The Challenge of an Aged Population:

Lessons to be drawn from Japan's Experience[*]

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I. Introduction

In the last two decades, much has been written about the aging of industrial and emerging market countries. The focus has been largely prospective, with the literature focusing on the largely inevitable shift in the *future* demographic structure of countries that have witnessed significant reductions in fertility and unprecedented increases in longevity. But soon the industrial countries are about to actually cross this demographic threshold, and experience a slow but inexorable rise in the share of their populations over age 65. Because of its own particular history of an intense but short-lived baby-boom, followed both by a sharp dramatic drop in fertility and a population that has progressively pushed back longevity frontiers, Japan is already now at this threshold. Its baby boomer cohort (born in 1947-49) started to turn 65 in 2012 and the share of its over-65 population will have grown from 23 percent in 2013 to 26.5 percent this year, growing further to 29.4 percent by 2020. Adding to this challenge is the fact that Japan's population is projected to *shrink* significantly over time--from about 127 million today to 117 million by 2030 and 97 million by 2050 (NIPSSR, 2014, National Statistics Japan, 2015).

This has not been unexpected. These demographic changes have been long anticipated by Japan's policy makers and academics, as have been their potential economic and social consequences. The obvious question is: what lessons—both positive and negative—can other aging countries draw from Japan's approach to an aged and shrinking population? Typically, the focus of much of the literature on aging populations has been on whether government-managed pension and health care systems will prove financially viable in the face of the burden of the increased claims and demands of a retired population. But the challenges that will confront a country experiencing a sharp drop in the share and number of those in the traditional working age groups are much broader than simply those of a government's finances.

This paper will draw a number of lessons from how Japan has pursued its economic and social policies during the period that it has approached the point of an aged population. It will examine these policies from a number of perspectives, starting from the most general in terms of its macroeconomic and overarching policy stance to the more specific issues that have arisen as it has shaped its social insurance and social safety net system in the spheres of pensions, medical care, and long-term care. Some of the lessons to be drawn are highly relevant for countries that still are a decade or so away from the point at which their 65+ populations start to swell. For industrial countries much closer to the threshold, there are fewer degrees of freedom for adaptation, and as with Japan, the policy choices will become more difficult and constrained. Japan's approach to an aging population must also be seen in the context of a social insurance system that has evolved and been rooted in Japan's particular socio-cultural and historical context. Particularly as relates to medical care, there are only a limited number of features that might be considered as relevant for emerging market countries exploring alternative medical insurance models.

This discussion offers the perspective of an outside observer long familiar with the policies of other countries as they confront the eventual prospect of an aged population. But, as noted, Japanese academics and government officials have written extensively on these issues in the Japanese context. It would be difficult for an outside scholar to provide many new insights that have not been discussed by Japanese experts and this paper owes much to their efforts.

Three observations offer some support for this paper's insights. First, fresh outside eyes can often see in ways that insiders cannot. Second, although there is no shortage of views as to what Japan should have done or now could be doing differently, many policy reforms have proven to be extremely difficult for Japan to introduce and so the gap between what is recognized as necessary to do and what has been done remains large. Third, as noted, while most Japanese and Western scholars have identified the challenges that will be associated with an aged population, the focus has not been on the challenges that must be confronted once that population has reached the "aged" doorstep.

Part II of the paper will draw lessons and raise issues that are broadly applicable to other countries. In particular, it will underscore the importance of clarifying the criteria that need to be considered in addressing the success or failure of a country in dealing with an aged population. Part III addresses some of the overarching issues which Japan immediately confronts and which will prove pivotal for its prospects of a successful response to this demographic shift. Part IV focuses in greater depth on the strengths and weaknesses of Japan's policies and institutions in the social insurance sphere in terms of coping with an aged population. Finally, Part V offers some concluding thoughts. In writing this paper, I have sought to focus on the larger policy issues that confront Japan as it addresses an aged society, and have not sought to provide a detailed description either of its demographics or the specific policies and institutions that characterize its social insurance system.[1]

II. Generic lessons for countries approaching an aged population

Criteria for judging the effectiveness and appropriateness of policies

A quick survey of the economics literature on aging populations would reveal much underscoring of the demographic imbalances that are likely to emerge, concern about the unsustainability of government finances confronted with excessive pension and health care promises, and analyses on the relative burdens to be borne by different generations (e.g., European Union, 2015, Ogawa 2011)). Generally missing is a more *holistic* perspective on the multiple challenges that a country must confront if it is to maintain and improve social welfare for both present and future generations in the context of a transitioning demographic structure.

[1] A very helpful survey of the social insurance framework can be found in NIPSSR, 2014 and the Annual Report on the Aging Society from the Cabinet office of the Government of Japan. Also see the Lancet journal special edition collection of articles on "Japan: Universal Health Care at 50 years,"

Such a more holistic perspective would argue for multiple criteria in evaluating the effectiveness and appropriateness of the policies that are in place for an aged population. For any country, the following criteria would seem to be important:

- **Ensure fiscal sustainability**: succinctly, does a government's fiscal commitments—reflecting the servicing of its existing public debt, promised future expenditure, and the delivery of essential public services—match its expected future stream of revenues? Any significant imbalance would either force cutbacks in a government's promises--throwing into question the welfare of households of different age groups--or provoke doubts about a country's future growth prospects.

- **Promote fairness in inter-generational burden sharing:** in the same way that a fiscally unsustainable situation will force a government towards fundamental changes in its tax and expenditure policies, too large a burden of intergenerational support borne by particular generations is unlikely to be socially or politically sustainable. Excessive taxes borne by the working age population would jeopardize their ability to invest in their children's human capital—an important requirement for a country's long-term economic viability--or provide for their own future retirement needs. Conversely, excessive poverty among the elderly would contribute to a sense of social malaise and in democratic societies, provoke a political reaction from elderly voters.

  Realizing a fair sharing of the burden across generations may be particularly difficult in most industrial countries, when long-promised social insurance commitments prove financially unviable, forcing alternative, but equally unpopular approaches to their resolution (i.e., cutting long-promised benefits, raising taxes on the elderly, increasing taxes on the working age generation, or cutting other services to children and the working age group). The challenge of achieving intergenerational equity is exacerbated by the tendency of politicians to shift the burden forward to unborn or younger cohorts, though the increased attention by markets to fiscal sustainability has made this more difficult. Further complicating effective policy-making is the difficulty that arises in estimating how much of the burden of support for any one generation is in fact being borne by other generations.[2]

- **Promotes the well being of the population:** this is a criterion that risks being excessively general and thus unhelpful. Yet there are important dimensions of a "good society" which cannot be ignored by policy makers in the context of an aged population:

    - **The state of the health of the elderly:** Specifically, for the elderly, who will now become a more prominent part of the population, are quality medical care services seen as readily available? Are the elderly living longer in a relatively healthy condition, or are they living longer but uneasily, with multiple chronic diseases? In Japan, the evidence seems to suggest increasing longevity but with an increasing number of years spent in an unhealthy medical condition (Yong and Saito, 2009, Crimmins et al, 2008). With increased longevity and an aging population, the share and number of very elderly likely to be afflicted by dementia is likely to rise sharply?[3] Will the long care insurance system be able to cope with this growth in demand?

