

**International comparison of life insurers:  
Balance-sheet differences and their financial stability implications**

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Life insurers, unlike other financial institutions, play a unique role in investing in long-term assets in order to fulfill long-term insurance contracts. While this fundamental role is a common feature around the world, there are large differences in the insurance products they provide and in the investment assets they hold. These differences have led to a divergence in firm-level financial risks, such as duration mismatch between assets and liabilities, which could also result in variation in their systemic impact. With this motivation, this report provides an international comparison on the balance-sheet composition of life insurers in Japan, Germany, the United Kingdom, and the United States.

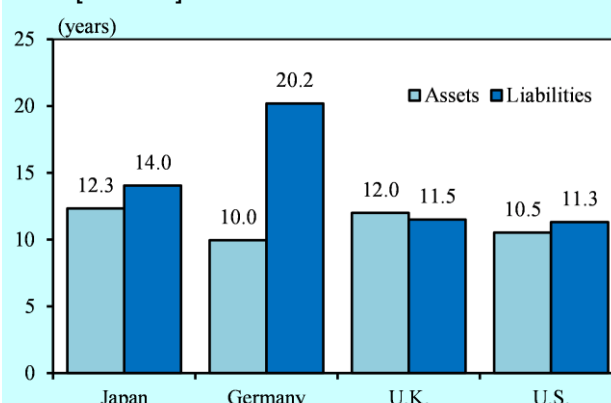
**Introduction**

Life insurance is provided as a measure for a policyholder to hedge against long-term economic risk, including death protection against mortality risk and survival protection against longevity risk. These protection measures are based on long-term insurance contracts. Life insurers accumulate insurance premiums as policy reserves for the payment of future insurance benefits, while making use of these funds for long-term investment. Both the duration of liabilities (a period up to the payment of insurance benefits) and the duration of assets (an investment period) range over more than 10 years (Chart 1). Thus, the insurers which invest in long-term assets in order to fulfill long-term contracts have been positioned as a "shock absorber" in financial markets.

In recent years, the presence of insurers has increased in financial systems and their possible systemic impact has been reevaluated. In particular, the changes in shock-transmission channels due to an increase of their presence are of great interest among international issues related to financial stability.<sup>1</sup> The responses of insurers to the prolonged low-interest-rate environment are also one of the key issues. That said, their systemic impact would vary depending on the insurance products they provide and the investment assets they hold. With this motivation, this report provides an international comparison on the balance-sheet composition of life insurers in Japan, Germany, the United Kingdom, and the United States,

which account for a large share of life insurance.<sup>2</sup>

**[Chart 1] Duration of assets and liabilities**



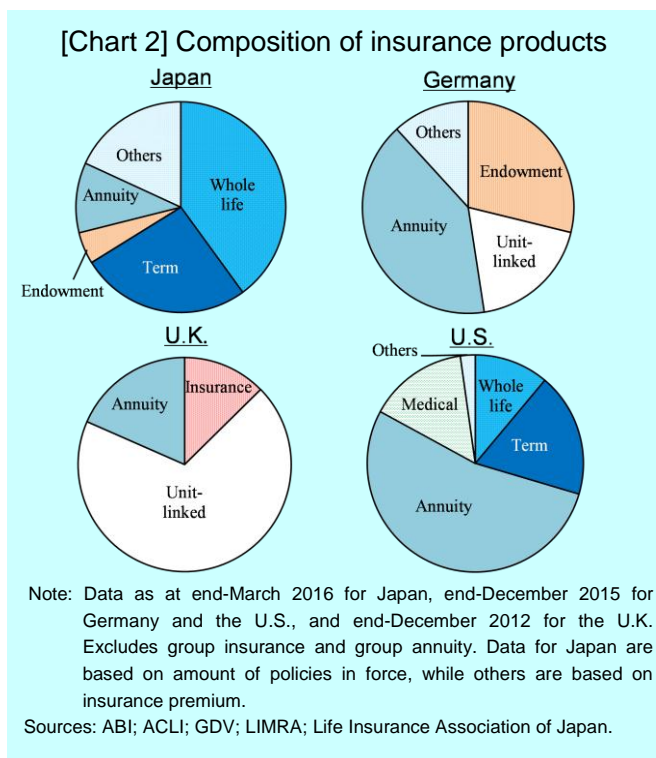
Note: Data as at end-March 2016 for Japan, end-December 2015 for the U.S., and end-December 2013 for Germany and the U.K. The figures for Japan are estimated using the data for four major insurers. Sources: ACLI; EIOPA; Moody's; Published accounts of each firm.

