Fundación MAPFRE

INSURANCE INDUSTRY INVESTMENT

MAPFRE Economic Research

Insurance industry investment

Comparative analysis of insurance industry investment portfolios in selected markets

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Contents

Presentation

Fundación MAPFRE presents a new report from MAPFRE Economic Research, which analyzes aspects related to insurance industry investments in a selection of representative markets. The objective of the study is to show the size of the insurance industry as an institutional investor in these markets and to observe how portfolio structure has evolved over a decade, describing the main characteristics of each and pointing out the factors that have influenced the changes in their composition based on various regulatory, economic and financial factors.

The study is complemented by an analysis of the investment portfolios of six large European insurance groups operating globally, and with a comparison of the gross regulatory capital risk weights applicable to the most representative categories of insurance companies' investment portfolios using the standard formula under the Solvency II regulatory framework.

The analyzed topic's relevance is one of the reasons why we are publishing this work by MAPFRE Economic Research, which updates and expands the work published in 2018. Insurance provides protection and peace of mind to society, and it is important to Fundación MAPFRE to disseminate and communicate its social function and to highlight its role in the economy. We hope that the reader will find this document a useful tool for performing both personal and professional activities.

Fundación MAPFRE

Introduction

The present report provides an overview of the distribution and risk profile according to the typology of investment portfolio assets for insurance companies in a selection of the main markets among large regions globally. This analysis expands and updates the information contained in previous reports prepared by MAPFRE Economic Research. On this occasion, the Japanese insurance market, the second largest global country market and a benchmark for the adaptation process facing this low-interest-rate environment in which insurance companies are located, has been incorporated into the analysis. As with insurance markets in most advanced countries, this is beginning to affect some of the major emerging markets.

This includes markets in the eurozone, the United States, Japan, the United Kingdom, Spain, Brazil and Mexico. In addition, a portfolio analysis has been incorporated into a selection of large European insurance groups, which incorporates information on the credit rating of the portfolios in which they invest.

As has been highlighted in previous reports, and especially in analyzing investments, it must be stressed that the insurance industry is recognized as one of the main institutional investors at the global level. However, unlike other financial institutions, the insurance business model calls for the implementation of liability-driven investment strategies, with the objective of achieving an adequate match in terms of maturity, currency and interest rates between the liabilities assumed and the investment instruments that promote them. In this way, these companies contribute to the consolidation of capital through a steady inflow of resources for the long-term financing of projects that promote economic growth, and also supports the stability of the financial system by providing a mechanism that reduces pro-cyclicality at times of crisis.

MAPFRE Economic Research

Executive summary

This report provides a comparative view of the distribution of investments of insurance companies, by type of assets, in a selection of markets, including both developed (Japan, the eurozone, the United States, the United Kingdom and Spain) and emerging (Brazil and Mexico). As shown in Table S-1, this is a set of markets offering a different level of relative development, in particular the markets of the United Kingdom, Japan and the eurozone, in which the volume of investments managed has a significantly greater weight than other markets, relative to their respective GDP.

Table S-1
Selected markets: investments managed by the insurance industry, 2018
(millions of euros)

Market	Investment	GDP	% of GDP
United Kingdom	2,440,229	2,505,106	97.4%
Japan	3,454,815	4,403,243	78.5%
Eurozone	7,370,819	11,570,658	63.7%
United States	5,384,972	18,149,954	29.7%
Spain	284,888	1,206,878	23.6%
Brazil	238,821	1,654,502	14.4%
Mexico	55,024	1,083,432	5.1%

Source: MAPFRE Economic Research (with information from EIOPA, NAIC, SUSEP, CNSF, LIAJ and GIAJ and the IMF)

Information on investments in these markets is presented, where possible, by distinguishing the traditional investment portfolio (in which the investment risk is retained in the balance sheet of insurance companies) from the portfolio that supports products in which the policyholder is responsible for the investment risk, which we have called the unit-linked type of business portfolio (which includes both strict unit-linked products, and other variable annuity products, where there is also an assumption of investment risk by the insurance policyholder, they are managed in separate accounts and investments are realized in mutual fund units). This distinction in the markets is shown in Table S-2.

Once the traditional investment portfolio has been defined, the proportions corresponding to each category of assets are then calculated. This method of presenting the information is based on the idea that in traditional (non-unit-linked or variable annuity) portfolios, it is appropriate to distinguish the typology of the investments made, with a view to defining the nature of the risk taken on by the insurance companies. In unit-linked or assimilated portfolios, risk and investment decisions do not fall on the insurance company. Instead, they are influenced by the decisions made by insurance policyholders.

The area of study addressed by this report also includes the growth of investment portfolios during the course of this last decade for which information is available (2008–2018). In this sense, the highest level of breakdown of the portfolios for comparative purposes (with a breakdown of corporate fixed income investments) has been achieved for the markets in Japan, the eurozone, the United States, the United Kingdom and Spain (see Table S-3).

Table S-2
Selected markets: the structure of investment portfolios broken down by type of insurance business, 2018
(%)

Type of business	Eurozone	United States	United Kingdom	Spain
Traditional business portfolio	84.5%	72.1%	45.9%	93.7%
Unit-linked business portfolio	15.5%	27.9%	54.1%	6.3%

Source: MAPFRE Economic Research (with information from EIOPA and NAIC)

Table S-3
Selected markets: a structural breakdown of traditional business investment portfolios, 2018
(%)

Asset type	Eurozone	United States	Japan	United Kingdom	Spain
Corporate fixed income	31.4%	51.5%	7.1%	36.5%	21.8%
Sovereign fixed income	34.5%	13.6%	39.1%	20.9%	56.9%
Equity	13.9%	13.1%	6.8%	12.9%	6.0%
Loans	5.2%	10.6%	7.9%	9.1%	1.0%
Cash and deposits	4.6%	3.9%	3.1%	10.1%	7.8%
Real estate	2.3%	0.6%	1.7%	2.7%	2.5%
Other investments	8.2%	6.7%	34.3%	7.7%	4.0%

Source: MAPFRE Economic Research (with information from EIOPA, NAIC, LIAJ and GIAJ)

This information highlights the United States insurance market, because of the predominant weight of corporate fixed income investments in this market. The depth and breadth of the capital market in this country offers more opportunities to find this type of issues to invest in, with a wide variety in terms of duration and credit quality level. The Japanese insurance market, meanwhile, has a high percentage of foreign currency investments (included in the "other investments" category and which account for 25% of its total portfolio), having experienced an increase of 12 percentage points over the 2008–2018 decade. Insurance companies operating in the Japanese market have traditionally been an important source of investment for Japanese sovereign bonds and, in particular, the so-called "super-long-term government bonds" (JGBs). However, the current low interest rate environment has made it very difficult to maintain the return on investment while aligning the duration of assets and liabilities, bearing in mind that old portfolios with high guaranteed rates still remain. The reaction from insurance companies in this environment has been to increase their investments overseas, mainly in US bonds, in search of higher yields to meet their guaranteed interest obligations. This has caused insurers to be more exposed to international markets and to the risk of exchange rate fluctuations.

Among the above developed markets, the Spanish insurance market represents the highest proportion of fixed income in its investment portfolio, and also has the largest concentration of sovereign fixed income. However, the Brazilian and Mexican markets have higher percentages than the Spanish market. In this sense, it is observed that, empirically, in insurance markets with a lower level of development (in terms of the volume of their portfolios' assets) the percentage of investment in fixed income values increases, while the percentages of variable income investment are correspondingly lower.

