Patterns of Lowest-Low Fertility in Hong Kong

Edward Jow-Ching TU

The earlier distinct fertility regimes, "developed" and "developing" are increasingly disappearing in global comparisons of fertility levels --- convergence towards low fertility (Bongaarts and Bulatao 2000; Lutz et al. 2001; Wilson 2001). The spread of below-replacement fertility to formerly high fertility countries has occurred at a remarkably rapid pace. A global convergence of fertility indicators that has been quicker than the convergence of many other socio-economic characteristics was (Billari and Kohler, 2002).

Fertility levels may not naturally stabilize close to replacement level as earlier notion suggested, they may continue and follow the course declining to below 1.3. The new aspect of current low and lowest-low fertility patterns is that the postponement of childbearing – particularly for the first births – has emerged as a crucial determinant of differences in fertility levels among developed countries (Billari and Kohler, 2002).

Reasons of such rapid delay of childbearing include increased incentives to invest in higher education, labor market experiences, uncertainty in early adulthood due to high youth unemployment of up to 40 percent for women, general economic uncertainty and inefficient housing markets leading to high costs of establishing or expanding independent households make late childbearing a rational response to socio-economic changes.

Social interaction effects are likely to reinforce individual desires to delay childbearing in response to socio-economic changes in low and lowest-low fertility countries (Kohler et al. 2002). These interaction effects occur due to social learning and social influence in the decision processes about the timing of fertility (Kohler 2001; Kohler et al. 2001; Montgomery and Casterline 1996), and they can also be caused by feedbacks in the labor and marriage market that make late fertility individually more rational the later the population age-pattern of fertility is.

The delay of childbearing follows a postponement transition that shares many characteristics with the fertility transition in Europe or contemporary developing countries (Kohler et al. 2002).

Figure 1 depicts the period total fertility rate (period TFR). In 1971 HK TFR was 3.41 and experienced a rapid and marked fertility decline until reaching a trough of 1.31 in 1987. Then it stabilized and fluctuated around 1.40 – 1.27 during late 1980s and early to mid-1990s.

Since 1996 HK TFR continued to decline at a moderate below-replacement levels. In 1998 TFR dropped to 0.99, in 1999 it was 0.97, in 2000 TFR slightly increased to 1.02, and in 2001 it was 0.93.The mergence of lowest-low fertility since early 1970s has been associated with a substantial delay of childbearing in HK. The mean age at first birth increased by about 4.71 years, from 24.0 to 28.7 years (Figure 2). And the mean age at second birth increased by 5.28 years, from

26.1 to 31.4. For the third and higher birth, the mean age increased from 30.5 to 33.2.

Since mid-1970s HK has already experienced an increasing mean age at first birth with a relatively high mean age at first birth at the onset. The mean age at first birth increased by about 2.66 years, from 24.0 to 26.6 years, during the period of 1976 – 1987. By late 1980s to early 2000s the pace of the mean age at first birth increased relatively slower, increased by 1.72 years from 27.0 (1988) to 28.7 (2001).Furthermore, in 1976, when TFR was 2.52, the first birth made 32.8 percent contribution, 29.1 percent from the second birth, and 38.1 percent from the third and higher-order births. However, this pattern has been gradually shifted. In 1996, TFR was down to 1.19, with 51 percent contribution from the first birth, 37.2 percent from the second birth, and the third and higher-order births only made 11.7 percent contribution.In addition, the mean age at first marriage for HK females increased from 22.9 (1971) to 27.5 (2001) years while for males it increased from 27.8 to 30.2 years during the same period (Figure 3). HK females increased their mean age at first marriage by 20.1 percent during 1971–2001.Thus, lowest-low fertility is not inevitably associated with a rapid delay of childbearing (Kohler and Kohler 2002). The mean age at first birth increased only by 1.72 years during the late 1980s to early 2000s. And the mean age increased by 2.01 years for the second birth and 1.84 years for third and higher-order birth. Therefore since late 1980s HK attained lowest-low fertility levels without substantial delays in the timing of first births anymore.

In the case of HK, a rapid and marked postponement did imply lowest-low fertility, NOT like some of the European countries (e.g., Netherlands, Billari and Kohler, 2002) experienced a significant increase in the period mean age at first birth during the 1980s and 1990s without substantial declines in period fertility levels.The major issue concerned is how do period TFR levels below 1.3 affect cohort fertility? (Billari and Kohler, 2002) The effect is modest if lowest-low fertility is only temporary and births are merely postponed but not foregone, or the implications of lowest-low TFR levels on cohort fertility are severe if lowest-low fertility persists and if it is caused by reductions in completed fertility levels instead of changes in the timing of fertility.

Completed cohort fertility for cohorts born between 1930 and 1937 have been relatively stable and remained within the interval ranging from 4.7–4.4 children except 1935 cohort (4.1) and 1936 cohort (3.7), and no marked downward or upwards trends in HK. Hence, for HK women of these cohorts, they did not really reduce their fertility levels, just changed the timing of the fertility.After 1937 birth cohort, the cohort fertility steadily declined from 3.6 (1938 cohort) to 2.9 (1947 cohort) and further down to 2.1 (1952 cohort) (Figure 4). These cohorts did truly contribute to HK reaching lowest-low fertility levels, especially for period TFR after mid-1980s.

However, such analyses are no longer feasible for women born from 1953 onwards because these women have not yet completed childbearing as of 2002.

An alternative is to study cumulated fertility, i.e., the number of children that have been born to women at various ages up to the most recent available calendar years. In order to provide a context and reference for such analyses, it is

conducted relative to a reference cohort (Frejka and Calot 2001a, b, c).The analyses focus on the differences between the cumulated fertility of women in the calendar year and the number of children that have been born to women in the reference cohorts (1931 for all birth orders and 1961 for first birth). Figures 5 and 6 depict the difference in the cumulated cohort fertility, separately for the all birth orders combined and first births, between women born 1931-1981 and women in the reference cohorts born in 1931 and 1961 respectively.

