

FORUM REPORT 005

Aging Society

Reexamining Japan in Global Context Forum, Tokyo, Japan, January 13, 2014

Population Aging: Unwinding the Demographic Dividend

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The population of the world has been aging for at least 40 years as a result of increasing longevity and decreasing fertility. Developed countries experienced aging first, but now it is also being experienced in the increasingly wealthy countries of the developing world. The record in the least developed countries is mixed, but many of them also have aging populations.

These patterns are consistent with demographic transition theory, which postulates four (or five) stages of population growth and economic development. Stage I is characterised by high birth and high death rates resulting in slow population and low economic growth. In Stage II, economic growth results in better public health and a decrease in death rates, thereby stimulating population growth and, with a lag, faster economic growth. These developments in turn promote

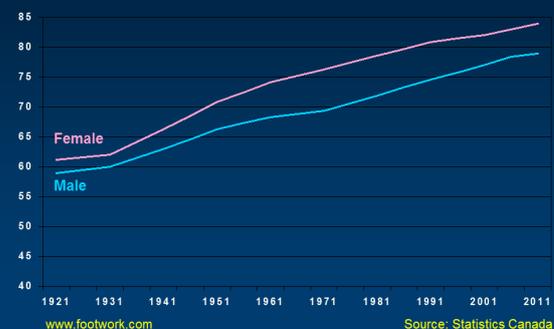
better education, which, especially when experienced by women, lowers birth rates and population growth thereby increasing per capita incomes and wealth during Stage III. Stage IV is characterised by low birth and death rates and hence slower population and economic growth, but higher levels of accumulated wealth. More recently, increasing death rates in aging populations have resulted in negative population growth and shrinking population size, with associated challenges for economic growth. This can be labelled Stage V. Because demographic transition theory is based on a combination of lower death rates (or increasing longevity) and decreasing birth (or fertility) rates over time, it is effectively a theory of population aging.

By almost all measures Japan is the oldest country in the World, and is now in Stage V. This is the result of the highest

Fertility Rates
1946-2011 (children per woman)



Life Expectancy
Canada, 1921 - 2011 (years)



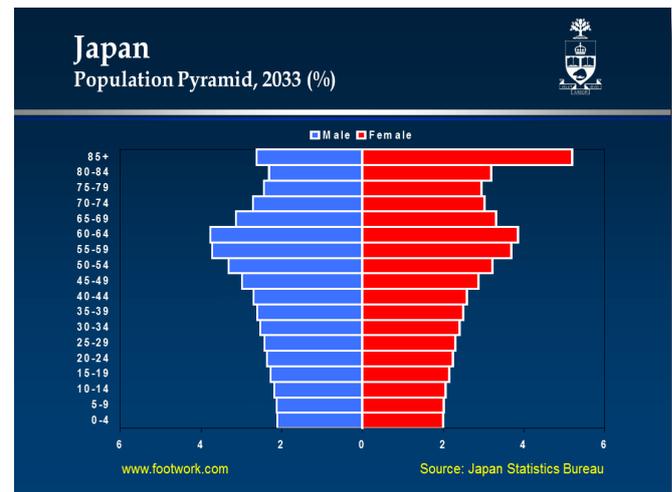
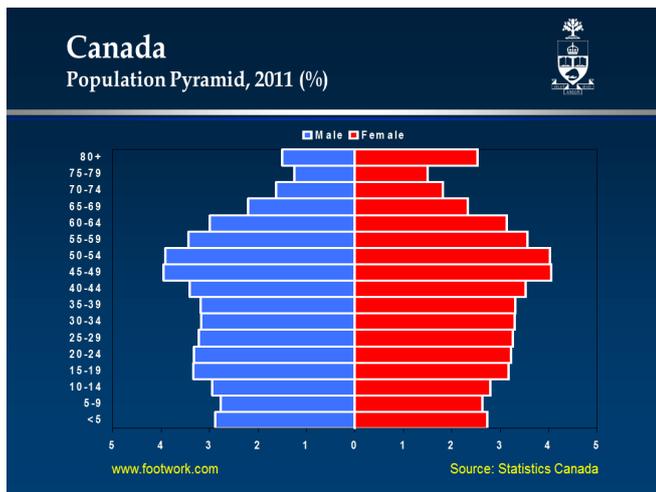
longevity (or life expectancy) in the world combined with the earliest reduction in fertility. All developed countries are essentially following in the footsteps of Japan. Canada is in Stage IV, with comparatively high life expectancy, below-replacement fertility, and slow population growth maintained by immigration.