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[2] The new methodology of National Transfer Accounts is often seen as one approach to gauging the extent of intergenerational burden shifting. (see Ogawa et al, 2009 as an illustration). But this methodology itself confronts challenges in judging the incidence of taxes across generations. In Japan, for example, only a handful of studies seek to estimate the incidence of Japan's tax and social insurance contribution system, and these all tend to be partial or incomplete (sources to give).

[3] A final philosophical issue is that inevitably, in an aged society, a significant portion of the elderly will be experiencing a closing down of life, a narrowing of their capacity and serious limitations not only physically but mentally. This itself is a form of inequality in life and for society and social welfare. But it is not one that offers easy solutions as to what is necessary to provide so that there is at least a modicum of comfort for those living in such reduced and narrow states.

This criterion could obviously be expanded to include the state of health of other parts of the population (children in particular). Equally, it is becoming increasingly clear that the roots of poor health in the elderly (at least in Japan) stem from diet, smoking, and the work pressures experienced by much of the working-age population.

- **The avoidance of "elderly destitution:"** Policies that are fiscally sustainable but are at the cost of a significant share of the elderly being destitute—living homeless or in heavily restricted and questionable circumstances—must be questioned in terms of whether they meet the criterion of good or acceptable policies. In countries, such as Japan, where the social value system expects family members to support the elderly, the social onus may be placed on such family members rather than on society in general. But with low fertility rates, this may still leave many elderly without obvious sources of family support.

- **Does a country adequately attend to promoting long-term growth?** Pressures for support of the elderly that compromise investments in support of productivity growth—specifically, infrastructure, investments in human capital and R&D outlays—must equally be questioned. Policy makers are always challenged by the need to balance considerations of current welfare against concerns for promoting a viable and sustainable society in the future that will grow the per capita income of future generations.

- **Are policies consistent with a country's cultural integrity and distinctiveness?** Recognizing that the policy innovations of other countries offer approaches that might be of value in solving common problems associated with a high share of the elderly, they nevertheless must be adapted to fit within the mindset and social and cultural norms of a particular society. Japan in particular has historically been adept at adapting external innovations and approaches to fit within its strong cultural identity. This may imply the exclusion of innovative policies found in other countries and less easily adapted to Japan's societal and political traditions.

Policy Lesson 1: Policy frameworks should avoid overemphasizing the "agedness" of a population

There is obvious irony, in a paper focused on the challenges of confronting an "aged society," to argue *against* an excessive focus on the "agedness" of a population! But this implicit contradiction arises from the surprising speed at which the demographic situation and standards of health have outpaced the underlying social insurance policy frameworks. For countries that still have the flexibility of establishing social insurance policy framework as well as influencing economic and institutional policy norms, **the key message is to avoid enshrining specific ages as the point at which there is an entitlement to retire, to receive pensions, or to be entitled to favorable social privileges.**

Social insurance policy frameworks of the past (such as was the case in Japan) that enshrined such specific age points--55 or 60 or 65—implicitly assumed the need to socialize the financing of the burden of excessive and unhealthy longevity. The implicit assumption was that these were the ages at which individuals could no longer finance themselves from their own employment or from the assets that could have reasonably been accumulated during their working lives. The granting of social privileges to the elderly (discounted transit fares, etc.) also reflected an attempt to defray the costs of being aged for such periods. But the average duration of such periods was not expected to be excessive. While reasonable as a social policy approach, policy-makers now face the challenge of introducing flexibility in establishing such age points such that they are responsive to changing demographic and health conditions. Specific entitlement policies would need to be flexibly revisited periodically and introduced with a long lead-time.[4] This might call for differentiating among the elderly in terms of their presumed functionality in terms of participating in the labor force (rather than treating all elderly above a specific age (e.g., 65) as a "dependent group." Experience in Japan and other industrial countries suggests that many in the 65-75-age group have the physical and intellectual capacity to continue participating in the labor force.

Labor market institutions must equally evolve to ensure that remuneration practices are keyed more towards productivity and less towards seniority or age. [5] Such policies are more easily accepted when the shift in the demographic structure is still a couple of decades in the future or when social insurance frameworks are still underdeveloped. For countries where such norms are well-established, the challenge of reform is far harder, as vested interests seek to maintain the "enshrined ages of privilege" and it is difficult to revise policies that have long conditioned the behavior of those now about to become or are already past these age points.

Some industrial countries have embodied a more flexible approach in some policy spheres. Sweden's notional defined contribution pension system—subsequently adopted by Japan, Italy, and Poland—can be considered one obvious example, allowing for adjustment in benefits according to the uncertain longevity, fertility, and interest rate environment that will pertain at the point of future retirement of a cohort.[6] As will emerge below, Japan has periodically revised a number of its social insurance policies in ways that have shifted the age benchmark for entitlement to specific benefits or the level of copayment required. Also in the pensions sphere, the movement by many

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[4] Some analysts have proposed alternative flexible measures of elderly dependency, including: (i) a "prospective old age dependency rate" measuring the proportion of those over age 20 with life expectancy under 15 years or (ii) an "adult disability dependency rate," measuring the share of adults over age 20 with disability *relative* to those over age 20 without disability.

[5] In the Japanese context, both business and government needs to reconsider employment practices, seniority-based wage profiles, and the role that training and senior education can play. The vibrant debate that continues in Japan about the appropriate mandatory retirement age, the nature of the wage contract after age 60, and the challenges posed by youth employment and underemployment to the sustainability of the social insurance model, illustrates some of the key issues to be confronted.

[6] Where possible, actuarial principles should be used to help determine the magnitude of benefits to be received over the lifetime of the elderly; the practice of periodic actuarial reviews with adjustments in contribution rates and possibly indexation adjustment formulae becomes critical.

countries towards defined contribution frameworks has forced individuals to recognize the extent to which they now bear the risk of financing retirement rather than being borne by employers or society. However, in many countries—Japan particularly—labor markets have not so easily adapted to enable extended employment of individuals past historically conventional retirement ages.

The origins of the problems associated with rigid age points for entitlement of benefits can be briefly noted. In Japan (as in many other countries), social insurance frameworks as well as many economic conventions (in terms of employment and wage practices) were formulated during an unusual demographic window, when fertility rates were relatively high and longevity expectations still relatively limited. With a rising number projected for succeeding generations, Japanese policymakers assumed they could afford to improve the conditions of an elderly population for which a large proportion would not live more than a decade beyond age 65. The prospect of "surviving beyond age 65" as a risk to insure against could thus be supported by the social insurance framework. The mandatory age of retirement for many was set at age 60; the age for eligibility of social pensions was set at 60 or 65. Free medical care for the elderly seemed appropriate. Wage rates keyed to seniority were equally viable when the age of retirement was clearly delimited. For a country like Japan, modeling economic and retirement policies keyed to those prevailing in other OECD countries offered another example of demonstrating successful policies against global norms.