Table S-4
Selected markets: overview of the structure of investment portfolios broken down by asset type, 2018
(%)

Asset type	Eurozone	United States	Japan	United Kingdom	Spain	Brazil	Mexico
Fixed income	65.9%	65.1%	46.2%	57.4%	78.7%	92.7%	81.5%
Equity	13.9%	13.1%	6.8%	12.9%	6.0%	6.5%	13.7%
Loans	5.2%	10.6%	7.9%	9.1%	1.0%		2.5%
Cash and deposits	4.6%	3.9%	3.1%	10.1%	7.8%	0.2%	0.5%
Real estate	2.3%	0.6%	1.7%	2.7%	2.5%	0.2%	1.5%
Other investments	8.2%	6.7%	34.3%	7.7%	4.0%	0.4%	0.2%

Source: MAPFRE Economic Research (with information from EIOPA, NAIC, LIAJ, GIAJ, SUSEP and CNSF)

In addition, Table S-4 provides a breakdown by asset type of the investment portfolio for all the markets analyzed. The high level of concentration of fixed income investment (both corporate and sovereign) throughout the sample comprising the analysis stands out. As mentioned previously, this predominance can be explained to a large extent by the fact that the insurance business model involves the need to implement liability-driven investment strategies in order to achieve an appropriate match in terms of maturity and interest rates between recognized liabilities and the investment instruments that back them up.

Moreover, the third section of this report includes an analysis of investment portfolios from a selection of European insurance groups, with the information taken from their consolidated accounts referring to the close of 2018. This analysis also offers comparative information about the rating of fixed income assets and changes compared to the previous year, in order to provide a more in-depth view when comparing their risk profiles.

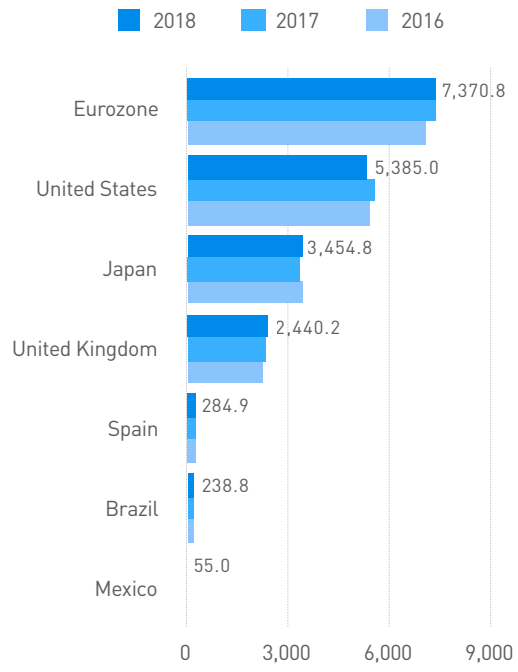
1. An analysis of the insurance markets

As illustrated in Chart 1-a, the insurance markets considered for the purposes of the analysis in this report represented, in 2018, aggregate investments amounting to 19.54 trillion euros, with four of the world's largest insurance sectors particularly standing out: the eurozone (with investments of 7.37 trillion euros), the United States (5.39 trillion euros), Japan (3.46 trillion euros) and the United Kingdom (2.44 trillion euros).

These are analyzed individually, and according to the degree of development of their respective Non-Life and, especially, Life segments. In 2018, investments in these insurance markets represented significant portions of their respective gross domestic products (GDP), from 97% in the United Kingdom, to just 5% in Mexico (see Chart 1-b).

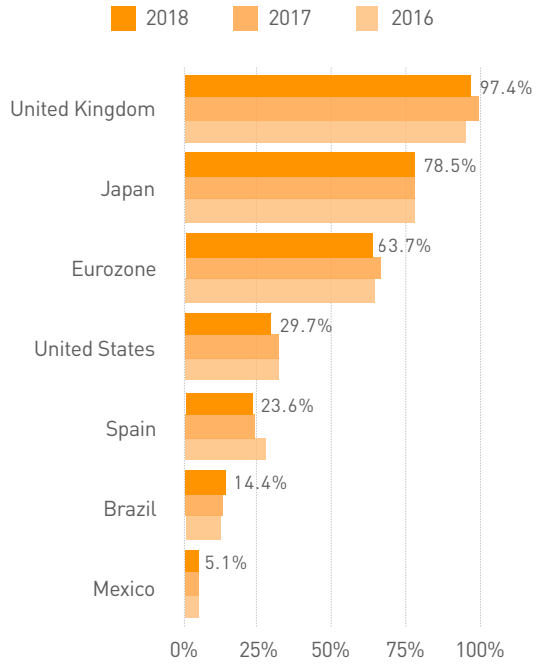
The information that was used as a basis for the analysis in this report was provided directly by the relevant national or regional supervisory agencies. In the case of the information concerning the eurozone market, the United Kingdom and Spain, the source was the European Insurance and Occupational Pensions Authority (EIOPA). In Spain, ICEA has been used as an additional source in the analysis of changes in the structure of the aggregate portfolio over the 2008–2018 period. In the case of the United States insurance market, the information was taken from that published by the National Association of Insurance Commissioners (NAIC). In the case of Brazil,

Chart 1-a
Selected markets: investments managed by the insurance industry, 2016–2018
(billions of euros)



Source: MAPFRE Economic Research (with information from EIOPA, NAIC, LIAJ, GIAJ, SUSEP and CNSF)

Chart 1-b
Selected markets: investments managed by the insurance industry compared with GDP, 2016–2018
(% of GDP)



Source: MAPFRE Economic Research (with information from EIOPA, NAIC, LIAJ, GIAJ, SUSEP, CNSF and FMI)

the source of the data was the Inspectorate of Private Insurance (SUSEP), and for the Mexican market, the National Commission for Insurance and Securities (CNSF). Finally, in Japan, information from Life insurance associations (The Life Insurance Association of Japan, LIAJ) and Non-Life insurers (The General Insurance Association of Japan, GIAJ) has been combined.

2. The structure of the investment portfolios in the selected markets

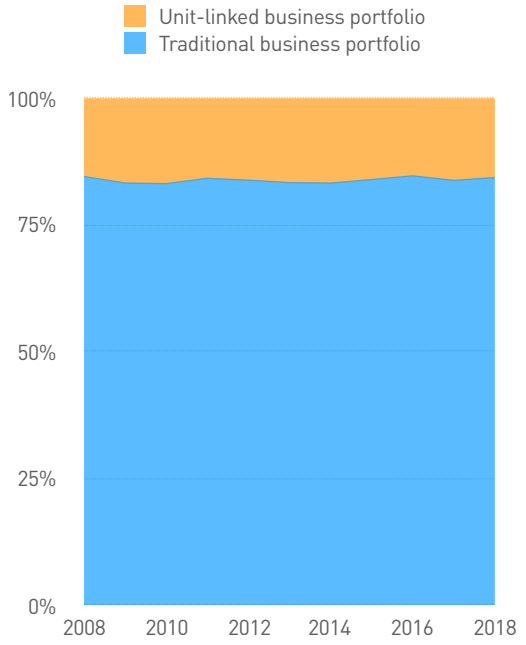
The following sections constitute a description of the evolution of investment portfolios in the insurance markets in Japan, the eurozone, the United States, the United Kingdom, Spain, Brazil and Mexico, with regard to the latest decade for which information is available. In the case of the markets in the eurozone, the United Kingdom and Spain, they also show a breakdown of the evolution of investment portfolios in terms of both traditional and unit-linked business over the same decade.

2.1 Eurozone

For the totality of the insurance markets included in the eurozone (Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia and Spain), Table 2.1-a and Chart 2.1-a show the evolution of investment portfolios broken down by type of insurance business (distinguishing between traditional and unit-linked business) between 2008 and 2018.