The speed and impacts of population aging vary within countries. Because of internal migration patterns, eastern Canada is older than western Canada, and the U.S. northeast is older than the southwest. Because young people gravitate to urban centres, cities such as Toronto and Tokyo are younger than smaller rural towns. In addition, specific subgroups may have experienced different historical patterns. Aboriginal peoples are youngest as a group in Canada, as are Afro-Americans and Latinos in the United States.

The impact of demographic transition on population growth is direct since population growth in the absence of immigration, is simply the difference between birth and death rates. The translation of population growth into eco-

1970s and into the 1980s, but persistently low fertility rates slowed labour force growth and hence economic growth by the end of the 1980s, ending the dividend as a prolonged period of stagnation set in. Demographics may not have been the only determinant of the pattern of Japan's postwar economic performance, but it played a large role.

The impacts of a demographic dividend are magnified by a baby boom, which occurred in Canada between 1947 and 1966 and in the USA between 1946 and 1964 (Europe's was smaller; Japan did not have one). As a result, North America enjoyed a demographic dividend from the early 1960s to the mid-1980s as the Boomers entered the labour force. The impacts of that dividend remained as the Boomers continued to work over the subsequent three decades. This period of sustained economic growth in Canada and many other developed economies is now largely over as the Boomers start to exit the labour force, 'unwinding' the demographic dividend. Because fertility in Japan dropped before North America and Europe, Japan has been facing 'unwinding' for



omic growth is more complicated. In Stage II, rapid population growth increases demand, thereby setting the stage for increased economic growth. However, because of increased population size, per capita incomes remain low. The decline in fertility in Stage III slows population growth but not economic growth because the young start to enter the work force. Decreasing population growth raises per capita incomes and wealth, but rapid labour force growth can temporarily increase unemployment until all new entrants are absorbed into the economy. This combination of slowing population growth and rapid labour force and economic growth in Stage III is called the demographic dividend.

The timing of a demographic dividend is directly linked to fertility levels. High fertility rates in Japan over the 1930s and much of the 1940s resulted in rapid labour force growth over the 1950s and 1960s when population growth was slowing. The associated economic growth continued through the

the past two decades. But while slower (or even negative) economic growth may be a challenge, it is not necessarily a problem; it can be good for the environment, and per capita incomes and wealth can continue to increase.

The world's two most populous countries—China and India—are in very different stages of demographic transition. China's 'one child' policy, introduced in 1979, effectively vaulted the country into Stage III before the completion of Stage II. Moreover, population momentum generated a noticeable echo of the numerically large generation born in the 1960s. These children, now aged 20 to 29, generated a demographic dividend over the first decade of the new millennium as they entered the workforce. That is now over because the past 'one child' policy will slow future workforce growth, thereby placing upward pressures on wages. The big question for China is, will they get rich before they get old or old before they get rich? In India there is no 'one child' policy

and fertility is still not sufficiently under control for a clear transition through Stage III to increase per capita incomes.

It appears that the economic benefits of a demographic dividend require a fertility rate 'window' around the replacement level of approximately 2.1 children per woman. Above 2.4 there are still too many youth to absorb into the labour force, which keeps per capita incomes low and can undermine the social stability that is conducive to rapid economic growth. Below 1.8 results in too few young people to look after a growing elderly population. This is the situation currently facing Japan. For very low fertility rates, immigration cannot make up the difference, and the track record of policy incentives to boost fertility is not impressive (the most promising would appear to be affordable, universal child care). By the time the 'problem' is recognised, it is usually too well entrenched for any fertility policy to be an effective solution to population aging. Alternatively, or in addition, we can explore boosting or seeking new sources of revenue to fund entitlement programs and elder care (for example, a small tax on stock market transactions); relying on technology to plug labour gaps where possible; and/or encouraging novel co-living arrangements so that seniors can support each other more effectively.

Population aging leads not only to slower population and workforce growth, but also to slower growth in consumption and changing aggregate spending patterns. With population aging, the health care sector 'wins' and the education sector 'loses' in terms of expenditure growth. In fact, all sectors of the economy are affected to a greater or lesser extent by population aging. Since these age-related expenditure patterns change very little over time, this approach can also provide projections of the economic future. For example, Canadians gradually move from spending money on child care in their thirties, to pet care in their forties, to eye care in their fifties, and pharma care in their sixties and beyond.

Life cycle patterns affect the financial sector as well. The average person borrows money (education loans, mortgages, etc) when they are young and incomes are lower. As their income increases, they save to pay back loans then accumulate and often ultimately draw down a 'nest egg' for retirement. All of this affects interest rates and equity markets.

