

CHILDLESSNESS PATTERNS IN TAIWAN[†]

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INTRODUCTION

In recent years a considerable literature has emerged on the social and economic aspects of childlessness. The phenomenon of childlessness has been interpreted generally as a demographic response to modernization and development. In countries in the incipient stages of development, childlessness, which is mainly involuntary, tends to decline with increases in modernization; see the studies of Zaire by Romaniuk (1980) and Tabutin (1982), Mexico by Poston and his colleagues (1985), and Egypt by Poston and El-Badry (1986, 1987). Conversely, in fully developed countries, childlessness is mainly voluntary and tends to increase as modernization increases; see the studies of the United States by Poston and Gotard (1977), Davis (1982), Poston and Kramer (1983), and Canada by Veevers (1972) and Wolowyna (1977). There has been only a minimum amount of attention devoted to studies of childlessness trends in newly developed countries and areas. This paper attempts to address this void by analyzing the patterns of childlessness among the hsien and major cities of Taiwan.

In the next section we review the general findings of studies of childlessness in fully developed countries, as well as in developing countries. We then set forth specific propositions and hypotheses with regard to the demographic and socioeconomic influences of the variation in childlessness among the Taiwan subareas. With data from the 1980 *Census* of Taiwan and the 1980 *Demographic Yearbook* of Taiwan, our hypotheses are subjected to empirical test. The final section discusses

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the implications of our investigation.

PRIOR STUDIES

Strictly speaking, childlessness is either voluntary or involuntary. Involuntary childlessness is mainly due to subfecundity, i.e., the diminished capacity to reproduce (McFalls, 1979a: 3). There are various causes of subfecundity, including genetic factors, psychopathology, disease, nutritional deficiencies and environmental factors (McFalls, 1979a, 1979b). Most of these causes are especially prominent in the developing world, especially those dealing with disease and nutritional deficiencies. With increases in development, therefore, one would expect that these causes would tend to become less prevalent and influential. And since childlessness in the developing world is mainly involuntary (Poston et al., 1983), levels of childlessness should decline.

Previous investigations have shown support for this hypothesis. Romaniuk (1980) has examined the effects of early modernization on childlessness in Zaire and its subregions from the mid-1950s to the mid-1970s. During this twenty-year period which was characterized by improvements in the provision of health services and reductions in malnutrition, populations in which formerly infertility was high experienced a dramatic reduction in childlessness (Romaniuk, 1980: 304; see also his 1974 study of the James Bay Indians).

In a study of Western Zaire over a twenty-year period, Tabutin (1982) reported that fertility had increased, and infertility has declined, in those areas in which formerly fertility was low, notably in the context of expanding socioeconomic development. And in a cross-sectional analysis of the states of Mexico in 1970 by Poston and his associates (1985), structural development and health conditions were found to be negatively associated with levels of childlessness. Poston and El-Badry have found essentially the same kinds of relationships among older women in their studies of childlessness in Egypt in the mid-1970s (Poston and El-Badry, 1986, 1987).

Childlessness in many countries of the developing world is thus largely involuntary. Levels of childlessness tend to decrease with increases in levels of

modernization. This is not the situation, however, in the developed world. Since by definition, developed countries have already experienced the forces of modernization, levels of involuntary childlessness should be low. Voluntary childlessness should be increasingly prominent. We observe below that although this is indeed the case presently in developed countries such as the U.S., Canada and elsewhere, such patterns have only characterized these countries in the past two or three decades.

The satiric Tom Lehrer, the nightclub singer and recording artist who entertained college students in the United States in the 1960s, noted in one of his more popular songs that "From the Bible to the popular song,/There's one theme we find right along;/Of all ideals they hail as good,/The most sublime is motherhood!" This point of Lehrer's was a most appropriate observation for that era. The norms relating to marriage and procreation were pervasive and pronatalist. Indeed, since the end of World War II, few women in the U.S. chose voluntarily not to be mothers. Everyone was expected to have children, to want to have children, and to rejoice at the prospect of having children (Veevers, 1973s). Motherhood was valued in its own right, and those who purposefully did not have children experienced severe negative sanctions (Veevers, 1973b; Blake, 1974: esp. 36-37). Such women were thought to be selfish and self-centered for not having children when they could have had them had they wanted.