The graphs in Figures 5 and 6 also reveal that at age 50 women in the cohort born in 1951 had on average 2.71 fewer children in total while at age 35 women in the cohort born in 1966 had on average 3.23 fewer children in total as the cohort born in 1931 and that at age 30 women in the 1966 cohort had 0.132 fewer first children as the cohort born in 1961. This differences in fertility level to the reference cohorts increase for younger women. At age 25, HK women born in 1971 had 0.106 fewer first children than the 1961 cohort and 1.104 fewer total children than the 1931 cohort. At age 20, HK women born in 1981 had 0.357 fewer total children than the 1931 cohort. It is likely that this difference further widens as the cohort reaches its late twenties.Figures 5 and 6 also reveal the extent to which differences in fertility levels across cohorts are due to either a postponement of fertility or a true reduction of fertility. The HK cohort born in 1966 "lagged" behind the 1931 reference cohort and had on average about 0.914 fewer births at age 25. When the ages of those younger cohorts reached the late 20s and mid-30s, this gap was not reduced but even further widened.

The younger cohorts exhibit the same pattern – the lines in Figures 5 and 6 representing the cumulated fertility of a cohort initially declines as the difference to the reference cohort grows, then reached a trough, but never reverses and moves towards zero as the difference to the reference cohort diminishes. If there is "perfect" recuperation, the difference will diminish completely, and partial recuperation implies a persistent difference also at the end of childbearing ages (Frejka and Calot 2001a).

The HK cohorts born after late 1940s reflect a true reduction of fertility and are NOT necessarily due to a postponement of fertility anymore as earlier cohorts did. The gradually increasing differences in cumulated fertility to the reference cohort in early to mid-twenties are exactly where union formation and first-birth childbearing has traditionally been concentrated.

Frejka and Calot (2001a) have denoted the difference in cumulated fertility to the reference cohort as a *fertility deficit.* They have taken the increasing deficit during early adulthood in younger cohorts as an indication that cohort fertility is likely to remain substantially below that of the reference cohorts.

Figures 7 and 8 confirms that all HK cohorts born after the reference cohorts exhibit a lower cumulated fertility for both first birth and all birth orders in their young adulthood and adulthood than the corresponding reference cohorts. This suggests that lowest-low fertility is definitely related to the fact that fertility rates in early adulthood until adulthood are truly low.

After the emergence of low fertility in most European countries experiencing the Second Demographic Transition, marriage has lost its central role in being a precondition to childbearing (Lesthaeghe and van de Kaa 1986; van de Kaa 1987).

Almost all births take place within a co-resident partnership (either cohabiting or married), and the rise of extra-marital childbearing is mostly due to the diffusion of cohabitation (Kiernan 1999).

Traditionally cumulated fertility is inversely related to age at marriage. Variations in the age at marriage - an important explanatory factor of aggregate fertility changes (Henry 1976; Inaba 1996; Billari et al. 2000). Figure 9 shows that marriage and fertility were still paralleled with downward trends between TFR and both male and female period total first marriage rate (TFMR).

A similar relation occurs also with respect to fertility and divorce – a higher level of divorce (general divorce rate) was associated with lower levels of fertility (TFR). (Figure 10)

Figure 11 Illustrates that the relationship between the extent of out-of-wedlock childbearing and the level of fertility. HK has a relatively low share of extramarital births during 1984-1998 comparing with late 1970s but has been raised since 1999.

The emergence of lowest low fertility during the 1990s in Europe has been associated with fundamental shifts in the relationships between fertility and marriage. In the near future there could be an increasing disconnection between marriage patterns and fertility levels after emergence of lowest-low fertility. Marriage formation and dissolution might not be important predictors of fertility levels. A possible negative relationship between the timing of household and union formation/dissolution and the quantum of fertility on the cohort level might also be observed. However, these shifts are not quite observed in HK yet. Whether the patterns of these relationships will be changed in the near future remains to be seen, especially under strong influences of both Chinese and Western culture. How soon will the second demographic transition be occurred in East Asia is a significant demographic interest. The studies of lowest low fertility and its convergence in East Asia will shed theoretical lights to theories being proposed and discussed in European fertility changes (Mayer 2001; Reher 1998; Granovetter 1973, 1985; Watkins 1990; Lesthaeghe and van de Kaa 1986; van de Kaa 1987; Billari and Wilson 2001).

In sum, the initial decline towards low fertility has been importantly related to stopping behavior – a reduction of higher parity births. More recently, the postponement of fertility, especially for first births, has emerged as a crucial determinant of differences in fertility levels.And the lowest-low fertility truly reflects the real reduction of fertility levels in HK.

When fertility drops to a particularly low level below replacement and the mortality rate remains low, the pace of population aging inevitably quickens. The overall dependency ratio is projected to rise from 381 in 2002 to 562 in 2031. The elderly dependency ratio is expected to increase gradually from 158 in 2002 to 198 in 2016, followed by a marked rise to 380 in 2031 in HK.

The HK official population projections projected more deaths than births each year from 2023 onwards. The population would then experience negative natural increase and de-population would arise if there were *no net inward migration.* This scenario implies (a) an accelerated "graying" of Hong Kong; and (b) the onset in 2023 of a very painful process of de-population that could well

last longer than half a century, resulting in a smaller and older population with significantly weaker economic potential.

