

# Micro-consequences of Low Fertility in Singapore

*The rapid aging of the population and the shortage of younger workers in the next 20 years are major demographic challenges*

By Paul P.L. Cheung\*

The fertility decline of Singapore is often cited as a success story of a developing country's effort to balance population growth with economic development. Since achieving nationhood in 1965, Singapore's fertility has fallen by almost 70 per cent in about 20 years: the total fertility rate (TFR) dropped from 4.66 in 1965 to a historic low of 1.44 in 1986, after breaking through the replacement level in 1975. The size of successive birth cohorts

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also fell by about one-third, even though the number of married women of reproductive ages increased by more than 70 per cent. After 15 years of below-replacement fertility, Singapore can be characterized truly as a low-fertility society.

Over the same period when fertility declined rapidly, industrialization and national development were proceeding at an unprecedented pace. From 1965 onwards, high growth in gross domestic product (GDP) was achieved year after year, except for the two recessionary periods of 1973/74 and 1985/86. As a result, the value of manufacturing output at standardized market prices increased by more than seven times. Non-manufacturing sectors, especially finance and commerce, also expanded rapidly. By 1989, the per capita income had risen from \$US1,600 in 1965 to \$US15,000, and unemployment fell from 9 per cent to 3 per cent. Singapore is now widely regarded as having become a “newly industrialized” country.

In the initial years of nationhood, the fall in fertility and cohort size provided some critical “breathing space” for economic development. Having just separated from Malaysia, Singapore was trying hard to gain a firm economic footing. This was not easy as the withdrawal of British military bases from Singapore further aggravated the unsettled economic base. However, falling cohort size helped to ease the economic burden of carrying a large dependent population. The bulk of available economic resources was able to be used for developmental projects.

As Singapore developed, the need to control its population growth to meet resource constraints became less critical. The expanding economy could clearly support a larger population base. Also a number of programmes to maximize water and land resources have been successfully implemented. In the past few years, persistent labour shortages have raised the question of whether Singapore should increase its population at a faster pace to facilitate economic growth and whether recent cohort sizes were too small for the manpower needs of a diversified economy. The long-term implications of persistent below-replacement fertility have now been widely discussed. The rapid aging of the population and the shortage of younger workers in the next 20 years are recognized as major demographic challenges for Singapore. Realizing the adverse implications of continuing fertility decline, the Government decided in 1987 to reverse its anti-natalist policy and announced a package of incentives to promote higher births. Since then, the TFR has rebounded to about 1.8 children per woman in 1989 and the cohort size increased correspondingly.

The consequences of the dramatic fall in Singapore’s fertility go beyond the distortions in age structure. The impact on the social and economic structures is evident and no less significant. This article is an attempt to

describe and discuss some of the changes that have occurred in both the family and the occupational structure. Its premise is that the immediate impact of fertility decline on the socio-economic structure is largely mediated through major changes in the roles of women and the restructuring of their life course. The effects of such changes on the family and the occupational structure are discussed. The case of family-owned small businesses serves as an illustration.

### Fertility decline and the family

The rapid fall in Singapore's TFR is due to two factors: the decline in female marriage rates and the reduction in average family size. As would be expected in an urban society, both factors play equally important roles in the fertility decline. The impact of these two factors on the family is discussed in this section.

### Singlehood in Singaporean society

Changes in Singapore's nuptiality pattern have been swift in both the delay in marriage timing and the rise in celibacy. In both instances, the same effect occurs: the distribution of unmarried females by age increased rapidly over time. The extent of the changes is shown in [table 1](#). The share of the unmarried among females aged 30-34 years increased from about 10 per cent in 1970 to about 20 per cent by 1989. For the age group 35-39 years, the percentage increased from 5 to 12 per cent during the same time-frame. The period average age at marriage has also risen over time: from 23.7 years in 1970 to 26 years in 1989.

