November 14, 2012
Bank of Japan

Ageing, Finance and Regulations

Keynote Address at the Joint Forum Meeting held in Tokyo

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Introduction: Population ageing, economy and finance

It is my great pleasure to have the opportunity to speak at the Joint Forum Meeting in Tokyo.

The Joint Forum has for many years been at the forefront of dealing with various cross-industry issues related to banking, securities and insurance. The Forum has thereby contributed greatly to the evolution of successful regulatory and supervisory frameworks. However, many challenges remain. For example, as economic globalization and information technology advance, "cross-border" and "cross-industry" risks have become increasingly important in financial services, and failure to regulate and supervise them effectively may result in profound economic consequences. "Structured" securitized products and monoline insurances are examples of such risks, as we have learned to our cost in the recent crisis.

Today, I would like to consider another significant challenge, which I think is increasingly important worldwide, though not yet widely recognized as crucially important. This is the issue of population ageing and how to regulate and supervise financial products and services to cope with problems arising from it. Indeed, these issues are deeply related to the fundamental nature of financial services, including all financial sectors such as banking, securities and insurance.

In fact, I have warned of the unpleasant and in some cases grave consequences of ignoring demographic factors in our economic thinking in a series of recent speeches and papers, especially with respect to asset price bubbles, money demand and inflation.[1] In particular, I have pointed out that asset price bubbles are most likely to occur at the final stage of the "demographic bonus" in which a country enjoys the benefits of an increase in the size of the working population. In contrast, a decline in growth potential due to "demographic onus" is likely to result in prolonged economic stagnation once the bubble bursts. These

[1] For example, see Nishimura, K. G., and E. Takáts, "Ageing, property prices and money demand", BIS Working Paper No. 385 (2012).

phenomena have been observed not only in Japan, but also in other countries such as the United States and peripheral euro area countries. What underlies the recent distress in the euro area is in fact deeply rooted in the structural changes resulting from demographic transition or population ageing. Figure 1 shows the relation between changes in the working age population curve and the timing of bubble bursts. These coincided in Japan around March 1991, in the United States in December 2005, in Ireland in September 2006, and in Spain in September 2007. And this is not simply a problem affecting advanced economies: the problem is just around the corner for some emerging economies like Korea, China, and Brazil.

Population ageing is likely to have a significant impact on financial services, and requires a new policy response. Here I would like to raise two issues: one is the necessity of cross-industry and even cross-border coordination, and the other is the question of how to deal with the fundamental uncertainty surrounding population ageing.

Necessity of cross-industry and cross-border coordination

Let me first consider the necessity of cross-industry and cross-border coordination. As a society begins to age, its older citizens become the dominant holders of financial assets. However, with the coming of age, many people are likely to become risk-averse in managing their financial assets, for natural reasons. Thus, a mature economy, with its lower growth potential due to ageing, faces the serious problem of how to provide risk money to promising sectors of the economy so as to encourage entrepreneurs' sound risk-taking and enhance value production.

To be more specific, financial products and services should enable older citizens to maintain their quality of life and help foster an environment where longevity is seen as a gift, rather than a risk. These products, in addition to retirement savings, are expected to play diverse roles. Given the improved average

health of senior citizens in many countries, it is increasingly important that these financial products and services help the older population stay active and contributing to the community to the best of their abilities, while mitigating age-related risks such as illness. To provide such products, financial institutions must cooperate with other industries to take full advantage of their advanced technologies and expertise. At the same time, financial institutions should utilize their own expertise to measure, distribute, and manage the various risks as intermediates between asset-rich older citizens and prospective entrepreneurs. These attempts inevitably involve “cross-industry” elements.

Furthermore, with the transition from a growing economy to a mature economy, it is natural for people in an ageing economy to pursue higher returns by investing their savings in growing overseas economies. Thus, it is also important for a mature economy to make full use of the benefits of cross-border transactions while managing the accompanying risks.

This upcoming trend of cross-industry and cross-border expansion of financial products and services will pose a serious challenge to the current regulatory and supervisory frameworks. It will certainly call for a comprehensive approach. Regulation and supervision focusing only on a specific sector will likely result in a “waterbed effect”: problems will be simply shifted to other sectors rather than being dealt with effectively.