So how many married women actually had no children? Studies conducted in 1955 (Freedman et al., 1959) and in 1960 (Whelpton et al., 1966) consistently reported very low levels of childlessness, usually about 4 to 5 percent of women who had completed their childbearing. Those cases which did occur resulted mainly from biological impairments. Very few married women were childless by choice. For instance, the 1955 national survey conducted by Freedman and his colleagues reported that childlessness had declined significantly since the early 1940s, and that "childlessness now results mainly from fecundity impairments. Few ... couples ... will be voluntarily childless, that is, will deliberately avoid having any children throughout their married life" (Freedman et al., 1959: 46). A national survey conducted in 1960 by Whelpton and his associates also found a virtual absence of voluntary childlessness. It was noted that nearly all American couples in the childbearing ages demonstrated "a strong aversion to childlessness ... voluntary childlessness is nearly extinct" (Whelpton et al., 1966: 162-163).

The situation has changed drastically, however, in recent decades. The U.S. birth rate has plummeted to the lowest level ever recorded; the total fertility rate in past years has been hovering at about 1.7. And as the birth rate has declined, the childlessness rate has increased. In 1980, for instance, over 40 percent of white married women under the age of 30 had no children; 20 percent of married white women between the ages of 25 and 34 had no children. But unlike the situation in the 1950s, most of the current childlessness in the U.S. is voluntary and temporary. Poston and Kramer have found, for example, that of U.S. married white women in the 1970s under the age of 30 who had no children, all but a few were voluntarily and temporarily childless (1983). Similar patterns have also been found in Canada (Veevers, 1973b); Wolowyna, 1977).

While it is certainly the case that many of these temporarily childless women will eventually have children, it is far from true that all of them will eventually have children. Many analyses of U.S. childless women have shown that very large proportions of the temporarily childless remain childless through the end of their child-bearing years (Veevers, 1973b; Poston and Kramer, 1983). The emergence of voluntary childlessness in the U.S. and other developed countries is no longer a hypothesis but a reality.

The developed world has experienced major changes in fertility control values. As Bumpass has noted, "Childbearing is now voluntary in a radically different sense than ever before ... (In previous decades, U.S.) women could not confidently plan a lifetime of childlessness, nor even the prevention of unwanted fertility ... The adult role expectations of women were (thus) structured around motherhood ... Cultural values with respect to fertility were, in part, rationalizations of the inevitable ... (Today) motherhood itself is fully a matter for rational evaluation. Since it ... (no longer must) be rationalized because inevitable, costs as well as virtues must be weighed ... Obviously, childbearing roles offer much that is rewarding, but these rewards are not likely to be experienced equally by all women ... (Motherhood has thus become a competitor) with other social roles.

Having reviewed prior studies of childlessness in countries of the developing and developed world, we turn attention now to Taiwan. Given its current levels of development, Taiwan should be beginning to show the childlessness patterns of countries such as the United States and Canada.

RATIONALE

Taiwan is a newly developed and industrialized area. The island is usually not grouped with the fully developed countries of the West, nor identified as a developing area. Along with Korea, Brazil, Argentina and a few other countries, Taiwan belongs in a special class of recently industrialized areas. Taiwan has been undergoing large-scale modernization since the early 1950s when the Nationalist government first began to implement land-reform programs. The island's first two Four-Year Plans paid particular attention to agricultural programs; the overall objective during this period "was to develop industry through agriculture" (Tsai, 1982: 65). The next two Four-Year Plans were aimed at switching the economy from an agricultural to an industrial base, thus encouraging investment, renovating the financial institution, and increasing the levels of modernization. In recent years, the Taiwan government has "instituted a series of wide-ranging projects designed to transform Taiwan into a modern industrialized economy ..." (Tsai, 1982: 66). Many of these projects have been aimed at the production of energy and the development of efficient transportation networks. Generally, industrialization and its subsequent economic growth "have brought wealth to the people of Taiwan in recent years" (Tsai, 1982: 74). Taiwan is one of the showcase of newly developed areas in the world today.

We know from demographic transition theory that fertility is negatively associated with modernization. As a country experiences increasing levels of development, fertility declines. During the past three decades, fertility in Taiwan has followed this pattern in a most dramatic manner. Table 1 presents total fertility rates and net reproduction rates for Taiwan for selected years during the 30-year period from 1956 to 1986. The total fertility rate has fallen from more than 6.5 children per woman in 1956 to less than 1.8 children per woman in 1986. (The net reproduction rate has declined from 2.8 in 1956 to almost .8 in 1986.) Reductions in fertility and reproduction of this magnitude in a thirty year period are astounding, and are among the most rapid declines in the demographic history of the world. The levels of fertility and reproduction in Taiwan today are considerably below replacement levels. As we note at the base of Table 1, replacement level fertility is associated with a total fertility rate of 2.1 and a net reproduction rate of 1.0.