Transportation choices also follow a life cycle. Younger workers are more likely to use public transportation, because they live in cities and cannot afford automobiles (and, maybe, care more about the environment). Older workers have families, live further away in the suburbs and can afford autos, so are more likely to drive. The Japanese auto industry was brilliant in following the life cycle of the Boomers in North America (perhaps because they had already experienced it themselves). When the Boomers were young (1960s and 1970s) they wanted small, inexpensive vehicles. As they aged, family-friendly vehicles (mini-vans, etc.) became the

vehicle of choice, first as basic packages (1980s) and then with more features and luxury (such as SUVs) that they could then afford (1990s). As they aged further and their children departed the household, the demand for luxury vehicles increased (2000s), hence the success of brands such as Acura and Lexus.

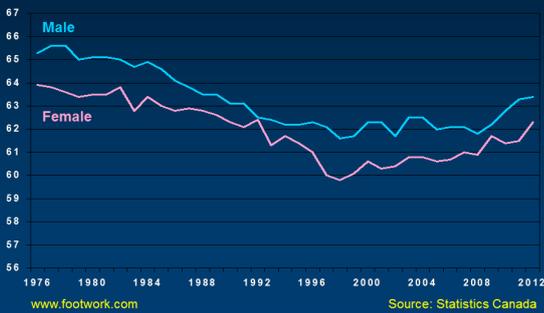
Food and drink choices also change as a person ages. Fast food in the younger years is replaced by family food at home in the early working years and then increasingly by sit-down restaurant food in the later working and early retirement years. And the average Canadian is more likely to order fresh fruit and vegetables and more fish as they get older. Many other food items show similar age-related variations. A fun, but relevant application for the financial sponsor of this conference, is that average North Americans move from beer to wine to hard liquor (such as whisky) over the life span, which means that aging populations are 'kinder' to wine and liquor manufacturers than to beer producers.

Leisure and recreation trends are also influenced by population aging as people move from active pursuits (e.g. sports) when they are young to less active pursuits (e.g. walking, birding, gardening) as they get older. This has important implications for the provision of appropriate recreation facilities in communities. It also means that countries with higher proportions of their populations in the high performance ages (twenties and early thirties) are likely to out-perform relative to their population size at international sporting events such as the Olympic Games. Russia is a good example today, as is Canada because the kids of the Boomers (the Echo generation) are now all in their twenties and early thirties. Therefore, allocating the Olympics to countries like Greece that have fewer young people leaves the country with high debts and underutilized sports facilities. This should provide a lesson for Japan, recently awarded the 2020 Olympics.

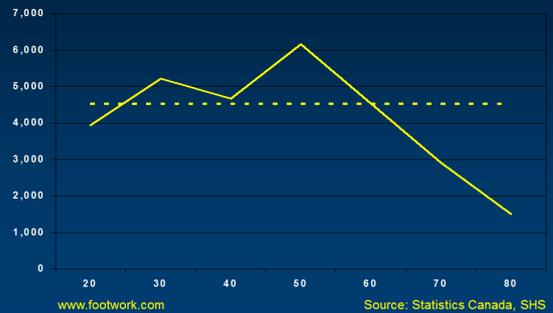
Finally, people make greater use of the health care system as they get older. Besides eye care in their 40s (referenced above), people are more likely to experience diabetes and arthritis in the 50s, then cancer in their 60s and 70s, followed by strokes and heart attacks in their 70s and 80s. Their demand for home care services increases in their 70s and 80s and their need for nursing homes in their 80s and 90s. These life cycle trends have implications not only for all parts of the health care sector, but also for food providers (diabetes) and workplace facilities (arthritis).

These behavioural patterns over the life cycle are remarkably stable over time. Canadian household expenditure data have been regularly available since the early 1960s and the expenditure patterns in broad categories have not changed noticeably, although technological change has changed the methods by which consumer demand has been satisfied (e.g. recorded music). These behavioural patterns are also remarkably similar across cultures and countries; the human

Age of Retirement Canada, 1976 - 2012 (age)



Vehicle Purchase Canada, 2011 (\$/year)



Leisure Activity Growth Canada, 2012-2032 (%)

Fastest		Slowest			
1	Exercise walking	20.4	12	Basketball	12.1
2	Gardening/yard work	19.6	13	Volleyball	11.9
3	Home exercises	18.8	14	Soccer	11.6
4	Golfing	16.4	15	Weight-training	11.4
5	Exercise class/aerobics	15.7	16	Ice skating	11.3
6	Popular/social dance	14.5	17	Downhill skiing	10.8
7	Bowling	14.4	18	Baseball/softball	10.5
8	Fishing	13.6	19	Jogging/running	10.3
9	Swimming	13.6	20	Ice hockey	10.2
10	Bicycling	13.3	21	Rollerblading	10.1
11	Tennis	12.3			
Population: 12 plus					21.9

