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Japan's Baby Bust: Causes, Implications, and Policy Responses

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This paper describes the trend in fertility in Japan, analyzes the causes and implications of the baby bust after 1973, and discusses the Japanese government's efforts to raise fertility, which by 2003 had fallen to 1.29 children (i.e., births) per woman, as indicated by the total fertility rate. Also addressed are the questions of why the government's efforts to raise fertility have not been effective and what additional steps the government might take.

The total fertility rate (TFR) is the measure of fertility most frequently used in this paper. The TFR for a particular calendar year is defined as the number of births that a woman would have by age 50 if, hypothetically, she lived through her reproductive years experiencing the age-specific fertility rates that prevailed in the population in the particular calendar year.

An age-specific fertility rate (ASFR) in a particular calendar year is calculated as the number of births that occurred during the year to women at a given age, divided by the midyear number of women at that same age. An ASFR has units of births per woman per year. The TFR is calculated by summing the ASFRs (births per woman per year at each age) between the ages of 15 and 50.

The Trend in Fertility in Japan

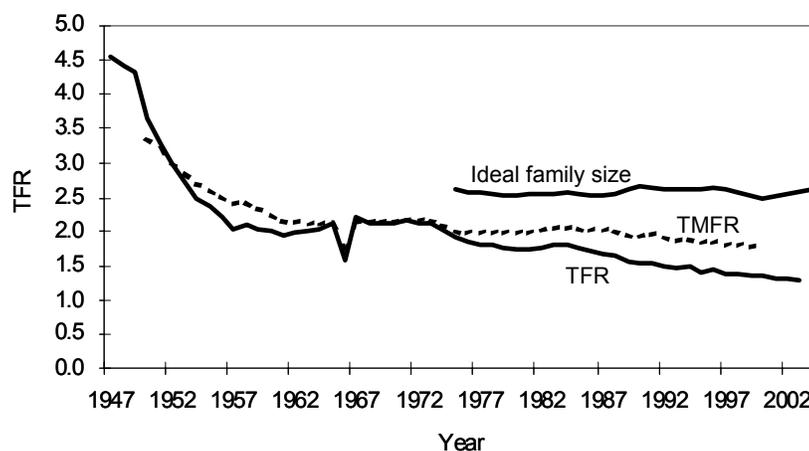
It is convenient to divide the trend in fertility in Japan since World War 2 into three time periods: (1) 1947–57, during which fertility declined by more than half; (2) 1957–1973, during which fertility leveled off; and (3) 1973 to the present, during which fertility resumed its decline. The decline after 1973 is what is referred to in this paper as the “baby bust.”

Figure 1 provides a more detailed picture of the trend in the TFR. Following a brief baby boom after World War 2 when soldiers returned home, the TFR declined sharply from 4.54 children per woman in 1947 to 2.04 in 1957. During this period post-war devastation and reconstruction posed hardships that motivated families to have fewer children. The decline in fertility was facilitated by the legalization of abortion in 1948, which led to a steep rise in the number of abortions.

After 1957 fertility leveled off at the replacement level of about two children per woman and remained there until 1973, albeit with some fluctuation. The period 1957–73 was a period of unprecedented prosperity during which per capita real income increased by about 10 percent per year. This prosperity facilitated marriage and childbearing and temporarily halted Japan's fertility decline. The unusual downward spike in the TFR in 1966, followed by recovery the next year, occurred because 1966 was the Year of the Fire Horse. According to Japanese superstition, girls born in that year are believed to be unlucky in life, with the result that many couples avoided having a birth in 1966.

The 1973 oil shock abruptly terminated the period of rapid economic growth. The steep increase in the price of oil implemented by OPEC (Organization of the Petroleum Exporting Countries) affected Japan more than most countries, because Japan imports virtually all of its oil.

Figure 1. Trends in the total fertility rate (TFR), the total marital fertility rate (TMFR), and ideal family size (number of children), Japan, 1947–2004



Sources: TFRs up to 2003 are from Ministry of Health and Welfare, *Vital Statistics*, various years. TMFRs are calculated from period parity progression ratios (see text and Figure 4). Values of ideal family size are from various rounds of the National Survey on Family Planning and the 2004 round of the National Survey on Population, Families, and Generations, conducted by the Mainichi Newspapers of Japan.

The oil shock plunged Japan into a recession that was followed by a rebound three years later to a much lower economic growth rate of about 3–4 percent per year. The recession was accompanied by rapid inflation, amounting to 53 percent over three years. Unions reacted by negotiating large wage increases for regular full-time workers, after which struggling companies started hiring large numbers of non-union part-time workers at much lower wages. Part-time workers not only cost less but also could be laid off as needed, giving firms more flexibility during future economic downturns. Most part-time workers were women, many of whom previously did piece-work at home but now worked in production work outside the home. As a consequence of these and other developments, age at marriage started rising again and the TFR started falling again. The TFR gradually fell from 2.14 children per woman in 1973 to 1.29 in 2003.

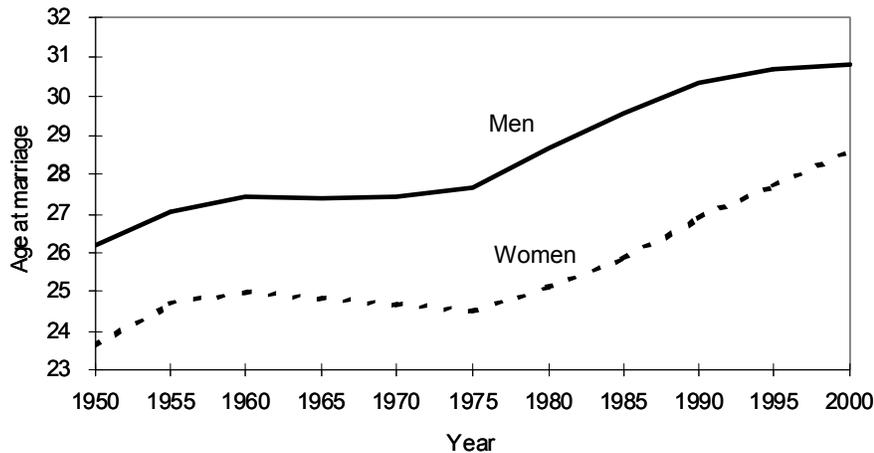
Figure 1 also shows that after 1973 the TFR fell faster than the total marital fertility rate, or TMFR. (The TFR pertains to all women, regardless of marital status, whereas the TMFR pertains only to ever-married women.) This occurred because the TFR is affected not only by fertility within marriage but also by age at marriage and the proportion who never marry, both of which started to rise after 1973. The effect of age at marriage and the proportion never marrying on fertility is especially important in Japan because only about 2 percent of births occur out of wedlock. Indeed, as we shall see shortly, later marriage and less marriage account for about half of the decline in the TFR since 1973.

Figure 1 also shows the trend in ideal family size, which remained almost constant at approximately 2.5 children per woman between 1974 and 2003. Because the TFR fell over this

same period, the gap between the TFR and ideal family size increased from 0.69 to 1.30 children, indicating that fertility values, as measured by ideal number of children, have increasingly lagged behind the trend in actual fertility. Because ideal family size has been higher than the TFR and has changed little over time, it has been a poor predictor of fertility in Japan during the past three decades.

Figure 2 shows the trend in the singulate mean age at marriage or SMAM—so-called because it is calculated from age-specific proportions still single (i.e., never married) in a census or survey. It is what the mean age at marriage would be if, hypothetically, women (or men) lived through their reproductive years experiencing the age-specific proportions still single calculated from the census or survey (Shryock and Siegel 1971). SMAM rose between 1950 and 1960 but then leveled off for men and declined slightly for women between 1960 and 1973 due to the economic boom during that period (Retherford *et al.* 2001). After the 1973 oil shock, SMAM began to climb steeply for both men and women. Between 1975 and 2000, SMAM increased from 27.6 to 30.8 years for men and from 24.5 to 28.8 years for women. (1975 is shown instead of 1973 in figure 2 because SMAM is calculated for census years.)

Figure 2. Trend in the singulate mean age at marriage (SMAM) by sex, Japan, 1950–2000

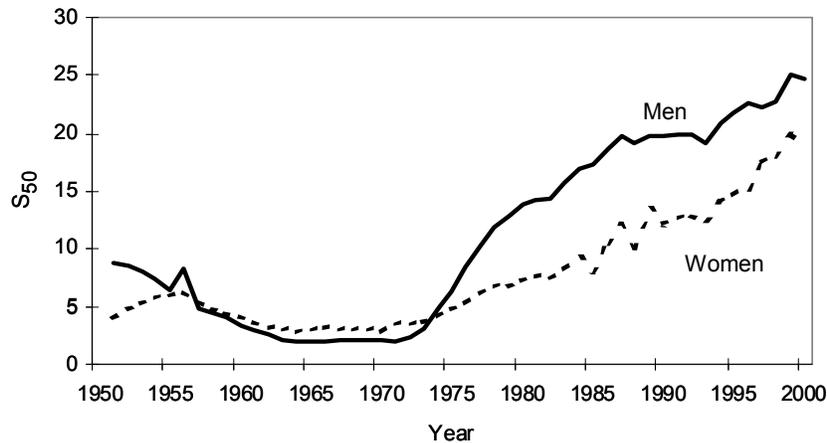


Source: Base data for calculating SMAM are from Statistics Bureau, *Population Census of Japan*, various years.

Figure 3 shows that the synthetic lifetime celibacy rate, S_{50} (the proportion who have never married by age 50), also began to rise steeply after 1975. S_{50} for a particular calendar year is calculated as what the proportion still single at age 50 would be if, hypothetically, single persons (women or men) lived until age 50 experiencing the age-specific first-marriage rates that prevailed in the particular calendar year. Remarkably, between 1970 and 2000 S_{50} increased from 2 percent to 25 percent for men and from 3 percent to 19 percent for women, indicating that Japan has moved far from the “universal marriage society” that it was only three decades earlier.

(It should be noted that the actual proportions still single at age 50 in a particular calendar year are much lower than the synthetic proportions, because the actual proportions reflect age-specific first marriage rates that prevailed two to three decades earlier. The actual proportions still single at age 50 in 2000 were 13 percent for men and 6 percent for women. The synthetic proportions provide a rough indication of where the actual proportions are headed.)

Figure 3. Trend in the synthetic lifetime celibacy rate (S_{50}), by sex, Japan, 1950–2000

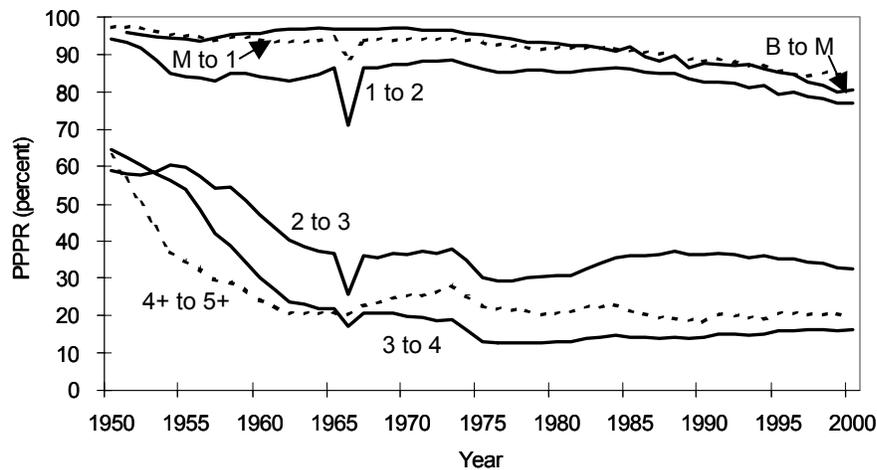


Source: Calculated from data on period parity progression ratios pertaining to the transition from a woman's own birth to her own first marriage.

The components of fertility change are clarified further by trends in period parity progression ratios (PPPRs), which are shown in figure 4. A woman's parity is defined as the number of children that she has ever borne. A parity progression ratio is simply the fraction of women at any given parity who go on to have another child (i.e., progress to the next parity). A period parity progression ratio (PPPR) pertains to a particular time period, usually a single calendar year. A PPPR is a synthetic measure that indicates what the parity progression ratio would be if, hypothetically, women of a given parity lived through their remaining reproductive years experiencing the birth rates specified by parity and duration in parity (i.e., by time elapsed since the last birth) that prevailed in the particular calendar year. $PPPR(B-M)$ is the fraction of women who eventually progress from their own birth to their first marriage, i.e., who eventually get married. In this case, the concept of parity is extended to include the state, M, of being in a first marriage but still without children. The synthetic lifetime celibacy rate, S_{50} , is calculated as $1-PPPR(B-M)$.

