

**FAMILY STRUCTURE AND FERTILITY IN TAIWAN: AN EXTENSION
AND MODIFICATION OF CALDWELL'S WEALTH FLOWS THEORY[†]**

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In this paper I will argue that the effect of patriarchal family structure on fertility is moderated by female education and occupational status. I will show that females with higher educational and occupational status tend not to marry into patriarchal families. For those who do marry into patriarchal families, their educational and occupational status enable them to better resist the pressures to have more children that families try to impose on them. Females with lower educational and occupational status, on the other hand, do not have the personal resources to resist the pressures from the patriarchal family to bear more children. Consequently, these women have higher fertility than the others.

Caldwell (1982) argues in his Wealth Flows Theory that the direction that intrafamilial wealth flows in a patriarchal family has a significant effect on fertility. Caldwell claims that unless the patriarchal family structure is replaced by a nuclear familial system fertility levels will remain relatively high in developing countries. However, he does not specify the nature of the institutional or structural constraints which may facilitate or impede the process of change in the structure of the family. Also, he does not distinguish a nuclear family living arrangement from a "nucleated ideology." It is unclear whether the patriarchal family structure, exemplified in an extended family living arrangement, or the patriarchal ideology, manifested by a strong son-preference, is more important in affecting fertility. I will argue that a patriarchal ideology can exist even in a nuclear family. Patriarchal ideology affects fertility independently of the extended family structure. A society such as Taiwan, which has experienced not only structural changes in family but also fertility decline, provides an opportunity to study both of these phenomena.

This paper seeks to modify Caldwell's argument by showing that females'

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educational level, employment patterns, and occupational prestige play a critical role in facilitating the process of change in family structure. It will also show the role that the parents-in-law play in defining the power structure in the extended family, and how, this in turn, affects the fertility of their daughter-in-law. A comparison is made between the effect of co-residence with in-laws on fertility, and the effect of patriarchal ideology on fertility. Although co-residence may sustain the values of a patriarchal family system, and hence have a direct effect on the desired number of sons and on childspacing, it is the patriarchal ideology of young married couples that is more important in affecting fertility. That is, I will argue that while living with parents-in-law in an extended family may promote a larger desired number of sons and shorter second birth interval, the strength of the couples' son-preference has a stronger effect on fertility (see Figures 1 and 2).

I. Trends in Fertility, Female Education, Labor Force Participation, and Occupational Prestige.

There have been great increases in female educational attainment and labor force participation over the last thirty years in Taiwan. The average number of years of schooling for women increased from 1.4 in 1951 to 7.4 in 1983. In 1951, the proportion of females aged fifteen and over who received at least some college training or better was only 0.4%, whereas in 1983 it rose to 7.8% (Chiang, 1986). Also, over the last twenty years female labor force participation has increased from 33.1% in 1965 to 43.3% in 1984; the average annual rate of increase is 4.9% for females, compared to 2.9% for males (Liu, 1985). The steady decline in total fertility rate for all women started in 1958, six years before the island-wide expansion of the family planning program was initiated. This decline accelerated after the program was expanded in 1964. By 1984, the total fertility rate reached 2.05, i.e., replacement level. However, the total marital fertility rate remained relatively high. It was 7.99 in 1964 and 6.67 in 1984 (Statistical Yearbook, 1986).

These changes seem to imply that women's status in Taiwan has improved. However, research has shown that female labor force participation *before marriage* not only fails to emancipate young women from the patriarchal family system, it may actually reinforce the subordinate roles of women (Gallin, 1982; Greenhalgh 1985). For lower class families, there are extreme pressures on young women to enter the labor force. These women are pressured into taking whatever job they can

find in order to support their brothers' education. Kung (1983) also argues that the effect of wage-earning on the improvement of women's status at home and in society are limited in Taiwan. For women who have sought employment in unskilled factory sectors, the wages they earn are relatively low and only meet already existing expectations of being sacrificing and obedient. The patriarchal family structure forces these women to use their wage-earning capacity to fulfill their traditional roles rather than to gain autonomy. The earning capacity of women also does not necessarily lead to a relatively more equal status for females (Salaff, 1981). Thornton et al. (1984) found that the vast majority of *unmarried female* workers contribute much of their earnings to their parents. From 1973 to 1980 there has been very little increase in the percentage of unmarried female workers who keep a substantial portion of their earnings for themselves.

Although female labor force participation before marriage has been encouraged for various reasons, a high proportion of Chinese people still believe that women's place is at home. Women are educated for the purpose of being better mothers (Diamond, 1975). Some enterprises still force women to resign when they get married or give birth (Chen and Rong, 1987). Studies on how the patriarchal system has been able to perpetuate its control of unmarried women and their labor do not show whether female labor force participation *after marriage* could bring about any structural change in the family. Therefore, this paper will examine how education, labor force participation, and occupational prestige of *married females* affects the nature of Chinese patriarchal family structure. The mechanisms between female status, family structure, and the effects of both on fertility will be discussed within the framework of Caldwell's Wealth Flows Theory.