Source: Foot & Bierling, CCHS

Household Expenditure Growth Canada, 2013-2023 (Total Expenditure Growth=100)

Fastest		Slowest			
1	Games of chance	183	9	Shelter	100
2	Gifts, alimony, charity	181	10	Tobacco & alcohol	98
3	Health care	152	11	Income taxes	96
4	Reading materials	135	12	Furnishings & equipment	95
5	Food	113	13	Transportation	92
6	Personal care	111	14	Clothing & accessories	87
7	Household operation	105	15	Insurance & pensions	65
8	Recreation	101	16	Education	15

Source: Foot, Statistics Canada

condition is the dominant determinant. Of course, adjustments have to be made for geography and unique cultural attributes, including sub-populations within national population. For example, while the sport of curling is unlikely to exist in countries that do not have ice, in Australia lawn bowling has a similar behavioural profile.

Societal and economic trends are determined by the behaviour of the ‘average’ person, and in most behaviour we mirror the patterns of our age group. It is always possible to find non-characteristic individual behaviour (such as a 12 year old attending the symphony or an 80 year old downhill skiing), but it is the majority behaviour and not the exceptions that drive the trends. As was once noted, ‘Always remember that you are unique, just like everyone else!’

The implications of population aging are ubiquitous and largely predictable. Every year we get a year older and so much follows from this simple ‘fact.’



The first question posed in the discussion period following Professor Foot’s presentation was: which countries currently exhibit the ‘ideal’ fertility rate of between 1.8 and 2.4 children per family, and is the sex ratio a relevant concern? Professor Foot noted that Turkey, Brazil, Mexico, and Vietnam currently fall into the ideal category. While some countries

have markedly more male than female newborns, nature will tend to equilibrate after age 40 unless the ratio exceeds 110 boys to 100 girls. China is the problematic case, with a ratio of 120:100.

The second question concerned the generalizability of Professor Foot’s findings. Can cultural differences, for example, compensate for demography as an economic driver? Professor Foot argued that demography is not the only relevant variable, but that in his estimation it accounts for approximately two-thirds of everything. Countries with similar demographic trajectories demonstrate surprisingly similar economic and policy patterns.

Another set of questions concerned the links between demography and public policy. How reliable are demographic projections? How far into the future can policy makers plan on the basis of them? Professor Foot insisted that 10-year demographic projections are very accurate, and 20-year projections accurate enough to be useful in most cases. Beyond that one should be wary. Some policy matters, such as the design of welfare and health care systems, require long lead times. Unfortunately, political cycles often give decision makers incentives to concentrate only on the very short term.

Countries facing a decline in economic growth as a result of falling birth rates must pay particular attention to long-term planning in two policy areas: namely, childcare and

pensions. Having affordable universal childcare is crucial for keeping women in the work force while also enabling them to raise children. Pension eligibility must also be adjusted to reflect rising life expectancy and longer vitality. Contribution schedules must also be adjusted to ensure that pension schemes are adequately funded without unduly burdening young families whose finances are particularly stretched.

The final set of questions concerned the importance of demographically-informed macroeconomic policy. Thanks

to the globalization of markets, the private sector is not as vulnerable to demographic pressures as is the public sector, nor is capital as vulnerable as labour (people cannot move freely around the globe). Governments must reconcile these differences one way or another. In particular, Professor Foot emphasized, governments of developed countries that are no longer benefiting from a demographic dividend must concentrate on policies that enhance per capita rather than absolute economic growth.

