

4/9/2009

## **Changing Intergenerational Transfers and Rapid Population Aging in Japan**

Naohiro Ogawa  
Population Research Institute  
Nihon University

Prepared for the United Nations Expert Group Meeting on Family Policy in a Changing World:  
Promoting Social Protection and Intergenerational Solidarity, to be held from 14-16 April, 2009,  
Doha, Qatar.

## ***Introduction***

The primary objective of this paper is to describe the impact of Japan's unprecedented population aging upon intergenerational transfers in the postwar period. To achieve this objective, we have applied the National Transfer Account (NTA) methodology to both micro-level and macro-level data covering the period 1984-2004. A fuller explanation of the NTA's basic concept, the crucial computational assumptions utilized, and the definitions of other key variables are available on the NTA website (<http://www.ntaccounts.org>).

Due to the limitation of space allotted to this paper, we will confine our discussion mainly to (i) Japan's first demographic dividend and its relationship with Japan's long-term economic growth, and (ii) a rapidly changing pattern of familial transfers between various age groups in Japanese society over the past two decades.

### ***Japan's Recent Demographics: Entering Uncharted Territory***

The decline in fertility in postwar Japan was one of the first of its kind to occur in the non-Western world, and was the greatest in magnitude among all the industrialized countries. Following its short-lived baby boom period (1947-1949), Japan's fertility dropped dramatically (Hodge and Ogawa, 1991; Ogawa and Retherford, 1993; Retherford and Ogawa, 2006). Between 1947 and 1957, TFR declined by more than 50 percent from 4.54 to 2.04 children per woman, as shown in Figure 1. This 50-percent reduction of fertility over the 10-year period was the first such experience in the history of mankind. Subsequent to this rapid fertility reduction in the 1950s, there had been only minor fluctuations around the replacement level until the first oil crisis occurred in 1973. Thereafter, TFR started to fall again, and by the mid-1990s, it had declined below 1.5 children per women. In 2005, the value of TFR plummeted to 1.26, lowest in postwar time, before the slight rebound to 1.34 in 2007. If fertility were to remain constant at the present level, each successive generation would decline approximately at a rate of 35 percent per generation. In addition, the post-1973 decline of fertility is often referred to by some demographers as Japan's second demographic transition (Ogawa and Retherford, 1993; Retherford and Ogawa, 2006; Ogawa, Retherford, and Matsukura, 2008).

In line with these changes in TFR, the birth cohort size varied considerably over time, as illustrated in Figure 1. During the baby boom period, there were, on average, approximately 2.7 million births per year, but by 1957, the number of births decreased to 1.6 million. In the early 1970s, however, despite the declined fertility rate, this number increased to more than 2 million, as an "echo" effect of the baby boom cohorts, or the often called "second-generation baby boomers". Since then, births have again trended downward, marking slightly less than 1.1 million in 2007, which is 60 percent less than the total annual number of births recorded during the baby boom period in the late 1940s.

Although Japan's recent very low fertility has been attracting a great deal of attention, both domestically and internationally (Retherford and Ogawa, 2006), only a limited amount of attention has been paid to the unprecedented rapidity with which its mortality transition has been under way. Age-specific mortality rates have declined remarkably over the past several decades. During 1947-1965, Japan's life expectancy at birth rose from 50.1 to 67.7 years for men and from 54.0 to 72.9 years for women. When Japan joined the OECD in April of 1964, Japan's life expectancies for both men and women were the lowest among all the OECD member countries at that time (Mason and Ogawa, 2001). By the mid-1970s, however, Japanese life expectancy had become one of the highest among all the OECD members. In 2007, male life expectancy at birth reached 79.2 years to become the third highest in

the world, following Iceland (79.4 years) and Hong Kong (79.3 years), and female life expectancy rose to 86.0 years, the highest in the world, followed by Hong Kong (85.4 years) and France (84.1 years). Moreover, between 1950-1952 and 2007, life expectancy at age 65 grew to a substantial extent, from 11.4 to 18.6 years for men and from 13.4 to 23.6 years for women, which implies a marked increase in the retirement period and in the joint survival to older ages for both husbands and wives. Primarily because of such long-term improvements of mortality, the number of centenarians has been increasing at an annual rate of 13 percent over the past four decades, recording the fastest growing segment of the entire Japanese population.