In the context of Singapore, a delay in marriage results directly in a delay in the departure of daughters from the parental home in the Chinese

**Table 1: Proportion of single women by age group, 1970-1989**

Age group (years)	1970	1980	1989
15-19	95.2	97.7	98.9
20-24	64.6	73.8	82.8
25-29	22.6	34.0	43.0
30-34	9.6	16.7	19.8
35-39	5.1	8.5	12.0
4044	3.3	6.0	7.2

*Note:* Data for 1970 and 1980 include non-residents; data for 1989 are for residents only.

and Indian communities. For the Malays, co-residence of the unmarried daughters with their parents remains the culturally accepted practice. In the “worst-case” scenario of celibacy, Chinese or Indian unmarried daughters may never get to establish an independent household. Two forces are at work here. First, it is culturally unacceptable for unmarried daughters to live outside of the parental home, unless they are staying in approved quarters, such as university hostels. This practice has enabled parents to retain a high degree of control over their daughters’ conduct. Second, in Singapore, where 85 per cent of the households live in government-built apartments, an unmarried person is not entitled to buy or rent such an apartment. Thus, for a single woman to live outside of the parental home would mean having to rent a room or purchase an expensive private apartment, both of which are undesirable choices to many.

As the co-residence rate of parents-daughters rises in Chinese and Indian households, there are two interrelated consequences. First, the unmarried daughters (or sons) have displaced the married sons in the right to share the parental home. For the married sons, the obligation to stay with the parents is therefore waived. As new housing is easy to come by, there is no incentive for the married son to remain in the parental home upon marriage. Second, the unmarried daughters now have to bear a greater burden in the care of the parents, thereby substituting the role traditionally performed by daughters-in-law. In past years, a number of complaints have been voiced in the press about the obligatory role of being the parents’ keeper which is imposed on unmarried daughters.

With the female celibacy rate projected to be about 15-20 per cent in each cohort, the prevalence of singles may profoundly change the normative rules governing the pattern of co-residence and parent-daughter relationships. Several changes may occur. First, the inheritance pattern of giving the largest share to the sons in these communities may change. The unmarried daughters may inherit a share of the parental home and other assets since they have neither left the parental home nor achieved “independence”. The rules governing patrilocal residence may have to be adjusted to meet demographic reality. Second, the parent-child relationship is likely to change. Having contributed substantially over the years to the family budget, the daughters are likely to be against continued parental control. Third, the lack of choices available to single women may lead to social demands for enhanced flexibility in the provision of social services and greater appreciation of alternative lifestyles.

#### **Family vs. work: changing priorities?**

The fall in family size by cohort is shown in [table 2](#). For married women born during the period 1936-1940, their completed family size was close to

**Table 2: Mean number of children ever-born by birth cohort at various ages**

Period	30-34	35-39	40-44
1956-1960	1.81	–	–
1951-1955	1.95	2.24	–
1946-1950	2.25	2.48	2.62
1941-1945		3.15	3.21
1936-1940	–	–	3.95

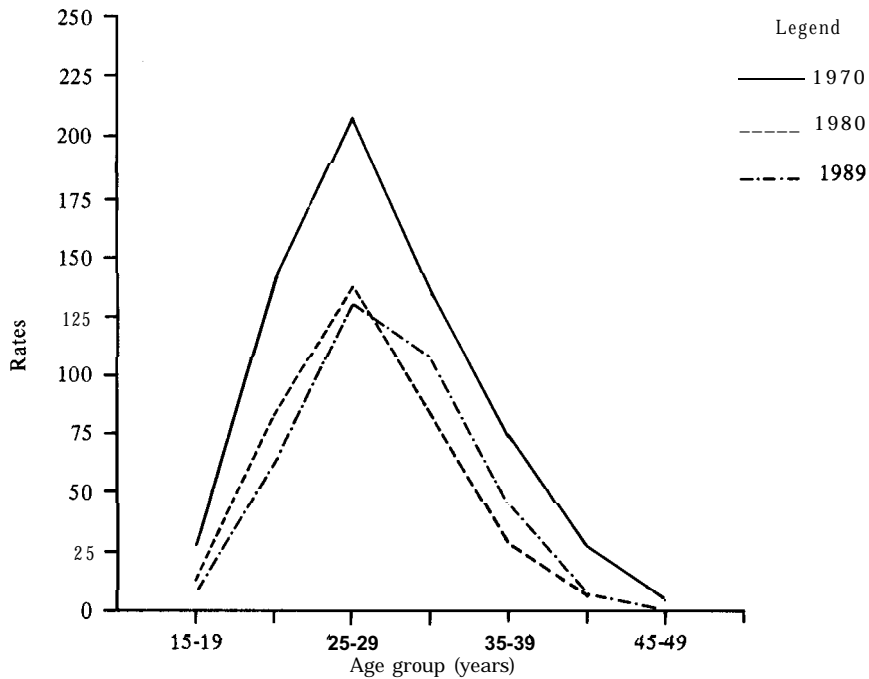
four children. For the women born 10 years later, the family size had dropped by almost one and one-half to 2.6 children. The fall is clearly related to a systematic downward adjustment in desired family size and the easy availability of contraceptive technology.