Population Decline in Japan: Demographic Prospects and Policy Implications

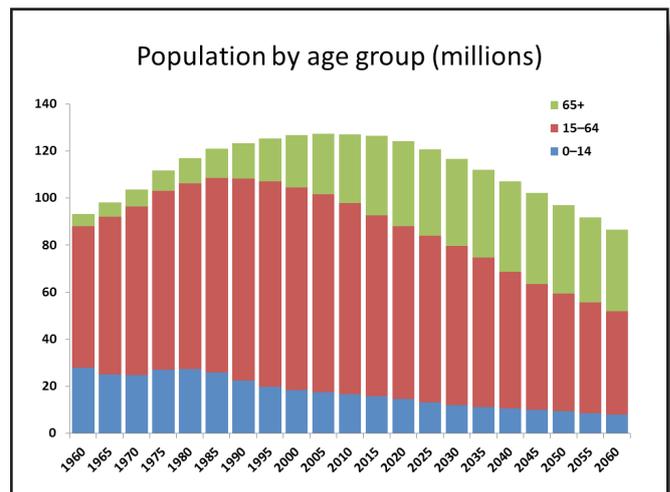
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What are the demographic underpinnings for possible social-institutional and policy changes associated with rapid population aging and continuous population decline in Japan during the first half of the 21st century? I first examine changes in the size and age composition of Japan's population from 1960–2010 and their direct contributors, namely mortality and fertility. Second, I examine the most recent official projections for population aging and decline in Japan from 2010–2060. Third, I look at the prospects of aging within the elderly population itself. Fourth, I seek to assess the possible impacts of these future demographic changes on the labor market, examining changes in the size and age composition of the working-age population. Fifth, I then analyze the possible effects of population aging and decline on Japan's public pension and long-term care insurance schemes. Finally, I consider implications of these future demographic changes from the perspective of international migration.

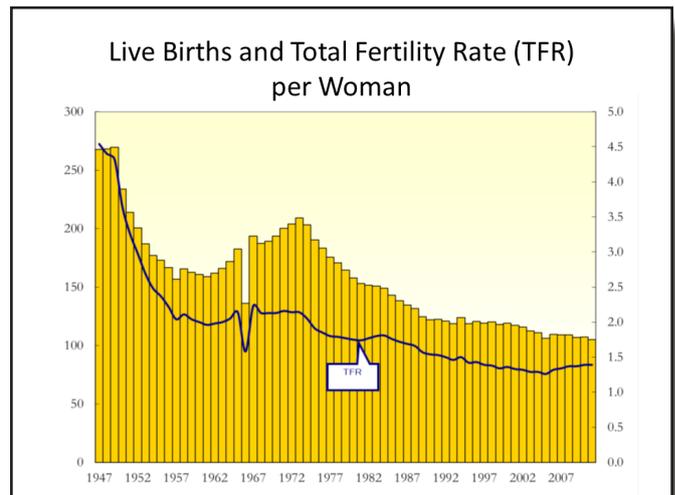
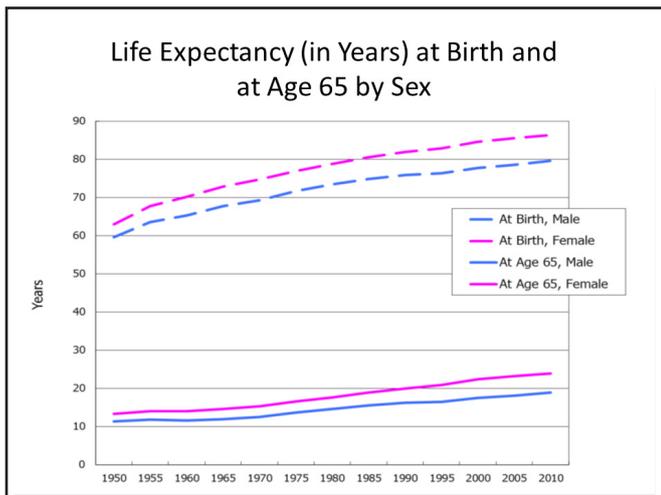
Japan is the most aged society in the world, with the proportion of the elderly (those aged 65 and above) in the total population standing at 23 percent in 2010. Furthermore, Japan's population has begun to decline notably, and is projected to continue shrinking during the lifetime of most Japanese alive today. There has never been a peacetime period in the country's recorded history in which the population declined continuously for a long duration and there are few, if any, institutions and systems in the country that take such long-term population decline into consideration. It is therefore urgent and important that we now assess the socioeconomic consequences of Japan's aging and declining population so that we can find ways to accommodate them.

Japan's population grew in the postwar years from around 93.4 million in 1960 to a little over 128 million in 2010:



a 37-percent increase over 50 years. However, if we divide the total population into three major age groups—children (under age 15), working age (15–64), and elderly (65 and above)—we can see that the population size of the youngest age segment shrank by 40 percent in 50 years from 1960, reaching 16.8 million in 2010. Thus the proportion of children in Japan's total population dropped from 30 percent in 1960 to 13 percent in 2010. The size of the working-age population (aged 15–64) increased from 60 million in 1960 to 81 million in 2010, after reaching a peak of more than 87 million in 1995. The proportion of the working-age population in the total population accordingly increased from around 64 percent in 1960 to 70 percent in 1990, then dropped to 64 percent by 2010.