Figure 4 shows that most of the fertility decline between 1947 and 1973 occurred because of declines in $PPPR(2-3)$ and higher-order PPPRs. By contrast, after 1973 most of the fertility decline occurred because of declines in $PPPR(B-M)$, $PPPR(M-1)$, and $PPPR(1-2)$. Decomposition of the change in the TFR between 1973 and 2000 into components indicates that 52 percent of the change in the TFR is accounted for by change in $PPPR(B-M)$, 23 percent by change in $PPPR(M-1)$, 18 percent by change in $PPPR(1-2)$, and 7 percent by changes in higher-

Figure 4. Trends in period parity progression ratios (PPPRs), Japanese women, 1950–2000



Source: Ogawa and Retherford (1993), updated with more recent data. PPPRs were calculated from published vital registration and census data using methodology described by Feeney and Saito (1985) and Feeney (1986).

order PPPRs (results based on calculation of the TFR from PPPRs instead of age-specific fertility rates).

The fall of PPPR(B–M), PPPR(M–1), and PPPR(M–2) after 1973 occurred in part because of large-scale movement of young women into the paid labor force after 1973, which contributed to later marriage and a lengthening of the interval between marriage and first birth (Retherford *et al.* 1996). PPPR(1–2) rose slightly after 1975, then resumed declining after 1985 when the economy started to heat up. Skyrocketing housing prices between 1985 and 1990 (one aspect of the bubble economy that emerged in the late 1980s) may partially explain this trend, as many young couples initially living with parents wanted to move into their own housing before having a second child but found it increasingly difficult to do so. PPPR(2–3) rose sharply after 1975 but did not turn downward until the bubble economy burst in 1990. A possible reason for the later downturn of PPPR(2–3) may be that many or most young parents with two children already had their own housing. Higher-order PPPRs did not change much after 1975, perhaps because couples with three or more children tended to be older, more economically secure, and therefore less affected by the bubble economy and the recession that followed it (Ogawa 2003).

The PPPRs for 2000, were they to remain constant in the future, imply that 19 percent of women would never marry, 12 percent would marry but remain childless, 16 percent would have only one child, 36 percent would have two children, 15 percent would have three children, and 3 percent would have four or more children (Ogawa 2003). Fully 31 percent of women would have no children at all, and 47 percent would have either no children or only one child.

Causes of the Baby Bust after 1973

The previous section on the demographics of the baby bust has already mentioned some of the macroeconomic trends that help explain the baby bust. Another socioeconomic trend affecting the baby bust has been rapidly rising levels of educational attainment. Empirically it has been found in many earlier studies that education is one of the most important socioeconomic determinants of fertility. Figure 5 shows trends in the proportions of 23–29-year-old men and women who have completed junior college or university. The figure shows huge gains in educational attainment for both men and women, but especially for women. Initially women went mainly to junior college and men went mainly to university, but in recent years women's enrolment gains have been concentrated at the university level, where they are catching up with men. The dip in university enrolment between 1975 and 1990, which was concentrated among men, was a result of enrolment caps following student unrest in the late 1960s and early 1970s. The caps were applied more stringently to men because of ongoing efforts to ease discrimination against women in universities, and because of rapidly rising numbers of woman applicants to universities, which occurred in large part because of rising economic returns to education (wage gain per additional year of education) which in recent years have been higher for women than for men (Ogawa and Clark 1995; Ogawa 2000). When one considers junior college and university together, women's average educational attainment at ages 23–29 surpassed that of men in 1996.

Figure 6 shows how the TFR varies by education in Japan. The figure shows that women with more education have lower fertility, conforming to the typical pattern observed in other countries. But it also shows that fertility has fallen in all education groups, implying that compositional shifts in the population by educational attainment cannot explain all of the fertility decline that has occurred. (If compositional shifts were the sole explanation, fertility at each level of education would remain constant over time.) Moreover, the pattern of differential fertility by education has changed somewhat over time. In 1966–70 the fertility of women with a junior high education was considerably higher than the fertility of women in the other three educational-attainment groups, whereas in 1996–2000 junior high fertility and senior high fertility were about the same, and university fertility was well below the fertility of the other three groups. The downward divergence of university fertility began in 1986–90, roughly coinciding with the passage of the Equal Opportunity Act of 1986, which aimed at ending job discrimination against women. The rapid increase in university-level educational qualifications of women after 1985, combined with greater opportunity for university-educated women to move into higher-level career jobs, may explain much of the widening fertility gap between university-educated women and women with less education, as shown in figure 6.

Because later marriage and less marriage account for about half of the baby bust since 1973, a deeper explanation of the baby bust must go beyond an examination of total fertility rates and look separately at factors affecting marriage and factors affecting fertility within marriage. This is done in the next two subsections.

Figure 5. Trends in the proportion of persons age 23–29 who completed junior college, university, and junior college or university, Japan, 1967–2002

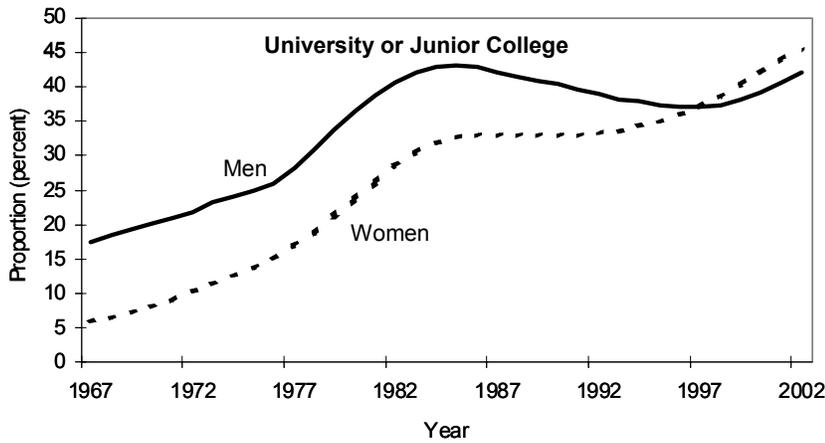
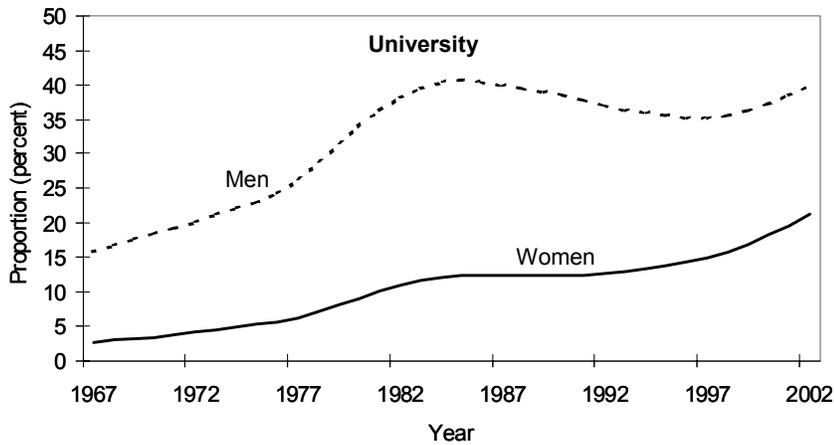
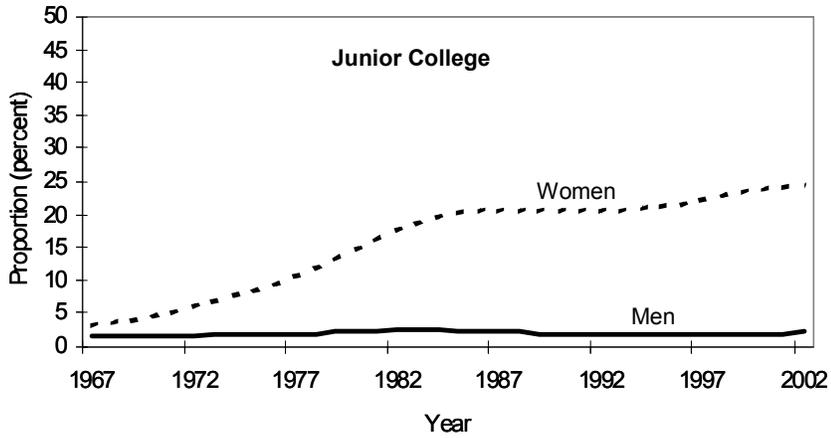
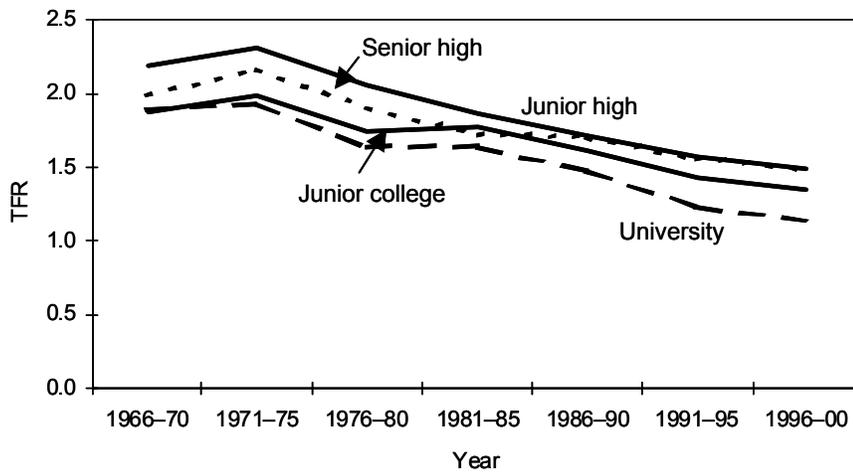


Figure 5 (continued). Trends in the proportion of persons age 23–29 who completed junior college, university, and junior college or university, Japan, 1967–2002

Source: Calculated from census data by age and sex (using estimated population for intercensal years) and annual numbers of junior college and university graduates by sex obtained from Ministry of Education, *School Basic Survey* (various years).

Notes: The calculation involved following particular age-sex cohorts over time. Numerators and denominators of proportions were initially calculated for single years of age and time and then aggregated over ages 23–29 before dividing to obtain the proportions for each calendar year. The figure shows three-year moving averages of these proportions.

Figure 6. Trend in the total fertility rate (TFR) by education, Japan, 1966–70 to 1996–2000



Source: Retherford et al. (2004).

Causes of Later Marriage and Less Marriage after 1973

The main causes of later marriage and less marriage after 1973 can be summarized as follows:

- Educational gains by women
- Increases in the proportion of single women who work
- Changing values about marriage
 - Decline in the proportion of marriages that are arranged
 - Decline in the proportion of newly married couples who coreside with parents
 - Increases in premarital sex
 - Emergence of the “new single concept” (OK to enjoy single life without pressure to get married)
 - Increasing desire of women for more help from husbands and a more egalitarian marital relationship

Table 1 shows how education affects SMAM and the lifetime celibacy rate. In this case, for reasons of data availability, we examine the actual lifetime celibacy rate (LCR) rather than the synthetic lifetime celibacy rate (S_{50}). Values of SMAM and LCR by education are shown for both women and men in 1990 and 2000. In both 1990 and 2000, SMAM rises steeply with education for women but not for men. One important reason for this pattern is that the opportunity cost of getting married increases with education much more for women than for men, because women often quit working when they get married whereas men do not, and because wages foregone due to quitting rise with education. It is also noteworthy that between 1990 and 2000 SMAM increased substantially in every education group for women but not for men. A likely reason for this pattern is that labor market attachment increased within every education group for women but not for men.

The lifetime celibacy rates by education in table 1 show a somewhat different pattern. The LCR tends to rise with education for women but fall with education for men. The reason is that men tend to prefer women with less education than they have, and women tend to prefer men with more education than they have. The result is that women with high education and men with low education find it especially difficult to find spouses. Between 1990 and 2000 the pattern of LCRs by education did not change much for women, but it changed considerably for men. LCRs increased considerably in all education groups for men, especially less-educated men. A likely reason is an increasing education-related marriage squeeze on men as a result of narrowing educational differences between women and men. Rising educational qualifications of women have made it increasingly difficult for men with less education to find women willing to marry them (Retherford *et al.* 2001).