II. Caldwell's Wealth Flows Theory

A. Fertility and the Necessity for Change in the Family Structure

There are two aspects of Caldwell's wealth flows theory. Economically, he argues that fertility is a result of economic considerations in the family. In a familial mode of production, where the net intergenerational flow of wealth and obligation is from children to parents, unrestricted fertility is advantageous to the parents. On the other hand, in a capitalist mode of production, the intergenerational flow is from parents to children. In this type of society it becomes economically "rational"

to limit fertility.

In addition to the economic aspect of Caldwell's Wealth Flows Theory, there are social and cultural aspects. He argues that there is a cultural superstructure which underlies intrafamilial allocations of material and emotional resources. This superstructure ultimately affects fertility due to its influence on economic activities. Specific norms and values which support this superstructure in a patriarchal society may remain intact even under the impact of economic development. In order to change familial relationships, and particularly the direction of intrafamilial flows of wealth dictated by familial obligations in a patriarchal family system, Caldwell claims a "social revolution" is required. Caldwell asserts that a transformation in the social structure, in which the patriarchal family system is embedded, is a precondition for fertility decline. The establishment of a nuclear family not only requires "economic nucleation" but also "emotional nucleation."

Based on these economic and structural aspects, Caldwell asserts that the transition from unrestricted to restricted fertility is "the product of social rather than economic change." Caldwell argues that the coexistence of high fertility with rapid economic growth in many developing countries is the result of economic modernization without structural transformation.

B. Criticisms of Caldwell's Theory

One of the main criticisms of Caldwell's Wealth Flows Theory is that he does not discuss how institutional or structural constraints might impede or facilitate the process of change in the structure of the family (Thadani, 1978).

Another criticism of Caldwell's theory is that extended family networks of mutual obligation and support facilitate fertility decline rather than perpetuate high levels of fertility (Cain, 1982). However, I believe that this depends on how one defines "extended family networks." If a kinship network includes not only the parent-son relationship but also other relatives, a strong kin network can actually facilitate fertility decline. The kin network provided by other relatives can be an alternative to dependence on children in old-age. However, in a society where the parent-son relationship is the focus of the kinship network, fertility is positively related to the strength of the kinship network. It is possible that patriarchal values

or norms can exist between parents and children even in a nuclear family structure. Co-residence with in-laws may indirectly promote fertility, but it is the patriarchal sentiments of the young married couple which has a stronger effect on fertility.

C. What Caldwell's Theory Explains and Fails to Explain About Fertility in Taiwan

Even though the total fertility rate for all women in Taiwan has reached replacement level, i.e., each couple has only two children, the total marital fertility rate is still relatively high. Its fluctuation which corresponds to traditional ideology is well known. I will show how the patriarchal family ideology still promotes high fertility independently of the effect of extended family structure. The patriarchal family ideology results in a strong preference for sons and co-residence of couples with their in-laws. The strong preference for a son in Chinese society is partly due to the intrafamilial financial obligation that exists between generations. However, it is also due to ancestor worship. Therefore, the son-preference of the young married couple may reflect their expectation for their son when they get old. The son-preference of the parents-in-law may not carry any practical expectation, but only reflect the sentiment of ancestor worship.

Based on the framework of Caldwell's Wealth Flows Theory, Figure 1 shows a modified model. It incorporates factors which have an effect on family structure. It also separates the effect of extended family structure on fertility from the effect of patriarchal ideology. Females' education and occupational prestige have a direct effect on family structure. Females' educational level and occupational prestige, and family structure all have a direct effect on patriarchal ideology. The desired number of sons and co-residence affect fertility independently. The effect of strong preference for sons on fertility can be used to show how patriarchal ideology is in fact more important than the effect of extended family structure. This will clarify and modify Caldwell's notion of extended family structure vs patriarchal ideology.

III. Patriarchal Ideology

A. Why Sons Are Highly Preferred in Chinese Families

The patriarchal family system that exists in Chinese society has been well-

documented by scholars. Under this system, sons are highly preferred over daughters. Ideologically, the Chinese believe that their lives are continued in the lives of their sons. As long as one generation succeeds another, the predecessors are perpetuated. Failure to bear a son means not only the end of the family line but the death of all the ancestors as well.⁽¹⁾ Therefore, having sons is perceived as the greatest responsibility of every couple to their ancestors. As Muncius, a Confucian at about 500 B. C., said two thousands years ago, "there are three things that are unfilial, and to have no sons is the greatest of these." This sentiment is deeply ingrained in the Chinese culture and has served as a norm for centuries (Wolf, 1972; Yang, 1945). In families in which the first child is female, the second birth interval may be shorter than if the first child were male. Also, it is not uncommon for a family to continue to have children until they have reached their desired number of sons. Therefore, the relationship between the sex of the first child with second birth interval and the total number of children ever born also reflects the role that patriarchal ideology plays in increased fertility.

In addition to ideological reasons for son-preference, sons have long been a symbol of prosperity and prestige due to their utilitarian function to the parents. Since each family is a primary productive unit, sons are expected to contribute to the family when they grow up. Even a son born in a poor family is not looked upon as someone who will further increase the parents' burden. Rather he is looked upon as someone who will eventually share the family burden. Parents think they will be better off when their son gets older. This expectation increases with each son born (Gallin, 1982; Yang, 1945)⁽²⁾.