Declining family size reduces proportionately the parents' child-rearing responsibilities. It also means that the portion of a woman's life course devoted to child-bearing is considerably shortened. In Singapore, the reduction has occurred at both ends. The period average age at first birth has been rising steadily to about 28 years in 1989. Concurrently, the desired age at last birth has fallen steadily and currently is an average of about age 35. [Figure 1](#) illustrates the contraction of the child-bearing period over time through the changes in the age-specific fertility rates.

Changes in the family size and the timing of births are linked to rapid increases in female labour force participation rates. The delay in marriage and child-bearing, for example, has helped to increase the participation rate of women in the age group 25-29 years from 30.8 per cent in 1970 to 74.1 per cent in 1989. The increases were also substantial in the older age groups. For the age group 40-44 years, the rates increased from about 18 to 50.2 per cent over the same period. Overall, the female participation rate increased from 29.5 per cent in 1970 to 44.25 per cent in 1980 and to 48.4 per cent in 1989 ([figure 2](#)). It is very likely that within the next few years, the rate would exceed the 50 per cent mark.

The increased involvement in the labour force is in part a response to the opportunities available to the women and in part a function of their rising educational attainment. Working outside the home has now become the norm rather than an exception among younger women. The rise of the dual-career families over these two decades has led to several changes within the family. Two major aspects are discussed here: the rising demand for alternate child-care arrangements and changing husband-wife relationships.

**Figure 1: Age-specific fertility rates, 1970, 1980 and 1989**

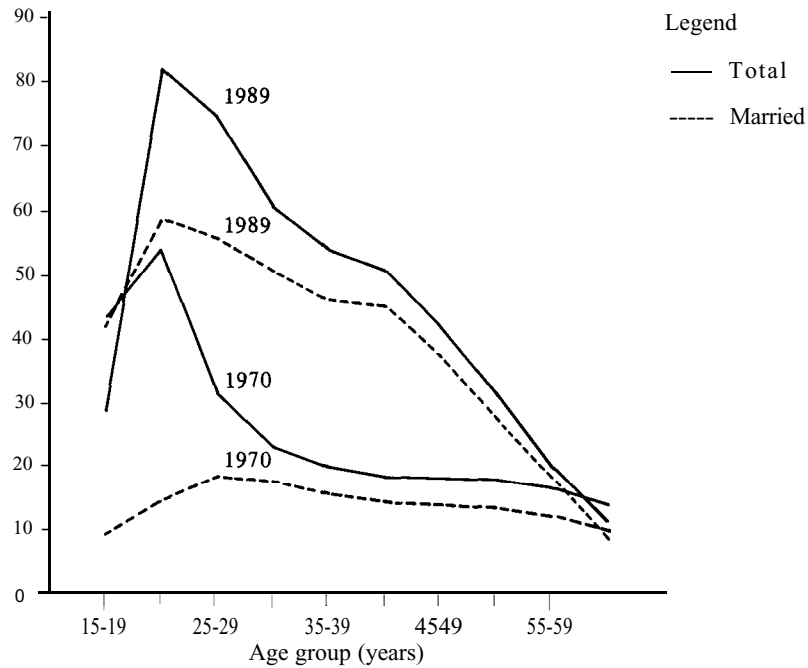


As in other countries, the demand for alternate child-care arrangements rises proportionately with increases in the female labour force participation rates. In an Asian society, the need to find a substitute for family care is imperative as the family has always been the predominant care-giver. In Singapore, three alternative arrangements have gained prominence as the young mothers are remaining at work in large numbers.