Figure 7 shows trends relating to the labor force participation of single women, based on survey questions to married women on work before marriage. The figure shows trends in the proportion who worked before marriage and the proportion who worked for pay before marriage, where the trend in the latter proportion is plotted both for all women and for those women who graduated junior college or university. The proportion who worked before marriage increased from 49 percent in 1955 to almost 100 percent in 2000. The trend in the proportion who worked for pay before marriage, which is about 10–15 percentage points lower, rose until the bursting of

Table 1. Singulate mean age at marriage (SMAM) and lifetime celibacy rate (LCR) by sex and education, Japan, 1990 and 2000

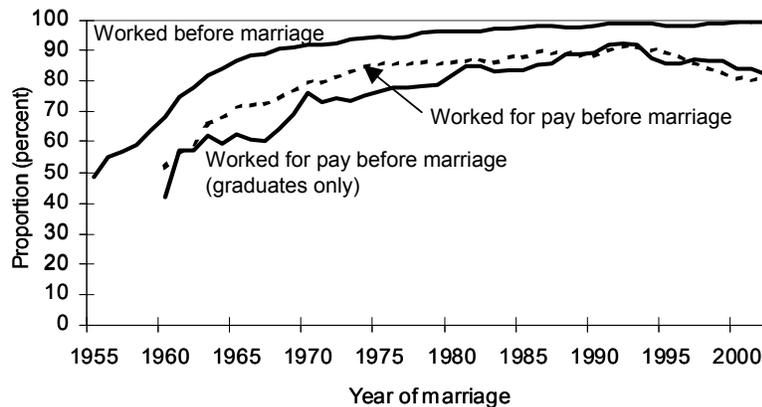
Characteristic and census year	SMAM		LCR	
	Women	Men	Women	Men
1990				
Junior high school or less	24.6	30.3	4	8
Senior high school	25.9	29.9	4	4
Junior college	27.4	30.3	6	4
University	28.1	30.7	9	3
2000				
Junior high school or less	26.6	29.6	6	21
Senior high school	27.3	30.4	5	12
Junior college	28.8	30.9	7	10
University	30.1	31.4	9	8

Source: Base data are from the 1990 and 2000 censuses of Japan. A specified level of education, such as senior high, means that persons classified at that level graduated that level.

the bubble economy in 1990 and then gradually dropped off after 1993 by about ten percentage points during Japan's long economic recession (commonly referred to as "Japan's lost decade") that began in the early 1990s and continued until 2002, the latest year shown in the figure. Until 1990, the difference between the two curves (worked before marriage and worked for pay before marriage) shrank somewhat over time because of declines in the proportion of women engaged in unpaid work on farms and in other family enterprises. The trend in the proportion of junior college and university graduates who worked for pay is somewhat lower than the trend in the proportion of all woman who worked for pay, but only in earlier years. By 1989 the two curves approximately coincided, and after 1997 the proportion of junior college and university graduates who worked for pay surpassed slightly the proportion of all women who worked for pay, apparently because more educated women were increasingly being drawn into the job market and were perhaps more successful at finding or keeping jobs during the long recession.

The overall rise in the proportion of young single women who work for pay has meant that the vast majority of single women do not have any compelling financial need to get married. This financial independence has also contributed to the rise in the mean age at marriage and the proportion never marrying. The impact of women's work on the mean age at marriage and the proportion never marrying is even greater than suggested by figure 7, because the figure does not include women who never married, almost all of whom work.

Figure 7. Trends in the proportion of currently married women who worked before marriage and who worked for pay before marriage, and trend in the proportion of currently married women who graduated from junior college or university who worked for pay before marriage, Japan, 1955–2002

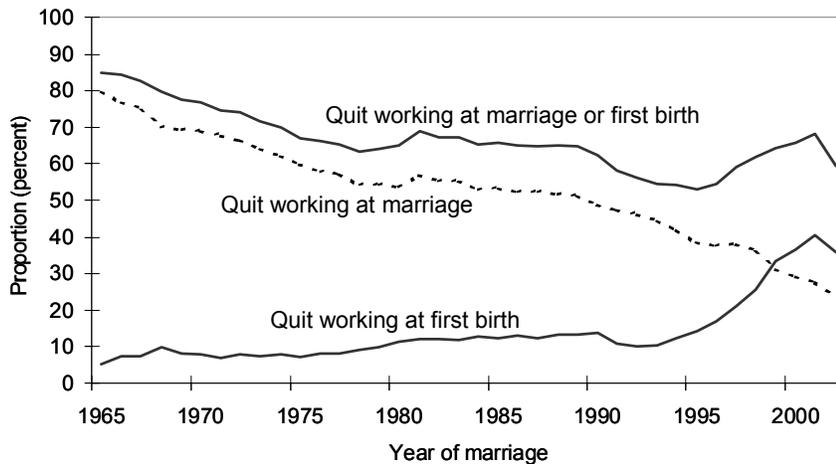


Source: Three-year moving averages, based on pooled data for currently married women age 15–49 from various rounds of the National Survey on Family Planning between 1986 and 2000 and the 2004 round of the National Survey on Population, Families, and Generations, conducted by the Mainichi Newspapers of Japan.

Figure 7 also suggests that the proportion working for pay would have continued to increase after 1993, had it not been for the bursting of the bubble economy in 1990 and the long recession that followed. If so, women’s attachment to the labor market may have continued to increase after 1993. This inference is supported by figure 8, which shows, among women who have had at least one child and who worked before marriage, trends in (1) the proportion who quit working when they got married, (2) the proportion who quit working when they had their first child, and (3) the proportion who quit working either when they got married or when they had their first child. The proportion who quit when they got married declined from 80 to 24 percent between 1965 and 2002. The proportion who quit at first birth rose from 5 to 40 percent between 1965 and 2001, with most of the rise occurring after 1993 when unemployment rose during Japan’s lost decade, and then fell off slightly to 36 percent in 2002. The fall-off may have occurred because of more generous compensation during childcare leave, as mandated by the 2001 revision of the Childcare and Family Care Leave Act, which will be discussed later. Overall, the figure shows a shift from quitting at first marriage to quitting at first birth and, until a few years into Japan’s lost decade when unemployment rose, a decline in the proportion quitting at either marriage or first birth.

Of course, women who worked before marriage did not necessarily work continuously between completion of their education and getting married. In 2004, according to the National Survey on Population, Families and Generations, conducted by the Mainichi Newspapers of Japan, 52 percent of single women worked in regular full-time jobs, 21 percent worked part-time, 7 percent were full-time temporary contract workers, 2 percent were self-employed, and less than 1 percent were unpaid family workers.

Figure 8. Among currently married women who have had at least one birth and who worked before marriage, trends in the proportion who quit when they got married, who quit when they had a first birth, and who quit either when they got married or when they had a first birth, Japan, 1965–2002

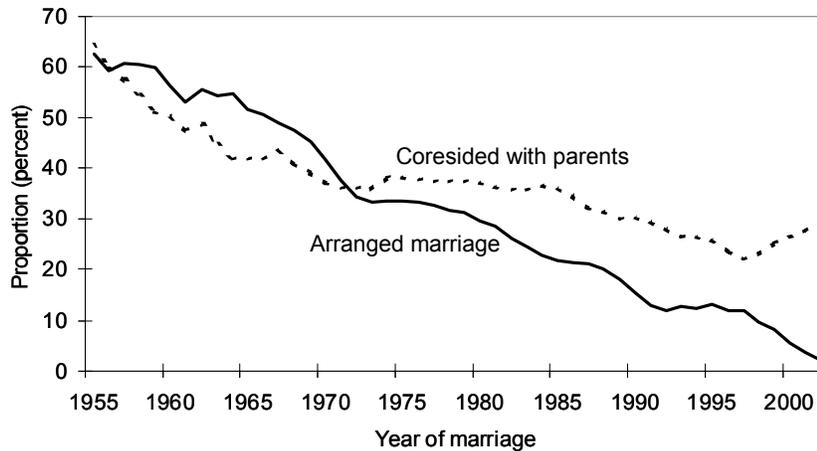


Source: Three-year moving averages, based on pooled data for currently married women age 15–49 from various rounds of the National Survey on Family Planning between 1986 and 2000 and the 2004 round of the National Survey on Population, Families, and Generations, conducted by the Mainichi Newspapers of Japan.

Figure 9 shows trends in the proportion of marriages that were arranged and the proportion of newly married couples who coresided with parents at the time of marriage. The steep decline in arranged marriage has contributed to later marriage and less marriage because the decline in arranged marriage has not been compensated by the emergence of a well-developed marriage market (Fukutake 1989). In contemporary Japan, contact with potential spouses tends to be limited to a small circle of colleagues at work and former schoolmates, so that it is difficult to meet and get to know potential spouses. Among single women age 20 and over, the proportion saying they have no male friend (neither a boyfriend nor any other male friend) was 34 percent in the 1990 round of the National Survey on Family Planning (also conducted by the Mainichi Newspapers), 38 percent in the 1994 round, 41 percent in both the 1996 and 1998 rounds, and 39 percent in the 2004 Survey of Population, Families and Generations.

The decline of coresidence of newly married couples with parents (usually the husband’s parents) at the time of marriage has also contributed to later marriage and less marriage, because in the absence of coresidence the newly married couple must bear all or most of the substantial cost of setting up a new household. Figure 9 shows that the trend in the proportion of newly married couples who coresided with parents at the time of marriage has been mostly downward. The proportion coresiding declined from 64 to 23 percent between 1955 and 1998, then rose to 29 percent in 2002.

Figure 9. Trends in the proportion of marriages that were arranged and the proportion of newly married couples who coresided with parents at the time of marriage: Japan, 1955–2002



Source: Three-year moving averages, based on pooled data for currently married women age 15–49 from various rounds of the National Survey on Family Planning between 1986 and 2000 and the 2004 round of the National Survey on Population, Families, and Generations, conducted by the Mainichi Newspapers of Japan.

The trends in figure 9 show fluctuations, and up until 1998 the nature of these fluctuations was that the proportion arranged and the proportion coresiding both tended to decline during economic good times and to decline less steeply or not at all or even to increase during economic hard times. This occurred because love marriages, but not arranged marriages, entail large costs of setting up an independent household, so that love matches are more likely than arranged marriages to be postponed during economic hard times. This pattern is observed in the figure, although not consistently so. For example, the proportion arranged rose in 1962 and did not start declining again until 1965, following the economic downturn during 1961–64 (which occurred at high rates of economic growth, but was still a downturn). The proportion coresiding also rose in 1962 but, unlike the proportion arranged, it started falling again the next year. Somewhat later, following the oil shock of 1973, the proportion arranged and the proportion coresiding both rose slightly and then leveled off for several years during the subsequent restructuring of the economy. More economic restructuring commenced in 1993, after which the proportion arranged rose and the proportion coresiding leveled off until 1998.

A major change of pattern occurred in 1998, which saw another major economic downturn following a brief recovery that was aborted because of an ill-timed increase in the national sales tax (i.e., consumption tax). As shown in figure 9, during this downturn the proportion coresiding increased, as expected, but the proportion arranged fell steeply, which was not expected at all. The unexpected fall in the proportion arranged was probably a consequence of the long recession, which by 1998 was in its eighth year, well into “Japan’s lost decade.” During this decade, mean age at marriage rose to very high levels, as seen earlier. The sharp

economic downturn in 1998 appears to have caused many couples to give up on waiting for the return of economic good times and to finally get married. Because these marriages were delayed love marriages, their occurrence drove down the proportion of marriages that were arranged. And because times were hard and jobs increasingly insecure, many of these newly married couples moved in with parents, driving up the proportion coresiding. They coresided also because wives were reluctant to give up hard-to-get jobs, and because the couple were getting older and wanted to start having children. Coresidence allowed women to stay on the job after having their first birth, since the husband's or (increasingly) the woman's mother could help with childcare. This may also be the reason why the proportion who quit working after first birth stopped rising and turned downward after 2001, as seen earlier in figure 8. (One expects this downturn to occur around 2001, because the delayed love marriages that finally occurred as a result of the economic downturn in 1998 would result in first births roughly two to three years after the economic downturn.) Given the changes in values and attitudes that have also occurred—especially new values of individualism among young wives who increasingly do not want to live with their mother-in-law—most young couples probably do not view these coresidence arrangements as ideal. If so, then, when Japan's economy revives as it appears to be doing at the present time, the proportion coresiding may resume its long-term decline.

If the above explanation of the trends in proportions arranged and coresiding is correct, an implication is that the rise in age at marriage that began in 1975 will slow down and may be coming to an end. In that case, there might be a temporary upturn in the TFR in the near future, because births that would otherwise occur later would instead occur sooner (Bongaarts and Feeney 1998). This potential upturn may be more than offset, however, by other forces that continue to push fertility downward, such as the continuing movement of women into higher-level career jobs, and increasing job insecurity as the restructuring of Japan's economy continues in response to the competitive pressures of economic globalization.

Another factor contributing to the sustained rise in age at marriage in Japan after 1973 has been the increasing social acceptability and prevalence of premarital sex, which means that sexual gratification can be obtained without getting married. As reported in the National Survey on Sexual Behavior of Youth, the proportion of junior college and university students who reported having had sexual intercourse increased from 23 to 63 percent among men and from 11 to 51 percent among women between 1974 and 1999 (Retherford *et al.* 1996; Japanese Association of Sex Education 2001). Also, as calculated from the 1990 and 2000 rounds of the National Survey on Family Planning, the proportion of single women age 16 and over who reported that they were currently using contraception rose from 39 to 57 percent between 1990 and 2000 (Retherford *et al.* 2001). (Despite the current high level of premarital sex, only about 2 percent of births in Japan occur out of wedlock, as mentioned earlier. Contraception—mainly by means of condoms, since the contraceptive pill was legalized only in 1999—is backed up by abortion, which is both legal and socially acceptable, so that pregnancies that are not followed quickly by marriage are almost always aborted.)