(1) When a bride fails to bear a son, there are several alternative practices. In the past, the husband can ask for a divorce and send back the bride to her own family. Or, the husband may legitimately have a concubine. Today, the husband may adopt a son from his brothers. Sometimes, when the family has not totally given up on the bride, a little girl is adopted, not as a substitute for children born to the family but to "lead in a son." In this case, the girl will be named as "Chaw-di", which means leading a brother into the family (Wolf, 1972; Yang, 1945).

(2) Yang (1945:84-85) gives an interesting description of the conflict between having more sons and financial burden in a family. He says, "It is true that when the time comes to divide a house, a self-seeking wife may secretly wish that her husband did not have so many brothers. But at the same moment she may also proudly look at her three or four sons and say in her heart: 'Why should I worry? I have four sons. Land and houses? They will earn them.' When she looks at her second sister-in-law, she secretly has pity on her: 'Poor Second Sister-in-law, she has only one son but three daughters. What can those daughters do? They are only money-losers.'"

The expectation from the older generation becomes an obligation for the youth. "Yang Er Fung Lau", i.e. raising sons as an insurance against the insecurity of old age, is a popular proverb. One of the son's major obligations in life is to see that his parents have as comfortable and happy an old age as he can provide. Staying together with the parents even after marriage is both a symbolic and practical means to fulfill this obligation. The ideal family living arrangement of the Chinese is a patriarchal extended family that includes married brothers, their wives and children, and unmarried sisters integrated under the dominant role of the parents. Although high mortality, low life expectancy, and economic insufficiency in most families have limited the prevalence of the extended family system in the past, the normative family structure in Taiwan is still the "stem family" in which parents co-reside with one married son, usually the eldest.

Several studies have shown that both parents and children in Taiwan believe in the idea that parents will stay with their sons in old age. In a study of the value system in Taiwan, Grichting (1970) reported that the preferred location of newlyweds was with the husband's parents. The main reasons given for this arrangement were mutual support and the "parents' needs." More than half of the male adolescents and one fourth of the female adolescents sampled preferred an extended family over a nuclear one (Olsen, 1979). When the respondents were asked if the aged parents should live with their son at the cost of hurting his own family life and marriage, about eighty percent of the Chinese parents (81% for mother and 79% for father) and eighty-five percent of the sons said "yes" (Lin, 1985).

In reality, the "co-residence stem family" is the predominant household pattern in Taiwan. Freedman et al. (1982) found that the large majority of Taiwanese older parents lived with their married son, and the great majority of Taiwanese young couples began married life by living with the husband's parents. Chang (1976) reported that eighty percent of the people aged 65 years and older lived with their married or unmarried children. A similar pattern was reported by Chen (1977)

in a study of the aged in the city of Taipei.

B. The Status of Daughter in Chinese Families

Compared to sons, daughters are recognized as a non-permanent member in the Chinese family. A daughter is destined to become a wife and a daughter-in-law in another family for whom she will work and bear children. Therefore, daughters have long been called "money-losers" (Wolf, 1972; Yang, 1945). Even though the educational level and the labor force participation of Taiwanese females have increased over the past thirty years, the status of a daughter in Chinese families has not really improved. Greenhalgh (1985) shows how the traditional system of sexual stratification has been perpetuated by the patriarchal family structure. Different child-raising strategies of the family intensify sexual inequality, even during this period of rapid economic development. As discussed in preceding section, the earning capacity of women does not lead to a relatively more equal status for unmarried females in their parental family.

C. Why Son-Preference Leads to High Fertility

In societies where people have very little control over their own fertility, son-preference will not be a significant factor leading to high fertility. However, in Taiwan where over 85% of the married women have used contraception, strong son-preference will lead to a larger discrepancy between the desired number of children and the actual number of children.

D. The Status of Daughter-in-Law in the Extended Family

The first birth interval refers to the length of time between marriage and the birth of the first child. There are two reasons for us to expect a shorter first birth interval from a co-residence family than from a nuclear family. One has to do with the expectation that parents-in-law have about the couple's marriage. The other is related to the status of daughter-in-law in an extended family.

The emphasis on fertility in marriage rituals is not simply a survival from the past. Most members of the senior generation still say quite frankly that the function of a daughter-in-law is to provide descendants. Even if the first grandchild is a

daughter, it relieves the anxiety that the bride will be unable to have children. The grandfather wants to see the new generation before he dies. The birth of a grandchild means that the family will continue and prosper. The grandmother wants to enjoy the pleasure of babies which she can love and even spoil. Both of them may start to anticipate a son from the next birth (Wolf, 1972).

The daughter-in-law is eager to have a baby due to her uncomfortable status in a patrilocal extended family. Although a son brings in his wife (an extra labor force participant) to his family when he gets married, the bride is usually not welcomed with enthusiasm. At best, she is treated with mild toleration. It is well known that a bride is criticized aggressively by her mother or sisters-in-law in Chinese society (Yang, 1945; Wolf, 1972; Olsen, 1974). Her insecure status will last until she becomes a child's, especially a son's, mother. If she is married to an eldest son, she is made to feel that she must become pregnant right after marriage (Wolf, 1972; Yang, 1945). Bearing at least one son not only provides her with settled status in the family, it also gives her a chance to become a mother-in-law in the near future. It is this hope that makes her present situation bearable.