In contrast, the size and the proportion of the elderly have both risen continuously and rapidly throughout the 50 years from 1960 to 2010. The number of people aged 65 and



above grew from around 5.4 million in 1960 to more than 29 million in 2010. Concomitantly, the proportion of the elderly quadrupled from less than 6 percent to 23 percent during the same period.

This rapid pace of change is one of the main characteristics of population aging in postwar Japan, as its Western counterparts have taken a great deal longer for their populations to age.

Japan's rapid population aging has been caused directly by two demographic factors: declining fertility and increasing life expectancy. Japan experienced a sharp downturn in its fertility shortly after World War II from 4.5 children per woman in 1947 to 2.0 in 1957. Japan's fertility then stabilized at around the replacement level until 1974, when it began to decline again.

Since the mid-1970s, Japan's fertility level has declined to well below replacement, reaching the Total Fertility Rate (TFR) of approximately 1.5 children per woman in the early 1990s, and standing at 1.41 children per woman in 2012. Although the fertility decline since the mid-1970s was less dramatic and slower than that of the earlier postwar decline, its demographic and socioeconomic consequences are much more important and serious, because it has resulted in the rapid and extreme aging and decline of Japan's population.

Declining mortality in old age is the second chief factor behind Japan's rapid and extreme aging. Life expectancy has been improving steadily throughout the postwar years for both sexes. As of 2010, life expectancy at age 65 for males was around 19 years and that for females stood at 24 years.

According to the 2012 official population projections, Japan's total population is expected to shrink from approximately 128 million in 2010 to 87 million in 2060—a decline of 32 percent over the next 50 years. This rapid population decline is due mainly to very rapid declines in childhood and working-age populations. Consequently, the proportion of those aged 65 and above in the total population is anticipated to jump from around 23 percent in 2010 to 40 percent

in 2060.

Not only is Japan's elderly population growing, but it is aging as well. The population aged 65 and above is projected to increase from approximately 29 million in 2010 to around 35 million in 2060. The population aged 75 and above (the 'old-old') is projected to rise even more rapidly, from 14 million in 2010 to around 24 million in 2055. The population aged 85 and above (the 'oldest-old') is expected to increase even more dramatically from a mere 3.8 million in 2010 to over 11.5 million in 2060. As a result, the old-old will exceed 50 percent of the elderly between 2015 and 2020, and the oldest-old is projected to increase dramatically from 13 percent in 2010 to 33 percent in 2060. In sum, not only will Japan's population continue to age, but the elderly will age at a much more rapid pace than the total population during the first half of this century.

Population aging is not a matter pertaining only to the elderly but also to the relations between the elderly and the rest of the population. The ratio of those aged 65 and above per 100 persons aged 15–64 (the 'old-age dependency ratio') is estimated to increase 2.2 times from 36 to 78 during 2010–2060. That is, while there were approximately 2.8 working-age adults per elderly aged 65 and above in 2010, the ratio will decline to merely 1.3 by 2060. Old-age dependency is expected to increase at an unprecedented pace, and will pose a formidable challenge to our social systems and policies.

Let us next consider the possible effects of these future demographic changes on the labour market. The size of population aged 20–64 is projected to drop from around 77 million in 2010 to 41 million in 2060. This decline is due primarily to decreases in the size of the two youngest segments (aged 20–39 and 40–49). The population at the peak working ages (20–64) will continue to age and shrink during the first half of this century. This suggests that Japan's labour-market and employment policies need to be altered drastically.

The projected decline and aging of Japan's population also has serious implications for the country's public pension sys-

tem and long-term care insurance schemes. While there are roughly 2.6 persons of the contributing age (20–64) per person of the receiving age (65 and above) in 2010, the ratio will plummet to a mere 1.2 in 2060. Because Japan’s public pension is funded by a pay-as-you-go system with the coverage of the scheme being almost universal, this dramatic decline in the ratio of possible payers to payees has serious policy and socioeconomic consequences.