Policy recommendations

HK government released their official population policy on February 26, 2003 (HKSAR 2003). The recommended measures aim to improve the overall standard of living and ensure the long-term sustainability of economy and specifically, strive to address the challenges posed by an aging population and shrinking workforce on economic growth.

In terms of *quantity*, the recommended measures help to rejuvenate progressively aging population by continuing the current course of one way permit scheme for mainland Chinese relatives, children and spouses; by increasing admission of mainland professionals and talent; and by granting permanent residents to persons who make substantial investment (HK$6.5 million) i.e., capital investment entrants, and to apply this extended policy initially to foreign nationals, residents of Macao SAR and Taiwan.

In terms of *economic sustainability*, the recommended measures are able to upgrade the productive efficiency and capability of workforce and are also able to enhance economic vibrancy and domestic consumption by continuing to pursue extensive programs to upgrade the educational attainment of our population at all levels; by promoting and facilitating skills upgrading and life-long education; and adopting a strategic, responsive and coordinated approach to manpower planning and development to meet the changing demands of the economy.

In terms of *social sustainability and integration*, the recommended measures facilitate integration of new arrivals from the Mainland and elsewhere with the community by continuing to provide and develop appropriate programs to address the training needs of new arrivals of different age-groups and fostering closer partnership between the Government and NGOs to identify and address the needs of new arrivals.

In terms of *fiscal sustainability*, the recommended measures are able to increase productivity and reduce elderly dependency by stepping up efforts to encourage Hong Kong people being educated overseas to return to live and work here and by granting the same level of tax deduction for all children irrespective of number.

Moreover, to address the problem of rising social expenditure and limited resources, the recommended measures help to provide a more rational basis for the provision of subsidized benefits to the residents and growing transient population by introducing a levy paid by employers for the employment of foreign domestic helpers (FDHs); by stepping up enforcement action against abuse of the FDH system and preventing exploitation of the workers, etc.

By adopting the principle of “seven-year” residence requirement for providing social benefits heavily subsidized by public funds; by tightening up the eligibility criterion for CSSA so that such benefits should be available only to residents who comply with the seven-year residence rule (except for children under the age of 18 and current residents in Hong Kong will not be affected by this rule.

And by applying the same principle in respect of public healthcare services to Two Way Permit holders and other visitors and considering how this policy could apply and be implemented for the rest of the population; and reviewing in the longer term access to subsidized benefits by residents absent from HK for a long period of time.

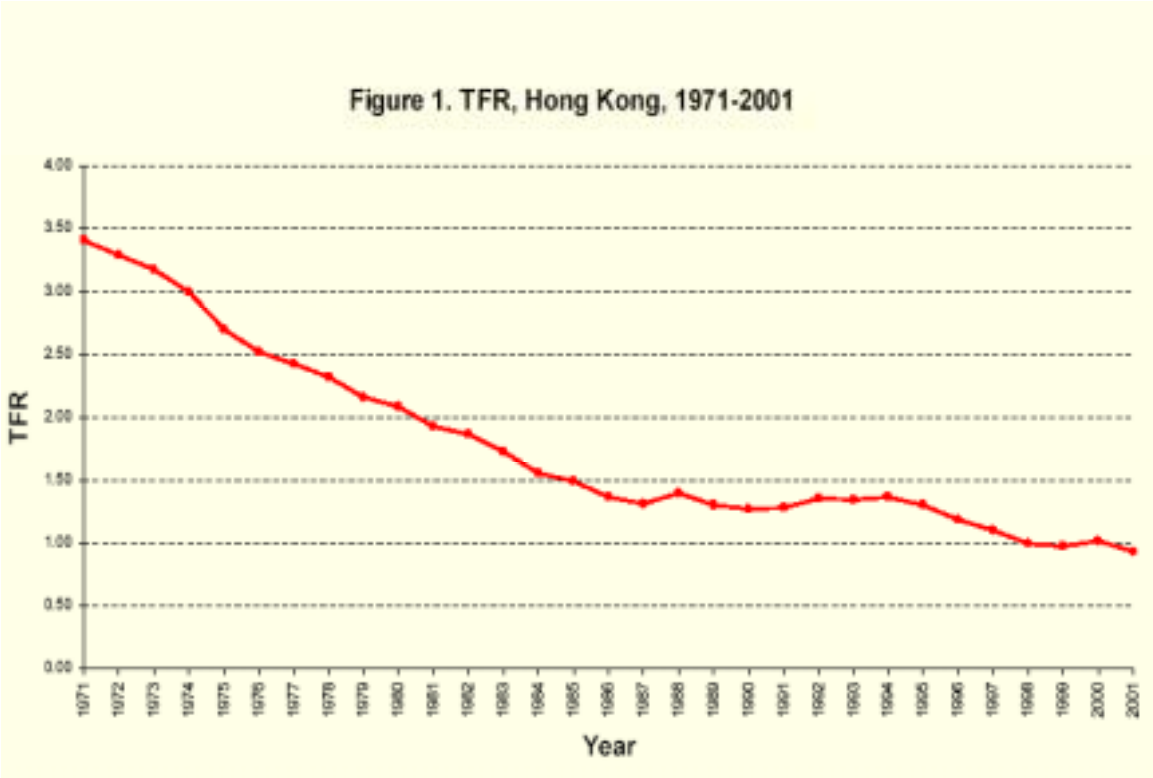


Figure 1. TFR, Hong Kong, 1971-2001
TFR
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001
Year