IV. Hypotheses

Based on the characteristics of the patriarchal ideology in Chinese society, and its effect on intervening fertility variables, three general hypotheses can be generated:

H1: High female status will influence the type of family structure that the female marries into. High status females will tend not to marry into patriarchal families, whereas low status females will marry into patriarchal families.

H2: Females who marry into patriarchal families will tend to have stronger patriarchal ideology and higher total fertility, especially if they have low educational and occupational status.

H3: Patriarchal ideology and patriarchal family structure have independent effects on fertility.

METHODS

The data for the study are drawn from a nationwide survey of labor force participation conducted in 1985 by the Office of the Directorate-General of Budget, Accounting and Statistics, Executive Yuan, Republic of China.⁽³⁾ The survey consisted of personal interviews with a nationwide probability sample of 27,140 women. The sample was designed to be representative of all 361 townships in Taiwan with the exception of the 30 townships in which Taiwan's small aboriginal population lives (less than 3 percent of the population). Information on the labor force participation as well as the social and demographic characteristics of each woman between 15 years old and over was obtained. Information concerning the women's employment, fertility preferences, and other selected demographic characteristics for each married female between 15 and 50 years old was also collected. In addition, a male respondent was located in each household. Information on his labor force participation, social and demographic characteristics was acquired.

This analysis is restricted to currently married women who were between 40 to 49 years of age in 1985 and who were employed before marriage. Females younger than 40 years old were excluded from the analysis because fertility measures will be biased against those with delayed marriage. Females older than 50 years old were excluded from the analysis because no information was obtained about their co-residence after marriage. Although this age group can only represent approximately the fertility level between 1955 and 1965, since the total marital fertility rate has been relatively stable over the last twenty years—7.90 in 1965 and 6.39 in 1985 (Statistical Yearbook, 1986)—the analysis will still show us the mechanism between patriarchal ideology, extended family structure, and fertility. Within this age group, those who continue to work after marriage are analyzed separately from those who cease to work (either temporarily or permanently) after marriage. It is assumed that females who continue to work after marriage have a different effect on family structure from those who do not continue to work. Thus, the hypotheses are tested for two subsamples: (1) ages 40 to 49 who continue to work after marriage, and (2) ages 40 to 49 who cease to work after marriage.

(3) I would like to thank Mr. Lo, Chung Nan of the Office of the Directorate-General of Budget, Accounting and Statistics, Executive Yuan, Republic of China, for granting me permission to use this data.

Females who had never participated in the job market before marriage were excluded from the analysis for two reasons. First, there is no measurement for their occupational status. Second, it is assumed that these women, compared to those who worked before marriage, have very few personal resources with which to resist a patriarchal family structure. This becomes very clear later on when we look at the different mechanisms among females who continue to work after marriage compared to females who leave the job market either temporarily or permanently for various reasons.

Female status is operationally defined as the educational level, labor force participation, and occupational prestige of the female before marriage. Female educational level (EDUC) is based on the highest year of school attended. While it would have been preferable to know the highest year completed, the categories obtained permit a relatively unambiguous ordering of educational attainment: 1 = no formal education, 2 = elementary school, 3 = junior high, 4 = vocational, 5 = senior high, 6 = college, and 7 = university or more.

Female occupational status (OCCUP) was generated from the question: "What is/were your occupational status?". Females whose employment was without interruption were asked only for their current occupational status. Previous occupational status was obtained for those who had temporarily or permanently left the job market after marriage.⁽⁴⁾ A total of 99 occupations were identified by female respondents. Stevens and Hoisington's prestige scores (1987) were used to generate an occupational-prestige score for each of these 99 occupations.⁽⁵⁾ A low prestige score implies low socio-economic status.

Patriarchal family structure was measured with the question, "How many months did you live with your parents or with your parents-in-law within the first

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- (4) Although it would have been preferable to have their pre-marital occupational status for females who continue to work after marriage, to substitute current occupational status for the pre-marital one should not be too problematic since female mobility in employment is relatively limited in Taiwan. Further analysis will investigate the possible consequence of this substitute.
- (5) Although it would have been preferable to use prestige scores developed on a sample from Taiwan, the specific scores on Taiwanese females were not available. Use of the scores developed by Stevens and Hoisington can be justified on the grounds that there is a consistent ranking of occupations cross-culturally (Treiman, 1977).

five years after you got married?" This question was answered only by respondents whose parents or parents-in-law were still alive when they got married. The duration of co-residence with parents-in-law (CORESD) was treated in continuous form and ranged from 0 to 60 months. Preliminary analyses revealed no differences in fertility among those staying with only one in-law (either the father or the mother-in-law) compared to those staying with both the father and the mother-in-law. Therefore, no distinction is made between these different types of extended families.