Few demographers let alone policy makers could have anticipated how brief would be the window during which such demographic and health conditions would prevail. The reality of sustained, below replacement, fertility rates has only been concretized in the last two decades. Equally striking has been the dramatic change in expectations about longevity and about the standards of health that can be expected. For longevity, particularly in Japan, life expectancy at age 65 has continued to increase dramatically, and now reaches 18 years for men and 25 years for women.

There are three aspects to this change in health conditions. For many elderly, there has been a veritable pushing back of the time at which "agedness"—in terms of a limited functionality of life—is experienced. Exercise, diet, and a revolution in what medical science can achieve, have all contributed to this phenomenon for many in society and have underscored the criticality of *preventive* policies that can enhance the quality of life and the degree of functionality of those in their elderly years. For other elderly, multiple chronic conditions have contributed to reduced functionality but with medical science still facilitating high expectations of longevity. And for the very elderly, medical science has allowed many to survive despite conditions of dementia.

There has thus been a disconnect between the speed at which the change in expectations about longevity and health options has been absorbed by individuals and the pace at which the policy environment has changed to be responsive to these developments. In effect, over time, individuals have increasingly come to expect the prospect of a period of retirement and pension receipts that can extend to 25-30 years rather than the 5-10 years of the past; as is well recognized, their expectations as to the age of retirement have only grudgingly changed (even if the elderly do also partly participate in the labor force). In effect, the swiftness of these changes has also outpaced the capacity of society to adapt its expectations and norms as to what can be financed within a social insurance context. This has created enormous challenges in terms of realizing an equitable measure of intergenerational burden sharing.

Policy Lesson 2: Recognize that meeting the challenges of an aged society requires a focus on policies that *go beyond* the narrow spheres of pensions, medical care, and long-term care.

Japan is unusual in the extent to which it has introduced comprehensive social insurance policies as well as mounted other noninsurance-related initiatives that seek to address the needs of an aged society.[7] Yet Japan's experience still raises questions as to the sufficiency of these efforts (see Part IV). Ultimately, economic success by the *non*elderly population must fundamentally undergird any country's capacity to meet the needs of the elderly. Japan's policy makers recognize the need for active promotion of structural reforms to facilitate productivity growth, address multiple inefficiencies in the labor market (including the factors limiting female and elderly labor force participation), strengthen investments in human capital, reform immigration policies, rectify excessive restrictions in many sectors (see Feldman, 2013, OECD, 2015). Some of these issues have been recently manifested in laws reforming Japan's corporate governance structure and the rules related to pension funds and institutional investors, and in efforts to expand the availability of child care facilities. Japan's experience of an increasingly aged society also reveals changing infrastructural needs, both at the micro level within cities to accommodate a higher share of the elderly, and at the macro level, as many towns can no longer support many kinds of infrastructure or social services as the share of the younger population diminishes.

Policy Lesson 3: In the context of an aged society, one should not confuse policies to restore fiscal sustainability with those that ensure that the elderly can meet their financial needs throughout their elderly years.

Inevitably, the fiscal pressures of an aged society force governments to reassess the financial sustainability of the prevailing social insurance framework, and what might be implied in terms of alternative contribution and tax policies as well as benefits. But Japan's experience suggests that solving a government's fiscal problems does not ensure that all those in the elderly age group can meet their financial needs. While the evidence suggests that most of Japan's elderly are well positioned in terms of their

[7] One examples of the latter include Japan Post's "Watchover services" involving postal workers regularly visiting elderly customers as well as its recent collaboration with Apple and IBM to provide over the next 5 years, 4-5 million IPADS to the elderly that are "loaded with software to help them communicate with family and friends, monitor their health and buy goods and services" (New York Times, 2015).

pension income, financial and real asset holdings, family support and wage income, Japan *still* has a relatively high elderly poverty rate among OECD countries (OECD 2015)), suggesting significant gaps in the welfare and social insurance framework.

For today's elderly, Japan thus needs to focus on: (i) whether there is a need to revise its current structure of public assistance policies or the size of its basic pension; (ii) the potential role that might be played by introducing a refundable tax credit; (iii) the possible value of introducing a reverse mortgage system; and (iv) the need for strengthened *preventive* health measures to both facilitate labor force participation by many elderly and to contain potential medical costs.

Equally of concern, and looking forward, it remains unclear whether the relatively beneficial position of many of Japan's elderly today will still be valid for Japan's elderly in the years after 2025. A fortiori, there is concern that the significant segment of Japan's younger labor force that has been characterized as "neets, freeters, parasite singles, or dropouts from the social insurance system" may not have the financial wherewithal to finance their elderly years, compared with the current generation of elderly.

III. The Overarching Policy Challenges Confronting Japan

Japan today confronts three fundamental questions that relate to its capacity to meet the challenges of its aged population. First, can it meet the goals of the Abe government in restoring durable long-term per capita income growth while also achieving a sustainable fiscal position? Second, can it realize a socially acceptable degree of inter- and intra-generational equity as its population gradually shrinks and there is a growing burden of supporting an increasing elderly population? Intergenerational inequities are bound to emerge even if faster productivity growth is achieved and this will intensify pressures to ensure that the elderly as a group provide more financial support for the government. Third, can Japan overcome the political obstacles that have blocked policies that would address the first two questions? These issues are equally relevant to other soon-to-be aged countries and offer further important policy lessons.

Lesson 4: Japan's experience is a cautionary lesson to not approach the point of an aged population with a significantly high public debt to GDP ratio

The case of Japan illustrates that "macro" dimensions constrain what is ultimately feasible, both for the financial decisions of a government as well as for households and enterprises. Japan's capacity for policy actions with regard to its aged population is heavily constrained by its excessive public debt. The challenge is particularly difficult because even if Japan were to be successful in raising GDP per capita, its high nominal public debt level (particularly if one includes implicit pension liabilities) requires Japan also to realize nominal GDP growth (in the face of a shrinking labor force). If Japan cannot realize primary budget surpluses sufficient to bring down its public debt, this will force *more* difficult *micro* adjustments in social insurance policies and fiscal transfers affecting the elderly. Indeed, even if one were to focus only on Japan's successes in terms of its micro policies dealing with the elderly (in long term care and health care), one would be neglecting the extent to which fiscal deficits and higher levels of public debt were used to finance these successes in the past.

Getting the macro dimension sustainable is critical. It enables a more predictable and unconstrained policy environment in adjusting micro policies, whether related to the elderly to other societal problems; ensures the availability of fiscal space during periods when expansionary policies are needed and for more gradual changes in hard-to-change social institutions; and reduces a country's vulnerability to exogenous shocks. The IMF's recent debt sustainability analysis for Japan vividly illustrates how sensitive is Japan's fiscal position to many downside risks affecting its debt position (IMF, 2015).