As a consequence of the long-term transformations in both fertility and mortality, the age structure of the Japanese population has been shifting to a marked extent, as indicated in Table 1. The proportion of those aged 65 and over increased from 4.9 percent in 1950 to 20.2 percent in 2005, making Japan's population the oldest national population in the world during 2005. (In 2008, the corresponding figure was 22.1 percent.) In contrast, the number of those aged below 15 has been declining for 28 consecutive years, and Japan now has fewer children than at any time since 1908. Furthermore, the overall size of Japan's population began declining from the end of 2005. More importantly, as displayed in Table 1, these demographic trends of low fertility and population decline are expected to persist over the period 2005-2025.

### *Changing Economic Growth Performance*

During World War II, the Japanese productive capacity was utterly shattered and in shambles. Japan's per capita GNP for 1950 was only US\$153, which was lower than that for Mexico (US\$181) or the Philippines (US\$172). By the end of the 1950s, however, Japan's real per capita income had recovered to prewar levels.

During the 1960s, Japan's real GDP grew at a phenomenal rate of about 11 percent per annum, as indicated in Figure 2. This rapid economic growth during the 1960s was facilitated by such factors as the use of abundant labor (or equivalent to the first demographic dividend, to be discussed later), the borrowing of advanced technology from developed countries, and the favorable international trade market (Ogawa, Jones, and Williamson, 1993). In 1973, however, the oil crisis occurred, triggering a series of changes for restructuring the Japanese economy. As a consequence, its economic growth performance became significantly less impressive than that for the 1960s.

In the mid-1980s, the Japanese economy entered the bubble economy phase, and this investment boom abruptly ended in the first half of 1990, causing a number of leading banks and other financial institutions to go into bankruptcy. It was a tragedy that the Japanese government implemented inappropriate macroeconomic policies to rectify the unfavorable economic conditions at the time. Although many of these economic problems were attributable to the influence of globalization, the Japanese government regarded them as part of business cycles, and went about increasing government spending in hope of boosting the economy without much success. It took the government several years to realize that more drastic economic restructuring policies were needed to make the Japanese economy more competitive in international markets. As a result, government debts accumulated at an unprecedented rate, becoming US\$8.5 trillion in 2008 or approximately 1.5 times as large as the country's GDP for that year. Japan's current debt is relatively by far the worst among all the industrialized nations. Moreover, Japan's international competitiveness deteriorated very quickly. In the early 1990s, the international competitiveness of the Japanese economy was ranked first, but it was ranked 22<sup>nd</sup> in 2008 (IMD, 2008). Because of such delayed government policy responses, some

economists call the 1990s “Japan’s lost decade” (Yoshikawa, 2001).

Despite these major changes in the Japanese economy, its mandatory retirement policies still remain as an extreme case among practices of industrialized nations. It is important to observe that the proportion of firms having mandatory retirement rules has been increasing, not decreasing. One of the principal obstacles in changing the mandatory retirement age (generally 60 years old at present) is related to the practice of the seniority wage system, under which the postponement of retirement age leads to larger wage bills (Clark and Ogawa, 1992). The other deterrent to the extension of retirement age beyond 60 years old is related to the provision of lump-sum severance benefits which are basically determined by the duration of an employee’s service. In 2008, an employee with university education with more than 35 years of service received a severance pay equivalent to 44 months’ worth of his/her final monthly salary. Because a substantial proportion of business firms have their own accumulated funds to cover such payments, or have already incorporated such grants into pension benefits provided by employers, these funds can be regarded as part of the second demographic dividend in NTA’s terms. More importantly, this lump-sum severance pay program has recently been drawing much attention from various financial institutions because the baby boom generations are now reaching their retirement age.