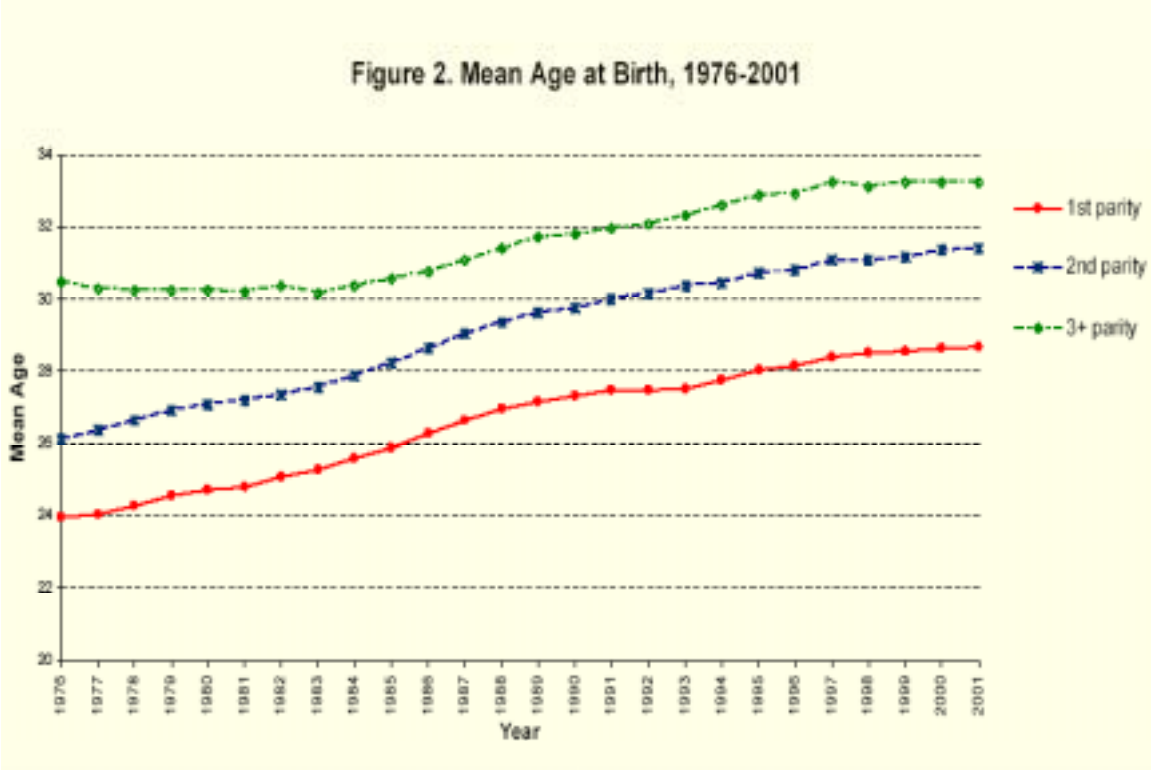


Figure 2. Mean Age at Birth, 1976-2001
Mean Age
34
32
30
28
26
24
22
20
1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001
Year
1st parity
2nd parity
3+ parity

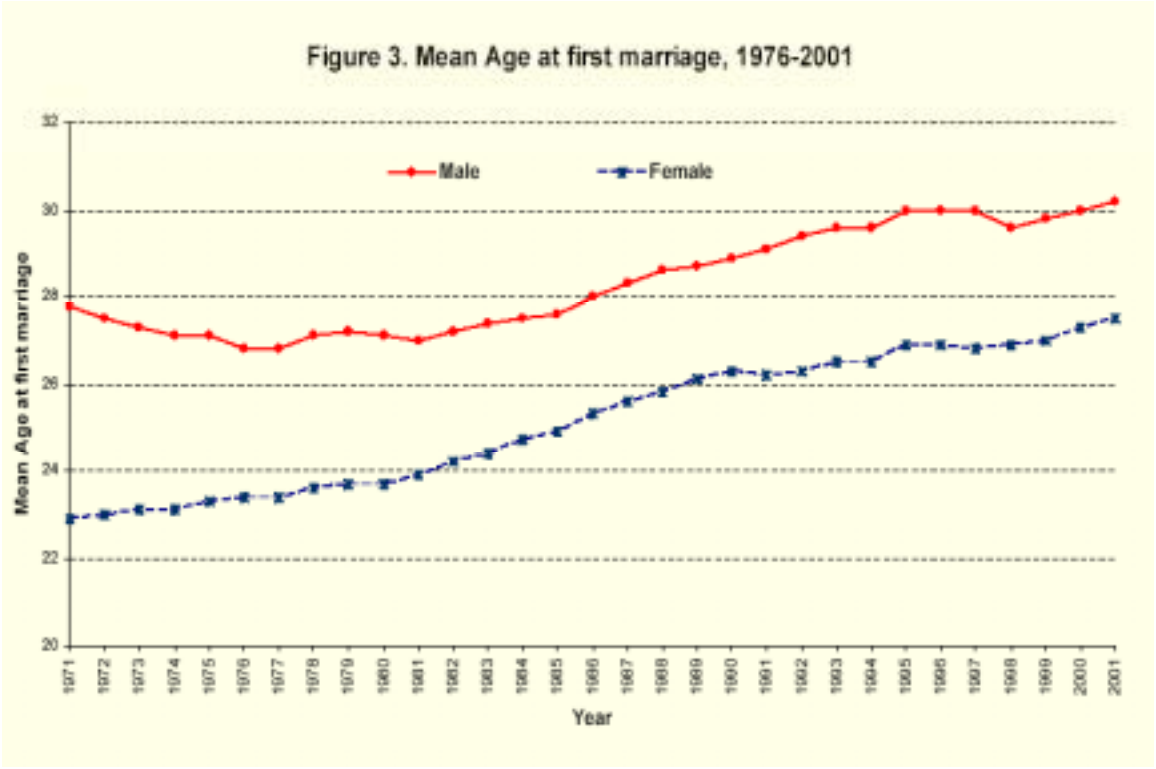


Figure 3. Mean Age at first marriage, 1976-2001
Male
Female
Mean Age at first marriage
Year