Fundamental uncertainty regarding life expectancy and fertility

The second issue is the fundamental uncertainty surrounding the pace of population ageing. I first note the two kinds of risk involved: the first relates to life expectancy or longevity, and the second to birth rates or fertility. I then discuss the fundamental uncertainty in measuring these risks in the economy as a whole, and the possible consequences of this for regulation and supervision.

Among the various risks we face in the real world, the longevity risk is the most fundamental one. No one can tell exactly how long he or she will actually live.

While economic textbooks impersonally state that efficient allocation of resources can be achieved more easily if there is no uncertainty, very few people would prefer to know the exact date on which they are going to pass away. As human beings we need to accept such unavoidable uncertainties, and financial services have a critical role to play in helping us manage the risks associated with such inherent uncertainties while enabling us to enjoy a life full of surprises. As the population ages, the social need increases for financial products and services to respond to the longevity risk.

To provide the tools necessary to respond to the longevity risk, providers need to be able to manage the accompanying risks in the economy as a whole. To this end, financial service providers such as insurers have traditionally utilized "the law of large numbers," a rule assuming that as the number of samples increases, the average figure of these samples, such as average life expectancy, becomes more predictable. The same is considered to be true for fertility. Although the exact number of children for a given couple is not known for sure, the average rate of birth per couple becomes largely predictable. The popular perception that demographic change is in general predictable is based on this law of large numbers.

Unfortunately, this perception is not always true, or to put it bluntly, not true in many instances. Take Japan for example. Between the 1970s and early 2000s, the total fertility rate forecasts regularly turned out to be wrong and were consistently revised down. The government repeatedly published its forecast in which the decline in the fertility rate was declared to be only temporary and the birth rate expected to rise again soon (Figure 2.) Similarly, life expectancy forecasts have shown that the actual figures consistently exceeded the forecasts (Figure 3).

These forecast errors show the fundamental uncertainty surrounding the pace of population ageing. And if the actual outcome deviates from the estimated life expectancy and longevity of the entire population in an economy, all service providers will be affected. For example, in the case of longevity risk products,

even a slight deviation could significantly increase the exposures of service providers.

Avoiding patchwork and "spaghetti code" problems

Regulatory and supervisory reform is often called for once such deviation causes an unexpected accumulation of losses. However, this kind of loss-induced regulatory and supervisory reform often leads to patchwork plumbing, which in turn results in a vicious circle of further losses and more patchwork. The repetition of such ad-hoc adjustments to the framework can cause what computer programmers refer to as "spaghetti code" problems, in which the framework becomes too complex and entangled, like spaghetti, so that no one knows how to fix the problem.

Thus, we must be careful not to make over-optimistic forecasts, especially when these forecasts underlie the overall framework and any forecast error might bring about irrevocable losses. It is also important to have in advance a clear strategy on appropriate policy responses when a forecast error is observed, especially in dealing with "spaghetti code" risks. The performance of the framework should be subject to continuous review, and necessary measures should be readily available at all times. With these measures in place, it should be possible to prevent a mere forecast error from turning into an "irreversible" disorder of the whole system. In this sense, it is better to address the challenges of population ageing by incorporating a second best "fail-safe" mechanism into our overall institutional framework, rather than by chasing the first best solution while pretending our forecasts are always rational and unbiased.[2]

[2] For a theoretical framework of rational decision under investment irreversibility and (fundamental) uncertainty à la Frank Knight, see Nishimura, K. G., and H. Ozaki, "Irreversible investment and Knightian uncertainty," *Journal of Economic Theory*, 136 (2007) 668 – 694.

Concluding remarks

The recent financial crisis has completely changed the landscape of financial services, both for financial institutions and for supervisors. Before the Lehman crisis, people tended to see only the "bright side" of new financial products, such as securitized products, derivatives, and cross-border transactions, believing them to be backed by advanced and innovative risk-management and investment tools. However, since the crisis revealed the risks and problems associated with them, people have come to see mostly the "dark side" of these services.