**Differences in insurance products**

The insurance products they provide vary across countries and firms. For instance, death insurance can be divided into term insurance, which defines a protection period in advance, and whole life insurance, which provides permanent protection until the death of a policyholder. There are also fixed-amount insurance, which defines insurance benefits beforehand, and variable insurance, where benefits will vary depending on investment performance. The composition of insurance products in each country is determined by demand and supply factors:

policyholders' needs, on the demand side, stemming from social customs as well as the developed status of social security systems, and insurers' ability to provide products on the supply side.

As shown in Chart 1, German insurers have the longest liability duration, up to 20 years, among the four countries, followed by Japanese insurers, 14 years, and U.K. and U.S. insurers, 11 years. Looking at the characteristics of the insurance product composition in these four countries, long-term fixed-amount insurance, such as endowment and whole life insurance, has a large share in German and Japanese insurers, which have a relatively long duration of liabilities (Chart 2). In contrast, variable products, such as unit-linked insurance (a type of variable product similar to investment trusts) and individual pensions with a focus on variable annuity, account for a sizable portion in U.K. and U.S. insurers, which have a shorter duration of liabilities.



### *Germany and Japan -- where fixed-amount insurance has been a leading product*

In Germany, against the background of low and stable inflation since World War II, long-term savings-type products with guaranteed yields have become widely accepted as a means of asset accumulation. Notably, endowment insurance and individual pensions, which have a long contract period of 30 years, have been preferred on account of tax incentives and subsidies.<sup>3</sup> Among these preferable measures, the tax incentives on endowment insurance were already abolished in

2005. Nonetheless, due in part to the existing contracts, the duration of liabilities still remains greater than 20 years and substantially longer than that of assets.

The additional premium reserve system or *Zinszusatzreserve* was introduced in 2011 to ensure the payment of insurance benefits, which has obliged insurers to accumulate policy reserves, if market interest rates become lower than the guaranteed yield for insurance contracts. Due in part to the length of the liability duration, the burden of accumulating policy reserves has been on an increasing trend. Meanwhile, German insurers have promoted the sale of variable products such as unit-linked ones with a view to reducing the burden of accumulating policy reserves, thereby leading to a rapid expansion of the share of variable products.

A feature of the insurance product composition in Japan is that death-benefit insurance products, such as whole life insurance for household heads, have a sizable presence. Since the war, under the family structure of a nuclear family with a single breadwinner, the need to compensate for economic loss due to death of household heads appears to have led to the provision of products, in particular, death-benefit insurance products with guaranteed yields. Their sales promotion accompanied by the unique sales strategy of door-to-door sales has also contributed to the spread of death-benefit insurance products to some degree. Given that the remaining period of whole life death insurance is on average greater than 30 years, it has directly contributed to the length of liability duration.<sup>4</sup> Death-benefit insurance products still remain a core product, while survival protection has been on an increasing trend against the backdrop of an increase of single-person households and double-income households, and a gradual lift of the ban on life insurers' participation in medical insurance and other third-sector products since 2001.

### *The U.S. and the U.K. -- where variable insurance has been a leading product*

Of insurers in the U.S., which have a relatively short duration of liabilities, individual pensions and medical insurance account for the majority of insurance products. Individual pensions have been widely accepted as a means of asset accumulation among households since the 1980s. Medical insurance has evolved as private insurance as opposed to the public medical insurance system under development. Alongside, term insurance and universal insurance (a hybrid product of term deposit and term insurance)

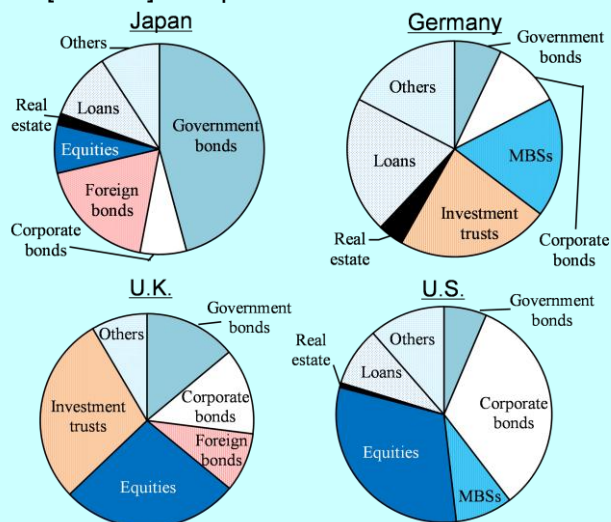
make up a substantial share.