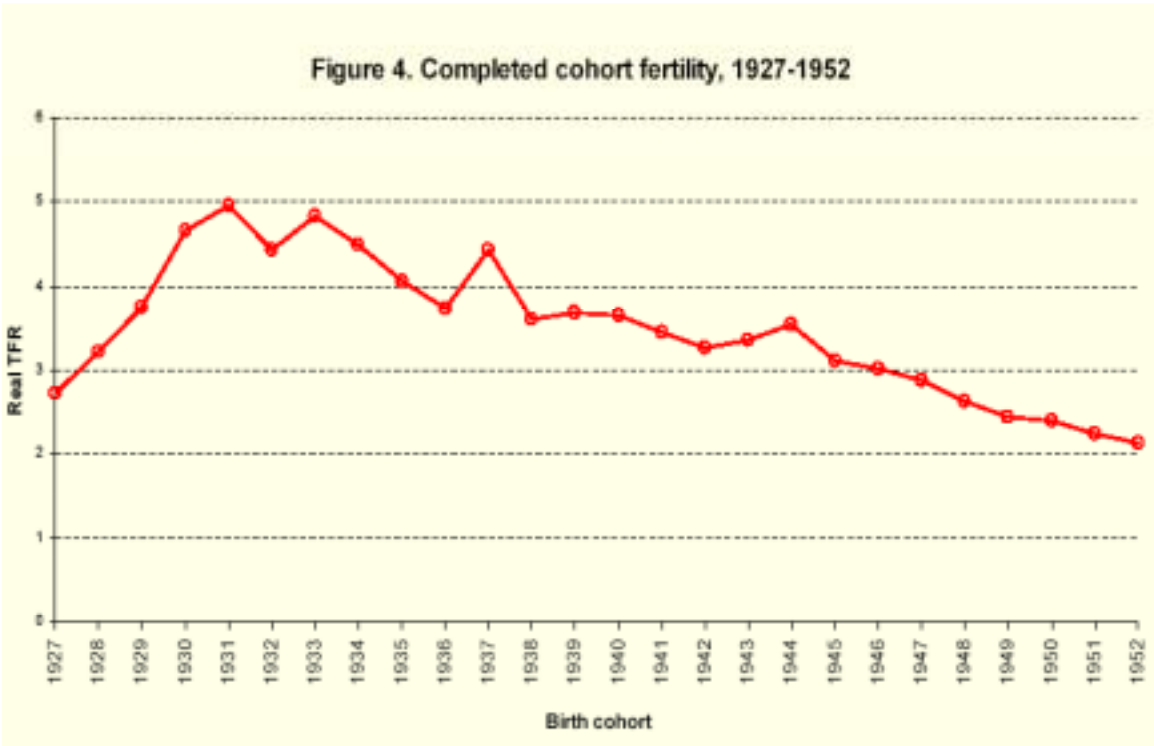


Figure 4. Completed cohort fertility, 1927-1952
Real TFR
Birth cohort

Figure 5. Difference in the cumulated fertility of cohorts (All birth orders), 1931-1981

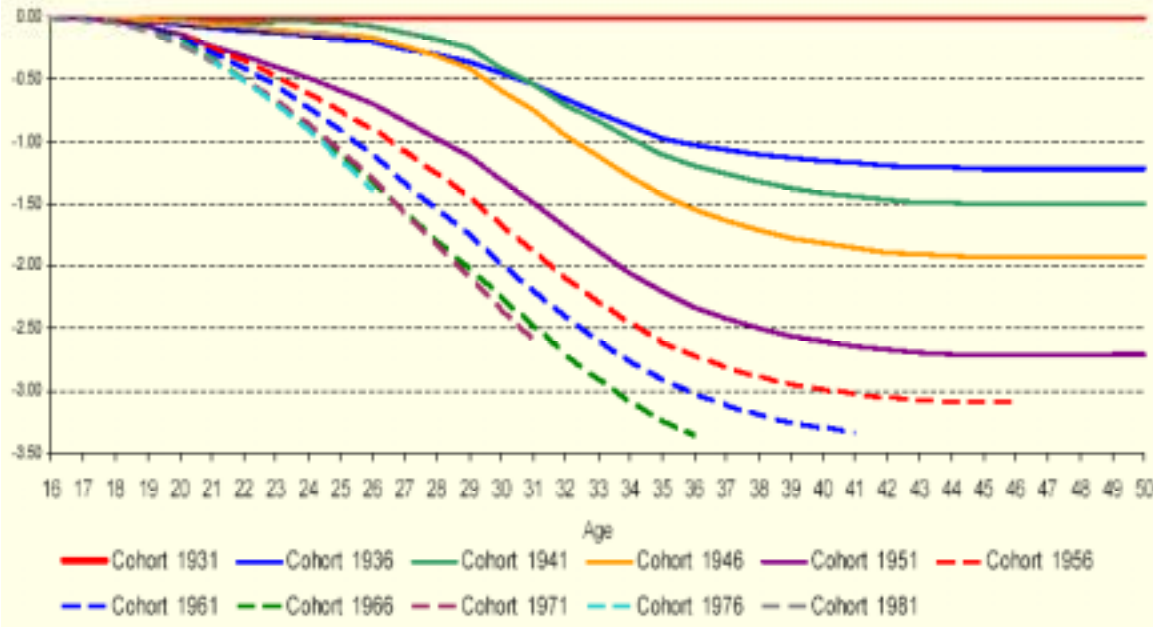
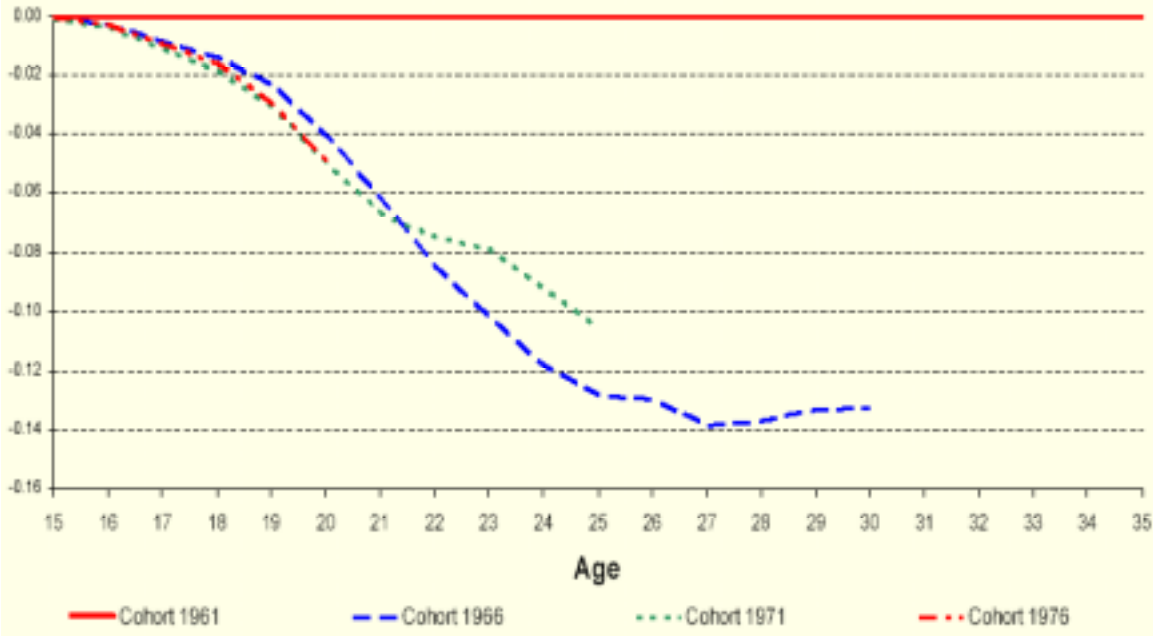