Nonetheless, there is still an essential need for financial products and services that can help individuals and firms manage their risks, since sustainable economic development can only be achieved through sound risk taking by private entities. Moreover, financial institutions will be expected to play an even more active role as more countries face the problems arising from population ageing. This is especially relevant to satisfying the need for longevity risk management and in coping with the problems of declining fertility, since financial institutions' full use of their technologies and resources is the key to solving these problems. Thus, financial service providers should be able to contribute to the economic society by providing people with the tools to address the risks and harsh uncertainties of life, while enabling them to enjoy its thrills and happy surprises.

In this respect, I believe that regulators and supervisors should bear the following two things in mind:

First, regulators and supervisors should always have a cross-industry and in some cases cross-border perspective, and they should also have a grand design as to how the economy can spread the risks necessary for sustainable growth, especially under population ageing.

Second, regulators and supervisors should be aware that a desirable regulatory framework will continuously evolve, partly due to population ageing and the

consequent structural changes in the economy and financial services. The current structure and regulatory framework will not last forever, and neither will sectoral classifications such as “banking,” “insurance,” and “securities”. For example, increased demand for longevity risk management could perhaps foster new cross-industry innovation between medical and financial services.

From its unique vantage point, the Joint Forum is able to observe the signs of structural changes in financial services and to identify the need for regulatory and supervisory evolution. I sincerely hope that the Forum will continue to be attentive to new developments in financial services and lead the global debate on regulation and supervision.

Now I come to the final words of my speech about ageing. Just as we mortal individuals mature and come of age, so too do institutions. Here is the Bank of Japan (Figure 4) more than a hundred years ago, in its youthful, burgeoning days. And here is the Bank of Japan as it is today (Figure 5), surrounded by new architectural additions to the city skyline and still the focal point of the landscape. The building itself has indeed matured, and in its maturity has come to fit itself perfectly to the new age. I believe the same can surely be said of the Joint Forum.

Thank you for your kind attention.