Of insurers in the U.K., which also have a relatively short duration of liabilities, single-premium variable products account for the majority of insurance products. Since the 1970s, the core products have shifted from protection-type to savings-type, and currently savings-type products are at the center. Among those products are unit-linked individual pensions. Both in the U.S. and U.K., the majority of individual pensions are variable products with a low guaranteed yield and their fixed obligations are small. Therefore, even individual pensions with a long contract period have only a minor impact on the duration of liabilities.

### Differences in investment assets

As shown in Chart 1, there is a narrower dispersion in the duration of assets within a range of 10 to 12 years relative to that of liabilities. However, there is a wide range of assets in investment portfolios across countries (Chart 3). In principle, the more fixed-amount insurance insurers provide, the more assets they manage under the general account. Likewise, the more variable insurance they sell, the more assets they manage under the separate account so that insurance payments directly reflect investment performance.

[Chart 3] Composition of investment assets



Note: Data as at end-March 2016 for Japan, end-December 2015 for Germany and the U.S., and end-December 2014 for the U.K. Data for Japan and the U.S. are the sum of general account and separate account, while those for Germany and the U.K. are total account including unit-linked products.

Sources: ACLI; GDV; ONS; Life Insurance Association of Japan.

Their selection of investment assets is affected by various factors. These include risk-return and liquidity evaluation by each asset class, which general investors conduct in their portfolio selection. The investment assets also differ, reflecting the differences in market

structure across countries. Moreover, insurers are faced with a specific need to lengthen the duration of assets in line with that of liabilities. Furthermore, insurance supervision and regulation including solvency margin standards have a substantial impact on the selection of investment assets. The super-long-term government bonds have been the core of investment portfolios in Japan, while corporate bonds and equities have been in the U.S. On the other hand, portfolio diversification by insurers has increased in Germany and the U.K. including through making use of investment trusts.

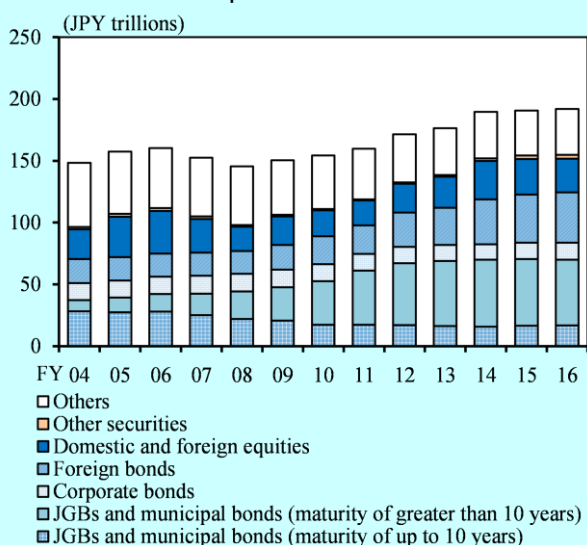
### Japan -- where fixed-income investment has played a central role

In Japan, the general account makes up for 97 percent of the total assets, reflecting a large portion of sales consisting of insurance products with guaranteed yields -- where an insurer is responsible for managing the investment risk. In terms of asset composition, while the ratio of Japanese Government Bonds (JGBs) in the total assets has been notably high relative to other countries, the ratio of corporate bonds and investment trusts has been significantly low. A high ratio of JGBs is partly attributable to the policy-reserve-matching bonds, which were introduced in 2000 as an accounting classification unique to life insurers. If bonds are managed to match policy reserves along with changes in market valuation from interest rate movements, these bonds can be classified as policy-reserve-matching bonds, which are exempt from mark-to-market valuation. This measure makes it easier for insurers to hold long-term JGBs than before from the asset-liability management perspective. At the same time, insurers have shifted toward investment in super-long-term JGBs since the 2000s for the purpose of maintaining investment return and closing the duration gap (Chart 4).