Another feature of Japan’s labor market is a high labor force participation rate among the elderly (Ogawa, Lee, and Matsukura, 2005; Clark, Ogawa, Kondo, and Matsukura, 2009). Figure 3 illustrates that Japan stands out in its labor force participation rates for men and women aged 65 and over. In 2007, the labor force participation rate for elderly Japanese men was close to 30 percent. In sharp contrast, the corresponding figure for a few developed countries (France, Germany, and Austria) in Europe was well below 10 percent and is slightly higher than 20 percent for the United States. Similarly, as depicted in Figure 3, Japanese women are also more likely to continue working than older women in Europe and the United States.

### ***Age Structural Transformations and the First Demographic Dividend***

In Japan, its postwar demographic trends, particularly in the change of age composition, have been closely intertwined with changes in the economic growth performance (Ogawa, Kondo, and Matsukura, 2005; Ogawa 2005; Ogawa and Matsukura, 2007). As has been recently discussed extensively elsewhere (Mason, 2001, 2007; Mason and Lee, 2006), one of the important linkages between demographic transformations and economic growth is the role of demographic dividends in the process of economic development.

Figure 4 shows estimates of age-specific profiles of per capita consumption, both private and public sectors combined, and per capita production (labor income) in five selected years, namely, 1984, 1989, 1994, 1999, and 2004. These profiles have been estimated by drawing upon private-sector information derived from the five rounds of the *National Survey of Family Income and Expenditure* (NSFIE) from 1984-2004, undertaken by the Statistics Bureau of Japan, and public-sector information for the corresponding five years, gleaned from various government published data sources. It should be noted that both age-specific profiles have been adjusted, by using data from the National Income Product Account. These estimated results are expressed in terms of 2000 constant prices.

We can observe a few points of interest emerging from this graphical exposition. First, the age at which an average individual shifts from a net consumer to a net producer gradually increased from 24 years old during 1984-1989 to 25 years old in 1994 and to 26 years old during 1999-2004. Behind these upward trends in the crossing age, we may enumerate the following as some of the contributing factors:

(1) changing earnings profiles, (2) hours worked, (3) women's labor force participation, (4) higher enrolment rates in tertiary education, (5) a marked increase in freeters (those aged 15-34 who lack full-time employment or are unemployed) and Neets (those not currently engaged in employment, education or training). At the other end of the lifecycle, the age transition from a net producer to a net consumer was postponed only marginally from 58 years old over the period 1984-1989 to 59 years old over the period 1994-2004. The persistency of the crossing age at the later stage of life cycle is attributable to the existence of the mandatory retirement age at 60 in contemporary Japan. These results indicate that the length of time when an average individual is financially self-sufficient ranges from 33 to 34 years, which is relatively short, corresponding only to two-fifths of the average length of life.

Second, the estimated age-specific profiles of per capita production over the period of 1994-2004 are fairly similar. This seems to reflect the influence of "Japan's lost decade" (Yoshikawa, 2001). In addition, the upward shift in the profiles from 1984 to 1994 captures the effect on labor income of substantial economic growth during the "bubble economy" phase. Third, unlike the case of per capita production, the age-profiles of per capita consumption rose almost continuously over time, particularly at both young and older ages. It is worth noting that the amount of per capita consumption rose distinctively among those aged 65 and over in 2004. This seems to be accounted for by the implementation of Long-term Care Insurance (LTCI) starting from the year 2000. In-home care for the frail elderly, which had until then been informally provided by their family members, became formalized as a part of the market economy. As a result, Japan's per capita consumption profiles have been increasingly similar to those for the United States, Sweden, and Costa Rica among the NTA member countries.