As can be seen, over the 2008–2018 period, the share of the overall unit-linked business portfolio increased by 0.2 percentage points (pp), and therefore appears to have stabilized. Interestingly, this behavior confirms that the prolonged low-interest-rate environment affecting eurozone countries and equity market behavior in recent years still reflect the demand for products where the policyholder assumes the investment risk (unit-linked). They face competition in the market from investment products issued by other financial institutions, such as banks or mutual fund managers and pension funds.

Chart 2.1-a
Eurozone: the structure of investment portfolios broken down by type of insurance business, 2008–2018
(%)



Source: MAPFRE Economic Research (with information from EIOPA)

Table 2.1-a
Eurozone: the structure of investment portfolios broken down by type of insurance business, 2008–2018
(%)

Type of business	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Traditional business portfolio	84.7%	83.4%	83.3%	84.3%	84.0%	83.5%	83.4%	84.1%	84.8%	83.9%	84.5%
Unit-linked business portfolio	15.3%	16.6%	16.7%	15.7%	16.0%	16.5%	16.6%	15.9%	15.2%	16.1%	15.5%

Source: MAPFRE Economic Research (with information from EIOPA)

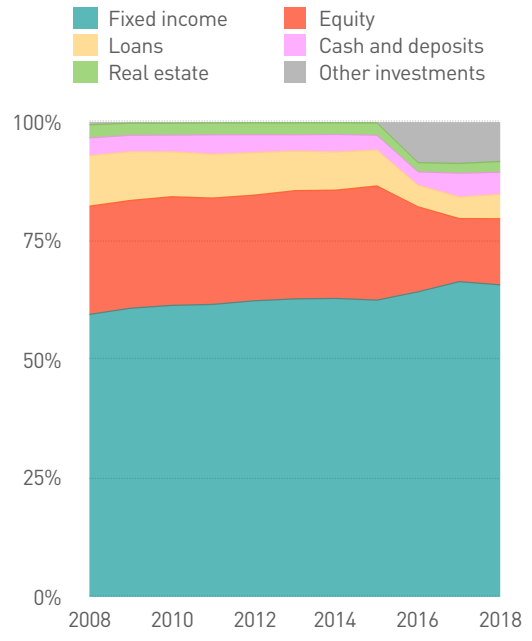
Table 2.1-b
Eurozone: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)

Asset type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fixed income	59.6%	60.9%	61.5%	61.7%	62.5%	62.9%	63.0%	62.6%	64.4%	66.5%	65.9%
Equity	22.8%	22.7%	22.9%	22.4%	22.2%	22.8%	22.8%	24.0%	17.9%	13.3%	13.9%
Loans	10.7%	10.3%	9.5%	9.3%	9.0%	8.4%	8.1%	7.6%	4.6%	4.6%	5.2%
Cash and deposits	3.7%	3.5%	3.5%	4.1%	3.7%	3.4%	3.7%	3.1%	2.8%	5.0%	4.6%
Real estate	2.8%	2.5%	2.5%	2.5%	2.5%	2.5%	2.4%	2.6%	1.9%	2.0%	2.3%
Other investments	0.4%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	8.4%	8.6%	8.2%

Source: MAPFRE Economic Research (with information from EIOPA)

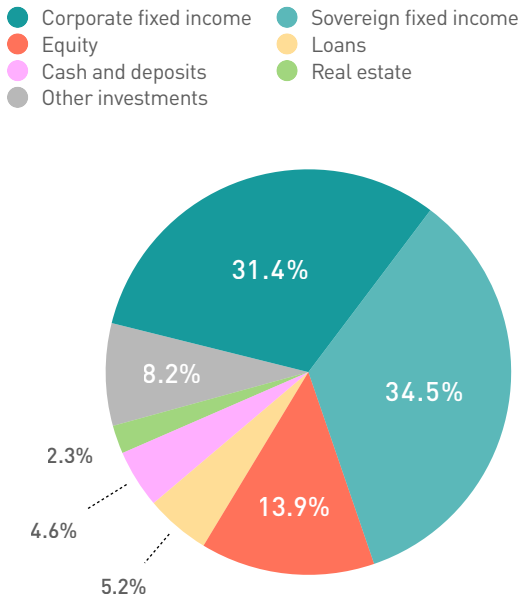
With regard to changes in the structure of investment portfolios linked to traditional business by asset type over the decade, the increase in fixed income investments of 6.3 pp stands out, as well as the fall of 9 pp in the share of equity investments (see Table 2.1-b and Chart 2.1-b). It should be noted that in the eurozone (and in all the insurance markets analyzed in this report in general), fixed income investments continue to maintain a preeminent position, to the extent that the insurance business model entails the need to implement liability-driven investment strategies, in order to achieve an adequate match in terms of maturity and interest rates between the liabilities assumed and the investment instruments that support them.

Chart 2.1-b
Eurozone: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)



Source: MAPFRE Economic Research (with information from EIOPA)

Chart 2.1-c
Eurozone: structural breakdown of traditional business investment portfolios by asset type, 2018
(%)



Source: MAPFRE Economic Research (with information from EIOPA)

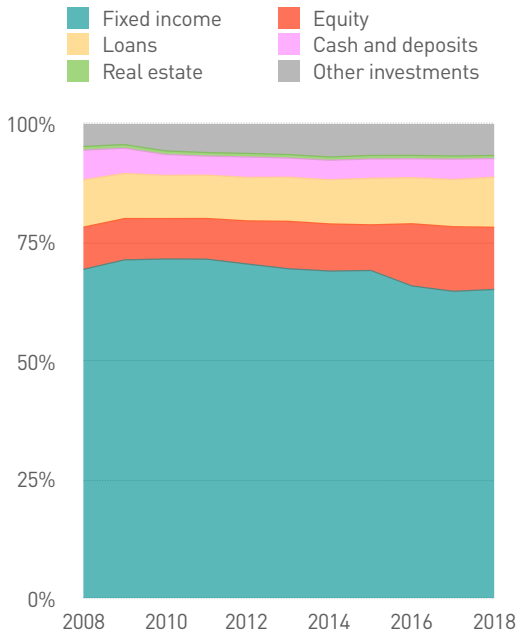
In 2016, there is a break in the series in terms of equity percentages, which decreased with a corresponding increase in other investments, influencing the introduction of the Solvency II regulatory framework and the new capital risk weights associated with different asset types, which had the effect of relocating investments and reducing the percentage of equities. However, it should also be noted that, in 2016, the category of "other investments" was first used, which until then was being used in a very residual way. Therefore, the variation may also be due to accounting reclassification movements of portfolio investments. Likewise, the slight fall in the percentage of real estate investment in this year (-0.7pp) is related to the new classification system under Solvency II, which excludes real estate for own use. Thus, if we consider the period of 2016–2018, the percentage of real estate investments remains low, but has increased by 0.4 pp, a relative increase of 21% (see Table 2.1-b and Chart 2.1-b).

Finally, Chart 2.1-c illustrates the structural breakdown of the traditional business investment portfolio in the eurozone by asset type in 2018. The investments corresponding to mutual funds are presented while taking into account the placement of the investment carried out by these funds (the "look through approach"). This information adds the details of the breakdown of the fixed income investments, specifying that 31.4% of the total investment portfolio represented corporate fixed income investments, while 34.5% of the total took the form of sovereign fixed income investments.

2.2 United States

In the case of the insurance market in the United States, Table 2.2 and Chart 2.2-a show the changes in the structure of the investment portfolio broken down by asset type throughout the decade 2008–2018.