Patriarchal ideology was measured by desired number of sons (IDSON) and the effect of the sex of the first child (SEX1) on the second birth interval and the number of children ever born (CHILD). Desired number of sons was measured by the question: "How many children do you think are most ideal to your family? Of the total, how many of them are sons?". (The desired number of children was not included in the analyses due to its high correlation with desired number of sons). The sex of the first child was dummy coded: 0 = boy and 1 = girl.

Two intervening fertility variables were used in the analysis: age at marriage (AGEMARG) and the second birth interval (INTER2). Age at marriage was measured by the question: "How old were you when you first got married?". The second birth interval refers to the number of days between the birth of the first and the second child in a family. This was created based on the question: "When was your first, second, and third child born?". Both year and month were recorded for each birth. The second rather than the first birth interval was used for three reasons. First, since there is no information on the month when each couple got married, the first birth interval – which measures the month between marriage and the first birth – could not be generated precisely. Second, it was found that the first birth interval has little variance. About three-fourths of the population (74%) had their first child within two years after marriage. Third, the second birth interval allows us to see how the sex of the first child affects the second birth interval and total fertility. If the first child is female, the second birth interval may be shorter than if the first child were male. Nine females were excluded from the analysis due to their unusually short second birth intervals.

The number of children ever born in the family was used as the measure of total fertility for each couple. Women aged 40 and over are assumed to have finished their childbearing period because of the low age specific fertility rate of this age group – only 1.0 in 1985 (Statistical Yearbook, 1986) – and because only 9 of the married

women aged 40 to 49 in this sample expected to have more children.

RESULTS

Since there is a clear causal order among variables in the model, path analysis, "a method for studying patterns of causation among a set of variables" (Pedhazur, 1982), was used. Ordinary least squares regression was used to estimate the parameters of separate path models of each of the two subgroups: (1) ages 40 to 49 who continue to work after marriage, and (2) ages 40 to 49 who cease to work after marriage. Tables 1 to 2 present the zero-order correlation matrices, means, and standard deviations for all the variables for each subgroup.

TABLE 1: Correlation Matrix, Means, and Standard Deviations
of Variables in the Model, Females Aged 40 to 49
Who Continue to Work after Marriage

	EDUC	OCCUP	AGEMARG	CORESD	IDSON	SEX1	INTER2	CHILD
EDUC								
OCCUP	.683**							
AGEMARG	.391**	.374**						
CORESD	-.279**	-.257**	-.200**					
IDSON	-.388**	-.311**	-.245**	.196**				
SEX1	-.034	-.031	-.038	.001	.012			
INTER2	-.046	-.064*	-.130**	-.024	-.075**	-.017		
CHILD	-.316**	-.265**	-.376**	.144**	.300**	-.032	.251**	
MEAN	2.05	26.25	21.51	47.53	1.86	.52	787.59	3.97
STDDEV	1.30	10.69	2.69	22.76	.49	.50	343.01	1.31

N = 868

* P < .05

** P < .000

TABLE 2: Correlation Matrix, Means, and Standard Deviations
of Variables in the Model, Females Aged 40 to 49 Who
Do Not Continue to Work after Marriage

	EDUC	OCCUP	AGEMARG	CORESD	IDSON	SEX1	INTER2	CHILD
EDUC								
OCCUP	.650**							
AGEMARG	.228**	.193**						
CORESD	-.190**	-.152**	-.173**					
IDSON	-.222**	-.231**	-.221**	.195**				
SEX1	-.017	-.031	.083*	.044	-.100*			
INTER2	-.019	-.017	-.156**	-.012**	-.012	-.082*		
CHILD	-.262**	-.272**	-.339**	.169**	.300**	-.073*	.128	
MEAN	2.00	26.01	21.72	40.29	1.80	.466	786.15	3.86
STDDEV	1.02	8.01	2.95	25.90	.56	.50	421.26	1.27

N = 639

* P < .05

** P < .000

Figure 1 shows the path coefficients for females who continued to work after marriage. The results reveal that both educational level and occupational prestige have a significant negative effect on co-residence with in-laws for this subgroup. These two variables also have a significant positive effect on the delay of marriage. Co-residence is significantly related to the desired number of sons. A longer period of co-residence with in-laws leads to an increase in the desired number of sons. However, co-residence does not shorten the second birth interval, nor does occupational prestige. Age at marriage and desired number of sons significantly shorten the second birth interval for this subgroup. Except co-residence and occupational prestige, all the rest of the variables in the model have a significant effect on the number of children ever born.