To facilitate computing and discussing the first demographic dividend, we have averaged the five sets of per capita consumption and production age-specific profiles observed over the 20-year period, as depicted in Figure 5. By applying the computed age-specific results displayed in this graph as statistical weights to adjust the entire population over the period 1920-2025, we have calculated the effective number of producers, the effective number of consumers, and the economic support ratio, i.e., the effective number of producers divided by the effective number of consumers. The annual growth rate of the economic support ratio gives the change in output per effective consumer due solely to changes in age structure over the period 1920-2025, as indicated in Figure 6. For 34 consecutive years from 1946 to 1980, the effective number of producers grew more rapidly than the effective number of consumers in Japan. As can be seen from this graph, the magnitude of the positive first demographic dividend was extremely large during the rapid economic growth of the 1960s and the early 1970s, as discussed in the earlier section. This result provides a piece of cogent empirical evidence, pointing to the high likelihood that the unprecedented fertility reduction subsequent to the baby boom (1947-1949) played an important role in boosting the growth of per capita income at a phenomenal rate during this high economic growth period.

As has been the case with other developed countries, Japan's first demographic dividend was inherently transitory in nature, and lasted only for a few decades. Since the early 1980s, the effective number of producers has been growing more slowly than the effective number of consumers, the economic support ratio has been declining, and the first demographic dividend has turned decidedly negative. This change is a direct consequence of population aging.

### ***Expanding Public Transfers and Newly-emerging Limits***

As a result of the miraculous economic recovery from the mid-1950s to the early 1960s, which was partially induced by the first demographic dividend, Japan managed to establish its universal pension and

medical care schemes in 1961. Since then, as depicted in Figure 7, Japan's social security system has grown remarkably. Between 1961 and 2006, social security benefits increased from 5 to 24 percent of national income (National Institute of Population and Social Security Research, 2008). Moreover, the proportion of the social security expenditure allotted to the elderly population increased from 25 percent in 1973 to 70 percent in 2006. Contributions to social security increased somewhat less than did benefits, and the growing difference between benefits and contributions has been covered by general tax revenues.

When Japanese pension schemes were initially established, they were organized on the principle of reserve financing, and a large amount of reserved funds was accumulated to cover the payment of old-age benefits for its future retirees. With the passage of time, however, the financing method was steadily shifted toward pay-as-you-go, thus making Japan's public pension schemes increasingly of the transfer nature. Consequently, as the proportion of the elderly population has increased over time, the tempo of growth of the accumulated reserve funds has been slowing down markedly over the past decade or so.

On a periodic basis, the financial solvency of the Japanese pension schemes have been assessed, and amended accordingly. Over the 20-year period under review in this paper, two drastic pension reforms were carried out, one in 1985 and the other in 2004. In the 1985 reform, the concept of a basic pension was introduced as a base for integrating the fragmented, occupation-specific pension schemes (Ogawa, 2005). In the 2004 reform, the schedule of future contributions was decided to be fixed, while the level of future benefits to be adjusted downward, if required. The main objective of the 2004 reform was to restore the younger generation's trust in government pension schemes. This may be regarded as a paradigm shift in Japan's social security provisions (Sakamoto, 2005). Putting it differently, Japan's public pension schemes are now sustainable from a financial point of view, although the adequacy of benefits to be paid out may become a more serious issue in the years to come.

The second major component of social security benefits is medical benefits. Subject to Japan's economic growth performance, the coverage of the medical insurance plans has been revised on a periodic basis. Despite these changes in the medical care plans over the past few decades, the absolute amount of financial resources allotted to medical care services has been continuously rising. It is worth noting that to curb the upward spiral of the medical care costs, the government of Japan implemented the LCIS in 2000 with a view to reducing the average duration of hospitalization for inpatient care by facilitating in-home care. The LCIS is expected to alleviate the care-giving burden to be placed upon family members, many of whom are the middle-aged women (Ogawa and Retherford, 1997).