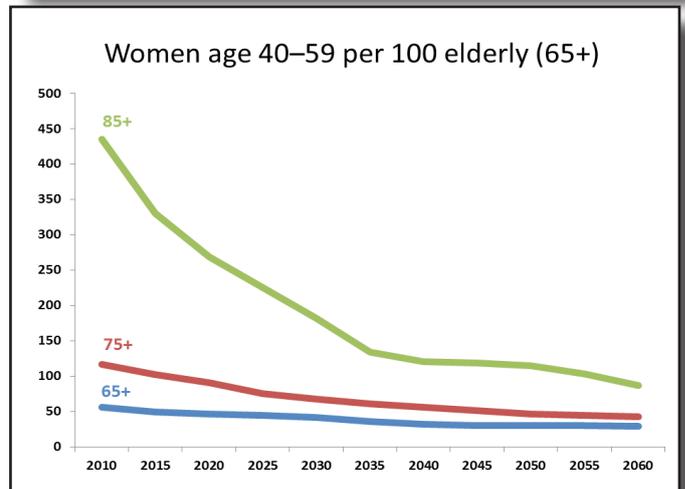
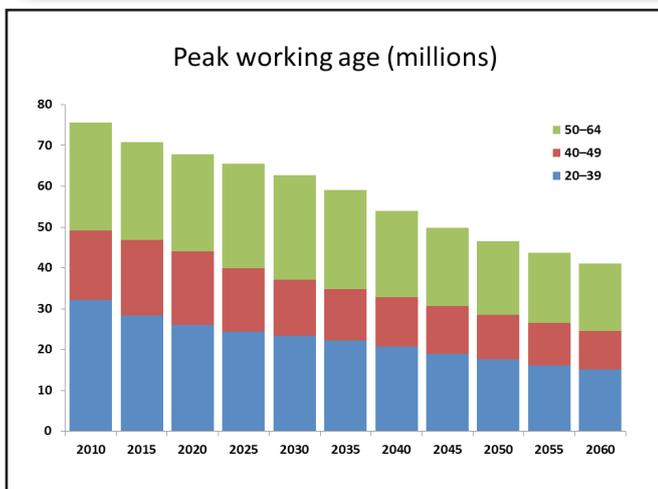
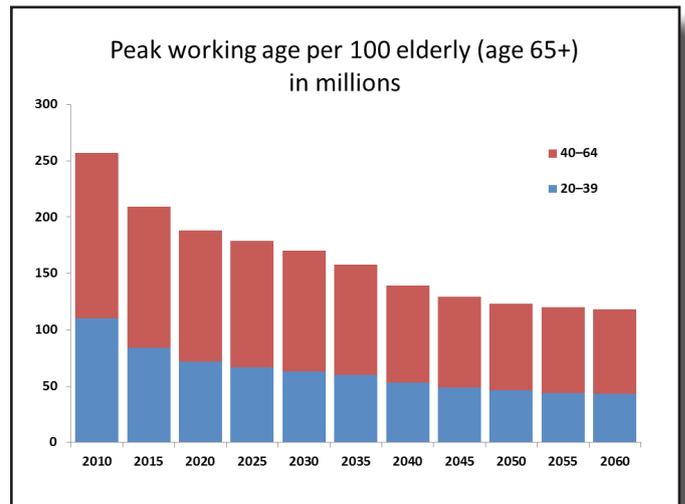
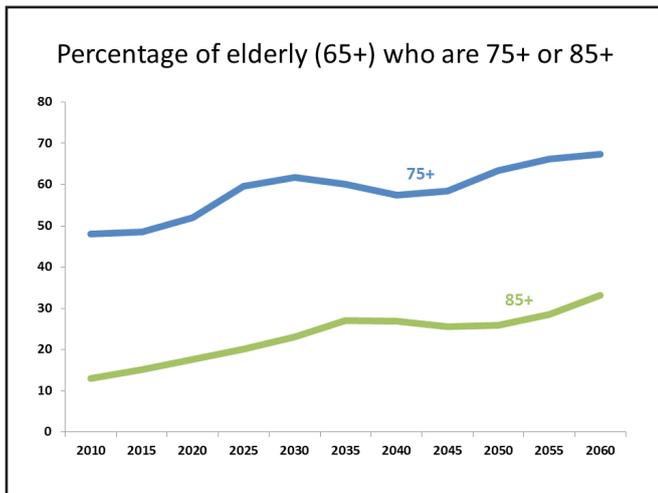
Japan has also adopted policies to encourage family care for the elderly, starting with the Golden Plan and the New Golden Plan in 1990–1999, and culminating in the establishment of the long-term care insurance scheme for the elderly, which designated those aged 40–64 as responsible for paying insurance and those aged 65 and above as eligible recipients. However, whereas there were 1.5 payers per possible recipient of long-term care insurance in 2010, the population eligible to receive the services will surpass that of the contributor population during the period 2030–2035. These trends suggest that the prospects for Japan’s long-term care insurance scheme and pension system are murky at best unless some drastic measures are taken.