Meanwhile, it has become evident that insurers have accumulated foreign bonds since 2010. Notably, a high ratio of foreign-currency-denominated bond investment is a feature that cannot be observed at insurers in other countries. In addition to the yield differential vis-à-vis domestic bonds, the increase in the ratio of foreign bonds in investment assets partly reflects the fact that the risk coefficients for foreign-currency-denominated bonds were lowered in the solvency margin standards revised in fiscal 2010. While 60-70 percent of foreign bond holdings are currency-hedged, the recently elevated hedge costs have urged insurers to accumulate U.S. corporate bonds, which are expected to generate a higher return

than U.S. treasury bonds.

[Chart 4] Investment assets among Japanese insurers



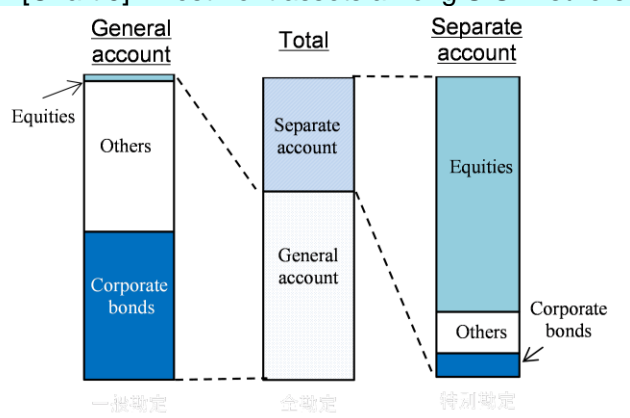
Note: Includes nine major insurers. Latest data as at end-September 2016. Based on general account. "Other securities" includes investment trusts. "Others" includes cash and deposits, loans, and real estate. Sources: Published accounts of each firm.

*The U.S. -- where investment in corporate bonds and equities has played a central role*

In the general account of U.S. insurers, domestic corporate bonds, which have a thick market, have played a central role in their investment. The average maturity of U.S. corporate bonds is 17 years, sufficiently longer than that of Japanese corporate bonds, which range mostly over the medium and long term. These suggest that U.S. insurers can control the duration of assets by investing in corporate bonds, while maintaining investment return without relying on other financial assets.

Another feature of U.S. insurers is that the assets managed under the separate account make up for a

[Chart 5] Investment assets among U.S. insurers



Note: Data as at end-December 2015. Source: ACLI.

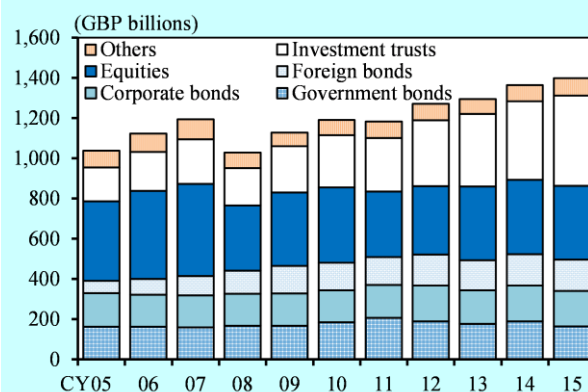
large portion of about 40 percent (Chart 5). This reflects a large share of variable annuity, and U.S. policyholders directly assume higher investment risk than in Japan. In the separate account, the ratio of equity investment, which is the main investment asset for defined contribution pensions such as the 401 (k) plan, has reached about 80 percent.

*Germany and the U.K. -- where diverse investment has played a central role*

In terms of asset management, the issue for German insurers, as with Japanese insurers, has been how to maintain investment return and close the duration gap. For maintaining investment return, they have promoted portfolio diversification from an early stage in order to secure sufficient return in comparison to a high guaranteed yield, leading to the holding of a wide variety of assets including mortgage-backed securities, investment trusts, and loans. On the other hand, the duration mismatch remains a big challenge. The duration of liabilities is remarkably long, up to 20 years, and it is also difficult to lengthen the duration of assets by investing in government bonds, given that the outstanding amount of super-long-term government bonds (30 year bonds) has been small.<sup>5</sup>

U.K. insurers, like German insurers, have also propelled portfolio diversification from an early stage, reflecting a large share of savings-type insurance products. They have spread their investment across corporate bonds and investment trusts in addition to government bonds and equities. It is worth noting that the ratio of investment trusts for unit-linked products in investment assets has been high (Chart 6). Policyholders will receive the benefits as a result of investment outcome of investment trusts for unit-linked products. This suggests that the policyholders bear a higher share of investment risk in Germany and the U.K., where the unit-linked products have been

[Chart 6] Investment assets among U.K. insurers



Source: ONS.

spreading widely.