Chart 2.2-a
United States: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)



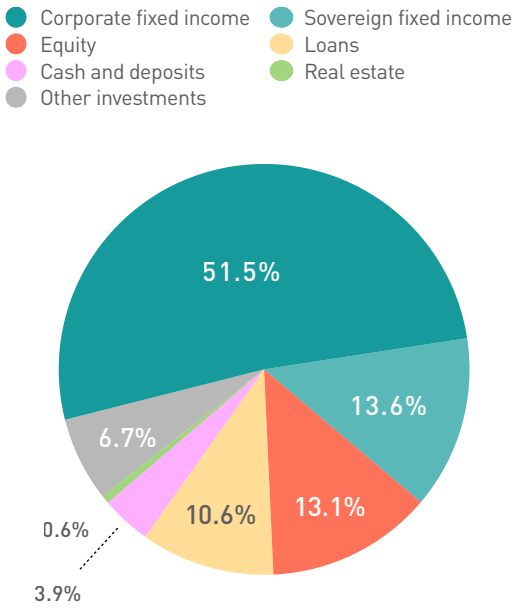
Source: MAPFRE Economic Research (with information from NAIC)

Table 2.2
United States: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)

Asset type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fixed income	69.4%	71.4%	71.5%	71.5%	70.5%	69.5%	69.0%	69.1%	65.9%	64.7%	65.1%
Equity	8.9%	8.7%	8.5%	8.6%	9.1%	10.0%	9.9%	9.6%	13.1%	13.6%	13.1%
Loans	10.0%	9.5%	9.1%	9.1%	9.2%	9.3%	9.3%	9.8%	9.7%	9.9%	10.6%
Cash and deposits	6.2%	5.3%	4.4%	4.0%	4.3%	4.0%	4.1%	4.1%	4.0%	4.3%	3.9%
Real estate	0.8%	0.8%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.6%
Other investments	4.8%	4.4%	5.7%	6.0%	6.2%	6.5%	7.0%	6.7%	6.6%	6.8%	6.7%

Source: MAPFRE Economic Research (based on data from the NAIC)

Chart 2.2-b
United States: structural breakdown of traditional business investment portfolios by asset type, 2018
(%)



Source: MAPFRE Economic Research (with information from NAIC)

Unlike the trend observed in the eurozone insurance markets, in the US market, fixed income investments fell by -4.2 pp over the period under analysis, largely concentrating in corporate fixed income securities. As illustrated in Chart 2.2-b, with data from 2018, 51.5% of the total portfolio was in corporate fixed income investments, while investments in sovereign bondsaccounted for 13.6%. Equity accounted for 13.1% of the total portfolio, highlighting the fact that its weight increased by 4.2 pp over the decade, a relative increase of 78.9%.

2.3 Japan

The evolution of the investment portfolio structure in the Japanese insurance market between 2008 and 2018 is illustrated in Table 2.3 and Chart 2.3-a. An important feature of Japan's insurance market investment portfolio is the high percentage of foreign investments held by insurance companies in the aggregate portfolio, which has also seen an increase of 12 pp over the decade. This represented a 133% increase on the volume of these investments in 2008.

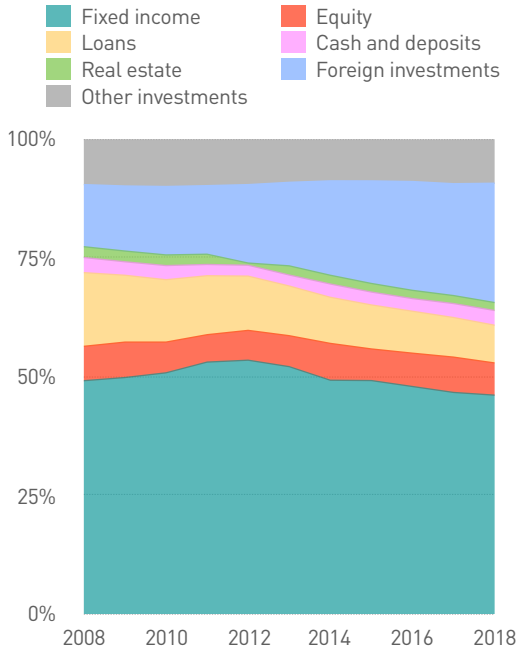
As can be seen in Chart 2.3-b, insurance companies operating in the Japanese market are an important source of investment for Japanese sovereign bonds and, in particular, for the so-called "super-long-term government bonds" (JGBs)[1]. However, the current low-interest-rate environment has made it very difficult to maintain the return on investment while aligning the duration of assets and liabilities, bearing in mind that old portfolios with high guaranteed interest rates still remain. The reaction from insurance companies in this environment has been to increase their investments overseas, mainly in US bonds, but also from the United Kingdom and emerging Asia, in search of higher yields to meet their guaranteed interest obligations. This has caused

Table 2.3
Japan: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)

Asset type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fixed income	49.3%	50.0%	50.9%	53.2%	53.6%	52.3%	49.4%	49.3%	48.1%	46.8%	46.2%
Equity	7.2%	7.5%	6.5%	5.8%	6.3%	6.5%	7.8%	6.7%	7.0%	7.4%	6.8%
Loans	15.5%	14.1%	13.1%	12.4%	11.4%	10.5%	9.7%	9.3%	8.8%	8.3%	7.9%
Cash and deposits	3.2%	2.8%	3.0%	2.4%	2.3%	2.3%	2.8%	2.7%	2.7%	2.9%	3.1%
Real estate	2.3%	2.3%	2.2%	2.2%	0.5%	1.9%	1.8%	1.8%	1.7%	1.7%	1.7%
Foreign investments	13.1%	13.7%	14.4%	14.4%	16.5%	17.6%	19.9%	21.6%	22.9%	23.6%	25.1%
Other investments	9.4%	9.7%	9.8%	9.6%	9.4%	8.9%	8.6%	8.6%	8.7%	9.2%	9.1%

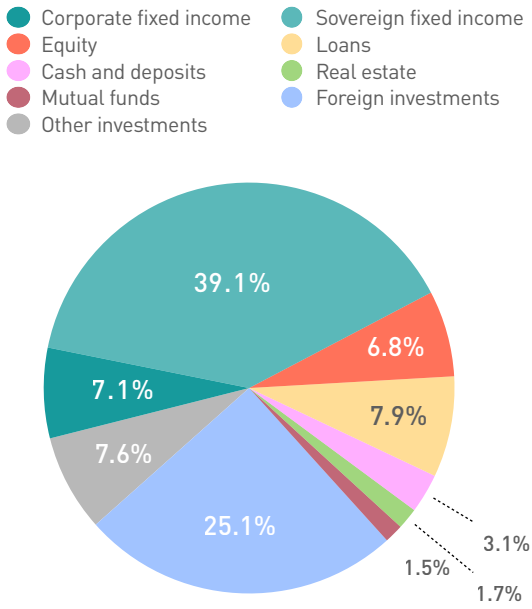
Source: MAPFRE Economic Research (with information from LIAJ and GIAJ)

Chart 2.3-a
Japan: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)



Source: MAPFRE Economic Research (with information from LIAJ and GIAJ)

Chart 2.3-b
Japan: structural breakdown of traditional business investment portfolios by asset type, 2018
(%)



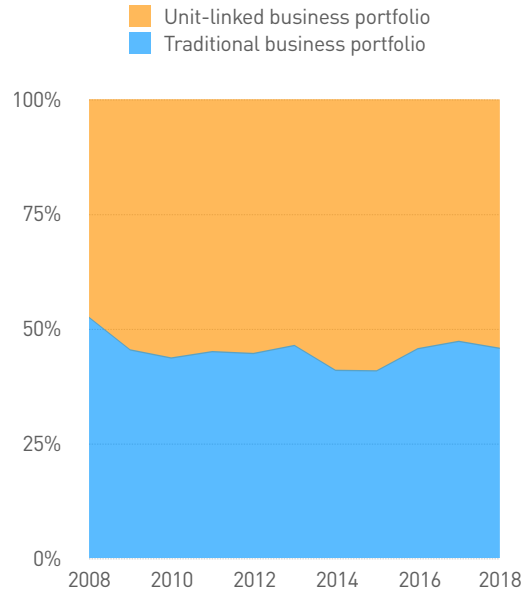
Source: MAPFRE Economic Research (with information from LIAJ and GIAJ)

insurers to be more exposed to international markets and to the risk of exchange rate fluctuations.

