEDUC	
	First Stage	Second Stage	First Stage	Second Stage
CONSTANT	-3.542 (2.67)	6.308 (3.41)	1.262 (6.80)	1.275 (9.29)
FED	-0.078 (6.18)	—	0.009 (5.02)	0.008 (4.27)
FLINC	0.884 (5.22)	—	-0.097 (4.09)	-0.087 (4.32)
FAGE	0.034 (3.51)	0.054 (3.50)	0.002 (1.64)	0.003 (1.92)
FMYR	-0.002 (2.34)	0.002 (1.32)	0.00002 (0.24)	
PR/INWK	-2.843 (6.05)	-2.340 (3.87)	0.051 (0.77)	—
PR/OUTWK	6.961 (10.42)	6.647 (6.54)	-0.038 (0.41)	—
CHD:TWIN	0.378 (4.38)	0.203 (1.47)	-0.020 (1.64)	-0.013 (1.02)
CHD:DEAD	-0.487 (3.79)	-0.888 (4.01)	-0.045 (2.51)	-0.053 (2.96)
CHD:M>F	0.304 (10.49)	0.223 (4.53)	-0.009 (2.26)	—
CHD:F>M	0.408 (14.47)	0.292 (5.52)	-0.013 (3.33)	—
SUBHOME	0.248 (3.16)	0.195 (1.65)	-0.006 (0.51)	0.0009 (0.09)
OWNHOME	0.325 (3.65)	0.648 (4.58)	0.036 (2.91)	0.042 (3.36)
MED	-0.038 (4.06)	0.026 (1.20)	0.007 (5.40)	0.006 (4.80)
MLINC	0.013 (2.06)	0.298 (3.96)	0.014 (1.91)	0.013 (5.66)
MAGE	0.174 (3.43)	0.029 (2.72)	0.002 (1.96)	0.002 (2.18)
CHDLIVE				-0.019 (3.65)
CHDEDUC		-8.90 (3.41)		
R <sup>2</sup>	0.326	0.170	0.081	0.080
n	2,328	2,328	2,328	2,328

Note: Absolute *t*-values in parentheses.

form and structural regression equations are presented. The first stage results are reduced-form results obtained by an ordinary least squares estimation, and the second stage results are structural results obtained by a two-stage least squares estimation. In order to identify the coefficients in the structural equations, a number of variables have been omitted from the second stage regressions. It has often been argued that in many similar studies of fertility demand, the choice as to which variables should be omitted can be quite arbitrary. The structural equations that are reported were obtained by eliminating those variables that contributed the least explanatory power in  $R^2$  sense in the second stage regressions. Fortunately, in our case extensive experimentation has shown that the major results of interest are not sensitive to the choice of which variables are omitted.

The most important results are the significant negative coefficients of CHDEDUC in the CHDLIVE regression, and CHDLIVE in the CHDEDUC regression. This shows that quantity and quality are indeed substitutable. Family wealth is proxied by whether the family lives in owned housing (OWNHOME) or whether the family lives in government subsidized housing (SUBHOME). The latter represents a transfer of wealth towards the family. All the significant coefficients in both the reduced form and structural equations are positive, as expected. This means that an increase in family wealth increases the demand for both the quantity and quality of children.

The market productivity of men is proxied by a husband's log earnings (MLINC) and home productivity by years of schooling (MED). The MLINC coefficients are generally significant and positive in both the structural and reduced form equations. As a whole, the results confirm the expectation that the major effect of an increase in men's market productivity is to increase the demand for children, both in quantity and quality terms. This is because child-rearing is not father's time intensive; hence, income effects will tend to dominate. The MED coefficients are significantly positive in both the reduced form and structural CHDEDUC equations. The evidence is mixed for the CHDLIVE equations; it is significantly negative in the reduced form equation, but changes to insignificantly positive in the structural equation. Hence, an increase in husband's home productivity raises the demand for child quality but has an ambiguous effect on child quantity.

The birth of twins may often be considered an exogenous event. Interestingly, both the structural coefficients of the number of twins (CHD:TWIN) are statistically insignificant in both the CHDLIVE and CHDEDUC equations. This suggests that the family attempts generally to make subsequent fertility readjustments so that there is no net increase in the number of children and so no decline in the average educational attainment of the children. Interestingly, the reduced form coefficient in the CHDLIVE equation is significantly positive, implying that families are on average not totally successful in making subsequent fertility adjustments, as could be expected.

The number of child deaths in a family (CHD:DEAD) is interestingly found to have a significant negative effect on CHDLIVE with a coefficient of  $-0.9$  in the structural equations. This means that most families are in general unable or unwilling to replace children who have died. The effect of CHD:DEAD on

CHDEDUC is also significantly negative. These results imply that the cost of producing quality for families with more child deaths probably is high, and therefore less is produced.

The variables for a married woman's age (FAGE), her total married years (FMYR), and her husband's age (MAGE) attempt to capture the myriad of life-cycle and cohort effects. In general, older men and older women tend to have more children and children who are more educated.

Sex preferences for children are captured by variables denoting the excess number of male children over female children (CHD:M>F), and the excess number of female children over male children (CHD:F>M). The coefficients are significantly positive for both variables in the CHDLIVE equations, reduced form and structural. This suggests that, as a whole, families prefer to have sexual balance. The point estimates are not very different between the two variables. There are no coefficients for the structural CHDEDUC equations because they have been omitted from the second stage regressions. The first stage coefficients are significantly negative, indicating perhaps a tradeoff between quantity and quality. That is, sexual balance in the family is acquired by having more children, which results in a lower average quality. But, since the structural coefficients are omitted because of their low statistical significance, such an interpretation may be highly conjectural.