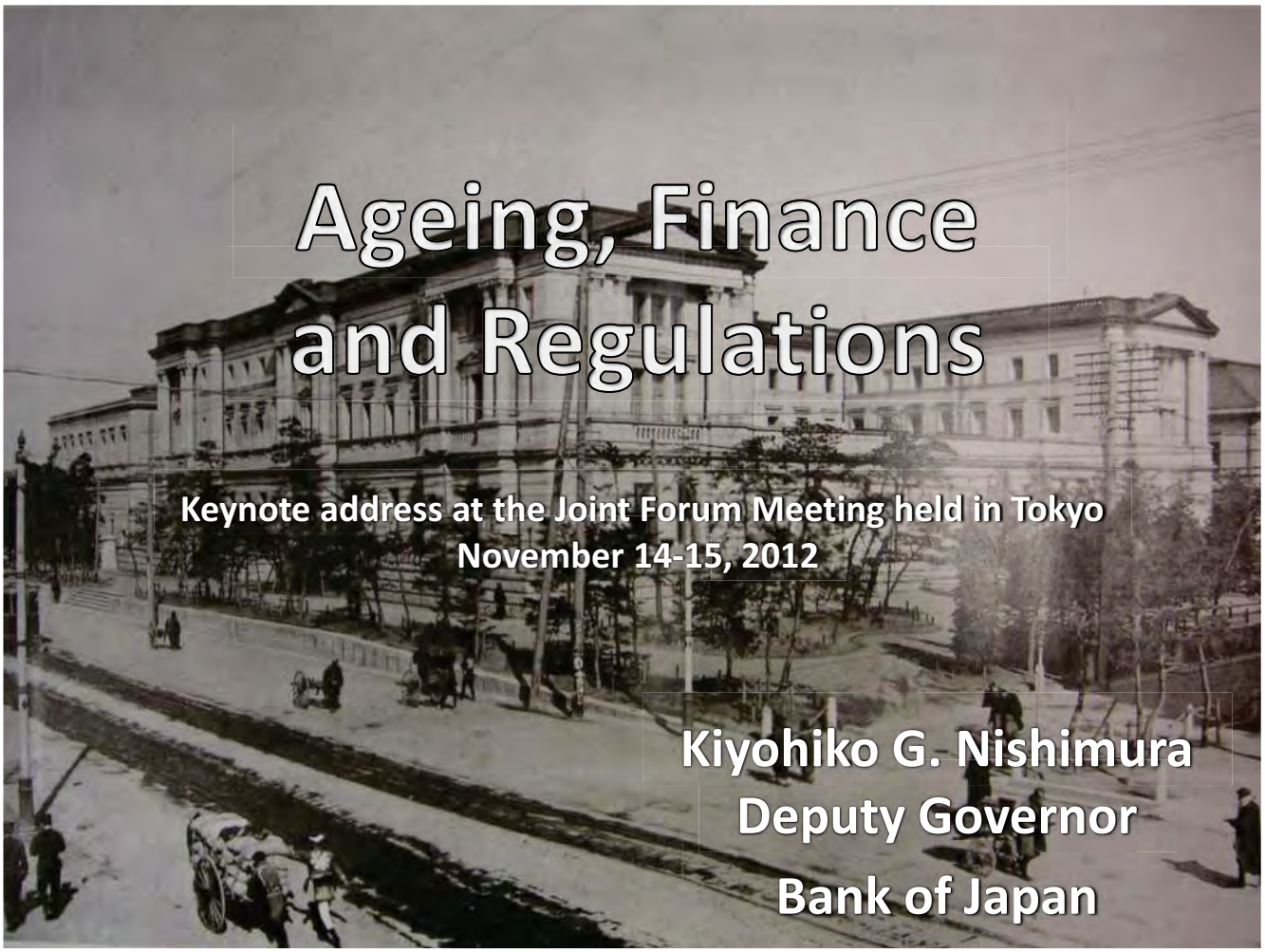

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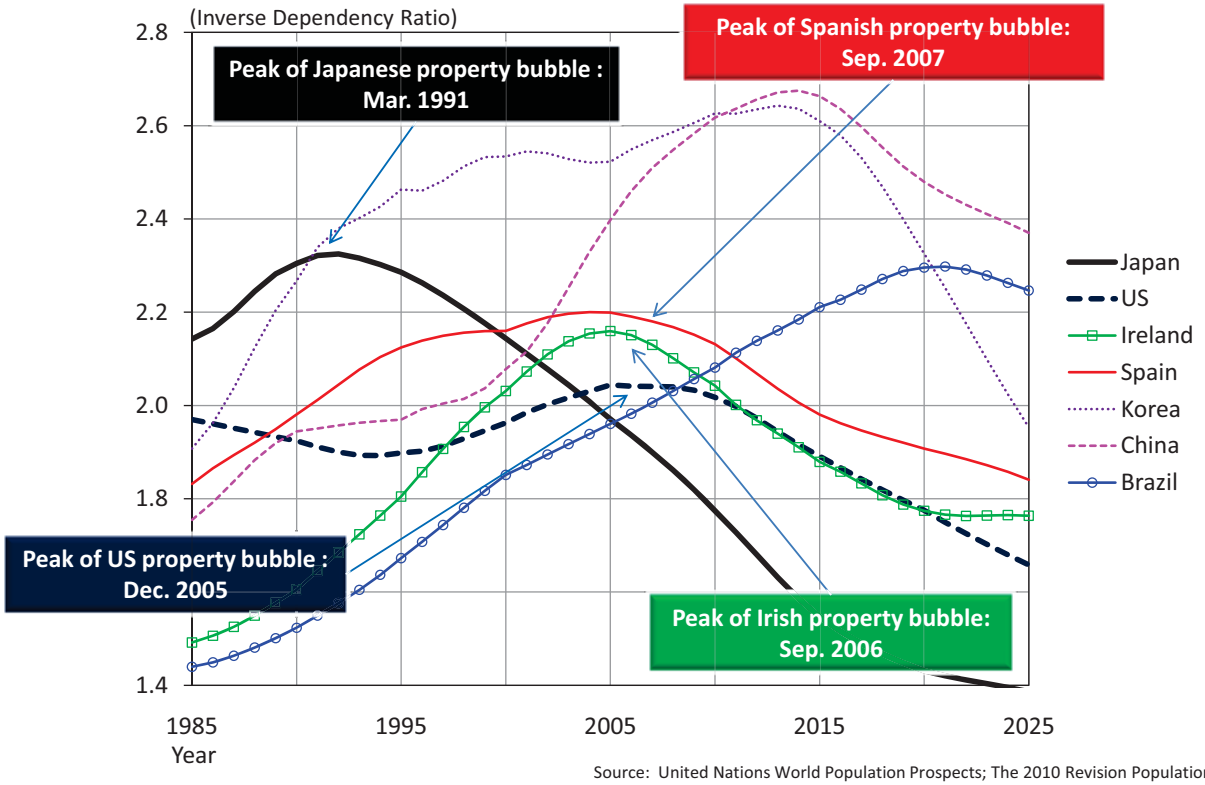
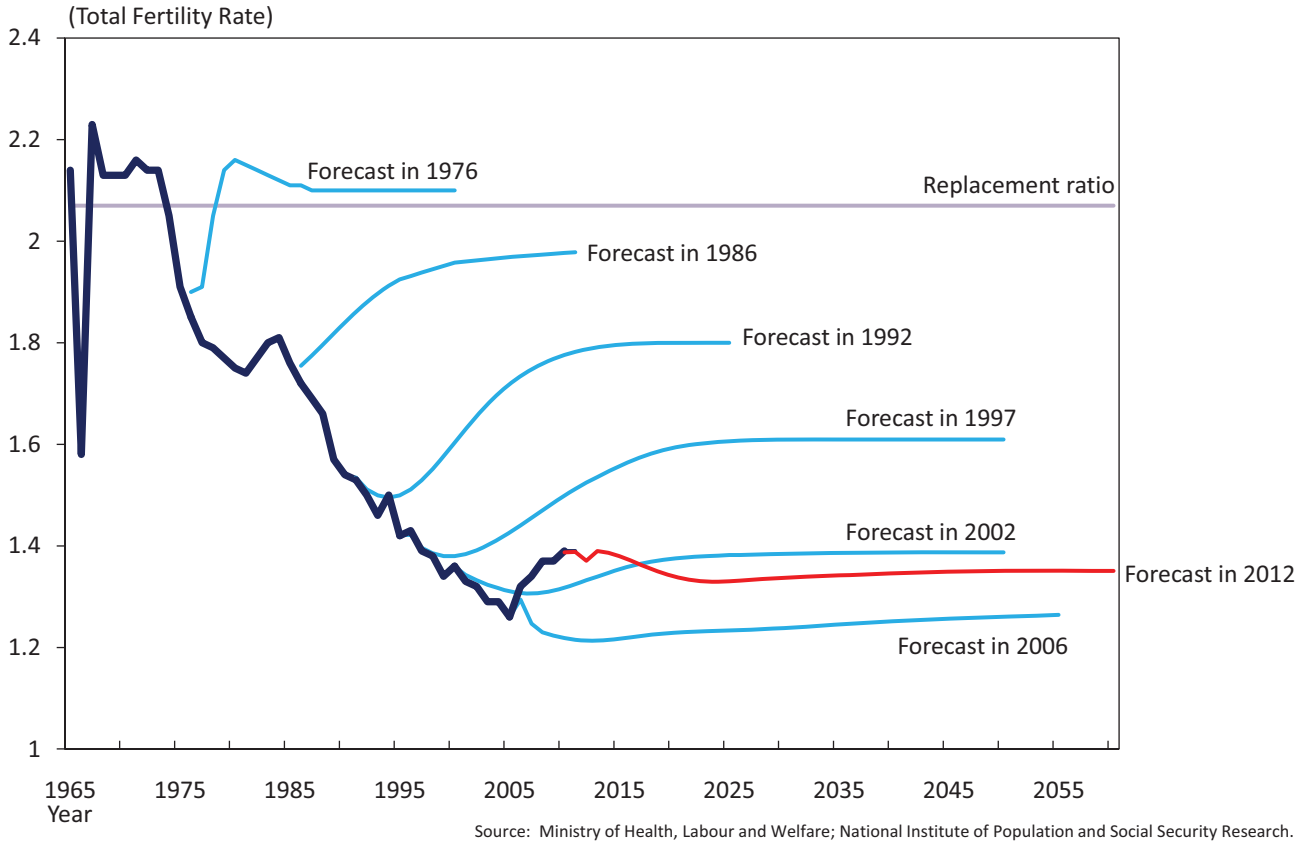
Figure 1
Demographic "Bonus" and Bubbles

Inverse Dependency Ratio: Ratio of Working-Age Population to the Rest.
= How many people of working age have to provide for one dependent person?