As one might suspect, fertility in Taipei City is even lower. Freedman reports total fertility rates for Taipei of 2.08 in 1977 and 1.60 in 1984 (Freedman, 1986:

RATIONAL

TABLE 1
TOTAL FERTILITY RATES AND NET REPRODUCTION RATES:
TAIWAN, 1956 – 1986

| YEAR | TOTAL FERTILITY RATE | NET REPRODUCTION RATE |
|------|----------------------|-----------------------|
| 1956 | 6.51 | 2.84 |
| 1961 | 5.61 | 2.49 |
| 1965 | 4.83 | 2.20 |
| 1970 | 4.00 | 1.84 |
| 1975 | 2.83 | 1.36 |
| 1980 | 2.52 | 1.18 |
| 1984 | 2.05 | 0.96 |
| 1985 | 1.84 (Freedman est.) | 0.86 (Poston est.) |
| 1986 | 1.75 (Freedman est.) | 0.82 (Poston est.) |

Source of Data: See R. Freedman, "On underestimating the rate of social change: a cautionary note." *Population and Development Review* 12 (September, 1986), p. 529, 531.

Definitions: The TOTAL FERTILITY RATE may be defined as the average number of children that would be born to a woman if she were to live through her childbearing years (from age 15 to age 49) bearing children at the same rates as women of those ages actually did in a given year.

The NET REPRODUCTION RATE may be defined as the average number of female children that a) WOULD BE BORN to a woman if she were to bear children through her childbearing years at the same rates as women of those ages actually did in a given year, and b) WOULD SURVIVE TO BECOME ADULTS, given the age-specific mortality conditions in effect in a given year.

A TFR OF 2.1 or an NRR OF 1.0 indicate REPLACEMENT FERTILITY, i.e., that level of fertility or reproduction in which a population would replace itself.

532). If we assume the same relationship between Taiwan's and Taipei's, TFRs in 1986 as in 1984, we can estimate that Taipei's TFR for 1986 is slightly above 1.3. A total fertility rate of this very low magnitude is about the same as that of West Germany, the country today reporting the lowest fertility in the world (Population Reference Bureau, 1985). Fertility decline in Taiwan, particularly in the 1980s, has been much more rapid than anticipated (see, e.g., Freedman, 1986). Demographically, Taiwan today is without doubt a developed area.

Voluntary childlessness does not begin to appear in a population at other than minimal levels until the population has experienced considerable socioeconomic and demographic development. As we noted above, involuntary childlessness decreases (and fertility increases) during a population's early and incipient stages of modernization. As the modernizing influences continue, fertility then begins to decline, and childlessness increases as it becomes more and more voluntary. Subregions with the highest levels of modernization and the lowest fertility rates should be characterized by the highest levels of childlessness, particularly among younger women; and vice versa. A somewhat constant amount of involuntary childlessness should remain among the subregions because minimum levels of infertility will always be present in a population irrespective of the levels of modernization (McFalls, 1979a, 1979b).

Given the levels of socioeconomic and demographic development in Taiwan and its subregions in the circa-1980 period, as well as its variability among the hsiens and major cities, we would expect to find higher levels of childlessness in the more developed localities, and lower levels in the less developed subareas. All the subareas should be characterized by low and relatively constant, presumably involuntary, levels of childlessness. But to the extent that the childlessness rates are differentiated among the subareas by differences in development, these differences in childlessness should be due to differences in levels of voluntary childlessness (Poston et al., 1984: 70-71).

DATA AND METHODS

The childlessness data used in this study were taken from the *1980 Census of Population and Housing, General Report, Taiwan - Fukien Area* (Republic of China, 1982). Some of the modernization data were taken from the *1980 Census*, and some

from the 1980 *Taiwan - Fukien Demographic Fact Book* (Republic of China, 1980).