2.4 United Kingdom

In the case of the United Kingdom insurance market, Table 2.4-a and Chart 2.4-a show the evolution of investment portfolios broken down by type of insurance business (distinguishing between traditional and unit-linked business) during the decade 2008–2018. In contrast with the data for the combined eurozone markets, in the case of the United Kingdom there is a marked tendency toward an increased proportion of investment portfolios associated with unit-linked product types rather than traditional business, an idiosyncratic element of this market. Throughout the period 2008–2018, this proportion grew by 6.7 pp, rising from 47.4% to 54.1%, which means not only that this market showed the highest trend toward growth in this segment, but also that it registered the highest relative proportion of such business among the markets analyzed in this report.

Chart 2.4-a
United Kingdom: the structure of investment portfolios broken down by type of insurance business, 2008–2018
(%)



Source: MAPFRE Economic Research (with information from EIOPA)

Table 2.4-a
United Kingdom: the structure of investment portfolios broken down by type of insurance business, 2008–2018
(%)

Type of business	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Traditional business portfolio	52.6%	45.5%	43.7%	45.1%	44.7%	46.5%	41.0%	40.9%	45.8%	47.4%	45.9%
Unit-linked business portfolio	47.4%	54.5%	56.3%	54.9%	55.3%	53.5%	59.0%	59.1%	54.2%	52.6%	54.1%

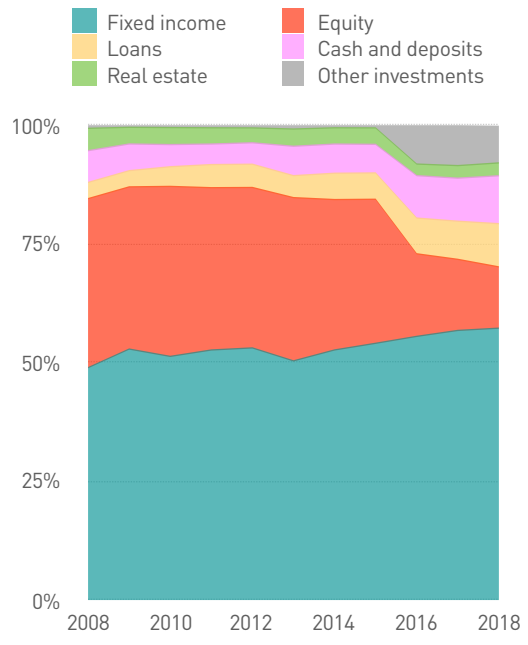
Source: MAPFRE Economic Research (with information from EIOPA)

Table 2.4-b
United Kingdom: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)

Asset type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fixed income	49.1%	53.0%	51.5%	52.8%	53.2%	50.5%	52.8%	54.2%	55.7%	56.9%	57.4%
Equity	35.6%	34.2%	35.8%	34.2%	33.8%	34.4%	31.7%	30.3%	17.4%	15.0%	12.9%
Loans	3.4%	3.4%	4.1%	4.9%	4.9%	4.6%	5.5%	5.5%	7.5%	8.0%	9.1%
Cash and deposits	6.7%	5.6%	4.7%	4.3%	4.5%	6.2%	6.1%	6.0%	8.9%	9.1%	10.1%
Real estate	4.7%	3.5%	3.6%	3.4%	3.1%	3.6%	3.4%	3.5%	2.4%	2.6%	2.7%
Other investments	0.5%	0.3%	0.4%	0.4%	0.4%	0.7%	0.4%	0.4%	8.0%	8.4%	7.7%

Source: MAPFRE Economic Research (with information from EIOPA)

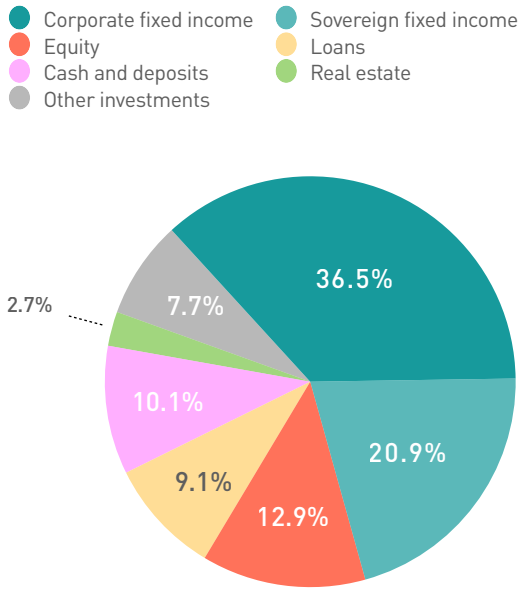
Chart 2.4-b
United Kingdom: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)



Source: MAPFRE Economic Research (with information from EIOPA)

With regard to changes in the structure of traditional business investment portfolios by asset type in the United Kingdom over the 2008–2018 period, the percentage of fixed income bonds was at 57.4% of the total portfolio in 2018, showing a growth of 8.3 pp over the last decade. As with the eurozone, the entry into force of Solvency II has led to the relocation of some investments, reducing the share of equities (from 35.6% in 2008 to 12.9% in 2018). However, it should also be noted that the category of "other investments," which until then was used in a very residual manner, significantly increased (from 0.5% to 7.7% in that period), so the variation may therefore be due in part to portfolio investment accounting reclassification movements.

Chart 2.4-c
United Kingdom: structural breakdown of traditional business investment portfolios by asset type, 2018
(%)



Source: MAPFRE Economic Research (with information from EIOPA)

Finally, Chart 2.4-c illustrates the structural breakdown of the traditional business investment portfolio by asset type in the United Kingdom market in 2018. This information allows for the identification of the relative breakdown of the fixed income investments, specifying that 36.5% of the total investment portfolio represented corporate fixed income investments, while 20.9% of the total portfolio took the form of sovereign fixed income investments. This structure contrasted with the predominant trend in the eurozone, and was closer to the behavior of the United States insurance market.

2.5 Spain

The Spanish insurance market has one of the smallest proportions of investment portfolios associated with unit-linked product types among insurance markets in the eurozone and the smallest in the sample we have analyzed, with a total of 6.3% in 2018. During the decade 2008–2018, the lowest percentage of the share of investments associated with this type of product was in 2015, in which it represented 4.7% of the total portfolio, having since started to show a slight recovery. However, the percentage remains significantly below the eurozone average, in which it represented 15.5% of total investments in 2018 (see Table 2.5-a and Chart 2.5-a).