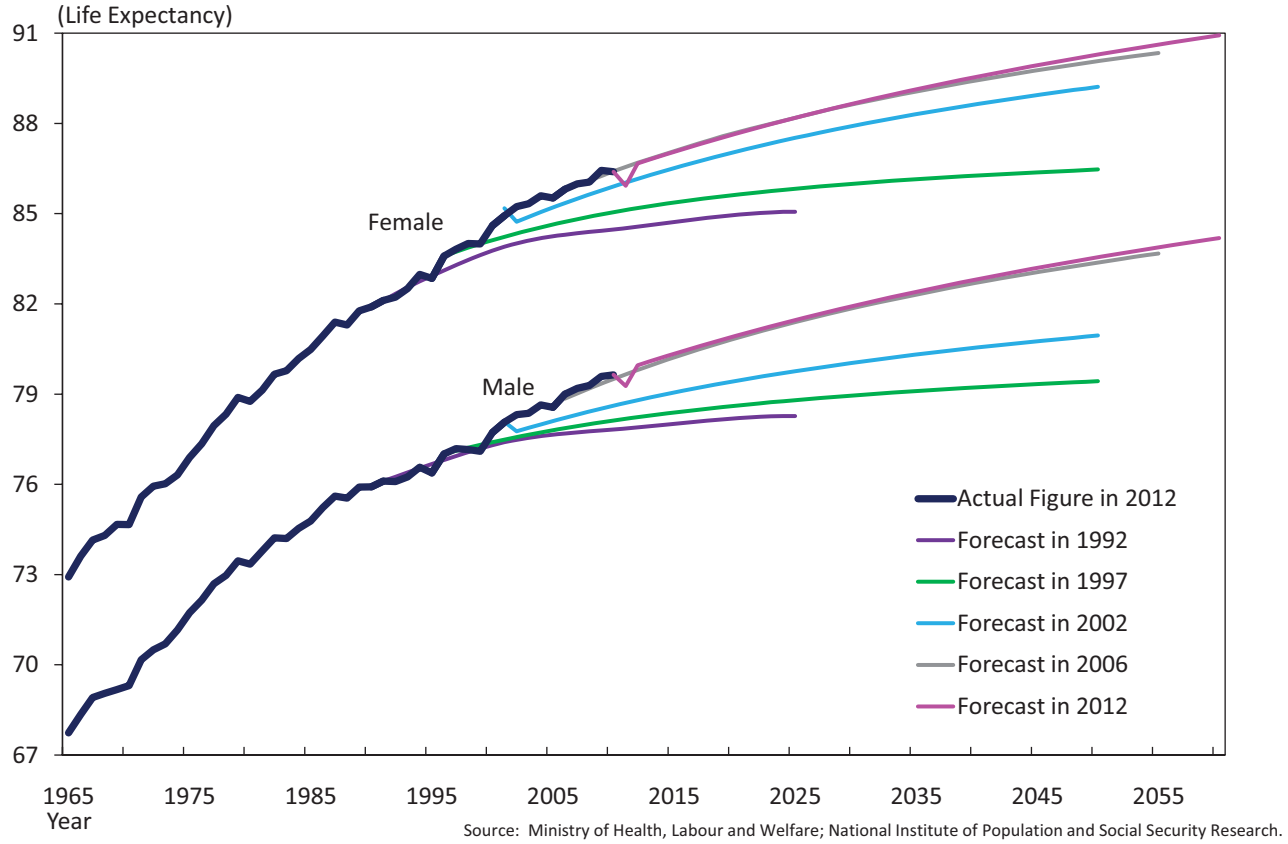
Source: United Nations World Population Prospects; The 2010 Revision Population Database.

Figure 2
Revisions in the Japanese Total Fertility Rate Forecast



Source: Ministry of Health, Labour and Welfare; National Institute of Population and Social Security Research.

Figure 3
Revisions in the Japanese Life Expectancy Forecast



Source: Ministry of Health, Labour and Welfare; National Institute of Population and Social Security Research.

(Figure 4)

Source: Bank of Japan “A hundred year history of the Bank of Japan”

(Figure 5)