### ***Deteriorating Familial Support***

As distinct from other developed countries, multigenerational households are still fairly common in Japan (Ogawa and Ermisch, 1996). According to the 2005 round of the International Survey of Lifestyles and Attitudes of the Elderly (Cabinet Office, various years), the proportion of the elderly at ages 65 and over living in three-generation households in Japan was 21 percent. By contrast, as displayed in Figure 8, the corresponding figure was only 3 percent in the United States, and 1 percent in Germany and France. It should be stressed, however, that due to rapid demographic shifts as well as changing lifestyles, the figure for Japan has been steadily declining over the past two decades; it was 42 percent in 1981, twice as high as the level for 2005. Similarly, the census data shows that the proportion of those aged 65 and over coresiding with their adult children declined from 70 percent in 1980 to 43 percent in 2005.

In parallel with these changes in multigenerational living arrangements over time, the magnitude of

the intergenerational financial support from adult children to their elderly parents has also declined. The income sources of elderly persons aged 65 and over have changed considerably, as indicated in Table 2 (Cabinet Office, various years). The proportion receiving financial support from children decreased substantially from 35 percent in 1981 to 11 percent in 2005. In contrast, the proportion receiving public pension benefits among elderly Japanese respondents aged 65 and over increased from 74 to 95 percent during the same time period. It is also important to note that the proportion of the elderly relying on their own savings increased from 11 to 25 percent over the period of 1981-2005. These inter-temporal changes in the sources of income for the elderly are closely connected with the remarkable improvement of old-age pension benefits and considerable economic growth over the period under review.

Moreover, value shifts among the Japanese women of reproductive age with regard to their children have been dramatic. The value changes are well captured in the time-series data of the National Survey on Family Planning. The proportion of mothers aged below 50 who expect to depend on their children for old-age security declined from 65 percent in 1950 to 11 percent in 2004. This time-series result suggests that Japanese children's utility as a source of old-age security for their parents had almost disappeared by the beginning of the 21<sup>st</sup> century (Ogawa, Mason, Chawla, and Matsukura, forthcoming).

In addition, in the same survey series, the question on the attitude of married women towards taking care of their aged parents was asked in successive rounds since 1963. The precoded response categories are as follows: (i) "good custom," (ii) "natural duty as children," (iii) "unavoidable due to inadequacy of public support resources," and (iv) "not a good custom." The proportion of those who chose one of the first two response categories ("good custom" and "natural duty as children") was stable over the period 1963-1986. However, a sudden decline occurred in this proportion from 1986 to 1988 when the government of Japan began to shift the costs of caring for the elderly back to families. In the subsequent years, the corresponding proportion has been, by and large, on a downward trend.

### ***The Impact of Population Aging upon Public and Familial Transfers in Japan, 1984-2004***

These demographic and socioeconomic transformations in postwar Japan have been affecting the pattern and mode of intergenerational transfers over time. Figure 9 compares the changing pattern of three components of reallocation of the per capita lifecycle deficits in Japan during 1984-2004. The three components include net reallocations through assets, net public transfers, and net private transfers, measured in terms of 2000 constant prices on a per capita and annual basis. Panel A illustrates the annual reallocation of the per capita lifecycle deficits observed in 1984, Panel B in 1994 and Panel C in 2004.

A brief comparison of these three panels reveals the following two points of interest. First, the composition of per capita net transfers to the elderly population changed dramatically over the 20-year period. As can be easily seen by comparing the three panels of Figure 9, the amount of per capita net public transfers to the elderly population increased significantly. Similarly, the amount of per capita net asset-based reallocations grew considerably over time. In contrast, the relative importance of per capita net familial transfers from the young to the elderly declined to an appreciable extent. These results seem to indicate that the Japanese elderly have been increasingly dependent upon public transfers (predominantly old-age pensions and medical care services) and asset-based reallocations in supporting their retirement life.

Second and more importantly, as marked by two circles in Figure 9 (one in Panel B and the other in Panel C), the amount of per capita net familial transfers to the relatively young elderly persons (roughly

in their 60s and early 70s) was negative in both 1994 and 2004, implying that the amount of financial assistance the relatively young elderly persons provided to their adult children and/or grandchildren exceeded monetary assistance from the latter to the former.