First, the use of grandparents and relatives as child-minders has become more common, although this practice is limited by the fact that some grandparents or relatives themselves are now working. A 1989 survey showed that 30 per cent of households with young children used the grandparents or relatives as child-minders. In 1983, the corresponding figure was only 23 per cent. This arrangement is a logical extension of family care. Helping out with child-care is considered an older person's contribution to family welfare and such chores have helped to reinforce family ties and reciprocal obligations.

Second, the demand for day-care centres has exploded during the past

Figure 2: Age-specific female labour force participation rates, 1970 and 1989



10 years. Long waiting lists were common in most centres, and the supply of child-care centres has not kept up with the demand. In 1980, there were only about 2,000 child-care centres. In 1989, this figure increased by six times to over 12,000 such places. The expansion of child-care services could be even faster if not for the shortage of child-care teachers, as their wages are not competitive *vis-a-vis* other industries and services. In any event, the acceptance of centre-based care for preschoolers among the local population has been quick and uneventful. The transition is apparently facilitated by the belief among parents that such facilities provide their children with a head start in a competitive educational environment. To them, formal education would start as early as when their children are two years old. Since Singaporeans of Chinese extraction comprise the majority of the population and are highly concerned about educational achievement, it follows that they are also the principal users of such centre-based facilities.

Third, middle-class families are recruiting foreign domestic servants to help in household and child-care chores. With the availability of cheap labour

from neighbouring countries, the number of such workers has increased by more than five times in the past nine years. Currently, the number of domestic servants is estimated to be about 50,000 or about 7 per cent of all households. Concerns have been raised about the desirability of these workers as socialization agents; however, in most households, the arrangement seems to have worked out well.

Apart from child-care arrangements, changes in husband-wife relationships have come about with the increased participation of women in the labour force. There is greater appreciation that the pooling of two incomes provides the family with the greatest opportunity to move ahead. A husband would now expect his wife to work even after marriage, rather than being dependent on him as the sole income earner. In exchange, a husband is more likely to assist in household chores or in caring for young children. The traditional lopsided division of household labour seems to have given way to a more equalitarian relationship.

In the context of changing husband-wife relationships, the locus of fertility decisions has shifted from the husband to the wife. Recent studies have shown that a working wife has more or less the final say in whether to have another child, particularly if the family already has two children. It is common that, although the husband may want to have another child, the wife would make the final decision depending on her employment conditions.