In view of this uncertainty, what will be the capacity of

the family to care for the elderly in the future? ‘Family care ratios’ are useful for making this judgment. Family care ratios are estimated by assuming that middle-aged women (aged 40–59) are likely to be primary caregivers for the elderly at home. We can see that the ratio of women aged 40–59 per 100 elders aged 65 and above is projected to decline from 56 in 2010 to 30 by 2045. This means that by mid-century there will be 3.3 times more elderly than there will be middle-aged women to care for them at home. The ratio of women age 40–59 to 100 elders age 75 and above is also projected to plummet, from 117 in 2010 to 43 in 2060. For the oldest-old, the family care ratio is projected to decrease even more dramatically: While there were more than 4 women aged 40–59 per elderly aged 85+ in 2010, the ratio will be only 0.9 in 2060, indicating that there will be more elderly aged 85+ than women aged 40–59.

Family care capacity is clearly insufficient to accommodate the rapidly growing need for elder care, and it is therefore imperative to seek effective and efficient ways to combine family care with services provided by the government and other organizations.

While international migration is often discussed as a pos-



sible policy response to rapid population aging and continuous population decline, estimates show that it is not a realistic solution on its own.

According to the United Nations, in order to have the same total population in 2050 as in the year 2000, Japan would need to average 343,000 net immigrants per year from 2000–2050. To have the same working-age population in 2050 as in 2000, we would need to bring in 650,000 migrants annually. In order to maintain the ratio between the population aged 15–64 and those aged 65 and above, we would have to have over 10 million immigrants per year. This is clearly unrealistic. Other policies are needed to address demographic challenges.

Fertility decline to below-replacement levels since the mid-1970s has been one of the primary factors responsible for Japan's rapid and extreme population aging as well as projected continuous population decline. Developed countries in which fertility has recovered and/or stabilized at relatively high levels have also experienced improvements in women's labour force participation. That is, as far as the developed world today is concerned, fertility tends to be higher in countries where women's employment rate is higher. This implies that Japan's family and other public policies would need to focus on the well-being and welfare of couples and families to achieve similar ends, putting aside the macro concern about low fertility. Only when society stops pressuring women to choose between work and family life, will Japan's fertility rate begin to recover, which will in turn lead to the slowing of population aging and the halting of population decline.



The first question raised during the second Q&A session concerned the retirement age in Japan. In view of the fact that Japanese people are living longer, healthier lives, what retirement age would be appropriate to ensure that the public pension system is adequately funded? Professor Tsuya answered that simply raising the retirement age would not suffice. People would have to accept a 'high-contribution, low-return' arrangement for the system to be sustained at all. In addition, multiple policies, such as 'pay-as-you-go' and 'elderly savings,' must be combined. Needless to say, we would expect that any such changes would be difficult politically,

as the elderly in Japan are among the most powerful interest groups and as they already expect a high return for their contributions.

The issue then arose of whether a radical reform of the taxation system could mitigate Japan's low fertility rate—including, for example, generous benefits or deductions for child birth. Professor Tsuya replied cautiously affirmatively, noting that some monetary incentives are already in place, but she endorsed Professor Foot's view that establishing an affordable child care system would be the single most effective course of action. Moreover, child care must be provided not only for pre-schoolers, but for elementary and middle school children as well. In Japan, there is a substantial gap between rural and urban municipalities in the availability of child care facilities. There are unused spaces in the former, and chronic shortages in the latter.

Participants then inquired into the utility of legal changes (such as guaranteeing) and the viability of encouraging cultural adjustments (such as encouraging co-living arrangements with non-family members). Professor Tsuya replied that these kinds of things are certainly worth exploring, and insisted that while culture can be a barrier to change, it is not necessarily an insurmountable one. But at the end of the day, she maintained, the most important thing is to find a way of sustaining the existing welfare system. There are no magic bullets. Many small adjustments will work better than one or two large ones. Sweden stands as an example here: the Swedish recognized early that the viability of their welfare system required changes that avoided burdening younger generations with unmanageable levels of public debt.

The final question concerned the best way of altering the shape of Japan's population pyramid. Professor Tsuya asserted that there is no way of changing it drastically. At most, public policy levers can tweak it marginally. Immigration is certainly not a viable tool. It would require an influx of 650,000 people next year just to sustain Japan's workforce at its current level, and over time this number would rise dramatically. Even 650,000 is unrealistically high. The best way for Japan to prepare for its demographic future is through a broad-based strategy with many elements, probably the single most important of which is simply getting people to realize that, one way or another, the public welfare system will have to move toward a high investment, low return model.

The preceding summaries have been prepared by the Project Directors, who accept responsibility for any errors or omissions. Longer, more detailed versions authored by the presenters themselves are available as Forum 005 Special Reports at <http://www.suntory.com/sfnd/jgc/forum/005/>.

Reexamining Japan in Global Context

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Monday, January 13, 2014, Embassy of Canada to Japan, Tokyo

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