Taiwan in 1980 was divided into twenty-one subareas (see the listing in Table 2). Sixteen are hsiens (counties) with 1980 populations ranging from more than 2.2 million (Taipei Hsien) to slightly more than 100,000 (Penghu Hsien). The remaining five subareas are Taipei Municipality, Kaohsiung Municipality, and the three cities of Keelung, Taichung and Tainan. Taipei Municipality was the largest with a 1980 population of more than 2.2 million; Keelung City was the smallest with a population of almost 345,000. Administratively, the hsiens have jurisdiction over all places within their boundaries, except for the five municipalities and cities just mentioned. Because these places are more developed and more densely populated than the other places in Taiwan, they are directly under the jurisdiction of the Taiwan government and "have a status comparable to the Hsiens" (Republic of China, 1981: 560).

Using census data on the number of children ever born to married women, we have computed for each of the 21 Taiwan subareas a schedule of seven age-specific marital childlessness rates (ASMCR). The rate for age group i may be defined as follows:

$$ASMCR_i = L_i/P_i$$

where L_i represents the number of married women in age group i with no children ever born to them, and P_i represents the population of married women in age group i . ASMCRs have been computed for each of seven age groups 15-19, 20-24, 25-29, ... 45-49.

Table 2 lists the seven age-specific marital childlessness rates for the 21 subareas. At the base of this table are means, standard deviations, and minimum and maximum values for the ASMCRs. The highest rates are found in the Taipei Municipality, and the lowest rates in the Ilan, Tainan and Yunlin Hsiens. There is considerable variability in the childlessness rates, especially those of the younger women. For married women aged 20-24, there is a difference of .10 between the highest rate of .29 for the Taipei Municipality and the lowest of .19 for the Ilan Hsien. Among married women in this age group, 29 percent of them in the Taipei Municipality are childless, compared to 18.8 percent of them in the Ilan Hsien. Among married women aged 25-29, there is also a difference of .10 between the highest (Taipei

TABLE 2

AGE-SPECIFIC MARITAL CHILDLESSNESS RATES:
HSIENS AND CITIES OF TAIWAN, 1980

| AREA | AGE-SPECIFIC MARITAL CHILDLESSNESS RATES | | | | | | |
|-----------------|--|-------|-------|-------|-------|-------|-------|
| | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 |
| Changhwa Hsien | .328 | .218 | .076 | .028 | .017 | .014 | .017 |
| Chiayi Hsien | .373 | .220 | .078 | .024 | .013 | .012 | .014 |
| Hualien Hsien | .375 | .195 | .089 | .037 | .024 | .026 | .027 |
| Hsinchu Hsien | .359 | .226 | .092 | .035 | .018 | .017 | .015 |
| Ilan Hsien | .303 | .188 | .078 | .030 | .018 | .016 | .019 |
| Kaohsiung Hsien | .353 | .204 | .074 | .025 | .016 | .014 | .014 |
| Kaohsiung Muni. | .357 | .243 | .105 | .039 | .025 | .024 | .026 |
| Keelung City | .327 | .215 | .101 | .034 | .018 | .020 | .022 |
| Miaoli Hsien | .349 | .228 | .087 | .027 | .014 | .014 | .017 |
| Nantou Hsien | .346 | .217 | .089 | .032 | .021 | .019 | .020 |
| Penghu Hsien | .364 | .196 | .070 | .023 | .015 | .014 | .016 |
| Pingtung Hsien | .351 | .189 | .071 | .027 | .016 | .014 | .018 |
| Taichung City | .330 | .243 | .108 | .037 | .019 | .016 | .018 |
| Taichung Hsien | .335 | .226 | .089 | .034 | .023 | .022 | .025 |
| Tainan City | .351 | .233 | .101 | .037 | .020 | .016 | .019 |
| Tainan Hsien | .326 | .205 | .069 | .020 | .012 | .011 | .012 |
| Taipei Hsien | .341 | .225 | .106 | .041 | .025 | .023 | .026 |
| Taipei Municip. | .378 | .290 | .168 | .064 | .034 | .029 | .031 |
| Taitung Hsien | .377 | .191 | .079 | .034 | .023 | .024 | .027 |
| Taoyuan Hsien | .355 | .212 | .083 | .037 | .025 | .027 | .029 |
| Yunlin Hsien | .352 | .209 | .065 | .021 | .014 | .013 | .015 |
| Mean | .349 | .218 | .089 | .033 | .020 | .018 | .021 |
| Stan. Deviation | .019 | .023 | .022 | .009 | .005 | .005 | .004 |
| Maximum Value | .378 | .290 | .168 | .064 | .034 | .029 | .031 |
| Minimum Value | .303 | .188 | .065 | .020 | .012 | .011 | .012 |

Source: Republic of China. *The 1980 Census of Population and Housing, General Report, Taiwan - Fukien Area*. Taipei: Census Office of the Executive Yuan, 1982.