Figure 6. Difference in the cumulated fertility of cohorts (First birth), 1961-1976



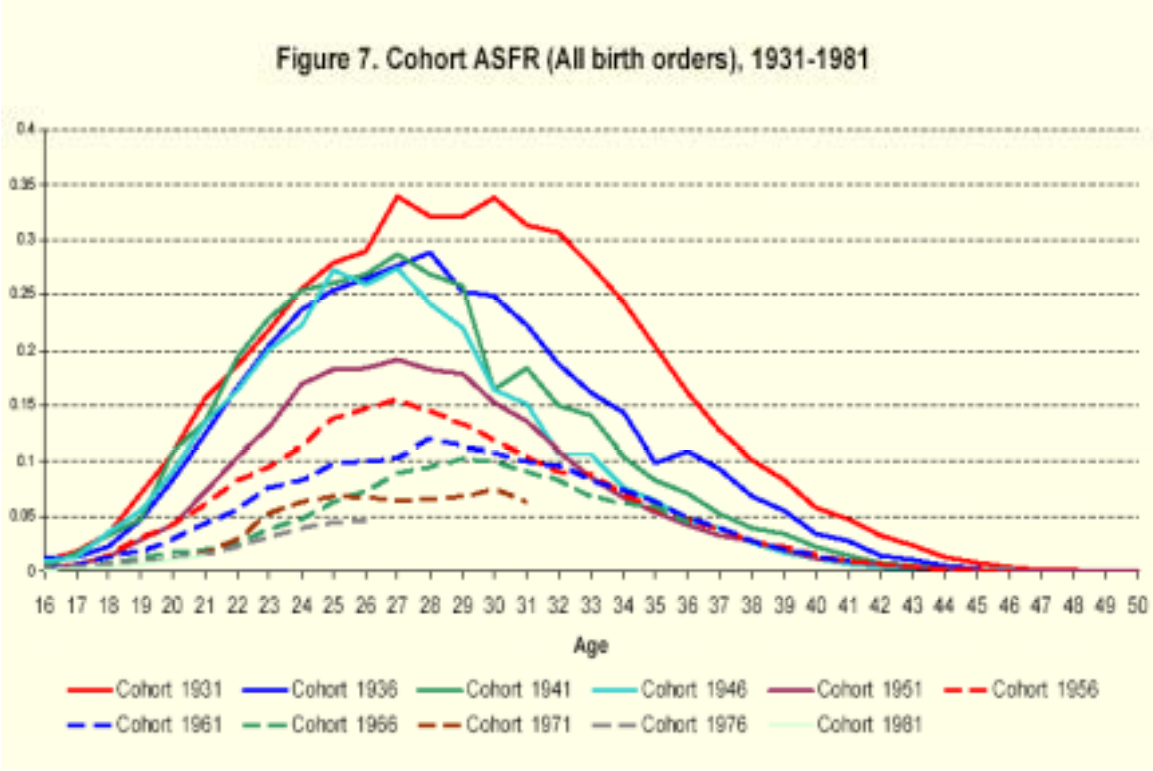


Figure 7. Cohort ASFR (All birth orders), 1931-1981
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
Age
Cohort 1931
Cohort 1936
Cohort 1941
Cohort 1946
Cohort 1951
Cohort 1956
Cohort 1961
Cohort 1966
Cohort 1971
Cohort 1976
Cohort 1981