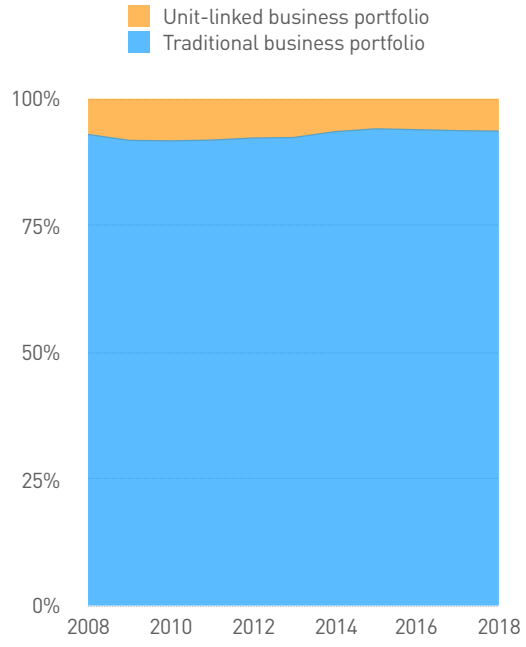
In terms of the changes shown in the structure of traditional business investment portfolios by asset type in Spain during 2008–2018, while fixed income investments accounted for 62.7% of the total in 2008, this percentage had risen to 75.7% (+13 pp) by 2018, while the amount of deposits and cash in that period decreased (-8.5 pp). This reallocation of the aggregate portfolio highlights the 2016 movement in which fixed income investments increased by 6.5% while deposits and cash were reduced by -5% (see Table 2.5-b and Chart 2.5-b). This movement influenced not only the entry into force of the new Solvency II regulatory framework, but also the monetary policy adopted by the European Central Bank which reduced the deposit facility to -40 basis points in that year, sharply penalizing cash holdings by economic agents.

Table 2.5-a
Spain: the structure of investment portfolios broken down by type of insurance business, 2008–2018
(%)

Type of business	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Traditional business portfolio	93.1%	91.9%	91.8%	92.0%	92.4%	92.5%	93.6%	94.2%	94.0%	93.8%	93.7%
Unit-linked business portfolio	7.0%	7.7%	7.7%	7.7%	7.2%	7.1%	6.5%	4.7%	6.5%	6.2%	6.3%

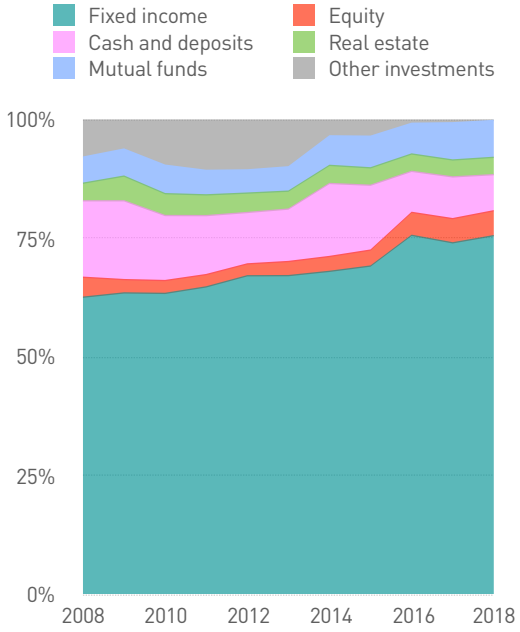
Source: MAPFRE Economic Research (with information from EIOPA)

Chart 2.5-a
Spain: the structure of investment portfolios broken down by type of insurance business, 2008–2018
(%)



Source: MAPFRE Economic Research (with information from EIOPA)

Chart 2.5-b
Spain: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)



Source: MAPFRE Economic Research (with information from ICEA)

Finally, the breakdown of investments in the Spanish insurance market for 2018 illustrated in Chart 2.5-c (applying the transparency or "look through" approach to investments through mutual funds), shows the predominance of sovereign fixed income, which represented 56.9% of the total investment portfolio, while corporate fixed income accounted for 21.8% of total investments.

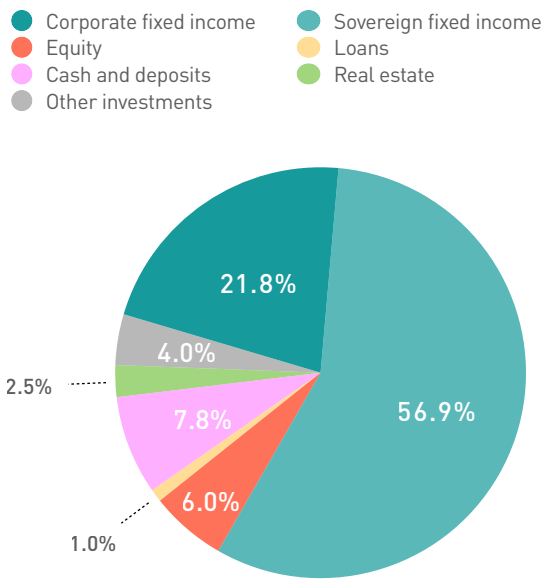
Thus, the high percentage of investments in sovereign bonds in Spain, as well as the lower percentage of investments in equities compared to the eurozone average, must be noted.

Table 2.5-b
Spain: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)

Asset type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fixed income	62.7%	63.6%	63.5%	64.9%	67.2%	67.2%	68.1%	69.3%	75.7%	74.1%	75.7%
Equity	4.2%	2.8%	2.7%	2.6%	2.5%	3.0%	3.1%	3.4%	4.8%	5.1%	5.2%
Cash and deposits	16.1%	16.6%	13.7%	12.4%	10.8%	11.1%	15.4%	13.7%	8.6%	8.8%	7.6%
Real estate	3.7%	5.2%	4.6%	4.4%	4.1%	3.8%	3.8%	3.7%	3.7%	3.6%	3.6%
Mutual funds	5.5%	5.7%	6.0%	5.2%	4.9%	5.1%	6.2%	6.7%	6.5%	7.8%	7.8%
Other investments	7.8%	6.1%	9.5%	10.6%	10.5%	9.8%	3.3%	3.4%	0.7%	0.6%	0.1%

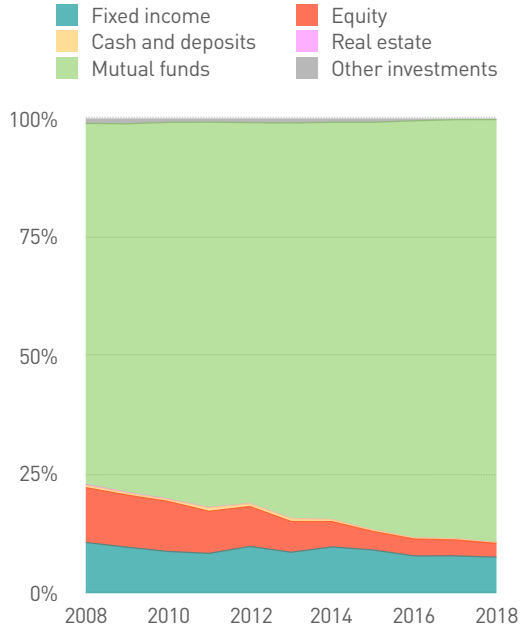
Source: MAPFRE Economic Research (with information from ICEA)

Chart 2.5-c
Spain: structural breakdown of traditional business investment portfolios by asset type, 2018
(%)



Source: MAPFRE Economic Research (with information from EIOPA)

Chart 2.6-a
Brazil: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)



Source: MAPFRE Economic Research (with information from SUSEP)

2.6 Brazil

The Brazilian insurance market is characterized by a high percentage of investments managed through mutual funds. As illustrated in Table 2.6 and Chart 2.6-a, investment in mutual funds accounted for 89.1% of the portfolio in 2018, with an increase of 13.1 pp over the 2008–2018 period.

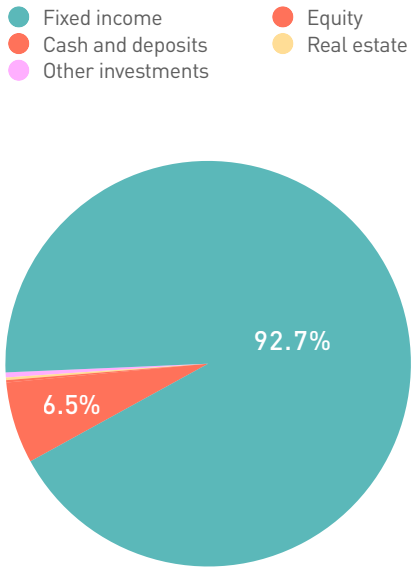
It should be noted that, according to information provided by the Superintendency for Private Insurance (SUSEP), the majority of assets invested through mutual funds are in fact fixed income securities, as is shown in Chart 2.6-b. Thus, based on 2018 data, the Brazilian insurance market's fixed income investment represented 92.7% of the total investment portfolio, while equities accounted for only 6.5%[2].