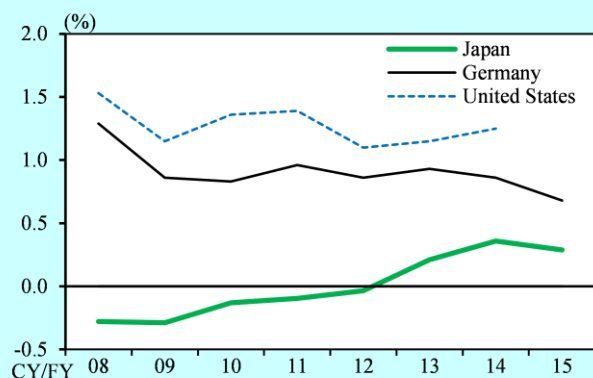
## Implications for financial stability

Business in the insurance sector in major countries has expanded in recent years. In terms of asset size, the insurance sector is ranked behind the banking sector in the financial system in each country. Meanwhile, the link between the insurance market and other markets has been strengthening. At the same time, the prolonged low-interest-rate environment worldwide has brought about the changes in search for yield by insurers and the allocation of risk money in the financial system through downward pressures on investment return, the standard interest rate or technical interest rate (a reference or statutory rate for calculating policy reserves), and the assumed interest rate (a guaranteed yield for insurance contracts). The degree of the resulting potential vulnerabilities in financial systems also varies depending on the composition of insurance products and investment assets.

### Intensification in search for yield

Downward pressures on investment return or interest margin (a differential between the actual investment return and the assumed interest rate) are supposed to facilitate a search for yield for insurers, i.e. accumulating high-yield assets and lower-rated assets, since such pressures will decrease the source of insurance benefits. In particular, these tendencies are evident in Germany and Japan, where insurers have provided guaranteed-return products with high guaranteed interest rates as a main product. Even under the long-lasting low-interest-rate environment, these insurers have not suffered from a substantial deterioration in interest margin (Chart 7).<sup>6</sup> In

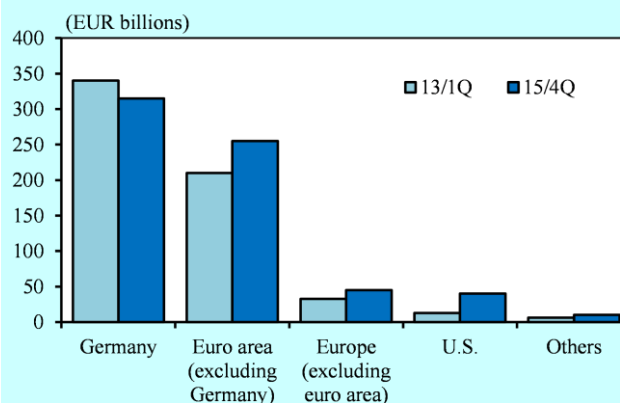
[Chart 7] Interest margin



Note: Interest margin is calculated as a differential between the actual return and the average assumed interest rate. Data for Japan include four major insurers.

Sources: Bundesbank; NAIC; Published accounts of each firm.

[Chart 8] Investment assets among German insurers



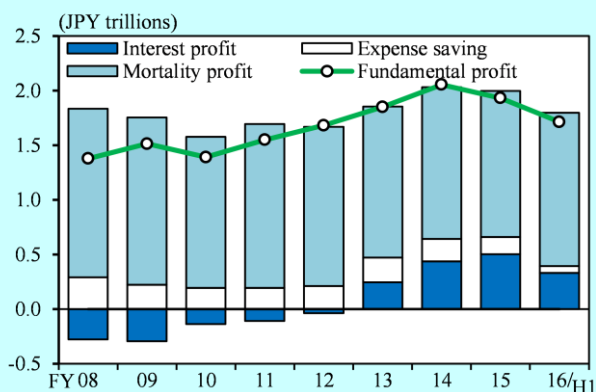
Note: Outstanding amount of investment by destination.