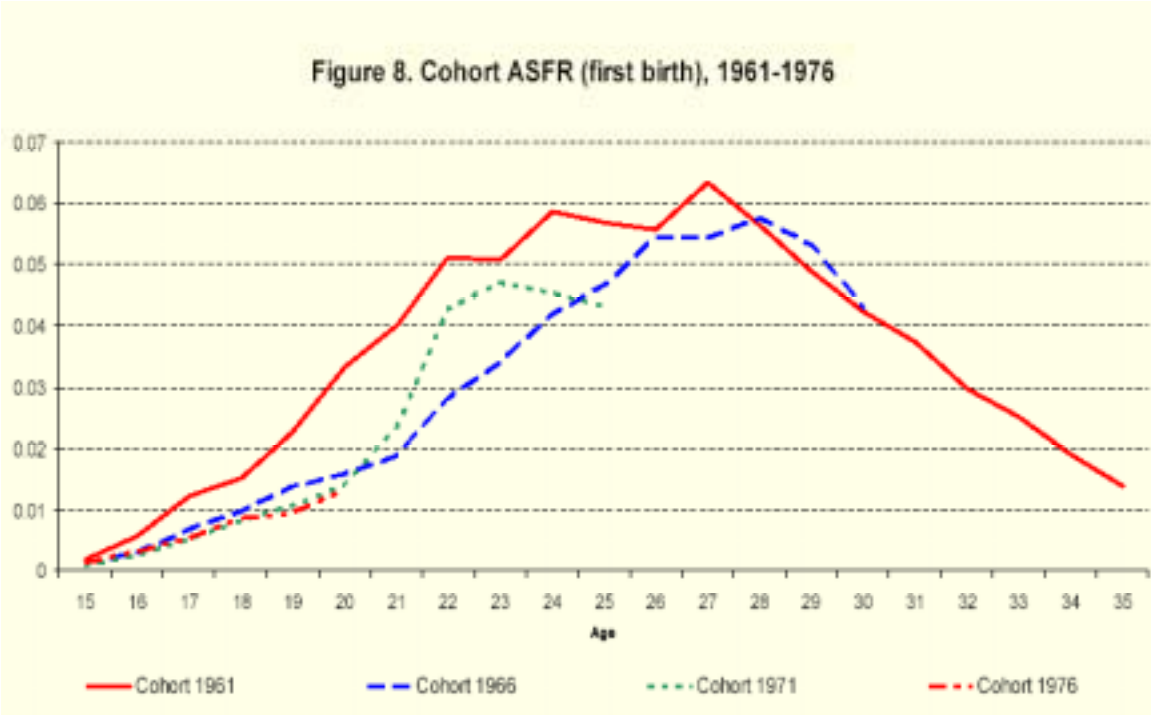


Figure 8. Cohort ASFR (first birth), 1961-1976
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
Age
Cohort 1961
Cohort 1966
Cohort 1971
Cohort 1976

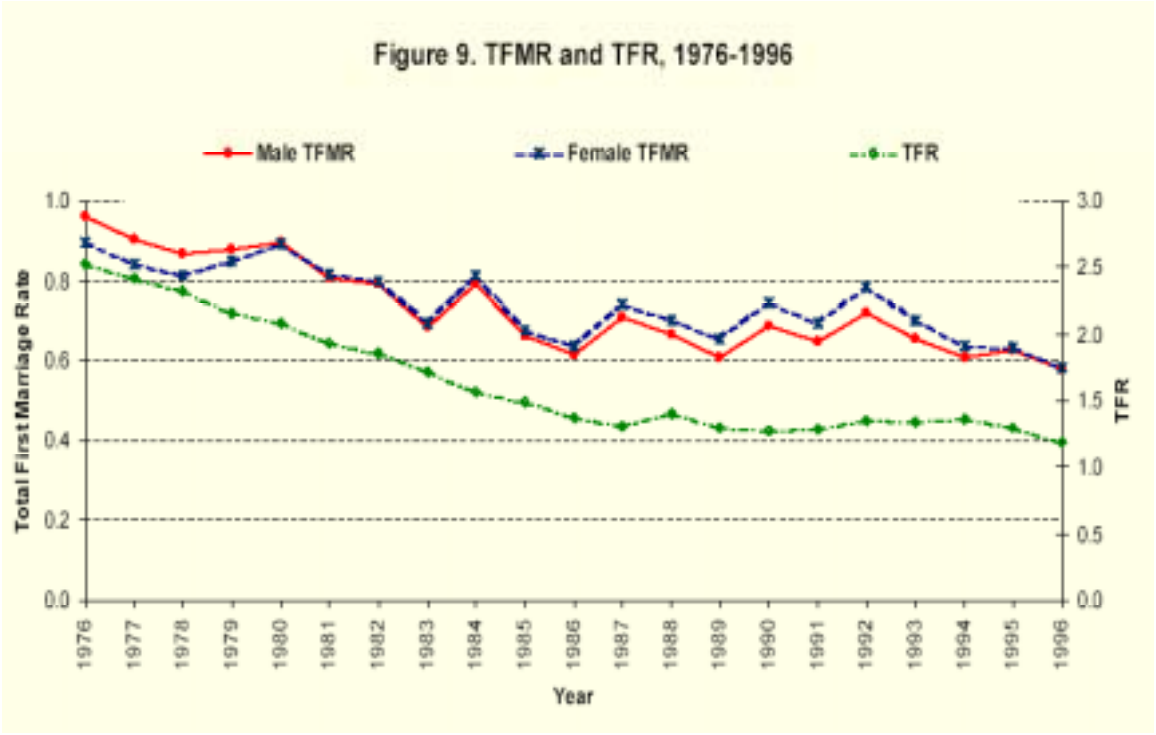


Figure 9. TFMR and TFR, 1976-1996
Male TFMR
Female TFMR
TFR
Total First Marriage Rate
TFR
Year