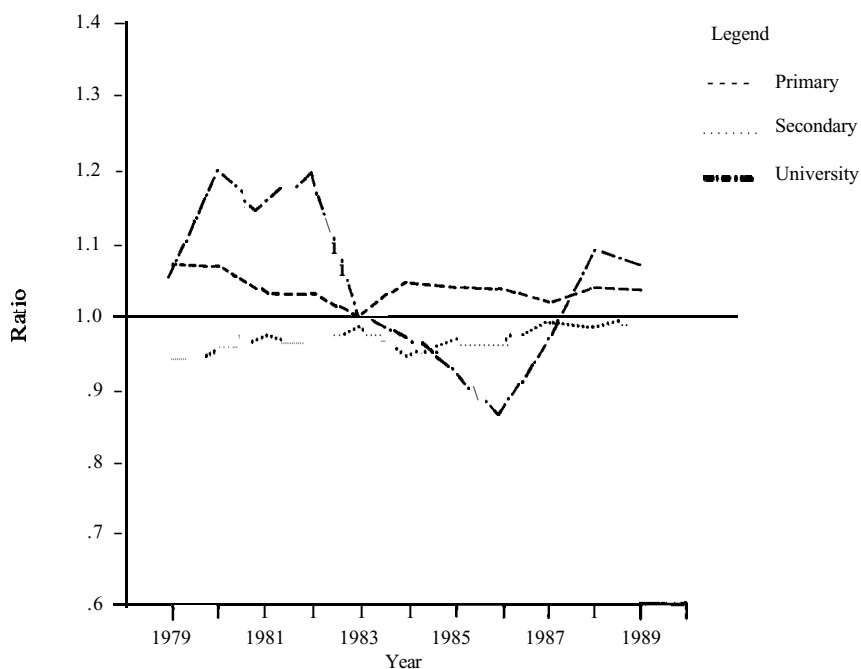
### **Changing valuation of daughters**

The fall in family size is generally expected to have a positive impact on the allocation of familial resources per child. In an affluent society, the per-child share is further enhanced by the availability of resources. In a society where sons and daughters are traditionally not considered equal in allocational decisions, these two factors may have an important equalizing impact. Discrimination against daughters is reduced as the "pie" is bigger and there are fewer sons to compete with. In addition, a daughter is now expected to work as soon as she is ready to join the labour force and develop a career just as a son would do. The economic returns of a daughter are therefore expected to be about the same as those of a son.

The rising status of daughters in Singapore is borne out by the fact that female educational attainment has improved dramatically over time and the average years of schooling may have even surpassed those of males. In 1970, the percentage of females aged 25-29 years with secondary or higher education was 26 per cent. This rose to 39 per cent in 1980, and to 61 per cent in 1989. [Figure 3](#) shows the sex ratio of graduating primary and secondary students over the past 10 years. For the primary school graduates, the sex



**Figure 3: Sex ratio of graduating class at primary, secondary and university levels, 1979-1989**



ratio was slightly over 1, and clearly, allowing for a positive sex ratio at birth, the girls were not disadvantaged. For the secondary school leavers, the sex ratio has been in favour of the girls, and the sex ratio has remained below 1 for the decade. This occurs because more boys were being channelled into vocational school as a result of poorer educational performance with regard to language requirements. At the university level, the sex ratio has been in favour of the girls since 1983, although the ratio has risen above 1 in the past two years.

### **Changes in the occupation structure**

The chronic labour shortage that Singapore has experienced in the past 15 years is not exactly a result of falling fertility, as the job entrants during this period were born in the “baby-boom” years. The entry of these cohorts has actually helped to increase labour supply. The shortage arose principally from the rapid expansion of an economy supported by a small population base. As a result, foreign workers were brought in and they constituted about 10-15 per cent of the total work-force at any one time. In the past, they were allowed only in selected industries, such as manufacturing, construction and hotel

services, provided that they did not exceed 50 per cent of the work-force. Foreign domestic servants were also allowed. In 1990, the recruitment of foreign workers was allowed for all other sectors, with the maximum share fixed at 40 per cent for traditional “receiving” industries and 10 per cent for all others.

To deter over-reliance on foreign workers, a levy for each foreign worker employed was introduced to reflect the true cost of labour. In 1990, the levy is \$S280 for all foreign workers, except for domestic servants, for whom it is \$S250. In addition, programmes were introduced to ensure fuller utilization of the domestic work-force through greater automation, greater participation of women and the elderly, and flexible work arrangements.

The increase in the participation of women in the labour market definitely helped to ease the shortage of workers. Between 1980 and 1989, while the participation rate increased from 44.3 to 48.4 per cent, the number of female workers jumped from about 383,000 to 513,000, a 34 per cent increase. However, the increase in the distribution of female workers by occupation is by no means uniform, reflecting a unique response to emerging employment opportunities as well as traditional work preferences. [Table 3](#)

**Table 3 : Percentage distribution of female workers by occupation**

	1970	1980	1989	% change 1970-1989*	% change 1980-1989*
Professional, technical and related workers	39.0	39.1	39.3	174.8	61.2
Administrative, managerial and executive workers	5.7	15.6	24.5	3 613.2	194.7
Clerical and related workers	30.9	60.6	71.3	429.8	35.8
Sales workers	15.6	28.6	33.8	215.8	37.3
Service workers	40.4	44.4	55.7	164.0	90.1
Agricultural, animal husbandry, forestry workers and fishermen	18.4	17.7	17.9	-67.2	-56.3
Production and related workers, transport equipment operators and labourers	18.6	29.5	29.6	179.5	3.1
Others	1.9	6.2	1.2	47.2	-83.1

Note: \*refers to percentage increase in absolute numbers.