The rise of a new single life style, dubbed by the news media in the late 1980s as the “new single concept,” has also contributed to later marriage in Japan. The new single concept refers to enjoying single life without pressure to get married. Previously there was considerable pressure, especially on women. As already shown earlier, almost all young single women in

Japan (and men too) work for a while before getting married. At the same time they mostly live with parents without contributing much to household expenses, thereby enabling a rather care-free life style dubbed by the news media as “parasite single.” Surveys have shown that the proportion of single persons favoring the new single concept was already fairly high by 1988, suggesting that considerable value change had already occurred before the new single concept surfaced in the news media. Surveys in 1988 and 1993 indicated that the proportion favoring the new single concept was 78 percent in 1988 and 76 percent in 1993 among young single women, and 59 percent in 1988 and 62 percent in 1993 among young single men (Retherford *et al.* 1996).

Rising education and paid employment among young women have also resulted in a rise in women’s expectations of a more egalitarian marital relationship. Men’s attitudes, however, have lagged somewhat behind women’s attitudes in this regard, and this makes marriage less attractive to women, thereby also contributing to later marriage and less marriage (Tsuya and Bumpass 2004). Exacerbating this problem is that men’s working hours continue to be long in Japan. According to background information included in the government’s latest “Angel Plan” (discussed in more detail later), men in their 30s with a child less than 5 years old spend an average of 48 minutes a day on childrearing and household chores. Moreover, 23 percent of husbands in their 30s work more than four hours of overtime per day, resulting a total workweek of more than 60 hours.

Reasons for the Decline in Marital Fertility after 1973

As seen earlier in figure 4, the decline in marital fertility after 1973 has been confined mainly to declines in PPPR(M–1) and PPPR(1–2), i.e., in the proportion progressing from marriage to first birth and the proportion progressing from first to second birth. The main reasons for declines in these progression ratios can be summarized as follows:

- The direct costs of children have risen, involving a substitution of quality for quantity of children (Becker 1960)
- The opportunity costs of children, in terms of lost income for women, have risen
- Preferences have shifted away from children toward “other goods,” involving a decline in the “consumption utility” of children
- In many respects families are less secure, so that the wife’s job has come to play a more important role in family finances

Rising higher-education enrolment ratios have been a major contributor to the rising direct cost of children. It has been estimated that the average undiscounted direct economic cost of raising and educating a child in Japan through four years of university is 28,600,000 yen (about \$286,000 at current exchange rates), assuming the least expensive option of enrolment in government schools only. The calculation of this cost uses several sources of data and pertains approximately to the year 2000. The cost of the most expensive option, involving education entirely in private schools through medical school, is 63,010,000 yen (\$630,100)(AIU Insurance Company 2001). Neither of these options includes expenses for *juku*, which are expensive privately-run cram schools whose main purpose is to prepare children for entrance examinations for elite junior high schools, high schools, and universities. Also not included are rising childcare costs (i.e., day-care costs) for working women as a result of declining coresidence with parents.

The average undiscounted opportunity cost of children for women, in terms of lost income as a result of quitting a job, is even higher than the direct cost of children. It has risen because the proportion of married women who work for pay outside the home has risen and because their pay has risen. Among married Japanese women age 20–54, the proportion working for pay outside the home increased from 13 to 48 percent between 1963 and 2000 (Shimada and Higuchi 1985; Ogawa and Ermisch 1996; Statistics Bureau 2001).

A recent government White Paper (Cabinet Office 2003) has estimated the average opportunity cost of children for women university graduates in terms of income lost as a result of temporarily dropping out of the labor market for six years to have children. The calculation assumes that a woman starts working at age 22, works for six years at a regular full-time job, quits for six years to have children, then comes back to the labor force at age 34 in another regular full-time job. In this scenario, the undiscounted lifetime income lost by the time the woman retires at age 60 is 84,770,000 yen (\$847,700). In a second scenario in which the woman returns to a part-time job instead of a full-time job, the lost income is considerably greater, amounting to 237,930,000 yen (\$2,379,300). These estimates would be even higher had they taken into account reductions in social security pensions after age 60 as a consequence of lost social security contributions resulting from lost income. In the second scenario, the main reason why the opportunity cost is so large is that part-timers are so poorly paid in Japan, the typical annual earnings being in the neighborhood of 1,000,000 yen (\$10,000).

The decline of coresidence of young couples with parents has also contributed to the rise in the average opportunity cost of children, because the lack of grandparents or other relatives in the household who can help with childcare makes it more likely that a woman will drop out of the labor force when she has a child.

The average opportunity cost of children is likely to keep on increasing, because married women's propensity to work full-time is likely to keep on increasing. This will occur partly because women's educational attainment will continue to rise. The propensity to work full-time will receive an additional boost by private-sector firms' on-going elimination of non-working spouse benefits as part of salary, and by a revision to the tax system in 2004 that abolished tax breaks to wives earning less than about one million yen (\$10,000) a year. Partly because of these tax breaks, many women have chosen in the past to work part-time instead of full-time. Without the tax breaks, more will choose to work full-time, especially the more educated wives of higher-income husbands, for whom the tax break was larger. Another boost to women's labor force participation may come when Japan's baby boomers start retiring at age 60 in 2007. Japan's labor force already started declining in 1998, and the decline will accelerate starting in 2007 when the boomers start retiring, thereby drawing more women into full-time jobs when the economy finally recovers from prolonged recession.

The continuing rise in divorce rates will also boost women's full-time work participation. Japan's crude divorce rate (divorces per 1,000 population) rose from 0.74 in 1960 to 2.25 in 2003 (compared with 1.9 for France and 2.4 for Germany in 2000)(Ministry of Health, Labour and Welfare 2005). Divorce rates in Japan may continue to rise, one reason being that, starting in 2007, a divorced woman will have the right to as much as half of her husband's pension. Another

reason the divorce rate may continue to rise is the continuing rise in women's paid employment and income, which make divorce more financially feasible for women. On the other hand, a major reason why divorce increased during Japan's lost decade was increasing instability of husband's earnings (Ogawa and Ermisch 1994). If the economy recovers to the extent that this income instability declines, the divorce rate could fall. The increasing likelihood that a marriage will end in divorce has meant that women increasingly have had to hedge their bets by getting a good education and a good full-time job.

The "consumption utility" of children (a term coined by economist Harvey Leibenstein (1957)) may be thought of simply as the joys of children. It has been declining for a number of reasons. Some of these reasons are demographic. People increasingly grow up with only one sibling who is close in age, or with no siblings. As a consequence, teenagers and young adults rarely interact with young children and are not socialized to enjoy them. The trend toward later marriage magnifies this effect, because young single adults have more time to settle into a life style without children. Another reason is the rise of new individualistic values of "finding oneself," "realizing one's potential," and (in the case of women) pursuing a career, especially among persons with more education who grew up in higher-income households. According to van de Kaa (1987, 1997, 2001) and Lesthaeghe (1995), these new values among young adults have resulted in "post-modern fertility preferences" that are the main driving force of the "second demographic transition" to very low fertility. As Aries (1980, quoted by Caldwell and Schindlmayr (2004)) put it, "His [the child's] existence is related to plans for a future in which he is no longer the essential variable ... his role is changing today ... It is diminishing." The decline in the consumption utility of children has no doubt contributed to the decline of marital fertility in Japan since 1973, but is difficult to quantify the size of this contribution.

The decline in consumption utility of children in Japan could be described as the "new marriage concept," meaning that it is OK for a woman to pursue a career and enjoy married life without pressure to have children. (The term "new marriage concept" has not been used either by academics or by the news media in Japan, however.) Evidence of this new marriage concept is that the proportion of women age 20–59 who agree or strongly agree with the statement, "The husband should be the breadwinner and the wife should stay at home," declined from 71 to 46 percent between 1982 and 1997, and the proportion of single women age 20 and over who agree or strongly agree with the statement, "Marriage does not mean that one must have children," increased from 52 to 63 percent between 1992 and 1997 (Tokyo Metropolitan Government 1992; Prime Minister's Office 1997; Retherford *et al.* 2001). Indeed, it appears that the "new single concept" has led rather quickly to the "new marriage concept."

In some important respects, economic and social changes in Japan since 1973 have led to less security for families, and this has also contributed to later childbearing and fewer children. (See Hobcraft and Kiernan (1995) and Hobcraft (2004) for discussions of the importance of this factor in Europe's recent fertility declines.) For example, the decline of the coresident extended family has contributed to economic insecurity because parents and other relatives are less available to help with childcare and housing expenses during hard times. Rising divorce rates have additionally contributed to rising insecurity, especially for wives. The rise of divorce reduces a wife's motivation to have children because she increasingly has to hedge her bets by getting a good education and a good job, especially because she is the one who is likely to have

custody of children in the event of a divorce. Holding down a good job usually conflicts with childbearing and childrearing to some extent. The increasing likelihood of divorce also reduces the motivation of husbands to have children, because in the event of a divorce husbands are likely to have to continue paying for children without receiving many of the benefits of children, again because the wife usually retains custody of the children.

Another change leading to less security for families is that ongoing market reforms aimed at maintaining Japan's competitive edge in the global economy have resulted in less job security for both husbands and wives, thereby increasing the couple's uncertainty about their future income stream as well as other disruptions entailed in moving from job to job, such as changes of residence. Figures 10 and 11 present evidence of less job security since 1993, when major restructuring of Japan's economy commenced in response to the recession that followed the bursting of the bubble economy in 1990. Figure 10 shows trends in the proportion of firms of different sizes that report that they follow the lifetime employment system. Between 1993 and 2002, this proportion fell by more than half in all firm-size categories. Figure 11 shows trends in the proportion of firms that report that their promotion system is primarily merit-based rather than seniority-based. This proportion increased substantially since 1993 in all firm-size categories.

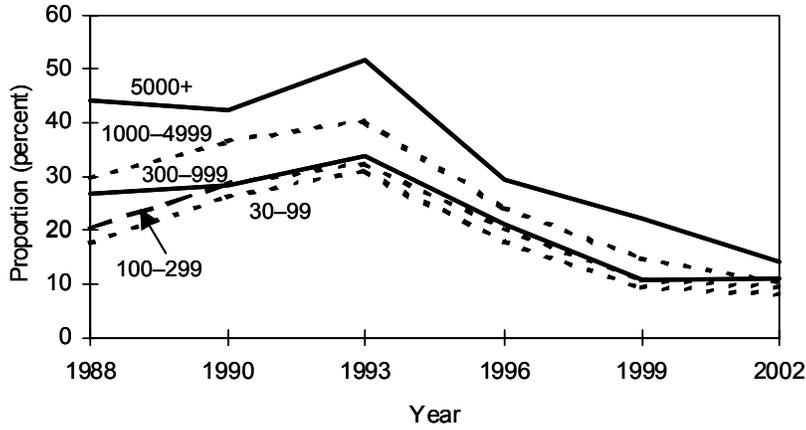
Another aspect of insecurity relates to Japan's social security system, covering both pension and medical benefits. This system has been characterized by universal coverage since 1961 (Ogawa and Retherford 1997). The downsizing of pension and medical benefits and the huge growth of government debt after the bursting of the bubble economy (Japan currently has by far the highest debt-to-GDP ratio of any economically advanced country) has resulted in substantial increases in the proportions of the population who view social security pension benefits and medical benefits as inadequate. The increases in these proportions are shown in figure 12. The figure shows that between 1993 and 2000 the proportion viewing pension benefits as adequate fell from 34 to 16 percent, and the proportion viewing medical benefits as adequate fell from 51 to 31 percent. A possible demographic response would be to have more children who could help parents financially in their old age. But survey data on what parents expect from their children show no sign of this response. Instead, the proportion expecting to rely on children in their old age has continued to fall, from 18 percent in 1990 to 11 percent in 2004, according to the 1990 round of the National Survey on Family Planning and the 2004 Survey on Population, Families and Generations, both conducted by the Mainichi Newspapers of Japan.

All of these aspects of increasing economic insecurity of families indicate that couples increasingly consider that two incomes are necessary in order to guard against the possibility of having to sell the couple's home or other assets in the event that the main breadwinner loses his or her job and is unemployed for a while. The result is that the wife's job becomes more precious, thereby contributing to delayed childbearing and fewer children because of the difficulties of managing both work and childrearing.