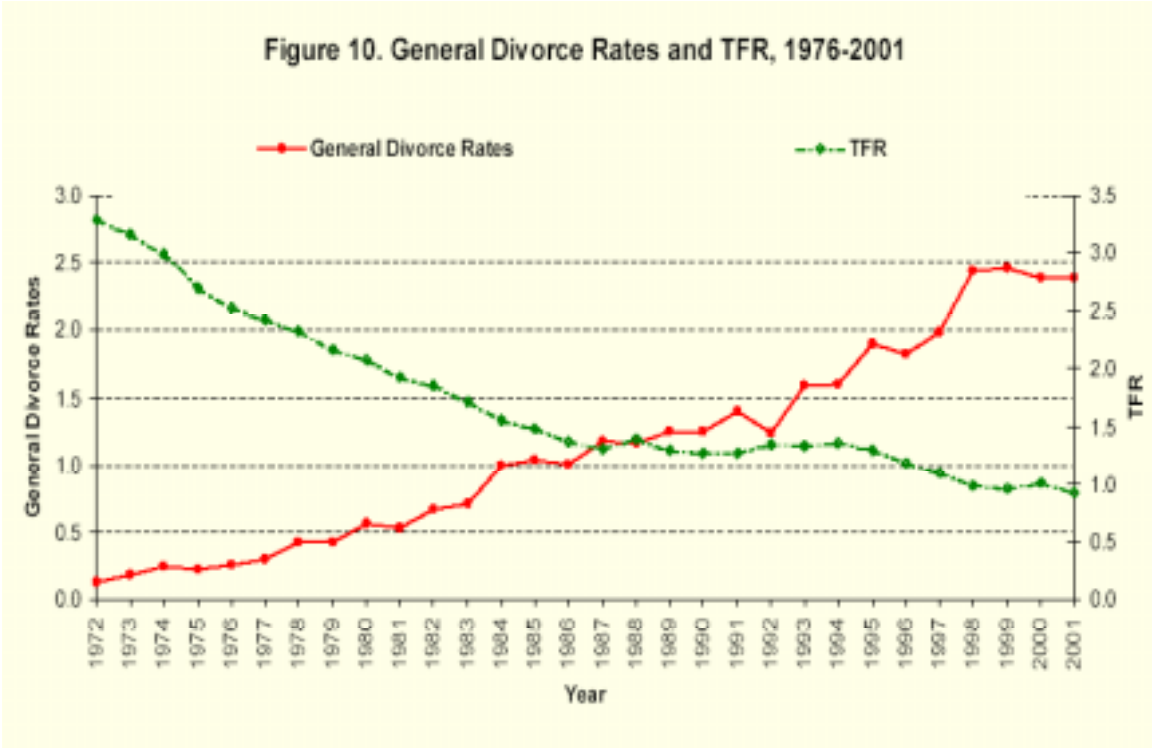
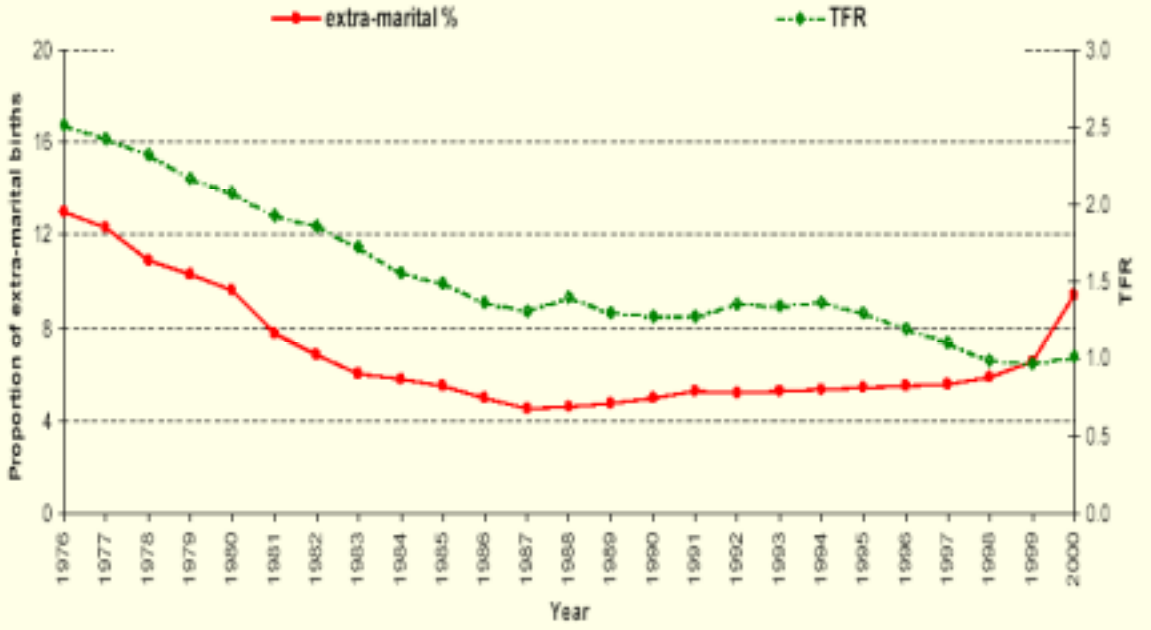


Figure 10. General Divorce Rates and TFR, 1976-2001
General Divorce Rates
TFR
General Divorce Rates
TFR
Year

Figure 11. Proportion of extra-marital births and TFR, 1976-2000



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Edward Jow-Ching TU
(Division of Social Science,
The Hong Kong University of Science & Technology)