It is also worth noting that the amount of such negative per capita net familial transfers from the relatively young elderly to other age groups rose during the period of Japan's lost decade in which the unemployment rate remained at a very high level by Japanese standards (ranging from 4 to 5 percent) and labor income hardly grew in both nominal and real terms. Moreover, per capita net public pension transfers received by the elderly increased steadily over time, as presented in Figure 10. It should be noted that the values plotted in Figure 10 are measured in terms of 2000 constant prices, and that the per capita benefit level rose owing to the maturity of public pension schemes. Furthermore, the data displayed in Figure 11 further substantiates the validity of these empirical results: the younger age groups received positive per capita net intra-household transfers from the age group 60-74.

To shed further light on the changing pattern of per capita net familial transfers over time, we have computed a change in the age at which an average individual shifted from a net consumer to a net producer during 1984-2004, as shown in Table 3. In addition, in Table 3 we have listed the age at which he/she became from a net producer to a net consumer over the same time period in question. In contrast to these changes in the crossing ages in per capita net familial transfers, we have also calculated the corresponding values for per capita net public transfers from 1984 to 2004, as indicated in Table 4. A careful examination of the numerical results reported in these two tables indicates that the crossing ages in per capita net familial transfers changed substantially for both the young and the elderly, particularly the latter. In the case of per capita net public transfers, however, the crossing ages changed only to a slight extent among the elderly, while they remained unchanged among the young. (The stability of the age at which an individual shifts his/her economic status in the per capita net public transfers can be accounted for by the following two institutional factors; (1) tertiary education that ends at age 22 or its vicinity, and (2) the slow adjustment of retirement age around 60 years old over the 20-year period under review.) These results appear to suggest that in contemporary Japanese society, familial transfers are considerably more flexible and responsive than public transfers, in coping with such large-scale economic shocks as the bursting of the bubble economy and its prolonged recession in the 1990s.

The foregoing discussions seem to indicate that despite the fact that multigenerational coresidence has been deteriorating over the past few decades, the Japanese elderly who have been increasingly dependent upon their steadily-increasing public pension benefits have been playing a vital role in providing financial support for their offspring when the latter encounter economic difficulties. Although older persons in Japan are often considered liabilities for the country, they are actually playing a key role as a social safety net. For this reason, they should be considered latent assets in contemporary Japanese society.

### ***Concluding Remarks***

By heavily drawing upon the NTA approach, this paper has reviewed selected evidence supporting the impact of fertility decline and age compositional shifts of the Japanese population upon various sectors of its society. This paper has also shown that although Japanese family organization has been changing very rapidly over the past few decades, the Japanese elderly persons still play a significant role in supporting their offspring when the latter encounter economic hardships.

### ***Acknowledgements***

Research for this article was funded by two grants from the National Institute of Health, NIA R01-AG025488 and AG025247. This work was also supported by a grant obtained by the Nihon University Population Research Institute from the “Academic Frontier Project for Private Universities”, a matching fund subsidy from MEXT (Ministry of Education, Culture, Sports, Science and Technology) for the period of 2006-2010. Furthermore, the author is grateful to the UNFPA (RAS5P203) and the Japan Medical Association for their financial assistance.