Why the Japanese Government is Concerned About Below-Replacement Fertility

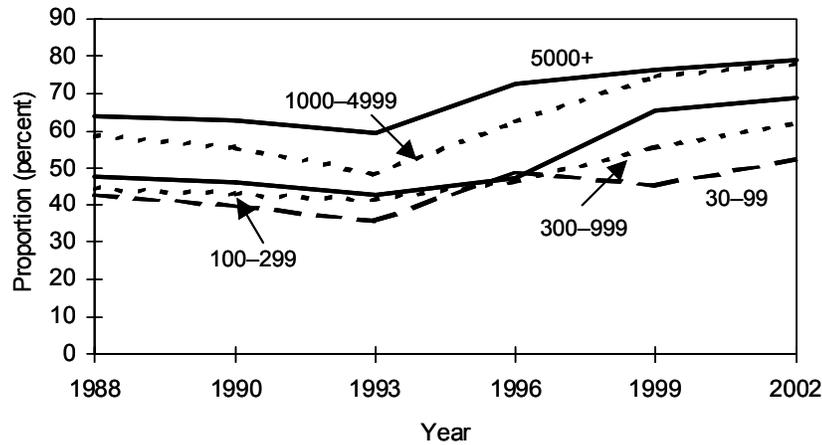
The Japanese government is increasingly concerned about Japan's very low fertility. One reason is that low fertility is an important cause of rapid population aging (typically measured by the

Figure 10. Trend in the proportion of firms reporting that they follow the lifetime employment system, by firm size (number of employees), Japan, 1988–2002



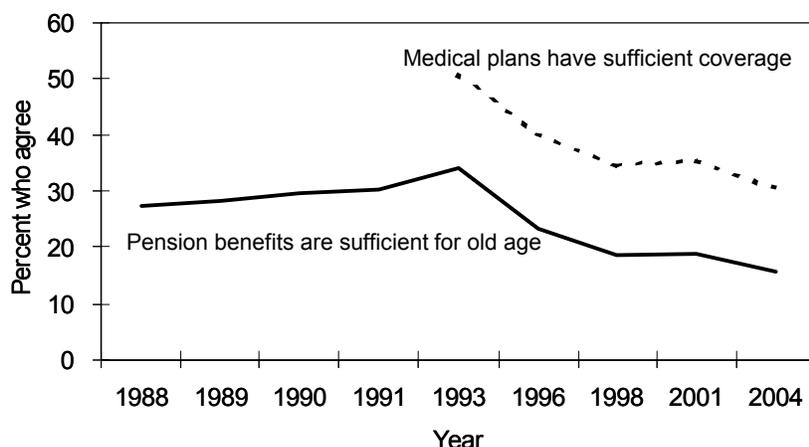
Source: Ministry of Health, Labor, and Welfare, *Survey on Employment Management* (various rounds).

Figure 11. Trend in the proportion of firms reporting that they are moving toward a merit-based promotion system, by firm size (number of employees), Japan, 1988–2002



Source: Ministry of Health, Labor, and Welfare, *Survey on Employment Management* (various rounds).

Figure 12. Proportion of persons age 18–69 who feel that the social security system’s pension and medical benefits are adequate, Japan, 1988–2004



Source: Japan Institute of Life Insurance, *Survey on Life Security* (various rounds).

proportion of the population age 65 and over). This worries the government because population aging is causing difficulties in funding Japan’s social security system. Another reason is that Japan’s population is projected to start declining in 2006, which could cause an economic slowdown because of possible labor shortages and declining demand for goods and services.

Figure 13 illustrates the concern about rapid population aging. The figure shows Japan’s age-sex distribution in 1950, 1965, 2000, and 2050. The distribution for 2050 is based on the medium variant of the 2002 revision of the United Nations population projections for countries of the world (United Nations 2003). Normally an age-sex distribution has a pyramidal shape that is broad at the young ages and tapers off at the old ages, as in the case of 1950 in the figure. Hence the term “age pyramid” for this type of graph. By 2050, however, this pyramidal shape is projected to be inverted at ages below 80 years, with the largest 5-year age group being the 75–79 age group. The overall distribution in 2050, as shown in the figure, is “coffin-shaped,” broad at the shoulders and tapering off at the head and feet. The reason for the inverted shape up to age 75–79 is that the absolute number of births in Japan has been declining or is projected to decline almost every year between 1974 and 2050. The tendency of mortality to thin out the population as age increases is more than offset by the annual decline in the number of births in previous years, with the result that in 2050 the number of persons in each age group usually increases rather than decreases with age up to age 75–79. With some justification, figure 13 could be described as a social security administrator’s worst nightmare, because it means that a relatively small population of working age will have to pay for pensions and medical services for a relatively large elderly population.

Table 2 provides additional detail, in terms of the changes that are projected to occur between 2000 and 2050 in the relative size of three broad age groups, <15, 15–64, and 65+. The age group 15–64 is meant to approximate the working ages, and the age group below 15 and the

Figure 13. Population age structure for Japan in 1950, 1965, 2000, and 2050

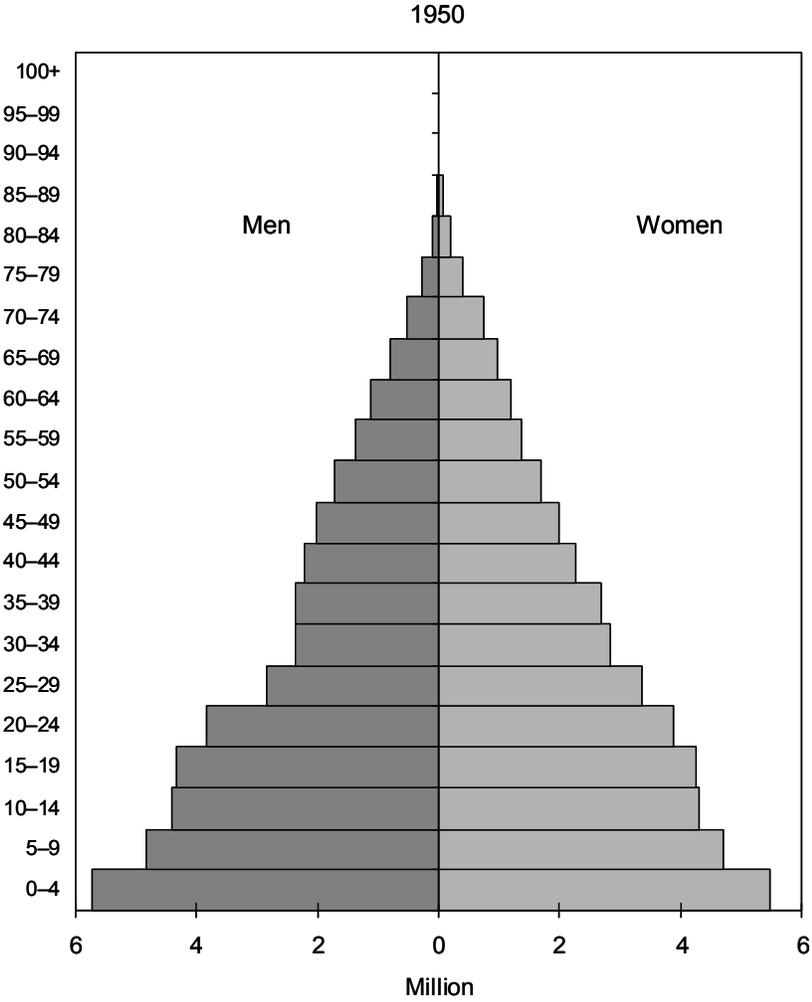


Figure 13 (continued). Population age structure for Japan in 1950, 1965, 2000, and 2050

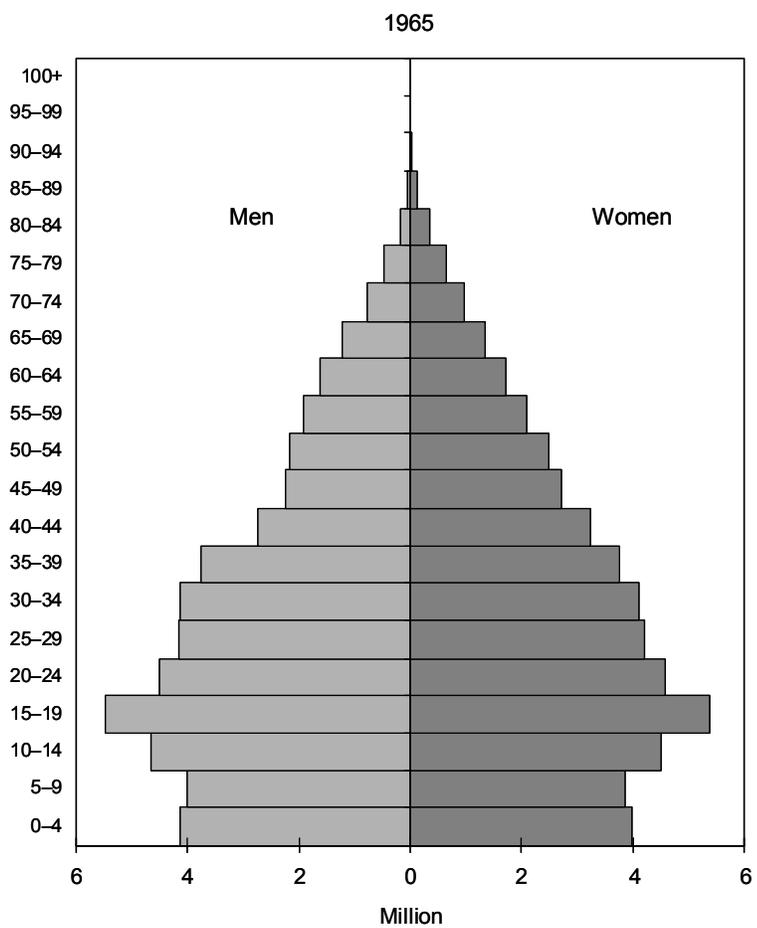


Figure 13 (continued). Population age structure for Japan in 1950, 1965, 2000, and 2050

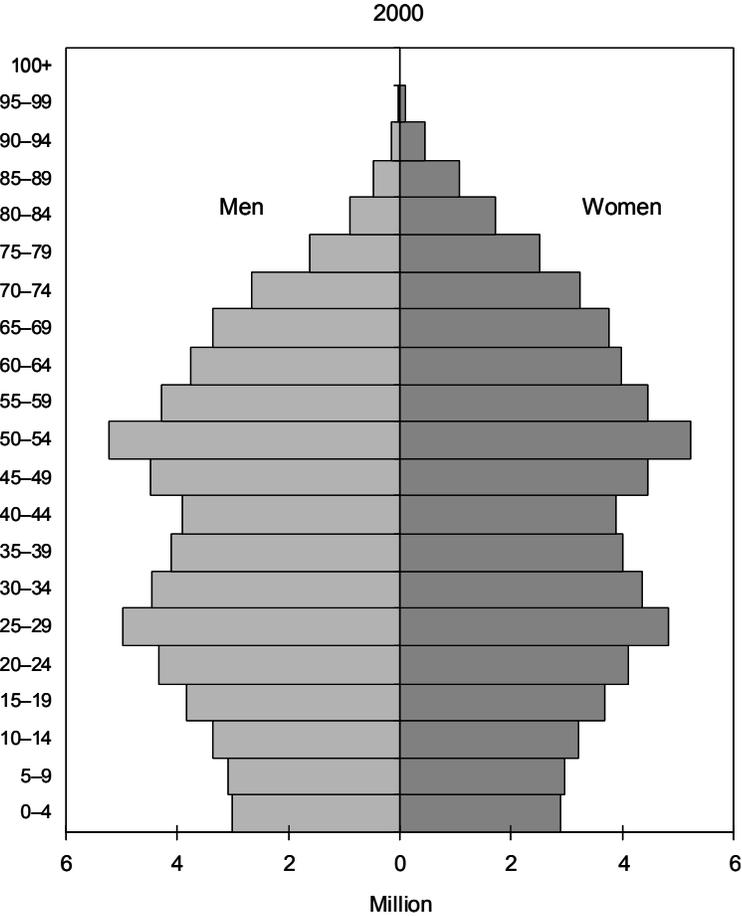
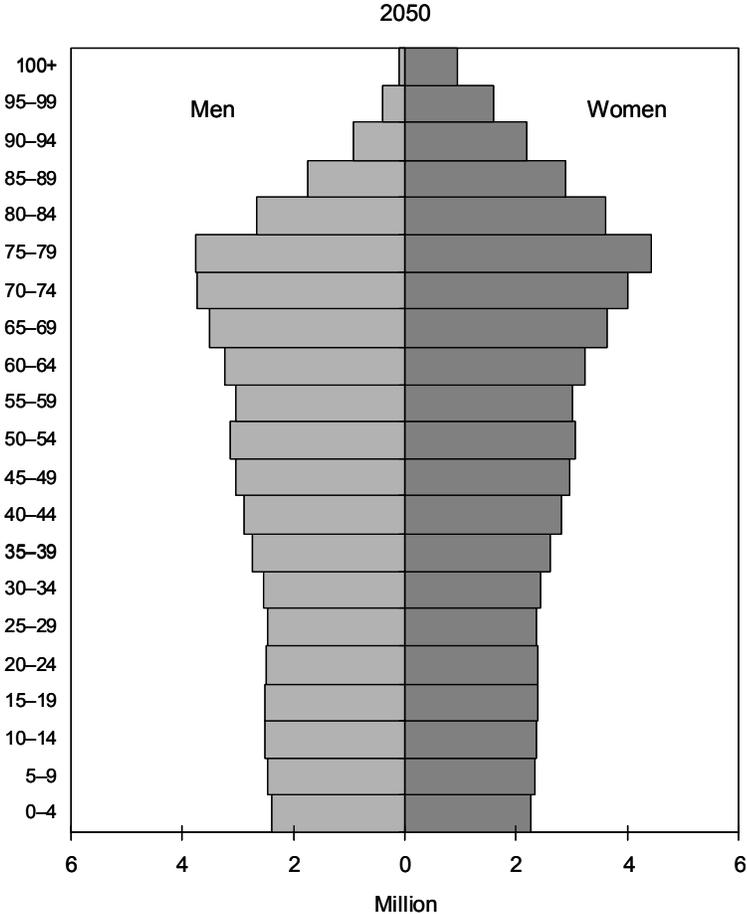


Figure 13 (continued). Population age structure for Japan in 1950, 1965, 2000, and 2050



Source: United Nations (2003).

age group 65+ are meant to approximate young-age and old-age dependents whom those in the working ages must support. The table shows that the proportion of population at the working ages will decline by 36 percent, and the proportion at the retirement ages will increase by 83 percent. The table also shows that the old-age dependency ratio will almost triple and the total dependency ratio will more than double, while the young-age dependency ratio will increase only slightly. These trends imply huge increases in government social security expenditures (both pension and medical), and this is occurring in a situation where, at the present time, the Japanese government is already reeling from a huge and rapidly growing government debt.