The principal qualification to this lesson is highly topical in the current global environment and particularly within the European Union. Germany in particular emphasizes the need for fiscal austerity policies precisely because of the recognition of an aging European population and high public debt shares with origins in the financial crisis. But others (e.g., Paul Krugman) emphasize that many aging European countries confront high rates of unemployment and that the costs of foregone output and employment in the present may need to be seriously weighed against the risks to long-term fiscal sustainability. The reconciliation of this controversy for most countries should probably lie in the use of fiscal policy for growth promoting investments in human capital, infrastructure and technological innovation that also provide support for aggregate demand.

In the case of Japan, the constraints posed by heavy public debt levels is far too great now to be assumed away by such a reorientation of fiscal policy. The likelihood of an effective default by the mid-2020s has been cogently argued by Hoshi and Ito (2012), and is still likely despite recent initiatives by the Abe government (the first increase in the VAT rate in April 2014 and the promise to carry through with a second increase in the VAT rate in 2017 (though deferred from 2015). Even the more optimistic budget scenario issued in mid-2015 suggests that a significant primary budget gap will remain,[8] relative to what would be needed to achieve fiscal sustainability, particularly in the period after 2020.

Lesson 5: When the demographic signals are clear, early and gradual adjustment of a social insurance system to facilitate fiscal sustainability should be undertaken.

As far back as the late 1980s, it was abundantly clear that Japan's fertility rate was sharply in decline and that longevity rates at age 65 were high (by international

[8] The 2015 optimistic scenario published by the Cabinet Office assumes significant acceleration of productivity growth (to 2.2 percent by 2020) and that Japan will outgrow the US from 2018 to 2023. (The Economist, June 20, 2015).

standards) and rising. At that time, even a dramatic and significant upturn in fertility would have still implied that Japan's demographic pyramid would turn significantly rectangular in coming decades. Japanese policy makers and its body of highly experienced and thoughtful academics, particularly in the social insurance sphere, were aware of the need for policy adaptation and adjustment to both cope with the sharp shift in the age structure in the second decade of this century and of the risks posed for fiscal sustainability by the expected rise in fiscal transfers and services to the elderly. Such recognition emerged in both of the adoption of a new long-term care insurance program, the revision of the pension system to a notional defined contribution system, and in a number of the decisions related to the contributions and copayments schedule within the social insurance schemes.

Regrettably, the bursting of Japan's bubble also engendered policy concerns that coincided with the awareness of the challenges posed by demographics. Macroeconomic policy goals subordinated the latter challenges and emphasized a focus on sustaining demand, in part due to a reluctance to allow fiscal policy to further dampen demand in a recession. The experience with the mid-1990s VAT increase, which led to a slowdown in the economy, solidified a reluctance to allow fiscal policy to be pro-cyclical. The result was twofold: first, social insurance expenditures continued to increase through the last two decades and proved responsible for much of the dramatic increase in the public debt share that has occurred since 1990; second, there was a reluctance to move ahead adequately in either implementing some of the intended reforms (e.g., the so-called "macroeconomic slide") or in making sufficient adjustments to some of the social insurance schemes in a way that would ensure that the impact of aging on fiscal outlays would not impinge on Japan's fiscal sustainability (a policy obstacle that has thus only grown in the last two decades as the public debt share has burgeoned). Such reforms would have entailed changes in pension eligibility ages; conditions of access by elderly to health insurance; introduction of the macro slide and symmetric indexation; consideration of pension privatization or partial or full funding approaches in the sphere of pensions; and the extent of copayments required of the elderly for medical and long-term care services.

The message for other countries is thus straightforward. When the obvious signs that fertility rates are significantly below the replacement level and substantial increases in longevity are apparent, adjustments of key social insurance parameters are critical, even if they encompass a phased-in approach to facilitate awareness and adjustments by individuals to the changed prospective environment to their financial position in their elderly years.

Lesson 6: The challenge of realizing intergenerational equity is one of the hardest policy issues a society must confront, particularly when the demographic foundations are subject to significant change (necessitating substantial revisiting of past generational burden-sharing assumptions). Greater attention needs to be accorded to a transparent assessment of the extent of intergenerational burden sharing that would arise from existing government social insurance and welfare programs.

The Japanese experience vividly provokes the question of which generations should bear the financial burden of an aged population. What may have seemed an appropriate "solution" in a world of high fertility and limited longevity has gradually become no longer viable as the age structure has become increasingly rectangular. Thus past justifications—that the recently turned boomer cohort supported *their* parents, so that social solidarity should similarly apply, with the burden borne by the current work force—imply a far heavier burden on the latter than was ever borne by the now elderly group. How much should the current labor force owe to the elderly on account of the latter's investments and work effort when they were in the labor force? Should not the current elderly have saved a higher share of their income, to compensate for the human capital they failed to produce by opting for lower fertility and fewer children? In the medical sphere, how much should "social insurance" principles apply when it is chronic, and not acute illness, which increasingly influences the demand for medical care?[9]

Consideration of the extent of intergenerational burden sharing must also recognize that the government's determinative role is only partial. Individuals, through their family relationships, determine the amount of intergenerational *family* support (and indeed. this is seen as a legal obligation in some countries, notably China). Markets are also influenced by demographic change and globalization, affecting asset and relative factor prices, and thus how the burden is distributed among generations. As an example, shifts in the age structure of the population may be reflected in the value of housing wealth owned by the elderly and thus of the cost of housing to younger cohorts. If much of the housing stock comes on the market coterminous with some period in post-retirement, younger cohorts may effectively receive an intergenerational transfer in the form of a lower cost of real estate acquisition. Equally, longer longevity may negatively impact on the prospective value of bequests to succeeding generations, as the elderly consume more of their assets before dying.

In a number of ways, Japan's policy environment has recognized the need for greater absorption by the elderly of the financial burdens of an aged population. One sees this in a number of ways in the sphere of pensions, medical copayments, long-term care charging, and the increased reliance on a value added tax that raises the cost of consumption of the elderly as well as the nonelderly.[10] But these efforts

[9] Medical insurance is based on the concept that illness strikes individuals randomly and on an acute basis, thus affecting only a small percentage of the insured population. With increased longevity, most elderly will be subject to some form of chronic illness at some point in time, with far less randomness in its occurrence. The financial burden thus borne by social contributors in financing medical payments for the elderly is thus significantly higher than was anticipated when longevity was much lower. In effect, the sharing of the burden for medical insurance for the elderly needs to be treated more analogously to the approach Japan has adopted for its long-term care insurance program.

[10] Specifically, one observes ceilings set for the maximum pension contribution rate by workers; the intention of the macro slide policy to shift some of the burden to the elderly; increased medical copayment charges for the "younger" elderly (ages 65-74), increased tax financing of health services for elderly; and the transition of the elderly health scheme to those 75 and over, from the previous

remain thin in comparison with the multiple ways in which the balance still remains tilted against the current working generation (particularly if one reflects on the important shifts in the structure of employment relations that have impacted on that generation). Pension eligibility and financing policies, benefit levels, and the tax treatment of pension benefits and contributions still remain heavily in favor of the elderly.[11] Financing of elderly medical insurance benefits substantially relies on heavy cross-subsidization by the working age group. The general taxpayer remains largely responsible for the burden of public debt and for much of the basic pension, long-term care and medical care outlays for those aged 75 and over. Efforts to measure the extent of intergenerational transfers remain highly nontransparent analytically, with confusion as to the appropriate application of insurance vs. welfare (viz., tax funding) principles. The role that targeting of benefits might play in the context of other factors that contribute to large asset holdings by a significant group of the elderly remains under-examined or unaddressed in policy design.