Municipality's .168) and the lowest (Yunlin Hsien's .065) childlessness rates.

The differences in rates narrow somewhat as the age groups get older, but even at age 45-49 there is still a difference of a few points between the highest and lowest rates (Taipei Municipality's .031 versus Tainan Hsien's .012).

Observe also in Table 2 the general patterning of the seven age-specific marital childlessness rates for the 21 subareas. Although the ASMCRs for any one age group vary considerably among subareas (see the descriptive data at the bottom of the table), the patterning is very similar from subarea to subarea. Generally the rates are at their highest among the 15-19 year-old married women; they then decline rapidly to age group 30-34, and maintain relative stability through the remaining three age groups (35-39, 40-44, 45-49). Since the ASMCRs are period and not cohort rates, however, this pattern varies occasionally.

The hypothesis guiding this investigation posits a positive relationship between levels of modernization and childlessness in the subareas of Taiwan in the circa-1980 period. In an attempt to employ relevant independent variables, we followed Goldscheider's suggestion that the "key to understanding modernization begins with the process of structural differentiation ... and major social structures, roles and organizations ... including the specialization and separation of economic, family, and religious, political and stratification systems" (1971: 93).

Under the ideal situation of complete data availability, one would obtain empirical indicators of all the various dimensions of modernization set forth by Goldscheider. Unfortunately, data for the 21 Taiwan subareas were not available for all of these modernization components. We gathered data on the following thirteen development indicators (see Table 3): the percentage of employed females aged 15 and over in administrative, executive and managerial occupations (% FEM ADM); the ratio of employed females aged 15 and over to employed males aged 15 and over in administrative, executive and managerial occupations (RATIO F/M ADM); the ratio of the employment rate of females in the age group 25-29 to that of males in

TABLE 3
 OPERATIONAL DEFINITIONS,
 EXPECTED SIGNS OF RELATIONSHIPS WITH VOLUNTARY CHILDLESSNESS,
 & AVERAGE VALUES OF DEVELOPMENT INDICATORS:
 21 HSIENS AND CITIES OF TAIWAN, 1980

| INDICATOR | SIGN | OPERATIONAL DEFINITION | AVERAGE VALUE |
|-----------------|------|--|---------------|
| % FEM ADM | + | % females in administrative occupa. | 10.20 |
| RATIO F/M ADM | + | Ratio of females to males in admin. | 0.46 |
| RATIO F/M EMP | + | Ratio of females to male employ. rates | 0.56 |
| % FEM AGRIC | - | % females in agriculture | 33.05 |
| % FEM TERT | + | % females in tertiary industry | 32.05 |
| F-REMAR | + | Female remarriage rate (per 1000 nonsingle & nonmarried fems) | 16.17 |
| F-DIVORCE | + | Female divorce rate (per 1000 currently married fems) | 3.68 |
| DENSITY | + | Population per square kilometer | 1585.00 |
| TFR | - | Total fertility rate | 2535.00 |
| % FEM ILLIT | - | % females illiterate | 3.86 |
| RATIO F/M ILLIT | - | Ratio of female to male illiteracy | 6.56 |
| % FEM COLLEGE | + | % females attended college or more | 4.22 |
| RATIO F/M COLLG | + | Ratio of female to male attended collg. | +0.52 |

Sources: Republic of China. *The 1980 Census of Population and Housing, General Report, Taiwan - Fukien Area*. Taipei: Census Office of the Executive Yuan, 1982.

Republic of China. *1980 Taiwan - Fukien Demographic Fact Book*. Taipei: Ministry of the Interior, 1980.

the age group 25-29 (RATIO F/M EMP); the percentage of the employed female population aged 25-29 in agricultural, forestry, fishing, grazing and hunting industries (% FEM AGRIC); the percentage of the employed female population aged 25-29 in tertiary industries (e.g., commerce, transportation/storage/communication, finance/insurance/real estate, government, individual services) (% FEM TERT); the rate of female remarriages (per 1,000 nonsingle and nonmarried females) (F-REMAR); the female divorce rate (per 1,000 currently married females) (F-DIVORCE); population density (per square kilometer of total land area) (DENSITY); the total fertility rate (TFR); the percentage of females aged 25-29 who are illiterate (% FEM ILLIT); the ratio of females aged 25-29 who are illiterate to males aged 25-29 who are illiterate (RATIO F/M ILLIT); the percentage of females aged 25-29 who have at least attended some college (% FEM COLLEGE); the ratio of females aged 25-29 who have at least attended some college to males aged 25-29 who have at least attended some college (RATIO F/M COLLG).