## *References*

- Cabinet Office, various years, *Brief Summary of the International Comparative Survey of the Elderly*.
- Clark, R. L. and N. Ogawa, 1992, "The effects of mandatory retirement on earnings profiles in Japan," *Industrial and Labor Relations Review* 45, 2, pp. 258-266.
- Clark, R. L., N. Ogawa, M. Kondo, and R. Matsukura, 2009 forthcoming, "Population decline, labor force stability, and the future of the Japanese economy," *European Journal of Population*.
- Hodge, R., and N. Ogawa, 1991, *Fertility Change in Contemporary Japan*, Chicago: University of Chicago Press.
- International Labour Organization, 2008, *Yearbook of Labour Statistics 2008*, Geneva: International Labour Office.
- International Institute for Management Development (IMD), 2008, *IMD World Competitiveness Yearbook 2008*, Lausanne: International Institute for Management Development.
- Mason, A. (ed.), 2001, *Population Change and Economic Development in East Asia: Challenges Met, and Opportunities Seized*, Stanford: Stanford University Press.
- Mason, A., 2007, "Demographic transition and demographic dividends in developed and developing countries," *United Nations Expert Group Meeting on Social and Economic Implications of Changing Population Age Structure*, New York: United Nations, pp.81-102.
- Mason, A. and R. Lee, 2006, "Reform and support systems for the elderly in developing countries: capturing the second demographic dividend," *GENUS* LXII, 2, pp. 11-35.
- Mason, A. and N. Ogawa, 2001, "Population, labor force, saving and Japan's future," in M. Blomstrom, B. Gangnes, S. La Croix (eds.), *Japan's New Economy: Continuity and Change in the Twenty-First Century*, Oxford: Oxford University Press, pp. 48-74.
- Ministry of Health, Labour and Welfare, various years, *Vital Statistics*, Tokyo: Health and Welfare Statistics Association.
- National Institute of Population and Social Security Research, 2008, *Social Security Benefits for Fiscal Year 2006*, <http://www.ipss.go.jp/>, accessed on April 1, 2009.
- Ogawa, N., 2005, "Population aging and policy options for a sustainable future: the case of Japan," *GENUS* 61, pp. 369-410.
- Ogawa, N., G. Jones, and J. G. Williamson (eds.), 1993, *Human Resources in Development along the Asia-Pacific Rim*, Singapore: Oxford University Press.
- Ogawa, N. and R. D. Retherford, 1993, "The resumption of fertility decline in Japan: 1973-92," *Population and Development Review* 19, 4, pp. 703-741.

- Ogawa, N. and J. F. Ermisch, 1996, "Family structure, home time demands, and the employment patterns of Japanese married women," *Journal of Labor Economics* 14, pp. 677–702.
- Ogawa, N. and R. D. Retherford, 1997, "Shifting costs of caring for the elderly back to families in Japan," *Population Development Reviews* 23, 1, pp. 59-94.
- Ogawa, N., M. Kondo, and R. Matsukura, 2005, "Japan's transition from the demographic bonus to the demographic onus," *Asian Population Studies* 1, 2, pp. 207-226.
- Ogawa, N., S-H. Lee, and R. Matsukura, 2005, "Health and its impact on work and dependency among the elderly in Japan," *Asian Population Studies* 1, pp. 121-145.
- Ogawa, N. and R. Matsukura, 2007, "Ageing in Japan: the health and wealth of older persons," *United Nations Expert Group Meeting on Social and Economic Implications of Changing Population Age Structures*, New York: United Nations, pp. 199-220.
- Ogawa, N., R. D. Retherford, and R. Matsukura, 2008, "Japan's declining fertility and policy responses," in G. Jones, P. T. Straughan, and A. Chan (eds.), *Ultra-Low Fertility in Pacific Asia: Trends, Causes, and Policy Issues*, Abingdon, Oxon: Routledge, pp. 40-72.
- Ogawa, N., A. Mason, A. Chawla, and R. Matsukura, forthcoming, "Japan's unprecedented aging and changing intergenerational transfers," in T. Ito and A. Rose (eds.), *The Demographic Transition in the Pacific Rim, NBER-EASE Volume 19*: University of Chicago Press.
- Retherford, R. D. and N. Ogawa, 2006, "Japan's baby bust: causes, implications, and policy responses," in F. R. Harris (ed.), *The Baby Bust: Who Will Do the Work? Who Will Pay the Taxes?* Lanham: Rowman & Littlefield Publishers, Inc., pp. 5-47.
- Sakamoto, J., 2005, "Population challenges and social security—the case of Japan," paper presented at *the Forum on Population and Development in East Asia*, Beijing, May 16-17, 2005.
- Statistics Bureau, Ministry of Internal Affairs and Communications, various years, *Population Census of Japan*, Tokyo: Japan Statistical Association.
- Yoshikawa, H., 2001. *Japan's Lost Decade*. Tokyo: International House of Japan.