One should also emphasize that any efforts to shift more of the burden to the elderly will not be easy; the risk is that they will exacerbate existing poverty levels. Significant parts of the elderly are not rich, are scraping by, and have little margin. Without intensified efforts at targeting and considering progressive measures that tap the assets of those elderly with assets and income, the social condition will not improve. Simply achieving fiscal sustainability at the expense of an even higher share of poverty among the elderly, a reduced quality of life, or greater degrees of ill health and disability would not seem a "good" outcome.

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coverage to those over age 69; the efforts to evaluate long-term care needs and the effort to limit the extent that the medical insurance scheme would be covering what are effectively long-term care costs by the use of hospital beds for the chronically ill elderly; charging for bed and board for much long-term care; and the nontrivial medical and long-term care insurance premia that are being paid by the elderly.

[11] Japan still relies on a pay-as-you-go approach for much of its pension system's finances. Academic analyses suggest significant inequities in generational accounts, particularly for younger and yet-to-be borne generations. Real pension benefits have risen throughout the deflationary period because the macro slide has not operated symmetrically. The baby boom population, now retiring, will not be affected by any deferral of the pension eligibility age. Elderly pension benefits remain largely tax exempt—Japan's tax treatment of pensions is effectively an EEE system.

Lesson 7: Japan illustrates the difficulties of overcoming the political economy challenges to a reform of policies that benefit the elderly and other vested interests. It also illustrates that increasingly, the policy window for implementing such reforms with limited pain can close.

There would be little controversy with the assertion that the present electoral system in Japan is biased towards the elderly as well as key constituencies that have blocked reforms that could foster productivity increases in a number of key sectors of the economy (i.e., agriculture, medical care, and the services sector) (Feldman, 2013). This provokes some obvious questions relevant to other soon-to-be aged societies. Specifically

- How many of the political obstacles that one observes in Japan can be attributed to the fact that the elderly and soon to be elderly constitute a significant share of the voting electorate, relative to the power of many vested economic interests that would lose their rents from existing policy and institutional structures in the context of reform (say, in the medical care sector or agriculture).
- Does Japan's experience suggest the need to implement policy reforms *before* the aged become a large voting bloc (viz., while the "political economy window" is still open)?
- Does an aging society lose the dynamism to implement significant reforms? Can it respond vigorously to a crisis? Even the dynamism and strong words of the "three arrows" strategy of Prime Minister Abe now confront resistance that calls into question whether really difficult structural reforms can be politically undertaken.
- Will Japan, down the road, prove another example of "it takes a crisis?"

What remains true is that the next 10-15 years are Japan's last obvious window for important policy gains from reform. The baby boomers are still among the "young old and they still have the potential for participating in the labor force. It is also the period when the prospects for containing and reducing the public debt level to a manageable level are still plausible. Even more important, there is no shortage of excellent and thoughtful proposals by the Japanese business sector, scholars and policy makers as to what is needed to revitalize the economy.[12]

IV. Can Japan's Social Insurance System fully meet the Challenges of its Aged Population?

Japan is appropriately regarded as a country that has been in the forefront of social insurance policy innovation. It was one of the first to follow Sweden in adopting a notional defined contribution (NDC) pension system, and it was a primary innovator of universal long-term care insurance. Its universal national health insurance scheme can rightly boast of delivering quality medical care at a reasonable cost to the economy (certainly far less than is observed in the United States). But a closer examination reveals that Japan's system, while in principle "universal:" (i) masks significant disparities in the treatment of different groups; (ii) has pillars that could be significantly strengthened in terms of their financial sustainability, efficiency and equity; and (iii) may not be easily transplanted to other, soon-to-be aged, societies.

Lesson 8: Japan's universal social insurance policies mask disparities in both the burdens borne and the benefits derived by different groups, raising important issues of both intra-generational and intergenerational equity.

Three sets of disparities prevail. Social insurance premiums may differ across workers of different firms (e.g., with regard to health insurance premia), across municipalities in terms of the premia paid by workers and the elderly for medical and long-term care insurance, and as between employed women and housewives. Compliance in contributions is problematic for some groups in the labor force,

[12] See Keizai Doyukai (2011), Nippon Keidanren (2011) McKinsey & Company (2011)

particularly by temporary workers and the unemployed. Benefits derived from the system may also differ across different municipalities, places of employment among spouses working part-time, full time, or as housewives, and within programs (e.g., in terms of access to preventive health care checkups). Finally, the social insurance system effectively gives low priority to low-income single elderly women and to single parent households with children.

Lesson 9: <u>Pensions</u>: Japan's NDC system, while well-formulated in principle, has fallen short in terms of the four principal objectives of a pension system: minimizing retirement risks associated with uncertain longevity, ensuring fiscal sustainability, limiting allocative distortions in the labor market, and fostering intergenerational equity.

The pension reforms that have been delayed or not initiated that would address these concerns are well recognized by Japanese academics knowledgeable about the system and will be familiar to pension scholars in other aging industrial countries. At the *macro* level, Japan has neither implemented the "macro slide," the key feature of an NDC pension system intended to take account of the change in the underlying demographic parameters (longevity and labor force size), nor the indexation mechanism that would have reduced nominal pension benefits *pari passu* with the deflation that has prevailed over the last decade.[13] Similarly, Japan has failed to adjust the age of pension eligibility (despite the significant increase in longevity), a failing which, with the onset of the retirement of baby boomers, now ensures that any subsequent adjustment would fail to realize the financial savings that would have been associated with reduced benefits to this large demographic cohort.

On the equity front, Japan has neither sought to address the significant differences that prevail in the implicit rate of return that will be realized on pension contributions across age cohorts, nor sought to reduce benefits received by high-

[13] Linked to this, the effects of any increase in the consumption tax on the CPI should be excluded for the purpose of any pension indexation.

income earners. Adding to intergenerational inequity, pension benefits continue to be exempt from income taxation. Approaches that could address issues of elderly poverty, such, as a refundable tax credit or a guaranteed minimum pension (as observed in Sweden) have not been on the agenda.[14]

In terms of efficiency, employers have expressed concern that the high rate of pension premiums on employers for the earnings-related pension scheme may be hindering domestic investments, sectoral shifts and the job creation needed to facilitate adaptation to the current global economic environment. Equally, it has been suggested that 100% of the basic pension should be financed from the consumption tax.