The anticipated relationships between each of the thirteen development indicators and childlessness, as well as the average value of the 21 subareas on each of the indicators, are also shown in Table 3. Generally, we expect that among the 21 Taiwan subareas, the higher the percentage of females in administrative occupations and tertiary industries, and the higher their remarriage and divorce rates, and the higher their percentages attending at least some college, the higher the childlessness rates; conversely, the higher the percentages of females in agriculture, the higher the total fertility rate, and the higher the percentages of females illiterate, the lower the childlessness rates; finally, the higher the ratios of females to males in administration and employed, the higher the ratio of females to males attending at least some college, and the lower the ratios of females to males in agriculture and illiterate, the higher the childlessness rates.

Our assumption is that with increasing levels of modernization, fertility declines and childlessness increases. The increases in childlessness are primarily due to its

tendency to become increasingly voluntary in character. This "Western" pattern in the relationship between modernization and childlessness has been reported in numerous studies of the U.S. and Canada (see, e.g., Veevers, 1972; Poston, 1974; Cutright and Polonko, 1977; Freshnock and Cutright, 1978). The tendency to have fewer children is influenced by the same kinds of modernization and development factors as the tendency to have no children voluntarily. In fact, the difference between voluntarily having few children and voluntarily having no children is a difference in degree and not in kind.

RESULTS

In this section we examine the results obtained in our tests of the general hypothesis expecting a positive association between modernization and seven age-specific, rates of marital childlessness in the circa-1980 time period. We have argued in earlier paragraphs that a positive association is expected because the variation in childlessness among the Taiwan subareas should be due mainly to the phenomenon's voluntary component. Childlessness is hence expected to respond positively to the same kinds of modernization and development factors that elicit negative responses in fertility behavior.

We use seven age-specific rates of marital childlessness for each of the twenty-one subareas. Employing seven rates permits us to appraise the degree of influence of modernization at all the stages of the reproductive life cycle of married Taiwan females, from the very youngest to the oldest. More importantly, since we have argued that the bulk of the variation in childlessness among the Taiwan subareas should be due to voluntary childlessness, our employment of seven ASMCRs permits us to evaluate this question indirectly. Voluntary childlessness should be more prominent among the younger married women, particularly those in their 20's and early 30's, than among, say, married women in their 40's, mainly because of the recent timing in Taiwan of modernization and fertility decline. We expect therefore that the relationships between the development indicators and childlessness should be the highest among married women in their 20's and early 30's, and the lowest among women in their 40's.

Zero-order correlation coefficients between each of the thirteen development

TABLE 4

ZERO-ORDER CORRELATIONS OF DEVELOPMENT INDICATORS
WITH AGE-SPECIFIC MARITAL CHILDLESSNESS RATES:
21 HSIENS AND CITIES OF TAIWAN, 1980

| DEVELOPMENT INDICATOR | EXPEC. SIGN | AGE-SPECIFIC MARITAL CHILDLESSNESS RATE | | | | | | |
|--------------------------|----------------|---|-------|-------|-------|-------|-------|-------|
| | | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 |
| % FEM ADM | + | .15 | .70 | .95 | .79 | .58 | .50 | .40 |
| RATIO F/M ADM | + | -.02 | .17 | .60 | .60 | .56 | .54 | .41 |
| RATIO F/M EMP | + | .37 | .40 | .19 | .25 | .13 | .19 | .05 |
| % FEM AGRIC | - | .18 | -.53 | -.72 | -.73 | -.69 | -.61 | -.45 |
| % FEM TERT | + | .08 | .42 | .82 | .68 | .58 | .59 | .42 |
| F-REMAR | + | .49 | .02 | .39 | .62 | .67 | .73 | .69 |
| F-DIVORCE | + | .31 | .28 | .66 | .75 | .68 | .74 | .57 |
| DENSITY | + | .21 | .64 | .81 | .66 | .53 | .38 | .36 |
| TFR | - | -.11 | -.36 | -.67 | -.56 | -.42 | -.42 | -.17 |
| % FEM ILLIT | - | -.02 | -.51 | -.60 | -.73 | -.49 | -.73 | -.51 |
| RATIO F/M ILLIT | - | -.09 | -.26 | -.36 | -.44 | -.26 | -.53 | -.36 |
| % FEM COLLEGE | + | .08 | .76 | .87 | .76 | .47 | .46 | .21 |
| RATIO F/M COLLG | + | -.05 | .63 | .79 | .63 | .41 | .42 | .29 |