Figure 2 shows the path coefficients of those who did not continue to work after marriage. Education is significantly related to co-residence and age at marriage. Occupational prestige neither has a significant effect on age at marriage nor on co-residence. Educational level and occupational prestige can significantly decrease desired number of sons, while co-residence with in-laws has an opposite function. The magnitude of co-residence in increasing the desired number of sons is even

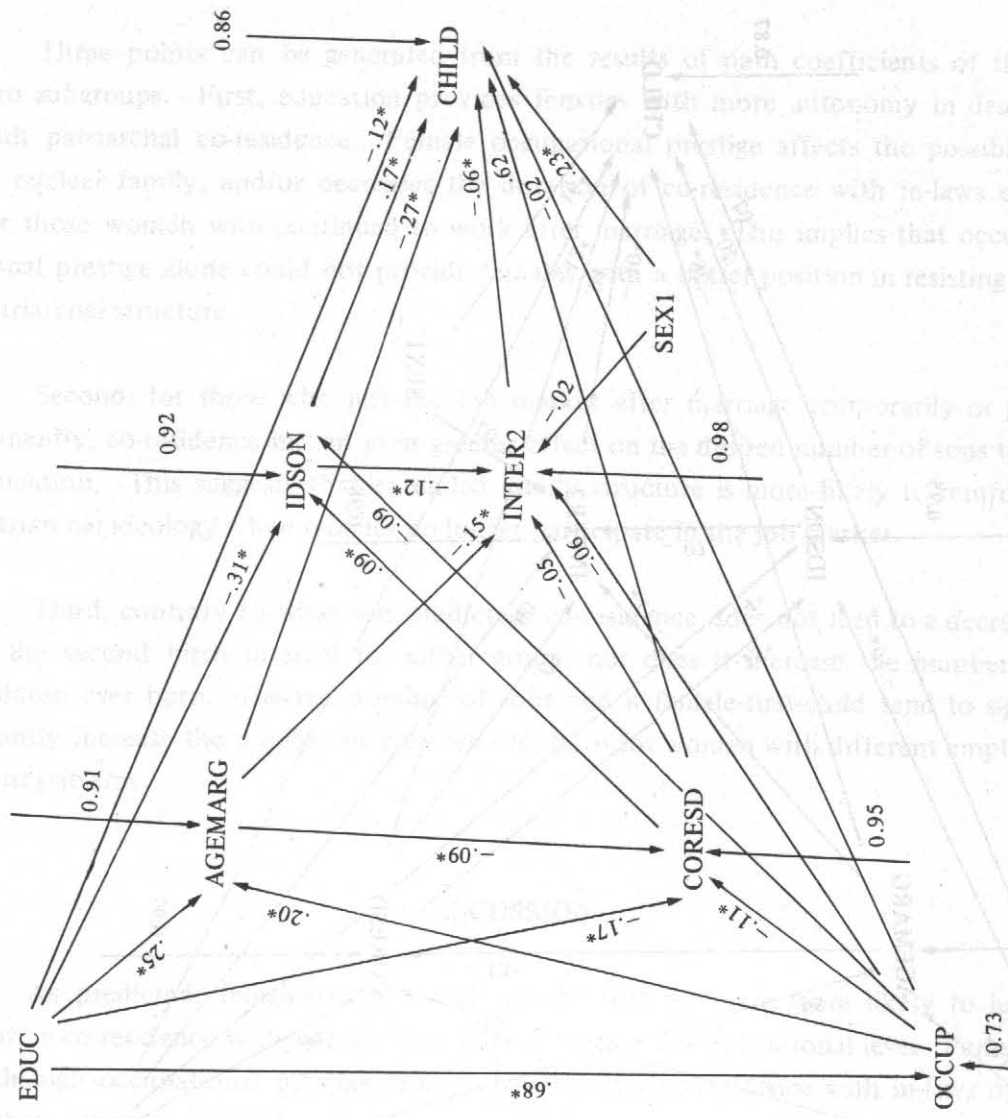


FIGURE 1. Females Aged 40 to 49 Who Continue to Work after Marriage

TABLE 5. Marriage After 40 to 49 Who Continue to Work After Marriage

EDUC

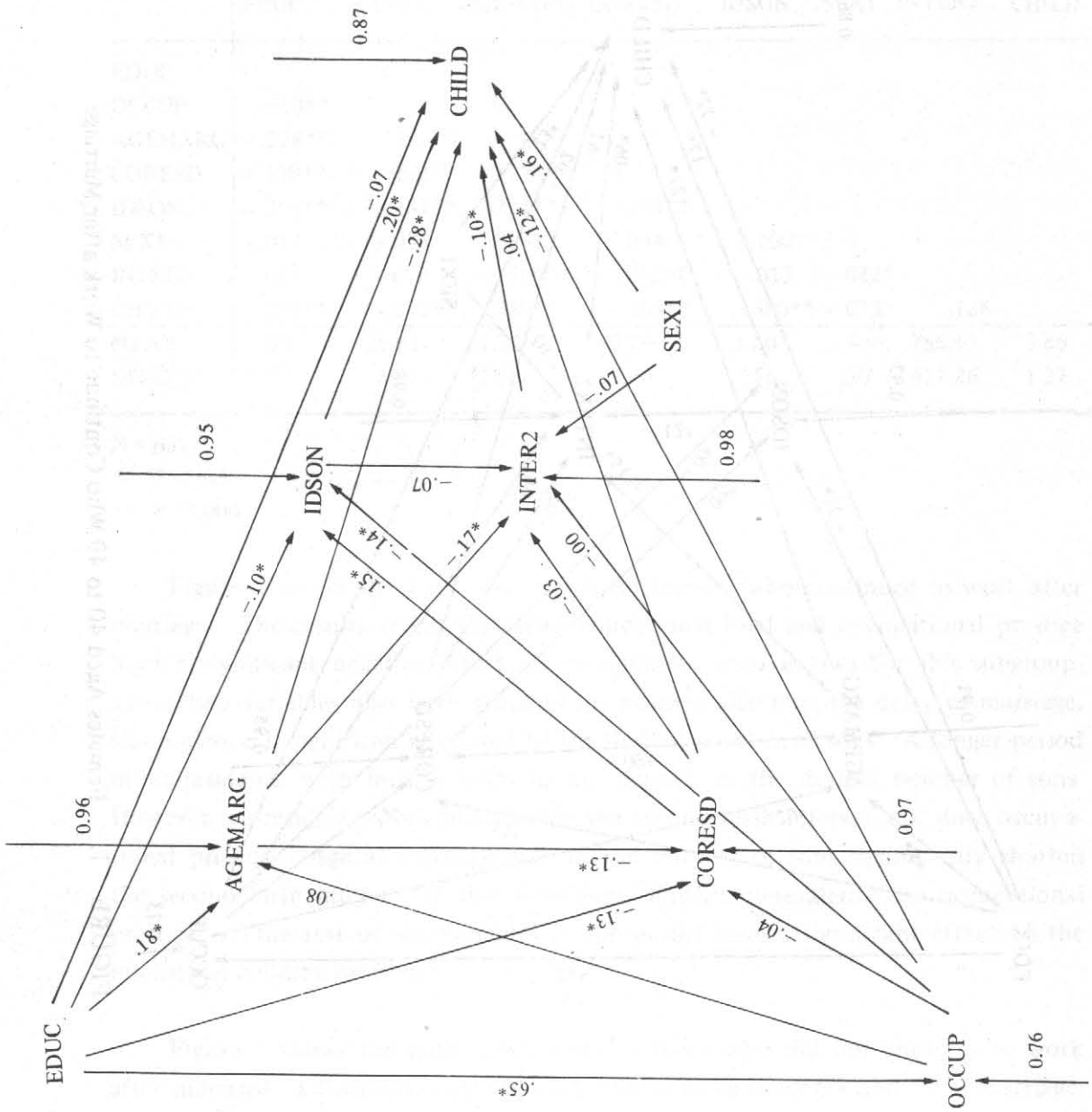


FIGURE 2. Females Aged 40 to 49 Who Do Not Continue to Work after Marriage.

stronger than educational level and occupational prestige. Age at marriage is the only variable which shortens the second birth interval significantly. Neither educational level nor co-residence with in-laws affects the number of children ever born significantly.

Three points can be generated from the results of path coefficients of these two subgroups. First, education provides females with more autonomy in dealing with patriarchal co-residence. Female occupational prestige affects the possibility of nuclear family, and/or decreases the duration of co-residence with in-laws only for those women who continued to work after marriage. This implies that occupational prestige alone could not provide females with a better position in resisting the patriarchal structure.

Second, for those who left the job market after marriage temporarily or permanently, co-residence has an even greater effect on the desired number of sons than education. This suggests that extended family structure is more likely to reinforce patriarchal ideology when females no longer participate in the job market.

Third, contrary to what was predicted, co-residence does not lead to a decrease in the second birth interval for either group, nor does it increase the number of children ever born. Desired number of sons and a female-first-child tend to significantly increase the number of children ever born for women with different employment patterns.

DISCUSSION

As predicted, females with a high educational level are more likely to have shorter co-residence with in-laws than females with a low educational level. Females with high occupational prestige tend to have shorter co-residence with in-laws only if they continue to work after marriage. This contradicts previous findings on the effect of female labor force participation on patriarchal family structure for *unmarried women* (Gallin, 1982; Kung, 1983; Salaff, 1981). Rather than reinforce females' subordinate roles in the parental family, female labor force participation after marriage provides women with two chances to bring about changes in their own family structure. First, if they continue to work after marriage, females with