The consequences of these failings have been several, including, obviously, the inexorable increase in pension outlays in the past and the prospect that the window has closed to implement reforms that could have limited the fiscal impact of the current growth in new pension beneficiaries among the baby boomer population. Similarly, by not implementing reforms when prospective elderly would have had time to adjust in terms of their work expectations and savings behavior, these reforms would now be difficult to politically consider and the cost to current elderly of cutbacks would be particularly onerous. This will make it difficult for Japan to exploit the coming 8-11 year window when the current "younger elderly" are still healthy enough to work.

Additionally, failure to implement reforms has contributed to a crystallization of perceptions by younger cohorts on the magnitude of the intergenerational inequities built into the system, factors which contribute to the current degree of the noncompliance problem for pension contributions by many younger cohorts of the labor force.

[14] Though not related to the pension system, intergenerational equity would be fostered by reducing the threshold exemption for the inheritance tax and by an increase in the estate tax rate. Compliance in tax payments could also be reinforced through the introduction of a taxpayer ID number and strengthened tax administration.

Two other nonobvious consequences can be noted: First, any thought of a possible shift to a non-notional define contribution pension system (viz., that younger cohorts' pension contributions would be allocated to their own pension account) would be shackled by the "double burden" problem of financing both one's own pension and the tax burden of covering existing pensioners. Second, by intensifying the policy focus on the fiscal imbalances arising from existing pension obligations, less attention is likely to be given to the structural problems in the system that create income risks for both current and *future* elderly.

Lesson 10: Long-term care insurance: Japan's innovative system, though still evolving, is an excellent model for other aging countries. But markets and policy makers still have much to learn about Japan's very elderly population, now and in the future, and the system remains to be stress-tested once the baby boomers move into their "very elderly" years.

Japan's long-term care insurance scheme appropriately uses insurance principles to extend the risk pool to the entire population at risk, with financing reaching down to workers over age 40. Equally, in the supply of long-term care services, it provides for an intelligent and creative approach for determining the levels of support and care that would be required for each eligible individual on the basis of their mental and physical status. The system has also built-in mechanisms to limit the costs that are thus entailed by the provision of the insurance, including efforts to promote preventive health initiatives.

Yet despite these efforts, Japanese policy-makers still lack essential data about the key group of the very elderly, which could significantly affect both the cost and capacity of the services required from the system looking forward. Such information gaps relate to:

- The likely incidence of dementia at different ages;

- Whether there are preventive measures that could forestall dementia;
- Whether there are ways that the combination of medical and long-term care could contribute to reduced levels of disability and care level needs (thus avoiding *increased unhealthy years), particularly* for *multiple chronic health conditions;* the system presently is at risk of treating the acute episode but *not* the associated disability or dysfunctionality; and
- Whether changes in diet, exercise, and stress among those *now of working age* can change the pattern of morbidity of the very elderly in the future.[15]

Moreover, the viability of the system will only be really tested in the future, specifically in the decade when the now retiring baby boomer population turns 75-80, roughly the age period at which many physical disabilities appear to become more significant and debilitating. The recognized weaknesses of the system are both structural and supply-driven. For the former, and as noted, the LT care and medical care systems are not well coordinated, and this is particularly a challenge for individuals with multiple chronic diseases. Concerns have been particularly raised that the LT care system receives inadequate support from medical practitioners.

Addressing the potential for severe capacity limitations in the future is also a serious concern, starting with the limited quantity, quality, and low pay received by LT care managers, the limited supply of non-medical long-term care beds, and the significant variation in capacity across municipalities for implementation and provision of LT care services. The budgetary bias towards home-centered care will be equally challenged by the increasing number of single-person households (particularly widows) living apart from their children. This bias will limit the success of policy efforts to increase female labor force participation. Finally, and most serious, can the system manage to provide services for those with dementia,

[15] An additional unanswered question is whether genetic factors that are Japanese-specific limit the value of drawing on the Japanese experience in shaping other country's programs.

with the likelihood of an explosion of such cases in 10 to 15 years as the baby boomers approach age 80?

Lesson 11: There is much to applaud about Japan's medical care system, and in terms of expenditure burden and longevity, Japan ranks high among OECD countries. But there are many weaknesses and inefficiencies in the system that often yield unsatisfactory measures of health outcome, and the capacity of the system to sustain its successes with an aged population is open to question. The medical care system is likely to be a pressure point for higher fiscal outlays in an aged population context.

Japan's medical care system fares well relative to other OECD countries. Medical spending relative to GDP is relatively low and the longevity of Japan's population is well known. The quality of medical care in Japan is high, with a dedicated pool of physicians and nurse practitioners. The system is famous for its accessibility, affordability and acceptability to its citizens. While there are sources of dissatisfaction, the high degree of accessibility and the escape value of private care for those with financial resources limit the pressures for change.

But the system has a number of important limitations, including:

– An **excess of quantity—**specifically: there are far too many hospitals of inefficient size; too many beds used for long-term care (resulting in excessive average bed-stays); too many outpatient consultations of excessive brevity; excessive use of expensive equipment per capita; and too easy access to expensive, specialist resources;
– **A bias towards private clinic doctors relative to public sector physicians and public hospitals;**
– **Excessive variation in compensation patterns for physicians across clinics, municipal and university hospitals,** with compensation levels not in accordance with skills, work effort and likely patient outcomes;

- Significant **differentials in the quality of care** across institutions; for sophisticated treatment, specialists typically confront a low volume of cases, compromising the quality of care;
- **Physician behavior and investment decisions motivated by questionable financial incentives arising from the structure of the system;** the result is a very high per capita ratio of MRIs and CATSCANs;
- **The absence of any primary care "gatekeeper system;"** the role of general practitioners is extremely limited (with most patients seeking primary care from specialists in specialist clinics, further compromising efficiency in resource allocation and the management of community health risks);
- Significant **weaknesses in hospital management** in many municipal institutions;
- **Inefficiencies in non-medical supply systems;**
- **Limited use of generic drugs**
- **Inadequate efforts to address the surging cost of end-of-life care; and**
- **Reliance on significant cross-subsidization by workers and employers for the financing of the medical care system for the elderly.**

While some may point to Japan's high longevity, it is questionable how much of this record can be attributed to the medical care system. Many argue that it more reflects a distinguished record of strong past public health measures, the legacy of good diet and exercise for the *present* elderly cohort, the basic success of the medical care system in dealing with infectious diseases and infant mortality, and the role played by an emphasis on preventive care. What is hidden by the increased longevity data is that one is also observing an increasing number of *unhealthy* life years among the elderly (viz., with health status not improving pari pasu with life expectancy) (Nozaki, et al, 2014)**.** And one cannot also fail to note that changing life styles may impinge on Japan's longevity record, as one observes a high incidence of suicides and still high smoking rates.

Looking forward, with a rising number of elderly, both the structure and the financial basis of the system will be challenged. This will reflect a number of pressures. First, with an increasingly aged population, the system will have to address a much denser population with *multiple chronic diseases needing less acute care and more chronic care management.* Second, the larger number of elderly (with more available time to pursue medical care) will inflate demand, increasing the cost burden on the health financing system, both from taxes and social insurance. This will lead to a heavier financial burden on employers and working age groups, particularly as the size of the latter group shrinks. This may lead some employers to shift to the Community Health Insurance system.