Sources: See Tables 2 and 3 for data sources.

indicators and the seven ASMCRs are shown in Table 4. In almost all cases the correlations are in the direction expected by the hypothesis. The female administration variable (% FEM ADM), the female in tertiary industries variable (% FEM TERT) and the female college variable (% FEM COLLEGE) report the highest associations with childlessness, especially among the younger women. In general, the correlations of all the development variables with childlessness, with only a few exceptions, support our expectation of a positive relationship between modernization and childlessness.

For the most part, the modernization factors have the highest relationships with childlessness rates of women in their 20's and early 30's. Women in these younger age groups are in a position to take advantage of the modernization features and their influences on childlessness. These high correlations are also indirect evidence that much of their childlessness is voluntary. For as Veevers (1972) and Freshnock and Cutright (1978) have noted in two influential areal studies of childlessness in the U.S. and Canada, if women are more voluntarily than involuntarily childless, then variation in the degree of the childlessness rates for the areas in which they reside should occur concomitantly with, and in the same direction as, variability in the common determinants of fertility.

Women in the older age groups have already passed through the principal child-bearing years; when they were younger, Taiwan was not as far along as presently with respect to modernization. Their childlessness patterns are therefore less likely to have been influenced by modernization, and, accordingly, more likely to be characterized as involuntary. Many of these women have been married for 10-20 years; if they are still childless at the older ages, the bulk of their childlessness is more likely to be involuntary.

As one would anticipate for a developed and industrialized area such as Taiwan, the childlessness rates for the younger women in the more developed subareas of the island tend to conform to the "Western" model of childlessness. Many of these women are highly educated, are employed outside the home, and have begun to take on the fertility control values of developed societies. As Bumpass (1973) has observed, in such a situation, motherhood becomes more and more a matter for rational evaluation. Since it no longer is inevitable, its positive as well as its negative merits will be weighed. In many ways, motherhood for these younger women has

become a competitor with other social roles.

CONCLUSION

We began this study by hypothesizing that among the hsien and major cities of Taiwan in 1980, levels of modernization should be positively associated with childlessness. Generally, we found support for this hypothesis. The correlations between modernization and childlessness were the highest among women in their 20's and early 30's. We suggested that women in these ages in the more developed subareas of the island, especially the larger cities, are precisely those most able to take advantage of the increased modernization of the areas in which they reside, and their influences on childlessness. These are the women, we would argue, who are the most likely to have large components of their childlessness classified as voluntary.

Voluntary childlessness is likely a new phenomenon in Taiwan. Indeed earlier investigations have indicated such a phenomenon not to be that prevalent. Coombs and Sun (1981: 123) have noted, for example, that childlessness should be mainly involuntary. They wrote that "the cultural norms ... (proscribing) both marriage and children for all women" have not experienced a great amount of change. We agree that Taiwanese familial values have indeed been pronatalist, particularly through the 1960's. We suspect, however, in light of the fertility and childlessness evidence shown in this paper that these norms may be undergoing change in the more developed areas of the island.

Certainly, the high childlessness values of the younger women in areas such as the Taipei and Kaohsiung Municipalities may be due in part to the postponement of children, rather than to the deliberate decision to have no children. Studies of childlessness in the United States, Canada and other Western countries report similar findings. Many of these investigations (e.g., Poston and Kramer, 1983) have endeavored to estimate the components of childlessness that may be classified as voluntary, involuntary and temporary. However, these studies have shown that sizable portions of the temporarily childless women have remained childless through the termination of their childbearing years.

Few married women decide at marriage to have no children voluntarily. Most

of them observe that they will have one or more children at some future date. Many are educated, reside in developed areas of their countries, and have career-level jobs outside their homes. They almost always state that they will in the future have children, but voluntarily have had none to date. Frequently, large proportions of them end up being permanently childless "as a result of decisions to postpone having children until some future time, a future which never ... (occurs)" (Veevers, 1973b: 359).