Table 2. Japan's population in 2000 and 2050 (in millions)

	2000	2050	Percent change in population
Total	127	110	-14
<15	19	14	-23
15-64	87	55	-36
65+	22	40	+83
Young-age dependency ratio	21	26	--
Old-age dependency ratio	25	72	--
Total dependency ratio	47	98	--

Notes: The young-age dependency ratio is defined as the ratio of population <15 to population 15-64, the old-age dependency ratio as the ratio of population 65+ to population 15-64, and the total dependency ratio is defined as the sum of the young-age and old-age dependency ratios.

Source: Calculated from the medium-variant population projection for Japan in the 2002 revision of the United Nations population projections for countries of the world (United Nations 2003).

Table 2 also shows that total population is projected to decline by 14 percent between 2000 and 2050. The decline would be much larger were it not for what demographers call "population momentum." This is the tendency for the population to keep on growing for a while even after the TFR drops to the replacement level of 2.1 children per woman. There are two sources of population momentum: (1) a temporarily inflated proportion of the population in the reproductive ages, and (2) a temporarily small proportion of the population in the elderly ages where age-specific mortality rates are high. These temporary distortions in the age structure of the population occur because it takes time for the age structure to adjust to rapid mortality and fertility decline.

The sources of population momentum can be better understood by considering what the age distribution looks like after the first fifteen years of a fertility decline. In Japan, fertility fell steeply between 1947 and 1957, following Japan's brief post-war baby boom. The population

pyramid for 1965 in figure 13 shows the age distribution a little more than 15 years after the post-war fertility decline began. The pyramid shows that by 1965 the proportion of children had fallen, resulting in a temporary bulge in the age distribution at the peak reproductive ages. The proportion who were elderly, on the other hand, remained small in 1965, because the elderly were born much earlier when infant and child mortality rates were high. The figure also shows that by the year 2000 there were two bulges in the age distribution. Between 1965 and 2000 the first bulge moved upward in age by 35 years, and a second, smaller bulge appeared in the young reproductive ages as a result of a baby boomlet that was an echo of the first baby boom some 30 years earlier (30 years being the length of a generation as approximated by the mean age at childbearing). As is evident from figure 13, it takes the better part of a century for the temporary distortions in age structure that result from mortality and fertility decline to work themselves completely out of the age distribution.

The effects of population momentum on population growth are large. Japan's TFR dropped to replacement level in 1957, and it started falling below replacement in 1973, reaching 1.29 in 2003. Yet population continued to grow by 35 percent between the 1960 and 2000 censuses, and it is projected to start declining only in 2006. The delayed advent of population decline is perhaps the main reason why the Japanese government has thus far been concerned more about population aging than about population decline. Another reason is that, although the Japanese labor force already started declining in 1998, there has as yet been no sign of a labor shortage because of relatively high unemployment since the early 1990s. But labor shortages are another worry on the horizon once the economy recovers.

It is simple to calculate roughly the generational decline in population implied by a TFR of 1.29 children per woman that would occur in the absence of population momentum. The calculation assumes that the TFR has been constant at 1.29 for a long time, so that no distortions in the population age distribution remain. A TFR of 1.29 implies that on average a woman replaces herself by approximately $1.29/2 = 0.65$ girl. That is 0.40 girl short of the replacement level of 1.05 girl (half of 2.1). In other words, a TFR of 1.29, if continued indefinitely, implies that the population will eventually decline at a constant rate of about 38 percent ($0.40/1.05$) per generation. A generation is approximately equal to the mean age at childbearing, which in Japan is about 30 years. Thus a constant TFR of 1.29 implies that population will decline by about 38 percent every 30 years.

Pronatalist policies and programs in Japan

The Japanese government initiated child allowances in 1972, when fertility was still close to replacement level (figure 1 and table 3) and the economy still booming. Initially the intent was not pronatalist but rather to help low-income couples with at least three children. Allowances were accordingly limited to third and higher-order children. In 1986 the allowances were extended to cover the second child, and in 1992 (by then for pronatalist reasons) they were extended again to cover the first child. The cost of the child allowances is shared by the national, prefectural, and municipal governments and by employers. The amount of the allowances has been revised upward from time to time. A series of revisions since 1992 have extended the benefit period, which currently extends until the child reaches the end of third grade in school. As of 2004, employers pay most of the allowance for children below age 3, and the government

pays entirely for children age 3 and older. The allowance is 5,000 yen (\$50) per month for each of the first two children and 10,000 yen (\$100) per month for each additional child beyond the second. There is a means test, however: If annual household income exceeds 4.15 million yen per year (\$41,500) for a four-person household, the household is not eligible to receive child allowances. The threshold income level varies by household size and composition.

Table 3. Major Japanese government actions aimed at raising fertility

TFR	Year	Action
2.14	1972	Establishment of child allowances (no pronatalist intent at first)
1.54	1990	Establishment of inter-ministry committee on “Creating a sound environment for bearing and rearing children”
1.53	1991	Enactment of Childcare Leave Act
1.50	1994	Announcement of Angel Plan for 1995–99
1.42	1995	Enactment of Childcare and Family Care Leave Act
1.34	1999	Announcement of New Angel Plan for 2000–04
1.33	2001	Amendment to the Employment Insurance Law, specifying 40 percent of salary to be paid to regular full-time employees during childcare leave
1.32	2002	Announcement of “plus one” plan
1.29	2003	Enactment of “next generation” law
	2003	Enactment of law on “Basic Measures to Cope with a Declining Fertility Society”
NA	2004	Announcement of New Angel Plan for 2005–09
NA	2004	Revision of Childcare and Family Care Leave Act

NA: Not yet available.

Source: NIPSSR (2003).

Prior to 1989, there was little public awareness that the country’s fertility had fallen well below replacement level. In 1989, however, Japan’s TFR reached an all-time low of 1.57 children per woman, and in 1990, when this figure was publicly released, Japan’s low fertility burst into public consciousness when the news media coined the term “1.57 shock,” which received wide publicity both inside and outside Japan (Ogawa and Retherford 1993). In that same year, the government initiated the first of a series of pronatalist policies and programs. Table 3 shows the chronology.

In 1990 the government established an inter-ministry committee on “Creating a Sound Environment for Bearing and Rearing Children.” This led to enactment of the 1991 Childcare

Leave Act. The intent of this law was to make it easier for working women to have children. The law provided up to one year of unpaid leave for either the mother or father to care for an infant. Coverage was restricted, however, to regular full-time employees. Temporary workers (including part-time workers) were not covered. Firms and organizations with more than 30 employees were directed to establish a childcare leave scheme for their employees by the time the law went into effect on 1 April 1992. The law did not specify penalties for noncompliance, however, and firms and organizations with 30 or fewer employees were exempt from the law until 1995. There was some noncompliance, inasmuch as some firms and organizations did not establish leave schemes according to the timetable requested by the government.

In 1994 the government announced its “Angel Plan” for 1995–99 (officially known as the plan on “Basic Direction for Future Childrearing Support Measures”). The core of the plan was a major expansion of the number of day-care centers in the country, and the intent was to raise the fertility of working women by making it easier for them to juggle the demands of both work and childrearing. The new day-care centers were established at the local level with subsidies from the national government, funded out of the Ministry of Health and Welfare’s annual budget. As a result of the Angel Plan, day-care center capacity for children age 0–2 in the country increased from 451,000 in 1994 to 564,000 in 1999 (1994 and 1999 are fiscal years ending on March 31 of 1995 and 2000). The Angel Plan also called for more after-school sports and other after-school activities, which were intended to help working women who did not return home until well after the end of normal school hours. The plan also called for the establishment of regional family support centers. For a modest fee that varied by locality, these centers provided services such as picking up a child from school and taking it to a day-care center, and arranging for medical care for a sick child until one of the parents could return from work.

As in the case of child allowances, services available under the Angel Plan were means-tested, which usually meant that higher-income persons had to pay more for services. Eligibility criteria varied by locality and are not well-documented. It appears that day-care centers and family support centers established in localities where there was not much demand for them (mainly in rural areas) eased eligibility criteria in order to attract clients. And in some urban areas where there was unsatisfied demand and long waiting lists, higher-income couples were simply turned away. Because many mothers who were eligible for leave under the 1991 Childcare Leave Act were either not eligible for services provided by the Angel Plan or had to pay too much for them because of high income, day-care services in the private sector also expanded.

It should be noted that Japan’s ubiquitous *juku* (private cram schools for entrance examinations, as mentioned earlier) also serve to some extent as childcare for older school-age children whose mothers work. Between 1976 and 1993, the proportion attending *juku* increased nationwide from 12 to 24 percent among elementary school students, and from 38 to 60 percent among junior high school students. These numbers are based on a survey question to women on whether each of their children attended *juku* regularly. The survey question changed in 1994. In 1994 and subsequently, mothers were asked for each child whether they spent any money on *juku*. Based on this new question, the proportion attending *juku* was 41 percent for elementary school students and 77 percent for junior high school students in 1994. Between 1994 and 2000, the proportion attending *juku* by this new definition fell slightly from 41 to 37 percent for

elementary students and from 77 to 76 percent for junior high school students, perhaps because of recession-related economic hardship. Allowing for the change in the survey question in 1994, the data indicate that the proportions attending *juku* did not change much after 1993 (Cabinet Office 2001).

In 1995, the 1991 Childcare Leave Act was superseded by the 1995 Childcare and Family Care Leave Act. Under the 1995 law, it was no longer necessary for the employer to have a childcare leave scheme. Regular full-time employees were simply entitled to one year of leave for either childcare or caring for another family member, with the added benefit that the employee now received 25 percent of salary while on leave, paid out of the National Employment Insurance Scheme (originally established to pay out unemployment benefits). For care of a child under one year of age, the law allowed up to one year of leave. For care of other family members (such as a sick elderly parent), it allowed up to three months of leave. Because the employee continued on the payroll during the leave, the employer continued to contribute as usual (and in the same amount) to the social security pension and medical schemes on behalf of the employee, and the employee continued to accumulate seniority at the usual rate. The government paid the employee's contributions to the schemes during the leave, and starting in 2000, the government started paying the employer's contribution as well. Neither the employer nor the employee pays into the employment insurance scheme during the leave, because contributions to this scheme are calculated on earnings, not on benefits from the scheme. Again part-time workers were not covered, nor were full-time contract workers, even if their contracts were renewed continuously from year to year. In 2004, however, fewer than 2.5 percent of married women of reproductive age were on such contracts (percentage calculated from the 2004 Survey on Population, Family and Generations.)

In 1999 the original Angel Plan for 1995–99 was succeeded by the New Angel Plan for 2000–04. The new plan called for further expansion of day-care centers, and day-care center capacity for children age 0–2 in the country subsequently increased from 564,000 in 1999 to 644,000 in 2002, the latest year for which data are available. The New Angel Plan also expanded support for after-school sports and other after-school activities. In 2003 671,000 children were enrolled in after-school programs nationwide. The new plan also called for further expansion of family support centers, which increased in number from 82 to 286 between 2000 and 2002, and it called for improved baby-sitting services. As of 2003, 307 cities and towns had government-subsidized baby-sitting services. The new plan also called for subsidized infertility consulting services. By 2002 these latter services were available in 36 localities, and by 2004 1.3 percent of births in the country occurred as a result of artificial insemination and other infertility treatments (figures from Ministry of Health, Labour and Welfare website). In a few localities, these treatments, which are expensive, are partially subsidized by local governments. As in the original Angel Plan, services under the New Angel Plan for 2000–04 were made available on a means-tested basis that varied by locality.