Third, the present level of financial outlays of the system is managed through the efforts of the Ministry of Health, Labor and Welfare (MHLW) to limit or even cut payments to physicians or drug prices. With the prospect of a significant increase in patient demand, this approach to contain the growth in outlays may prove infeasible. Fourth, uncertainties exist as to the specific kind of supply pressures that will emerge with an increased volume of demand; it is unclear whether the present spatial distribution of medical supply will match the likely sources of demand as the population ages further. Fifth, will the current restrictions on for-profit institutions limit the capacity of the medical care system to respond to changing pattern of demand? Sixth, Japan currently limits access to new medical technologies by only reimbursing patients that seek treatment through the public health care system. It does not allow a patient to receive some treatment from the public system and pay for unapproved technologies from the private sector. The result is to limit access to the newest, more sophisticated technologies to only the wealthiest. Any revision of the rule to allow more access to more advanced drugs and treatment could generate further significant cost pressures on the system

While many academics may call for wholesale institutional reforms that increase the role of primary care and limit the volume of private hospitals and clinics, the prospect for realizing institutional change is very small. Some have emphasized the strong vested interests in the system's present structure, including hard set attitudes, sunk physical and human capital and rents in sustaining the practices in the sector (Sieg, 2013). Such institutions constrain what policy designs can be envisaged as feasible, what reforms can occur, and how quickly they could be implemented even with the best of will. As well put by Dr. Ikegami, "institutions change much more slowly than demographics!" The implication is that pressures on the medical system will be met more by a higher level of medical outlays than by reform of existing inefficiencies.[16] Japan's experience underscore the extent to which, in *any* country, the strength of cultural and national behavior factors may prove durable and extremely limiting as to the speed and extent of possible institutional reforms.

V. Concluding Thoughts: Whither Japan? Should it be Considered a Model for other soon-to-be Aged countries.

Imagine Japan as if it were engaged in the construction of a highly innovative, new design for a dwelling place of a type that no other country had envisaged for a neighborhood. Being Japanese, its design incorporates many traditional Japanese design features—rooms with tatami mats and shoji screens, a traditional Japanese roofline, windows that seek to incorporate the outside world into the dwelling. At the same time, the house is technologically sophisticated, incorporating all the innovations of the early 21st century. The house is designed to be multigenerational-- the home of four generations—great grandparents in their 80s & 90s, grandparents of the baby boomer generation, their children in the labor force and *their* grandchildren. The initial design of the house also reflects Japanese culture in revering the elderly, who are thus given more space and expected to bear less of the financial burden from construction of the house and in the cost of daily living expenses. Readers of architectural design magazines from other countries are excited about the project and see many features of this house as ideally suited for

[16] In terms of additional financial costs, the IMF estimates that the combination of aging and excess cost growth will raise health spending to GDP by 5.5-6 percent of GDP between 2010 and 2030 (Nozaki, 2014).

the environment they expect in the future, though recognizing that some features (notably those that reflect Japanese culture) are less adaptable to their situation.

Regrettably, highly innovative designs are costly and so too with this dwelling. Construction costs have proven far more expensive than envisaged, and has already required heavy borrowing, and with a flexible mortgage rate, and the possibility of foreclosure in the future cannot be discounted. The house, while livable now, is not yet finished. The foundations, while sturdy, support walls that are drafty. More of concern, the temporary roof is susceptible to leaking and is vulnerable to heavy macroeconomic winds; a permanent sustainable roof will require further funding to complete. There is thus uncertainty as to whether it will allow for comfortable living for the foreseeable future or whether the house will require such drastic changes as to force its inhabitants to abandon the project and seek a less commodious dwelling that is far less satisfactory.

Fortunately, one of the sons has just graduated from business school and has new bold ideas on how to complete the job, plug the leaks, strengthen the foundations, build a permanent sustainable roof, and square the project with the household's available and prospective financing. But it is unclear whether he can persuade many of the more traditionally powerful family members to accept less space and bear more of the costs.

This is the situation now. There is no shortage of interest in the project and no shortage of advice on both the details of the design and the economics of financing, both from family members wrangling about what to do and from outside friends and family advisers. There is so much that is innovative. Yet it is unclear on how the family and the project will fare looking forward. Much will depend on the insights and persuasive powers of the son to implement the kinds of reforms that can address the key issues.

In short, the Japanese project of constructing a financially sustainable, prosperous, and equitable "house" for its increasingly aged population is a work in progress that may succeed or fail. Many of the factors that will contribute to its success offer instructive lessons to other countries on the threshold of embarking on a similar project. But the Japanese project also offers lessons on what not to do and illustrates the cost of an excessive focus on the details of programs dealing with the aged with insufficient attention to the macroeconomic and fiscal challenges and the problems of the non-aged groups that will necessarily be the foundation for the success or failure of the overall project.

Contemplating the current Japanese situation and seeking to judge how Japan will fare in its full transition to an aged economy over the next decade and a half is thus highly problematic. Forecasts would be highly conditional on whether Japan can manage to rekindle its economic growth rate and take the clearly needed actions to reduce the share of its public debt through further progressive increases in the value added tax rate. The social insurance system is likely to be highly sensitive to whether growth resumes on a sustainable basis and the fiscal crisis is dealt with. These will influence (i) how much pressure there is for significant further cutbacks in benefits and for pension claw backs from the well-offer elderly, (ii) how tight will be the spending environment for medical and long-term care, and (iii) the degree of tightening of availability of institutional LT care services and the extent of higher copay requirements.

One final more general lesson can be posited. Demographics, while a critically important factor affecting the nature of societal change, do not imply a specific destiny. Countries differ in many ways during the period when they make the shift to a low fertility rate and high life expectancy. Countries may fundamentally differ in their income and socioeconomic attributes at the time this demographic change occurs. Clearly, they are likely to differ in the characteristic of their institutions and in particular in the degree of development of their social insurance policy frameworks. Also likely to be important at that time of transition is the international context within which their economies are placed relative to other countries. Japan had the misfortune of being the first to encounter a financial sector meltdown in a globalized economy at the time that it was heavily into the transition towards an aged economy. Equally, while Japan may have benefited by being the "lead goose" in terms of the demographic transition, exploiting the demographic transitional features of a declining dependency rate and a high savings rate, perhaps it has also proven costly, having implemented policy frameworks that now appear inefficient and costly.

References

Campbell, John Creighton and Naoki Ikegami, 1998, *The Art of Balance in Health Policy: Maintaining Japan's Low-Cost Egalitarian System,* (Cambridge University Press, UK).

Crimmins, Eileen M. et al, 2008, "A Comparison of Biological Risk Factors in Two Populations: the United States and Japan," in *Population and Development Review*, (September), 34(3), 457-482

Economist Magazine, 2015, "Winds of Change," (June 6), pp. 53-56.

Economist Magazine, 2015, "Bringing down Japan's national debt: Hoping for Growth" (June 20), pp. 37-38.