**Table 4: Projected population aged 15-29,  
1985-2030**

(Number in '000s)

Year	Total		15-19		20-24		25-29	
	Number	Index	Number	Index	Number	Index	Number	Index
1985	816	100.0	235	100.0	286	100.0	295	100.0
1990	142	90.9	223	94.9	234	81.8	285	96.6
2000	619	15.9	206	87.7	191	66.8	222	75.3
2010	662	81.2	232	98.7	225	78.1	205	69.5
2020	635	77.8	193	82.1	211	13.8	231	78.3
2030	566	69.4	189	80.4	185	64.7	192	65.1

shows that the largest increase in absolute numbers over the period 1970-1989 and 1980-1989 has been in the administrative, managerial and executive occupations. This is followed by the clerical occupations and the professional and technical occupations. However, in terms of the share of female workers in these occupations, clerical occupations show the largest increase, i.e. from 31 per cent in 1970 to about 71 per cent in 1989. The concentration of women in the lower-level white-collar jobs is due to a steady influx of female secondary school leavers who generally prefer office work. In comparison, men of equal education tend to enter technical and skilled occupations.

The rapid fall in cohort sizes during the past 20 years will make its impact felt in the next two decades. The shrinkage in the number of new entrants is made worse by the increase in the average years of schooling. Table 4 shows the projected cohort size of younger age groups for the next four decades. Using 1985 as the base year, the table shows that the size of the 20-24-year-old age group will drop by about 33 per cent by 2000. It then recovers slightly before declining again.

The competition for new entrants will be intense across industries. Whether an organization will be successful in recruitment will depend on whether it can offer a competitive wage relative to others; the perceived attractiveness of the occupation and the industry would be an important deciding factor as well. The shift from production to sales, service and commerce occupations has already occurred. Limited by their lower wages and unpleasant work environment, labour-intensive manufacturing industries currently face no alternative but to rely more on foreign workers, or eventually move their operations to labour-rich neighbouring countries.

Family-owned small enterprises comprise the group probably most severely affected by the labour shortage. These businesses are unable to offer attractive wages because of their small-scale and small profit margins. This

is compounded by the fact that their turnover rate is traditionally high, as the non-family workers find it difficult to integrate into the running of the organization. Enterprising workers tend to feel alienated because decision-making authority in family-owned businesses tends to be concentrated among the family members. While external recruitment poses problems, internal labour sources are also drying up. Family members, particularly daughters, are also looking for better opportunities. Failure to recruit and retain family and non-family workers makes it very difficult for these businesses to expand, improve, or indeed sustain their operations. Very often, these organizations are run by the aging parents themselves with a number of loyal long-time workers.

A number of strategies have been employed to cope with the labour shortage. Many such businesses simply continue their operations with marginal additional labour input until such time when it becomes profitable to sell out. This normally occurs when the aging parents decide to quit or have fallen sick. Temporary part-time help from children in between studies provides an important source of labour. Whether the children are recruited to continue the family business seems to depend on the profitability of the business and whether they are successful in school. The family business has become in many ways a fall-back option if the children fail to make it to more respected occupations. Traditionally, the daughters fill many key positions of a family business; they manage the accounts, handle sales, or help in the production line. However, with better education and wider career choices, the daughters may not be easily persuaded to stay back.

### **Conclusion**

This article has briefly sketched some of the socioeconomic changes arising from the dramatic fall in fertility. Some of these ideas are currently being pursued in a number of research projects. Although the Government's population policy has been revised and may eventually lead to higher fertility, the socioeconomic impact of declining family size described above is unlikely to be altered. The roles of a Singaporean woman have been restructured in the modernization process. It would not seem possible to persuade the women to give up what they have achieved and revert back to a lower socioeconomic status. The success of the new population policy would therefore depend to a large extent on the willingness of women to accommodate their career with a large family size. This article points to the need for the Government to give special consideration to the needs of the unmarried in a family-oriented society. It also highlights the importance of the female work-force in Singapore's economy. Programmes for skill training and career development should adjust their male-dominated focus to take into consideration the special needs of the female work-force.