high occupational prestige are more likely to establish nuclear families and/or to co-reside for a shorter period of time with in-laws than those with lower occupational prestige. Second, for women who continue to work after marriage, the patriarchal family structure exerts less influence on females' desired number of sons. Because patriarchal family structure was treated as a continuous variable, i.e., from 0 to 60 months, the analysis does not distinguish females who establish nuclear families from those who marry into extended families. It is possible that those who do not stay with in-laws at all are very different from those who do. Therefore, further analysis should re-categorize this variable so that it will capture the difference between nuclear and extended families.

Contrary to Caldwell's theory, patriarchal family structure, as measured by co-residence, only moderately increases the desired number of sons for young couples. It does not shorten the second birth interval, nor does it increase the number of children ever born. There are several alternative explanations of these results. First, the results may suggest that the parents-in-law do not possess the authority to affect their daughter-in-law's reproduction. Second, the results may imply that although parents-in-law tend to increase the desired number of sons of young couples, it will not directly affect the in-laws' own interests if the young couples do not have a 'sufficient' number of sons. It is the young couple, not the parents-in-law, who would be disadvantaged if a son were not available in their old age. Third, the non-significant result on the second birth interval may only show that the second birth interval is not a proper measurement of fertility. Previous research on family planning programs has found that contraception is used mainly to decrease unwanted children, not to space children in Taiwan (Sun et al., 1978). Fourth, because the information on co-residence with in-laws was only limited to the first five years after the young couple got married, the actual length of co-residence through their married life is unknown. Although more than 50 percent in the sample said that they stayed with their in-laws 60 months, we do not know how many of them established their nuclear families later on. Therefore, the results may underestimate the effect of extended family structure on the number of children ever born. Freedman et al. (1982) gathered information on the actual length the couple stayed with in-laws and found that couples who have stayed in the extended families more than ten years have a larger desired family size and relatively higher fertility than those who stay with in-laws less than five years.