Table 2.6
Brazil: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)

Asset type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fixed income	10.8%	9.8%	9.0%	8.5%	10.0%	8.8%	9.9%	9.3%	8.0%	8.0%	7.8%
Equity	11.5%	11.0%	10.5%	8.9%	8.4%	6.5%	5.3%	3.9%	3.5%	3.4%	2.9%
Cash and deposits	0.5%	0.4%	0.4%	0.7%	0.6%	0.6%	0.4%	0.3%	0.2%	0.2%	0.2%
Real estate	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Mutual funds	76.0%	77.6%	79.3%	81.2%	80.2%	83.3%	83.7%	85.9%	87.8%	88.3%	89.1%
Other investments	0.9%	1.0%	0.7%	0.6%	0.8%	0.8%	0.7%	0.7%	0.4%	0.1%	0.1%

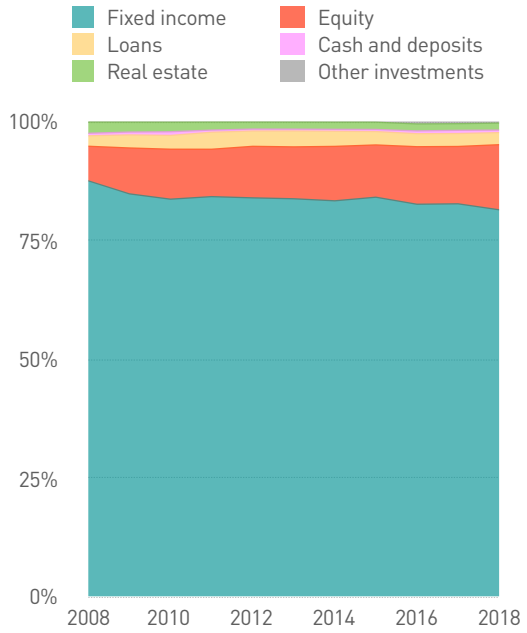
Source: MAPFRE Economic Research (with information from SUSEP)

Chart 2.6-b
Brazil: structural breakdown of traditional business investment portfolios by asset type, 2018
(%)



Source: MAPFRE Economic Research (with information from SUSEP)

Chart 2.7-a
Mexico: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)



Source: MAPFRE Economic Research (with information from CNSF)

2.7 Mexico

In the case of the Mexican insurance market, a strong predominance of fixed income investment is also observed within investment portfolios throughout the period 2008–2018 (see Table 2.7 and Charts 2.7-a and 2.7-b).

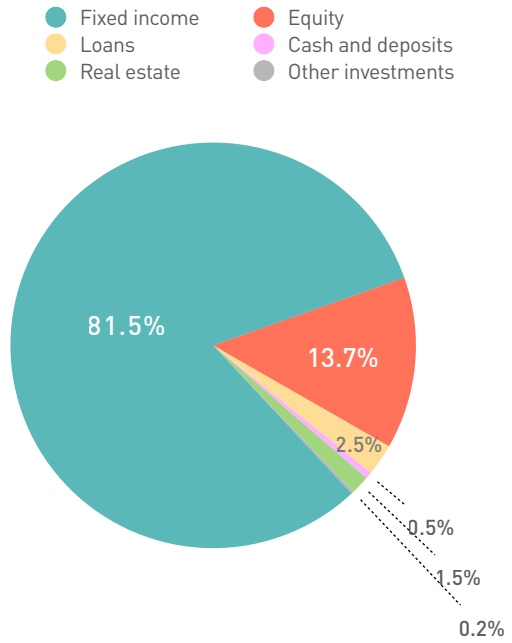
During the same period, however, the proportion of fixed income investment was reduced from 87.6% to 81.5% (a fall of -6.1 pp), while the proportion of variable income investment grew 6.4 pp, rising from 7.3% in 2008 to 13.7% in 2018.

Table 2.7
Mexico: the structure of traditional business investment portfolios broken down by asset type, 2008–2018
(%)

Asset type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fixed income	87.6%	84.9%	83.8%	84.3%	84.0%	83.9%	83.4%	84.2%	82.7%	82.8%	81.5%
Equity	7.3%	9.7%	10.5%	10.0%	10.9%	10.9%	11.5%	11.0%	12.1%	12.1%	13.7%
Loans	2.2%	2.7%	2.9%	3.6%	3.2%	3.3%	3.2%	2.8%	2.7%	2.7%	2.5%
Cash and deposits	0.5%	0.6%	0.8%	0.5%	0.4%	0.4%	0.4%	0.4%	0.6%	0.7%	0.5%
Real estate	2.3%	2.1%	2.0%	1.7%	1.5%	1.5%	1.5%	1.5%	1.5%	1.4%	1.5%
Other investments	0.0%	0.0%	0.0%	0.0%	-0.0%	0.0%	0.0%	0.0%	0.4%	0.3%	0.2%

Source: MAPFRE Economic Research (with information from CNSF)

Chart 2.7-b
Mexico: structural breakdown of traditional business investment portfolios by asset type, 2018
(%)



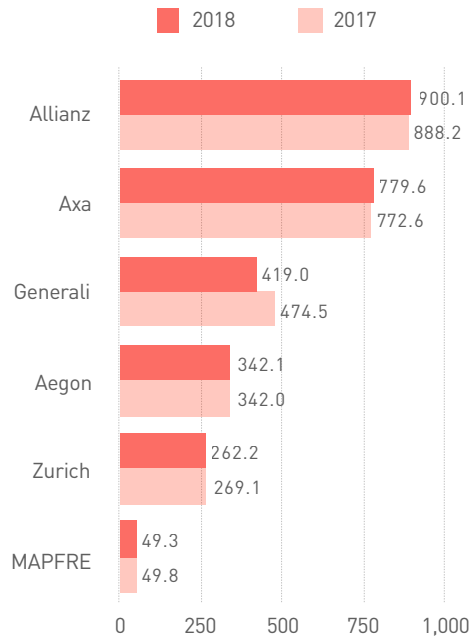
Source: MAPFRE Economic Research (with information from CNSF)

3. Investment portfolio structure of large European groups

In order to complement the analysis of the distribution of insurance company investments, an analysis of the investment portfolios from the largest European insurance groups (defined as their parent company being located in this territory) which can be considered global groups is shown below. These are internationally active groups with a high cross-border business volume. The group selected for this report is characterized as having sufficiently homogeneous information to make a comparison of their investment portfolios (including the ordinary portfolio, loans granted, cash and the investments allocated to unit-linked products).