Esmail, Nadeem, 2013, *Health Care Lessons from Japan,* (Fraser Institute, Ontario, CA)

European Commission, 2014, "*The 2015 Ageing Report," European Economy* (August 2014).

Feldman, Robert Alan and Takesi Yamaguchi, 2013, *Japan Economics: J-Insight: The Third Arrow: What's Next* (Morgan Stanley Research, Japan)

Fukawa, Tetsu and Itaru Sato, 2009, "Projection of pensions, health and long-term care expenditures in Japan through macro simulation," *The Japanese Journal of Social Security Policy,* vol. 8, no. 1 (August)

Government of Japan, Cabinet Office, 2011, *Definite Plan for the Comprehensive Reform of Social Security and Tax,"* (unpublished provisional translation*)*

Government of Japan, Cabinet Office, 2011, *Annual Report on the Aging Society (unpublished)*

Hayashi, Masayoshi and Haruka Kazama, 2008,"Horizontal Equity or Gatekeeping? Fiscal Effects on Eligibility Assessments for Long-term Care Insurance Programs in Japan," *Asia Pacific Journal of Accounting & Economics,* 15, 257-276

Hoshi, T. and T. Ito, 2012, "Defying Gravity: How Long Will Japanese Government Bond Prices Remain High?" *NBER Working Papers, No. 18287.*

Ikegami, Naoki and John Creighton Campbell, 2208, "Dealing with the Medical axis-of-power: the case of Japan," *Health Economics, Policy and Law," vol. 3, 107-113.*

Ikegami, Naoki*, 2011,* "Japanese Universal Health Coverage: evolution, achievements, and challenges," *The Lancet (*September), 29-38.

Imrohoroglu, Selahattin and Nao Sudo, 2011, "Will a Growth Miracle Reduce Debt in Japan," *IMES Discussion Paper No 2011-E-1*

Inagaki, Seiichi, 2011, "Simulating policy alternatives for public pension in Japan," (unpublished paper presented at conference on Micro simulation and Policy Design, Stockholm Sweden)

International Monetary Fund, 2015, *2015 Article IV Consultation* (IF Country Report No. 15/197) http://www.imf.org/external/pubs/ft/scr/2015/cr15197.pdf

Iwamoto, Yasushi, 2008, *The Choice of Japan toward the Construction of a Sustainable Social Security System* (unpublished)
Japan, Prime Minister and Cabinet Office, Innovation 25 Strategy Council, 2007, *Innovation 2025: Creating the Future, Challenging Unlimited Possibilities"* http://japan.kantei.go.jp/innovation/interimbody_e.html

Jones, Randall S. and S. Urasawa, 2013, "Restoring Japan's Fiscal Sustainability, OECD Economics Department Working Papers No. 1050 (OECD Publishing.) http://dx/doi.org/10.1787/5k46cvtkbf33-en

Kaneko, Ryuichi, 2011"The Society Created by the Longevity Revolution—Historical Development and Associated Issues," *The Japanese Journal of Population, vol. 9, no. 1 (*March), pp. 135-154.

Kashiwase, K., M. Nozaki and K. Tokuoka, 2012, "Pension Reform in Japan," *IMF Working Papers,* No. 12/285, IMF, Washington DC.

Keizai Doyukai, 2010, *Vision of Japan: 2020:* Nation of Vibrant Young People, Looked upon by the World with High Expectations, http://www.doyukai.or.jp/en/policyproposals/2010/pdf/110111a.pdf

Nippon Keidanren, 2011, *Japan 2025:Envisioning a Vibrant* Attractive Nation in the 21st Century, https://www.keidanren.or.jp/english/policy/vision2025.pdf

Klein, Matthew C., 2015 "Is Japan in danger of a "fiscal crisis? (Series of blogs in Financial TimesAlphaville) (February)

The Lancet, 2011, *Japan: Universal Health Care at 50 years*

McKinsey & Company, 2011, *Reimagining Japan" The Quest for a Future That Works*

Naohiro, Yashiro, 2014, "Clock Running Down on Social Security Reform," http://www.nippon.com/en/simpleview/?post_id=17776.

National Institute of Population and Social Security Research (NIPSSR), 2014, *Social Security in Japan, 2014)*

________________________, *Population Projections for Japan,* 2012

_________________________, *Selected Demographic Indicators for Japan*

National Statistics Japan, 2015), *Population Estimates*

*New York Times, "*Old Age market Holds Promise of Profit in Japan" (April 30, 2015)

Nozaki, Masahiro et al, "Health Spending in Japan: Macro-Fiscal Implications and Reform Optio*ns," IMF Working Paper WP/14/142*, IMF. Washington DC

OECD, 2015, *OECD Economic Surveys Japan* (OECD, Paris)

Oguro, Kazumasa, 2011, *The Nation Needs to Conduct Fiscal Policy Reforms that Correct the Unfairness Between the Generations,* http://www.japanpolicyforum.jp/en/archives/economy/pt 20111007135752.html.

Ogawa, Naohiro et al, "Japan's Unprecedented Aging and Changing Intergenerational Transfers," in *The Economic Consequences of Demographic Change in East Asia* (National Bureau of Economic Research 2010, pp.131-160.

Oshio, Takashi., 2010, *Welfare Analysis on Redistribution: Fairness and Efficiency,* Nippon Hyoron Sha, Tokyo (in Japanese)

Oshio, Takashi et al, 2011, "Social Security Reforms and Labour Force Participation of the Elderly in Japan, *The Japanese Economic Review*, vol. 62, No. 2, (June), pp. 248-272.

Sieg, Linda, 2013, "Japan's Abe battles doctors' lobby over 'Third Arrow' reform," http://www.reuters.com/article/2013/08/25/us-japan-reform-dUSBRE97O00920130825

Tajika, Eiji, 2007, "The Role of Personal Income Tax to Mitigate Widening Income Inequality: the case of Japan," *Journal of Income Distribution, vol. 16.*

Tajika, Eiji, 2011, *Construction of Public Pensions in Developing Economies* (unpublished power point)

Takayama, Noriyuki and Yukinobu Kitamura, 2010, "The Ageing Crisis: The Japanese Response," power point presentation to Australia National University

Takayama, Noriyuki and Yukinobu Kitamura, 2009 "How to Make the Japanese Public Pension System Reliable and Workable," *Asian Economic Policy Review*, vol4, 97-116

Tokuoka, Kiichi, 2012, "Intergenerational Implications of Fiscal Consolidation in Japan*, IMF Working Paper WP/12/197*, IMF. Washington DC

Wharton School, 2014, *The Graying of Japan: Tough Choices on the Population Dilemma,*

Yong, Vanessa and Yasuhiko Saito*,* 2009, "Trends in healthy life expectancy in Japan: 1986-2004," *Demographic Research,* vol. 20, article 19, pp. 467-494 http://www.demographic-research.org/Volumes/Vol20/19

Yuji, Genda, 2005, *A Nagging Sense of Job Insecurity: The New Reality Facing Japanese Youth,* (Tokyo: LTCB International House of Japan, Inc.)