The proportion of preschool children who were enrolled in day-care centers (both public and private) increased from 24 to 34 percent between 1990 and 2004 (Ogawa 2004). The proportion in 2004 is still rather low, mainly because full-time mothering is still considered very important by a majority of Japanese women. The 2004 Survey on Population, Families and Generations asked mothers whose preschool children were not in day-care centers why they were

not using day-care services. The question allowed multiple responses. Sixty-one percent of the mothers said “because I am a full-time housewife,” 45 percent said “I want to raise my children on my own,” and 15 percent said “relatives or friends are helping.” Only 9 percent said “too costly,” only 2 percent said “no day-care center in the neighborhood,” and only 1 percent said “day-care center service hours do not coincide with my work hours,” indicating that the supply of day-care facilities is largely adequate to meet the demand for them. Further evidence that supply is adequate is that the majority of the more than 3,000 administrative districts in the country do not have waiting lists for their public day-care centers, and only a handful of those with waiting lists have waiting lists amounting to more than 10 percent of capacity. The 2004 Survey on Population, Families and Generations also showed that, among mothers who did have pre-school children in day-care centers, 45 percent said that they felt uneasy about having their children in a day-care center (Ogawa 2004).

In large urban areas, where waiting lists for public day-care centers are sometimes lengthy, the cost of public day-care centers is very costly to the government. In Tokyo in 2000, for example, the average running cost of public day-care services for infants was about 500,000 yen (\$5,000) per infant per month, an amount that exceeded the average male worker’s monthly salary in Tokyo of 440,100 yen (\$4,401) (Ogawa 2003). Charges to parents using these services come nowhere near covering this cost, which is heavily subsidized.

During the late 1980s and 1990s the government also took steps to reduce working hours. Initially there was no pronatalist intent, and the approach was to increase the number of national holidays and to celebrate some national holidays on a Monday if they happen to fall on a Sunday. Collectively these changes reduced annual hours worked by about 40 hours, or five days.

Starting in 1992, there was also an effort reduce the length of the work week. This effort was motivated in part by pronatalist considerations, inasmuch as reductions in weekly working hours were seen as a way of improving the quality of family life so that couples would want more children. The government’s five-year plan for 1992–97, entitled “Five-Year Plan for Becoming a Quality-of-Life Superpower,” stated as one of its goals the reduction of annual hours worked to 1800 hours per year (roughly equivalent to a 40-hour work week) by 1997. In 1997, the government followed through and reduced the work week from 48 to 40 hours. This goal was achieved immediately for assembly-line workers, because once an assembly line shuts down, workers have to go home. Between 1990 and 2002, average annual hours worked in secondary industry (manufacturing) in Japan, including overtime, declined from 2,124 to 1,954 hours (Ministry of Health, Labour and Welfare 2004). But in the case of other workers, large numbers continued to work longer hours, usually for no additional pay. This is indicated by the fact that in 2000 the proportion of the workforce who worked more than 50 hours a week was 28 percent in Japan, compared with 20 percent in the United States and 1 percent in the Netherlands. The highest proportion in Europe was 6 percent for Greece (Lee 2004).

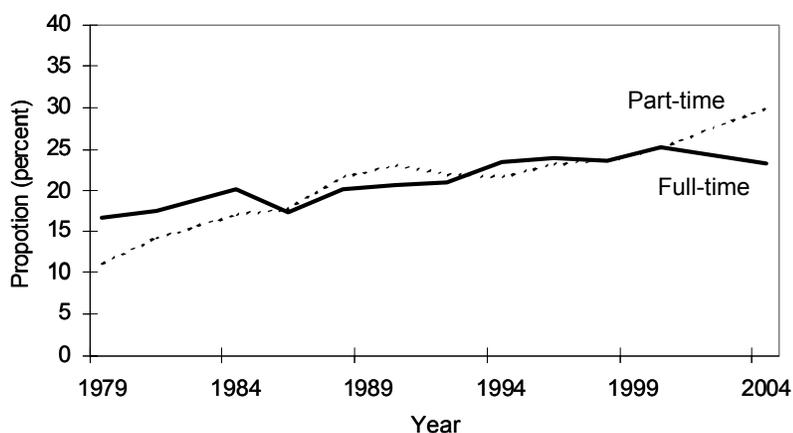
In 1997 the government also took steps to reduce the “examination hell” faced by Japanese school children and their parents. Again the intent was partly pronatalist, to reduce pressures on families so that parents would want more children. The result was a relaxation of educational standards. As a result of directives from the Ministry of Education, considerable material was deleted from the curriculum, mathematics requirements were made simpler, the

number of Chinese characters to be learned was reduced, the number of examinations was reduced, and school no longer met on Saturday. The downside was a decline in academic performance, as indicated by the performance of 15-year-old students on the 2003 Programme for International Student Assessment (PISA) tests conducted periodically by the Organisation for Economic Co-operation and Development (OECD). The 2003 test was conducted in 41 countries. Japan's performance on the mathematics part of the 2003 test did not change significantly since the previous PISA test in 2000, but Japan was one of nine countries in which performance on the reading part of the test declined significantly (OECD 2005). Japan registered the largest drop in reading scores among all participating countries, and its international ranking on the reading part of the test dropped from 8th to 14th (Asahi Shimbun 2004).

In 2001 a new amendment to the Employment Insurance Law specified that an employee would henceforth receive 40 percent (up from 25 percent) of salary while on childcare or family care leave. Coverage continued to be limited to regular full-time workers, and benefits continued to be paid out of the National Employment Insurance Scheme. Despite the fact that the government rather than the employer pays 40 percent of salary as well as social security contributions for the employee during the leave, the improved childcare leave benefits for full-time workers appear to have had a downside, because they apparently made employers less willing to hire women as regular full-time workers. Between 2000 and 2004, among currently married women below age 50, the proportion working full-time fell and the proportion working part-time rose, as shown in figure 14. This trend, if it continues, will make it more difficult for women to find regular full-time jobs in the future. In that case, the average opportunity cost of leaving the labor market for six years to have two children will increase substantially for full-time woman workers, because a greater proportion of women who leave will have to come back to part-time jobs. This higher opportunity cost could cause the fertility of working women to fall, not rise. There are, however, other forces, described earlier, that will tend to increase the proportion working full-time, so it is not clear that the decline in this proportion between 2000 and 2004 will continue, especially when Japan finally pulls out of recession and unemployment falls.

The pattern shown in figure 14 is confirmed by a preliminary report for 2004 released recently by the Ministry of Health, Labour and Welfare. The report indicates that during 2004 the workforce grew for the first time in seven years as the economy picked up, but only by 0.4 percent. The increase was entirely accounted for by an increase in the number of part-time workers, most of whom are women. (According to an earlier survey conducted by the Ministry of Health, Labour and Welfare in 2001, 24 percent of part-time workers were men and 76 percent were women, as reported on the Ministry's website.) Among payroll employees who worked in the same place for more than one month, the number of full-time workers declined for the seventh straight year, by 1.1 percent during 2004, while the number of part-time workers grew by 5.5 percent. Also during 2004 the average monthly wage for all workers fell by 0.7 percent. The ministry attributes the decline in wages, which has continued for four consecutive years, to the increase in part-time workers (Japan Times 2005b). The increase in part-time workers makes a big difference in the average wage because in Japan, as already mentioned, there is a huge wage gap between full-time and part-time workers, many of whom actually work full-time or very close to it. In its recent economic survey of Japan, the Organisation for Economic Co-operation and Development reported, "There are ... important equity problems,

Figure 14. Among current married women below age 50, trends in the proportions working full-time and part-time



Source: Various rounds of the National Survey on Family Planning between 1986 and 2000 and the 2004 round of National Survey on Population, Families, and Generations, conducted by the Mainichi Newspapers of Japan.

given that the difference in productivity between regular and nonregular [mostly part-time] workers is much smaller than the wage gap. The equity concern is magnified by the lack of movement between the two segments of the workforce, trapping a significant portion of the labor force in a low-wage category from which it is difficult to escape” (Japan Times 2005a).

In 2002 the government announced a plan on “Measures to Cope with a Fewer Number of Children Plus One.” The “plus one” plan argued that an important reason why fertility has continued to decline, despite the government’s efforts to raise it (table 3), is that husbands are not doing enough to help with childrearing. The phrase “plus one” means that the effort to raise marital fertility should be strengthened, and that a greater role for husbands in childrearing should be a major component of this increased effort. The plan said that fathers should take at least a five-day leave when a child is born. It also said that, among regular full-time workers eligible for childcare leave, at least 10 percent of men and 80 percent of women should take childcare leave. The targets of 10 and 80 percent were based on a survey in which, among persons with young children, 7 percent of men and 76 percent of women said that they would take childcare leave if there were less social disapproval of childcare leave by employers and co-workers. The plan also said that there should be provisions for flexi-time and shorter hours for couples with pre-school children, and it called for a target of 25 percent of eligible couples (husband or wife) working shorter hours. The plan also called for further expansion of day-care centers for pre-school children in accordance with a new “no queue” policy. The “no queue” provision is the real “plus one” in terms of the budgetary implications of the plan. But a “no queue” policy may not be needed, because, as indicated earlier, long waiting lists are a problem in only a handful of administrative districts in the country. (This could change if eligibility criteria were to be relaxed and charges to parents reduced, but so far there is no plan to do this.)

Following the issuance of the “plus one” plan, two laws were enacted in July 2003 in order to implement the goals set forth in the plan: (1) the Law for Measures to Support the Development of the Next Generation and (2) the Law for Basic Measures to Cope with a Declining Fertility Society.

The Law for Measures to Support the Development of the Next Generation (the “next generation” law) became effective on 1 April 2005, and will remain in effect for ten years. The law pertains only to firms with more than 300 workers on the payroll (including part-time workers and full-time contract workers). Within these firms, the law covers not only regular full-time employees but also all other employees who have been working continuously for more than a year, regardless of whether they are full-time or part-time and regardless of the length of their contracts. Each employer falling under the law is asked to prepare a plan to raise fertility among its employees. The plan must include targets, and it had to be submitted to the prefectural government by the time the law went into effect on 1 April 2005. There are no penalties for not coming up with a plan, but if the employer does not do so, the government can send the employer a notice urging the employer to take action. (In Japan such urging by the government is usually quite effective, although less so than previously because of less government leverage over business as a consequence of reductions in government regulation as part of the on-going restructuring of the economy.) The submitted plan must span at least two years but no more than five years. If the plan is approved, the employer receives permission to use a special logo that the employer can display on products, advertisements, and other promotional literature. At the end of the plan, the employer has to report progress under the plan to the prefectural government. The Labor Bureau of the prefectural government evaluates the plan with guidance from the national government’s Ministry of Health, Labour, and Welfare. If progress is evaluated as unsatisfactory, the firm can no longer use the logo. The logo is shown in figure 15.

The goals of the “next generation” law are mostly the same as those laid out in the “plus one” report a year earlier. The main targets are that, among eligible workers in eligible firms and organizations, 10 percent of men and 80 percent of women should take the childcare leave to which they are entitled. The main intent of these targets, and of the plans that had to be submitted by 1 April 2005, is to change the workplace atmosphere so that parents, and especially women, feel more comfortable about taking the childcare leave to which they are entitled. According to the 2002 round of the government’s Basic Survey of Female Employment Management (firm-level reporting), among eligible workers in eligible firms, only 0.3 percent of men (compared with the target of 10 percent) and 64 percent of women (compared with the target of 80 percent) had taken childcare leave. The “next generation” law also sets a target that 25 percent of firms with more than 300 employees should have policies that allow women with pre-school children to work shorter hours.

In December 2004, the Childcare and Family Care Leave Act was revised to bring it into line with the “next generation” law, which specifies that all part-time workers and full-time contract employees who have worked continuously at a firm for more than a year are to be included in a firm’s plan to raise fertility. The revised Childcare and Family Leave Act went into effect on 1 April 2005. Before this revision, temporary workers (including part-time workers and full-time contract workers) were not entitled to childcare leave.

Figure 15. Logo for government-certified child-friendly employer



Note: In firms with more than 300 employees, the “next generation” law of 2003 asks each employer prepare a plan to raise fertility among its employees and to submit this plan to the government by the time the law goes into effect on April 1, 2005. If the plan is approved, the employer will have the right to use the logo on products, advertisements, and other promotional literature. Loosely translated, the top part of the logo says, “We support childrearing among our employees.” The four zeros at the bottom are to be replaced with the year (e.g., 2005). Loosely translated, the bottom also says after the zeros, “Government-certified child-friendly employer.” The logo is scarlet in color.