Among the younger childless women in the more developed cities of Taiwan, it is probably the case that many are temporarily voluntarily childless. However, to the extent that these women follow the patterns of temporarily childless women in the industrialized countries of the West, it is likely that many of them will never have children. Although still conceiving themselves as temporarily childless, many will probably postpone and postpone their decisions to have children until a date in the future that they never experience. If they follow the Western model, the possibility of their engaging in childbearing roles will be evaluated again and again, and postponed again and again.

Considerable work is still required on this topic. For one thing it would be particularly advantageous to be able to calculate ASMCRs that are also broken out by number of years since first marriage. Additional information on the educational attainment of the childless women would also be most valuable. Unfortunately, census data in the printed reports on children ever born are unavailable in such cross-tabulations, along with information on age. This analysis of patterns of childlessness in Taiwan would also benefit from information about the childless women with respect to their contraceptive patterns, knowledge of their fecundity, and intended "timing" of "the first birth" (and subsequent births). Individual data of this type would allow the direct estimation of whether one's childlessness is voluntary, involuntary or temporarily voluntary. However, these kinds of data are typically not available in census reports and must be obtained from fertility surveys (see, e.g., Poston and Kramer, 1983; Poston et al., 1983).

The evidence reported here and the results of childlessness studies in other developed countries would argue against all of the younger childless women in Taiwan eventually deciding to have children. In fact, as the subareas of Taiwan continue to become even more developed, we would expect even higher levels of childlessness.

Fertility, and its converse, childlessness, occur in social settings. These behaviors are very much influenced by the prevailing fertility control norms. As a society modernizes, thereby legitimizing the movement of women from traditional roles of mother and housemaker to more secular educational and occupational undertakings outside the home, voluntary childlessness is a result. The evidence for Taiwan reported in this paper is not incongruent with these expectations.

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台灣¹的無子女模式

鮑思頓*

(中文摘要)

如同南韓、巴西、阿根廷以及其它一些國家屬於近期工業化地區一樣，台灣也是一個新發展起來的工業化地區。台灣的大規模現代化過程始自1950年國民政府的土地改革方案，至今已成為世界發達地區的一個典型。

衆所周知的人口轉變理論表明，生育率的變化反相關於現代化過程。在過去的三十年裡，台灣的生育率變化也跟隨這種理論模式。

西方的無子女問題研究已經證明，隨著現代化的影響，生育率下降，自願無子女的比例隨之增加。現代化程度高的低生育率地區，其無子女比例同時亦很高，特別是年青婦女更日趨於無子女化。相反的，現代化程度低的地區，無子女比例則低。

如果以1980年台灣各地區的社會經濟、人口發展的程度、以及在各地區和主要城市的變化為基礎，我們期望的結果是其發展程度高的地區，無子比例平也高；發展程度低的地區，無子女比例則低。我們將使用1980年台灣各地區的人口，住宅調查資料與1980年台灣地區人口統計資料去驗證這種假設。

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CHILDLESSNESS PATTERNS IN TAIWAN

(ABSTRACT)

Taiwan is a newly developed and industrialized area, and along with Korea, Brazil, Argentina and a few other countries belongs in a special class of recently industrialized areas. Taiwan has been undergoing large-scale modernization since the early 1950s when the Nationalist government first began to implement land-reform programs and today is one of the showcase newly developed areas in the world. We know from demographic transition theory that fertility is negatively associated with modernization. During the past three decades, fertility in Taiwan has followed this pattern in a most dramatic manner. Studies of childlessness conducted in Western countries have shown also that as the modernizing influences continue, fertility declines, and childlessness increases as it becomes more and more voluntary. Subregions with the highest levels of modernization and the lowest fertility rates should therefore be characterized by the highest levels of childlessness, particularly among younger women; and vice versa. Given the levels of socioeconomic and demographic development in Taiwan and its subregions in the circa-1980 period, as well as its variability among the hsiens and major cities, we would expect to find higher levels of childlessness in the more developed localities, and lower levels in the less developed subareas. This hypothesis is tested with data from the *1980 Census of Population and Housing, General Report, Taiwan - Fukien Area* (Republic of China, 1982) and the *1980 Taiwan - Fukien Demographic Fact Book* (Republic of China, 1980).