A wife's home and market productivity is much more difficult to capture. In the CHDLIVE structural equation we use the predicted probability of in-firm work (PR/INWK) to capture a wife's market productivity, and the coefficient is significantly negative. We found also that the coefficient of the predicted probability of out-firm work (PR/OUTWK) is significantly positive in the structural CHDLIVE equation. In the CHDEDUC structural equation, the wife's schooling (FED) is used to proxy home productivity and the wife's predicted log earnings (FLINC) is used to proxy her market productivity. The FED coefficient is significantly positive and the FLINC coefficient is significantly negative. Hence, an increase in the wife's home productivity increases her demand for quality, but an increase in her market productivity reduces her demand for quality. All these results are in accordance with expectations. The reason for excluding the PR/INWK and PR/OUTWK variables from the structural CHDLIVE equations, and the FED and FLINC variables from the structural CHDEDUC equations, is that they were not significant in the structural equations.

## VI. CONCLUSION

The most important finding in this paper is that young children encourage a mother to seek out-firm but not in-firm work. The kind of out-firm work pattern that is presented here, using cross-section data, underlines the importance of competing uses of a mother's time between home and market production, and how fixed costs associated with such production can be reduced through out-firm work arrangements. Similarly, the presence of out-firm work leads a woman to have more children, quantity-wise. This parallel effect emphasizes

the fact that decisions regarding fertility and work choices are made jointly. In this respect, it is important to note that policies which aim at manipulating work patterns of women will at the same time affect their fertility behavior. For example, attempts to bring women into the labor force by providing child-care services or making provisions for out-firm arrangements may lead to a higher birth rate, if such policies are perceived to be permanent.

In the case of Hong Kong, the growth of out-firm workers was not a result of conscious government policy but an autonomous development of the international demand (or derived demand) for such services. By the early 1980s such demand had declined considerably. It is not clear whether the demand for out-firm workers during this period has been perceived as a sufficiently permanent effect so as to have irreversibly altered family fertility decisions. The extent of the effect would also depend upon future demand for out-firm work.

#### REFERENCES

1. BECKER, G. S. *A Treatise of the Family* (Cambridge, Mass.: Harvard University Press, 1981).
2. HECKMAN, J. J., and MACURDY, T. E. "New Methods for Estimating Labor Supply Functions: A Survey," in *Research in Labor Economics*, Vol. 4, ed. R. G. Ehrenberg (Greenwich, Conn.: JAI Press, 1981).
3. KILLINGSWORTH, M. "A Survey of Labor Supply Models: Theoretical Analysis and First-Generation Empirical Results," in *Research in Labor Economics*, Vol. 4, ed. R. G. Ehrenberg (Greenwich, Conn.: JAI Press, 1981).
4. MINCER, J. "Labor Force Participation of Married Women: A Study of Labor Supply," in *Aspects of Labor Economics*, ed. National Bureau of Economic Research (Princeton, N.J.: Princeton University Press, 1962).
5. MCFADDEN, D. "Conditional Logit Analysis of Qualitative Choice Behaviour," in *Frontiers of Econometrics*, ed. P. Zarembka (New York: Academic Press, 1973).

## APPENDIX

Variable Name	Definition
CHD:0-3	Number of children aged 0 to 3 living in the same household.
CHD:4-6	Number of children aged 4 to 6 living in the same household.
CHD:7-12	Number of children aged 7 to 12 living in the same household.
CHD:>12	Number of children aged greater than 12 living in the same household.
CHD:F>M	Excess number of female children over male children.
CHD:M>F	Excess number of male children over female children.
CHD:DEAD	Number of children dead at time of interview.
CHD:TWIN	Number of children born as twins.
CHDLIVE	Number of children living at time of interview.
CHDEDUC	Index of education level attained by children living in the same household. <sup>a</sup>
FAGE	Wife's age in years.
FED	Wife's schooling in years.
FLINC	Predicted log earnings of wife. <sup>b</sup>
FMYR	Number of years wife has been married.
MAGE	Husband's age in years.
MED	Husband's schooling in years.
MLINC	Husband's log earnings.
PR/INWK	Predicted probability wife is an in-firm worker. <sup>c</sup>
PR/OUTWK	Predicted probability wife is an out-firm worker. <sup>d</sup>
SUBHOME	Family living in government subsidized housing.
OWNHOME	Family living in owner occupied housing.

<sup>a</sup> CHDEDUC is defined as follows:

$$\frac{1}{N} \sum_{i=1}^N \frac{s_{it}}{s_t},$$

where  $N$  = number of children aged 6 or above,  $s_{it}$  = schooling attainment of child  $i$  aged  $t$ , and  $s_t$  = mean schooling attainment of all children aged  $t$ .

<sup>b</sup> This is predicted from a regression equation that was estimated using the sample of women who are in the labor force. The explanatory variables included years of schooling, years of schooling squared, years elapsed since the completion of schooling, years elapsed since the completion of schooling squared, dummy for being born locally, dummy for having acquired some form of training.

<sup>c</sup> This is predicted from the coefficients of the trinomial logistic model given in Table IV.

<sup>d</sup> Same as above.