Sources: Bafin; Bundesbank.

Germany, insurers have gradually increased their exposure to the euro area excluding Germany and the U.S. with a view to improving investment return (Chart 8). In Japan, the flattening yield curve has rendered it difficult for insurers to maintain investment return and to extend the asset duration at the same time. As aforementioned, Japanese insurers have accumulated currency-hedged foreign bonds more proactively, leading to an increase in the share of foreign bonds in investment assets from 15 percent to 20 percent over the most recent 5 years. As a result, they have become more easily affected by not only overseas bond markets but also foreign-exchange swap markets.

Although insurers have intensified their search for yield, the degree of their intensification has been so far limited. For instance, in the case of Japan, mortality profit, defined as profits stemming from a differential between the assumed mortality rate (an expected mortality rate when insurance contracts are signed) and the actual mortality rate, works as a profit buffer and contributes to restricting any excessive search for yield (Chart 9).<sup>7</sup> In Japan, as the outstanding amount of death protection is more than twice as large as nominal GDP, death-benefit insurance products have a remarkable presence. In addition, the pace of increase in life expectancy has been unprecedentedly rapid relative to other countries. Meanwhile, the actual mortality rate has remained lower than the assumed mortality rate, resulting in mortality profit, which significantly outweighs the interest profit for each year. Mortality profits have contributed significantly to maintaining term profits and accumulating retained earnings, whereas insurers recorded negative interest margins until fiscal 2012.

[Chart 9] Fundamental profit among Japanese insurers



Note: Includes four major insurers. Data for the first half of fiscal 2016 are annualized.

Sources: Published accounts of each firm.

In the U.K. and Germany, the sales of unit-linked products, which carry high expected return, have increased as a result of the intensified search for yield by households, aside from insurers' search for yield. The change in investment behavior of households has contributed to an expansion of exposure to investment trusts through insurers, leading to a strengthened link between the insurance market and the investment trust market. It has been pointed out that the asset management of investment trusts for unit-linked products reflects investment decisions by households, which is likely to result in short-term investment behavior rather than long-term investment behavior of institutional investors. Therefore, this could carry the risk that market turmoil will be amplified due to concentrated asset sales if, for instance, a flood of cancellations of insurance contracts and investment trusts for the contracts is triggered by the heightening of a risk that a loss of principal of investment trusts will occur. This is a newly-developed shock-transmission channel through insurers, which is among the key international issues.

In the U.S., investment return has remained at a relatively high level of around 5 percent. Meanwhile, the moves to increase the ratio of risk assets have been relatively limited to a marginal lengthening of the maturity of fixed income and an increase of bonds with a one-notch lower rating.<sup>8</sup> Despite the limited change in insurers' search for yield, the links between insurers and investment trusts have been strengthening through the corporate bond market as open-ended investment funds have proactively invested in corporate bonds for higher return. It has been pointed out that transactions of investment funds could amplify price fluctuations, thereby affecting the investment behavior of insurers.

### *Downward pressure on standard interest rate*

The standard interest rate or technical interest rate is a reference or statutory rate in calculating policy reserves and corresponds to a discount rate of insurance value. A fall in the standard interest rate would increase the burden of accumulating policy reserves, contributing to an increase of liability costs in the short term. In contrast, from the medium- to long-term perspective, it would add to the stability of insurers' business by securing the sufficient policy reserves.

In this respect, the standard interest rate in Japan is set in a conservative manner and more sensitive to declining market interest rates relative to other countries. In particular, regarding the yen-denominated single-premium whole life insurance, which has a high interest rate risk, the standard interest rate will be revised every quarter and reflect a decline of interest rates in the market. As a result, an increase of liability costs is likely. In Germany and the U.S., the revision of the technical interest rate is conducted each year. Due in part to these elements, the moves to limit the sales by insurers in Japan have been most evident among the four countries. Japanese insurers have increased insurance premiums and suspended sales of some products, in particular yen-denominated single-premium whole life insurance. The moves to increase insurance premiums started to spread to level-premium insurance in fiscal 2017.