The Law for Basic Measures to Cope with a Declining Fertility Society (the “basic measures” law), also enacted in 2003, states, “We are being strongly called upon to halt the decrease in children by creating an environment where parents can feel secure in giving birth and raising children who will be the next generation of society, and to realize a society in which children grow up equal and healthy in mind and body, and parents truly feel pride and joy” (Doteuchi 2004). This law contains general language that appears to be intended to set the stage for future government action, but the law does not indicate specific actions to be taken. The specific actions are contained in the “next generation” law that was passed at the same time in July 2003.

The government is now implementing another New Angel Plan for 2005–2009. The general goals are the same as those in the “next generation” and “basic measures” laws of 2003. A major objective is to increase husbands’ involvement in childcare and household chores. As mentioned earlier, according to background information included in the plan, men in their 30s with a child less than 5 years old spend an average of 48 minutes a day on childrearing and

household chores. The plan sets a goal of raising that to two hours a day (two hours being about average for other economically advanced countries). Additional background information contained in the plan is that 23 percent of husbands in their 30s work more than four hours of overtime per day, resulting a total workweek of more than 60 hours. The plan sets a target of reducing this percentage by half by the end of 2009. The plan also calls for a further increase in the number of family support centers from 368 in 2005 to 710 by 2010 (at that time covering almost a quarter of the more than 3,000 administrative districts in the country).

To the extent that the goal is to prevent population decline, an alternative to raising fertility is immigration from abroad. But this is not a politically feasible solution at this time, and it is not under consideration by the government. Japan is a very homogenous society without a multi-cultural and multi-ethnic tradition. With almost no exceptions, it bars foreigners from becoming Japanese citizens. Earlier it was noted that a TFR of 1.29, were it to continue for a long time into the future, would result in a population decline of approximately 38 percent per generation, which is approximately every 30 years. Were that gap to be filled by immigration, a large majority of Japan's population would be foreign-born after only two generations, and Japan would be a very different society from what it is today. It is unlikely that the government will ever allow immigration on this scale to occur. If Japan's fertility remains at very low levels, however, it is likely that some immigration will eventually be allowed.

What can Japan do that is not already doing to raise fertility? According to Caldwell *et al.* (2002):

“Nearly all the methods likely to be used to raise fertility have been implemented over the last half-century by either France or communist Eastern Europe (Bourgeois-Pichat 1974; McIntosh 1981; Hohn 1988; Heitlinger 1976; Gauthier 1991, 1993, 1996). They include bonus payments for births, family allowances, paid maternity and parental leave, leave to care for sick children, tax relief for parents, care facilities for young children or tax relief for childcare, flexible working arrangements for mothers and guarantees of retained promotion rights, labour force re-entry training programs, housing benefits for families with children, and educational supplements for children.”

To this list might be added measures to encourage more marriage and earlier marriage, which are quite relevant to Japan's situation, because, as seen earlier, increases in the mean age at marriage and the proportion never marrying account for about half of Japan's fertility decline since 1973. This suggests the need for policy initiatives aimed at improving the functioning of the marriage market.

One way that has been tried is dating services, which were pioneered in Japan, but so far only in the private sector. At the present time there are about 3,100 dating services firms in the country. As a service to their employees, some large firms contract with dating services firms, and these large firms sometimes cooperate with each other in providing these services. For example, the Mizuho Financial Group (formerly the Fuyou Family) contracts collectively with a dating services firm for their employees. The Mizuho Financial Group is a large industry group, or *keiretsu*, that includes Mizuho Bank, Hitachi, Canon, Sapporo Beer, Marubeni, NKK Steel, and a number of other major corporations. For an employee in one of the group's companies to

get the services, he or she must join the Fuyou Family Club and pay an annual membership fee of 50,000 yen (\$500), plus another 70,000 yen (\$700) if a marriage results. These rates are subsidized by the companies and are low compared with the fees that individuals must pay if they deal directly with a dating services firm. The Fuyou Family Club claims 7,000 members and a 10 percent success rate in terms of matches that result in marriages (information obtained at <http://www.omiai-web.com/hikaku/fuyou01.com>). Most other large industry groups have similar out-sourcing arrangements with dating services firms.

The Japanese government may soon get involved in matchmaking by providing government support for dating and related services. On 24 January 2005, the Ministry of Economy, Trade and Industry held its first expert group meeting to investigate the possibility of government support of “marriage information services,” including not only dating services but also “life support” services such as training to improve interpersonal communication skills (Asahi Shimbun 2005).

Most of the pronatalist measures listed by Caldwell *et al.* (2002), as quoted above, are costly, and Japan is implementing only some of them. In order to do more, the government must first put the economy on a steady growth path and reduce Japan’s huge government debt. This would reduce unemployment and other economic pressures on couples that cause them to reduce their fertility, and it would expand the government’s financial capacity to implement the costly pronatalist measures that it would like to put into effect. A discussion of what needs to be done to restore the nation’s economic health is beyond the scope of this paper. Suffice it to say that Japan was slow to restructure its economy during the 1990s and instead relied mainly on Keynesian-style pump-priming (i.e., deficit spending) to revive the economy. The pump-priming probably helped to avoid a much worse recession than what actually occurred, but it did not pull Japan out of recession, and it has resulted in a ballooning of government debt to extraordinarily high levels. In 2000, the ratio of central government debt service to recurring revenues was about 65 percent and rising (Asher 2000). The ratio of debt at all levels of government to GDP was 69 percent in 1990, 92 percent in 1995, 139 percent in 2000, and 159 percent in 2002 (Cabinet Office 2004).

Given the imperative of restoring the health of the economy, it is important that pronatalist measures do not erode the efficiency of Japanese firms by placing too much of the burden of those policies directly on firms. Given the government’s huge budget deficits, the temptation to unload the costs of pronatalist measures on firms is considerable. Some of these costs must inevitably fall directly on firms, but to the extent possible the costs should be spread over all taxpayers. Large income tax exemptions (i.e., deductions from taxable income) for dependent children are an example of a pronatalist measure the cost of which is spread over all taxpayers (assuming that the government raises income tax rates to compensate for lost revenue) and which does not erode the efficiency and competitiveness of firms.

Another point concerns the impact of Japan’s various pronatalist measures on differential fertility by income and education. At the present time fertility tends to be lower among those with higher income and more education. If the goal is to raise the fertility of all income and education groups equally, then financial incentives to have more children must rise with income, because couples gauge the attractiveness of a financial incentive relative to their income.

Because income and education are positively correlated, financial incentives that increase with income also increase with more education, although this is true only on average and not in every individual case.

As seen earlier in figure 6, women with more education have lower fertility than those with less education, and this gap has been increasing in Japan for some time, especially the gap between university-educated women, who are an increasingly large proportion of all women, and women with less education. Financial incentives that do not increase with income would likely increase this gap even further. From a population perspective this is not desirable, because on average those with higher income and education have more to offer children and are better equipped to bring up the next generation.

Some of Japan's pronatalist measures favor more-educated women and some do not. Among the measures that favor more-educated women has been the childcare leave provision of the Childcare and Family Leave Act, because this provision until recently applied only to regular full-time employees, who tend to have higher than average educational qualifications. The "next generation" law also benefits the more-educated more than the less-educated, because employees in firms and organizations with more than 300 employees are also more educated than average. This is evident from the 2002 Employment Status Survey, which shows that among male paid employees age 15–49, the proportion working in firms with 300 or more employees is 14 percent for those with a junior high education, 42 percent for senior high, 44 percent for junior college, and 67 percent for university. Among female paid employees age 15–49, the proportions are 27 percent for junior high, 42 percent for senior high, 59 percent for junior college, and 68 percent for university. Income tax exemptions for children also tend to favor the more-educated (to the extent that education is positively correlated with income), because in a progressive tax system like Japan's, where marginal tax rates rise with income, the tax saving on tax-exempt income rises with income. On the other hand, the means-tested child allowances and the means-tested services provided by the Angel Plans disproportionately benefit lower-income groups who on average are less educated. Thus the means-tested measures tend to widen negative fertility differentials by income and education.

In 2000 the government reduced the tax exemption for children age 0–15 from 480,000 yen (\$4,800) to 380,000 yen (\$3,800) per child, and raised the tax exemption for children age 16–22 from 630,000 yen (\$6,300) to 680,000 yen (\$6,800). The tax exemption for young children was reduced to help pay for improved childcare leave benefits and means-tested child-rearing services. This shift of funding could have an effect on fertility opposite to what is intended. The reason is that, although paid childcare leave and subsidized childcare services may indeed increase the fertility of full-time working women, they may also draw more women into full-time jobs, and the fertility of the women newly drawn into full-time jobs is likely to fall as a result, because full-time working women are subject to opportunity costs when they have children. The overall impact could be to lower Japan's TFR rather than raise it.

This does not mean that the government should back away from paid childcare leave and subsidized childcare services, because these are beneficial regardless of whether they raise fertility, inasmuch as they increase women's ability to realize their individual potential and lead more satisfying lives. But if raising fertility is the goal, large income tax deductions for children

may be a more effective means, as well as an economically more efficient means, of achieving the goal. Whether this is actually so is an empirical question in need of further research.

Regarding tax deductions for children, it should be mentioned that currently in Japan the employer prepares the employee's tax return (except for the part dealing with outside income), including the parts of the return that take into account tax exemptions for children. As a result, most Japanese taxpayers have little or no idea of what the income tax benefits of children are. If the intent is to raise fertility, the tax forms should be revised so that individual taxpayers have to indicate on the tax form the number of child tax exemptions and the amount thereby subtracted from taxable income, and this should be done in such a way that the amount of the tax reduction is obvious to the taxpayer. Alternatively, the employer could still fill out this part of the form, but the form could be revised to prominently indicate the tax benefit from children so that the employee sees it when he or she signs the tax form. Until something like this is done, the fertility-raising effect of child tax exemptions is unnecessarily reduced.

A likely objection to income progressivity in pronatalist incentives is that it is inequitable and unjust to give those who are already better off larger financial incentives. But this is not really so. Larger incentives for those with higher income will always be much less than the direct economic cost of a child, and very much less than the opportunity cost of a child (lost income to the mother), which is not only very large for full-time working women who resign their jobs to have children, but also higher, on average, the more educated a woman is. Moreover, if the financial incentives are large enough to motivate large numbers of highly educated high-income women to temporarily drop out of the labor force for several years to have two or three children, the result would probably be to reduce household income inequalities, not to increase them, because these women would incur huge income losses over their lifetime. In this regard, it should be borne in mind that one of the major reasons why household income distributions have been becoming more unequal in industrial countries in recent years is the increase in the proportion of families with few or no children where the husband and wife both work, are highly educated, and have high incomes (the extreme case being "double income/no kids" or "DINKS" couples, as economists call them). When these considerations are taken into account, progressivity in childbearing incentives appears more justifiable from an equity standpoint.

The Big Picture

Japan's Childcare and Family Care Leave Act allows up to one year of childcare leave to care for an infant under one year of age, but most women would probably consider that one year of childcare leave is not enough. Although data are not available on this point, it seems likely that most Japanese women would prefer to have two children in fairly quick succession, with about a three-year interval between them, and then return to work when the youngest child is about three years old, when the mother would feel more comfortable about putting the child in a day-care facility. In other words, most women would probably prefer a six-year leave. This is probably why the previously cited government White Paper that simulated the opportunity cost of children under different scenarios specified a six-year period for temporarily dropping out of the labor force to have children.

Requiring employers to grant six years of childcare leave with return rights and other benefits would, however, place a very heavy burden on employers. (The government is currently considering extension of the leave to three years.) The problem of the length of the leave highlights the dilemma facing policymakers, which is how to implement two major imperatives:

- Restructuring the Japanese economy to be more efficient and competitive in the global economy
- Restructuring Japanese society to be more marriage-friendly and mother-and-child-friendly in order to raise fertility

The trick is how to do this so that the second imperative does not undermine the first, and without jeopardizing women's hard-won gains in education and employment. Experience to date suggests that this will not be easy, and that it will be very costly to both the government and firms to raise fertility back up to the replacement level.

Finally, it is instructive to consider Japan's situation compared with that of other economically advanced countries with very low fertility. In addition to Japan, approximately 30 countries in the world, mostly in Europe, currently have a TFR of less than 1.5 children per woman. Very few of these countries have been able to bring fertility back up to 1.5, and none of them has been able to bring it back up to anywhere near the replacement level of 2.1 (Caldwell *et al.* 2002; Caldwell and Schindlmayr 2004; Lutz 2005). This international experience provides some additional perspective on why the Japanese government has not yet been able to reverse the fall of fertility, much less raise it, despite more than a decade of effort to do so.

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