Desired number of sons significantly affects the second birth interval for those who continued to work after marriage. Females who have a larger desired number of sons tend to have a shorter second birth interval than those with a smaller number of desired number of sons only if they stayed in the job market. Desired number of sons also has a significant effect on the number of children ever born. This was true for both subgroups. Females with a larger desired number of sons are more likely to end up with more children in the family than those who have a smaller desired number of sons. The sex of the first child has a significant effect on the number of children ever born for the older age group.

These results suggest that the patriarchal ideology, manifested through son-preference, does effect females' reproductive behavior. The fact that a female-first-child does not shorten the second birth interval may be due to their larger desired number of children. Having one daughter does not immediately increase the anxiety of not being able to bear sons. However, interestingly enough, a female first child does eventually increase the number of children ever born in the family.

Compared to the effect of co-residence, patriarchal ideology has a stronger effect on fertility. This seems to suggest that the duration of co-residence with parents-in-law has relatively little influence on the reproductive behavior of the younger generation. Nonetheless, since son preference is known as a strong predictor of fertility, without having another independent measure of patriarchal ideology we can not conclude that son preference is more important in predicting total fertility than patriarchal family system.

Occupational prestige affects co-residence with in-laws only if females continued to work after marriage. It significantly affects the number of children ever born only for females who do not continue to work after marriage. This implies that females who continue to work after marriage have a different fertility pattern from those who do not continue to work. However, because the model was analyzed separately for women who continue to work after marriage and those who do not continue to work, it is not possible to determine the impact of female labor force participation on fertility. Also, in this analysis, it is difficult to assess how different employment patterns may bring about structural change in the family. Therefore, future research should include female labor force participation as a dummy variable in the model.

CONCLUSION

Female education, labor force participation, and occupational prestige play a crucial role in bringing about change in the family structure. Regardless of their work status after marriage, females with higher education are more likely to co-reside with their in-laws for a shorter period of time than females with lower education. The effect of patriarchal family structure on patriarchal ideology is weaker than education. This suggests that female education, labor force participation, and occupational prestige serve as personal resources which women can use to resist the pressures from the patriarchal family to bear more children. Contrary to Caldwell's theory, co-residence, and hence family structure, only moderately increases the desired number of sons. Patriarchal family structure does not affect the second birth interval nor does it affect the total fertility. However, patriarchal ideology, as manifested through son preference, does affect the second birth interval and the number of children ever born. Thus, Caldwell's theory must be modified so that it will distinguish the effect of extended family structure on fertility from the effect of patriarchal ideology.

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台灣的家庭結構與生育力： 科威爾財富流動理論的引申和修正

熊秉純*

(中文摘要)

應用來自民國七十四年行政院主計處收集的『臺灣地區婦女生育與就業調查資料』，本文試著去修正科威爾的財富流動理論以便分析已婚婦女的生育行爲。

科威爾(J. C. Caldwell)的財富流動理論(Wealth Flows Theory)指出，父系家庭對生育有顯著的影響。他認為在開發中國家中，除非小家庭制度取代此父系家庭結構，否則其生育力會維持偏高的狀態。然而科威爾沒有討論造成家庭制度變遷的社會因素以及傳統父系家庭結構中的那些因素會影響生育力。爲彌補此缺失，本文特別指出婦女的教育程度、就業經驗和職業類別會導致家庭結構的變遷。另外本研究亦指出，即使在傳統的父系家庭裡，教育程度和職業階層高的婦女，其生育力較低。

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**FAMILY STRUCTURE AND FERTILITY IN TAIWAN: AN EXTENSION
AND MODIFICATION OF CALDWELL'S WEALTH FLOWS THEORY**

(ABSTRACT)

Based on the data from a nationwide survey of labor force participation conducted in 1985 by the Office of the Directorate-General of Budget, Accounting and Statistics, Executive Yuan, Republic of China, this project tries to modify Caldwell's Wealth Flows Theory in order to analyze fertility behavior of married women.

Caldwell's Wealth Flows Theory indicates that a patriarchal family has a significant effect on fertility. Unless the patriarchal family structure is replaced by a nuclear family system, he claims, fertility levels will remain relatively high in developing countries. However, he does not discuss social factors which may influence the process of change in the family structure and which factors in the patriarchal family may influence fertility. To make up this shortcoming, this paper shows that female educational level, employment patterns, and occupational prestige brings about change in the family structure. This research also indicates that women with higher education and occupational prestige have lower fertility. In addition, it finds that female occupational status is a main factor to bring about change in the family structure.