### *Downward pressure on assumed interest rate*

The assumed interest rate is a yield which insurers guarantee to policyholders beforehand. It is also used in calculating expected investment return and corresponds to a discount rate of insurance premium. A reduction in the assumed interest rate would increase the insurance premium rate (a proportion of the total insurance premium out of the insured amount). In the short term, insurers have an incentive to ensure that insurance products, savings-type products in particular, remain attractive as an investment asset by maintaining a relatively high assumed interest rate amid declining interest rates in the market. Actually, however, the assumed interest rates are set from the medium- to long-term perspective to balance policy reserves and insurance premiums given that it is difficult to reduce the assumed interest rates for existing contracts.

In Japan, fixed-amount life insurance has developed as a means of savings with guaranteed yields along with bank deposits. In terms of the share of financial assets held by households, life insurance

accounts for 12 percent, second to bank deposits, accounting for 48 percent. It is worthwhile to see, not only from the perspective of household investment behavior but also from the perspective of the allocation of risk money in the financial system, what type of products will be an alternative for the fixed-amount insurance out of households savings funds as a result of a decline in the assumed interest rate and the sales suspension of some insurance products.

## Concluding remarks

This report has provided an international comparison on the balance-sheet composition of life insurers. While the insurers have a fundamental role in long-term investment in order to fulfill long-term insurance contracts in common, the insurance products they provide and the investment assets they hold vary across countries and firms. These differences have led to a divergence in firm-level financial risks, which could also result in variation in their systemic impact.

There has been lively discussion on the insurance sector among the key international issues on financial stability.<sup>9</sup> Going forward, aiming at the sound development of the insurance industry and the whole financial system, it is important to deepen the understanding about insurers' possible systemic impact, including the difference in shock-transmission channels, while taking into account both the similarities and differences of insurers around the world.

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<sup>1</sup> See the following report.

International Monetary Fund, *Global Financial System Report*, April 2016.

<sup>2</sup> For the developments of life insurance industry in the world, see the following reports.

[Germany]

Deutsche Bundesbank, *Financial Stability Review*, November 2016.

European Central Bank, *Financial Stability Review*, November 2016.

German Insurance Association, *Statistical Yearbook of German Insurance 2016*, November 2016.

[United Kingdom]

Bank of England, *Financial Stability Report*, December 2015.

[United States]

American Council of Life Insurers, *Life Insurers Fact Book 2016*, November 2016.

Bruning, L., "Monitoring Interest Rate Risk: Low Interest Rate Study Update," National Association of Insurance Commissioners, April 2016.

<sup>3</sup> In the case of endowment insurance, subject to certain criteria,

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the insurance premium was deducted from income, and the maturity benefits and surrender value were exempt from taxation. Riester pension for employees and Rurup pension for self-employed, which were established following the reduction of public pension benefits in 2001, have been deducted from income and supported by subsidies.

<sup>4</sup> See the following report.

Kazutoshi Kan, Yoshiyuki Kurachi, Yoshiyuki Fukuda, and Shinichi Nishioka "Japanese Life Insurance Companies' Balance-Sheet Structure and Japanese Government Bond Investment," Bank of Japan Review Series, No.2013-E-2, February 2013.

<sup>5</sup> In 2016, the economic-value-based solvency margin standards (Solvency II) were introduced in Europe, ahead of Japan and the U.S., which requires a market-based valuation of both assets and liabilities. It allows for the grandfathering of up to 16 years.

<sup>6</sup> In Japan, the interest margin of the major insurers turned positive in fiscal 2013. In addition to their efforts to maintain investment return mentioned in the main text, this is partly attributable to the fact that the average assumed interest rate has been on a declining trend as the existing contracts with high guaranteed yields signed in the 1980-90s have matured.

<sup>7</sup> Interest profits represent gains/losses stemming from a differential between the actual investment return and the assumed interest rate. Expense savings represent a differential between the assumed business operating expenses and the actual ones. Mortality profits represent gains/losses stemming from a differential between the assumed mortality rate and the actual mortality rate.

<sup>8</sup> Between 2011 and 2015, the share of bond holdings with a maturity of greater than 5 to 10 years has increased from 29.2 percent to 30.6 percent, while that of a maturity of more than 10 years has increased from 34.6 percent to 36.6 percent. By rating, the share of BBB-rated bond holdings has increased from 28.4 percent to 31.7 percent. On the other hand, the share of A-or-above-rated bond holdings has decreased from 65.1 percent to 62.4 percent.

<sup>9</sup> See the following report.

Financial Stability Board, "FSB Assesses Implementation Progress and Effects of Reforms," February 2017.

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