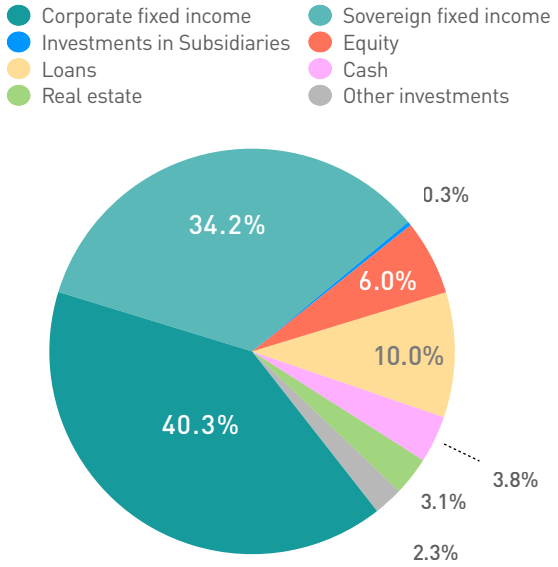
Firstly, the information presented in Chart 3-a shows that the two largest European groups under this analysis criterion are Allianz and Axa, with investment portfolios in 2018 of 900.1 billion euros and 779.6 billion euros, respectively, significantly higher than the rest: Generali (419 billion euros), Aegon (342.1 billion euros), Zurich (262.2 billion euros) and MAPFRE (49.3 billion euros). The aggregate analysis of the traditional business investment portfolios from these groups (excluding unit-linked businesses) highlights the predominance of corporate fixed income and sovereign fixed income, which represent 40.3% and 34.2% of investments, respectively (see Chart 3-b). As shown In Chart 3-c, sovereign fixed income in 2018 reduced its weight in total portfolio investments by 1.05 pp from the close of the

Chart 3-a
Selected insurance groups: aggregate investment portfolio, 2017–2018
(billions of euros)



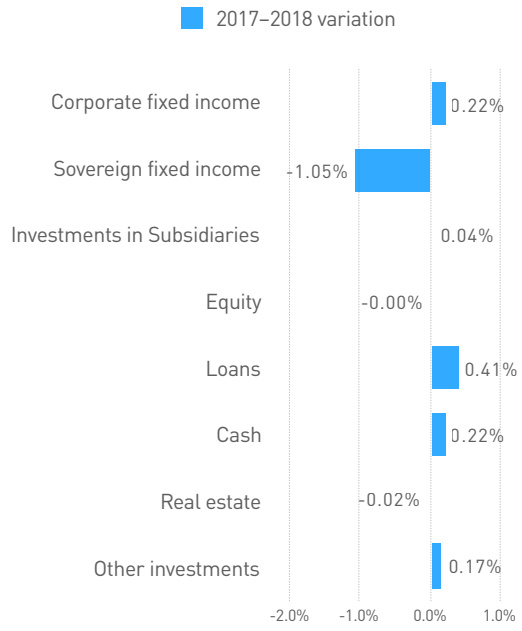
Source: MAPFRE Economic Research (with information from the consolidated financial statements of the previously mentioned insurance groups)

Chart 3-b
Selected insurance groups: distribution by aggregate investment portfolio asset type, 2018
(%)



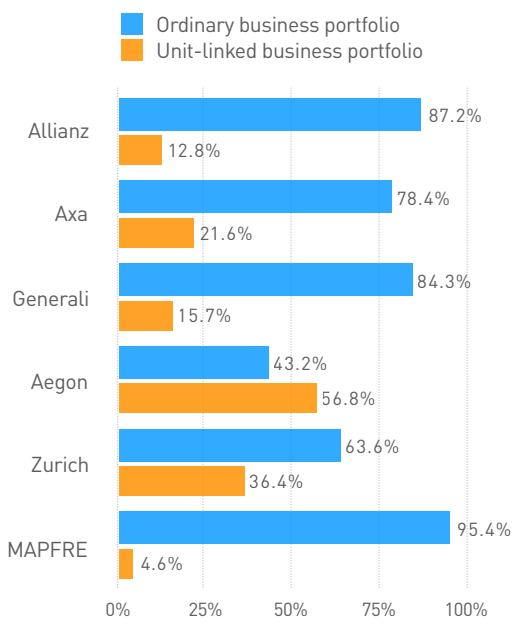
Source: MAPFRE Economic Research (with information from the consolidated financial statements of the previously mentioned insurance groups)

Chart 3-c
Selected insurance groups: variation by aggregate investment portfolio asset type, 2017–2018
(%)



Source: MAPFRE Economic Research (with information from the consolidated financial statements of the previously mentioned insurance groups)

Chart 3-d
Selected insurance groups: distribution by investment portfolio asset type, 2018
(%)



Source: MAPFRE Economic Research (with information from the consolidated financial statements of the previously mentioned insurance groups)

previous year, while the weight of other items increased: loans (0.41 pp), corporate fixed income (0.22 pp), cash (0.22 pp).

Finally, Table 3-a and Chart 3-d show the distribution of the investment portfolios between traditional business and those of products in which the insurance policyholder assumes the investment risk (unit-linked and similar), in the case of all the insurance groups included in the sample analyzed. Aegon is a significant example of this; the insurance group in which the unit-linked and assimilated business made up the majority of its portfolio in 2018 (56.8%), which influences its Life business in the United States, the market in which variable annuity products predominate. In the case of the other insurance groups analyzed, portfolios linked to the traditional business prevail: Zurich (63.6%), Axa (78.4%), Generali (84.3%), Allianz (87.2%) and MAPFRE (95.4%).

Furthermore, Table 3-b shows the relative proportion at the close of 2018 of the different

Table 3-a
Selected insurance groups: unit-linked business weight, 2017–2018
(%)

Type of business	Allianz		Axa		Generali		Aegon		Zurich		MAPFRE	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Ordinary business portfolio	87.2%	86.6%	78.4%	76.3%	84.3%	84.1%	43.2%	43.3%	63.6%	62.6%	95.4%	95.3%
Unit-linked business portfolio	12.8%	13.4%	21.6%	23.7%	15.7%	15.9%	56.8%	56.7%	36.4%	37.4%	4.6%	4.7%

Source: MAPFRE Economic Research (with information from the consolidated financial statements of the previously mentioned insurance groups)

Table 3-b
Selected insurance groups: distribution by investment portfolio asset type, 2017–2018
(%)

Asset type	Allianz		Axa		Generali		Aegon		Zurich		MAPFRE	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Corporate fixed income	47.0%	47.1%	36.0%	34.3%	37.6%	38.9%	36.5%	37.2%	39.6%	38.9%	19.0%	20.2%
Sovereign fixed income	27.0%	27.8%	39.8%	41.1%	45.1%	45.3%	18.5%	19.8%	33.5%	34.4%	58.7%	57.7%
Equity	8.1%	7.8%	4.5%	5.3%	6.0%	4.9%	2.9%	2.4%	8.5%	8.8%	5.1%	5.1%
Loans	13.8%	13.6%	5.8%	5.8%	3.0%	2.9%	29.1%	26.9%	7.4%	7.8%	0.0%	0.0%
Cash	2.2%	2.2%	5.4%	4.2%	3.1%	3.4%	5.9%	7.3%	4.5%	4.1%	4.7%	3.9%
Real estate	1.6%	1.5%	3.6%	4.1%	4.3%	3.8%	1.8%	1.5%	6.5%	6.0%	4.5%	4.6%
Other investments	0.4%	0.0%	4.9%	5.2%	0.8%	0.8%	6.7%	6.4%	0.0%	0.0%	8.1%	8.6%

Source: MAPFRE Economic Research (with information from the consolidated financial statements of the previously mentioned insurance groups)

categories of assets for each of the insurance groups analyzed and their comparison with the previous year. The relevant weight of fixed income investments, both corporate and sovereign, is noted. Allianz is a significant example of the former, with corporate fixed income investments representing 47% of its total portfolio, while MAPFRE is an example of the latter, with sovereign fixed income investments at 58.7% of its portfolio.

Finally, Table 3-c summarizes the credit profiles of the investment portfolios considering the highest level of diversification shown in the consolidated financial statements of the insurance groups analyzed, while Table 3-d presents the changes in the credit profile of the portfolios' investments between 2017 and 2018. In general terms, an improvement in the

Table 3-c
Selected insurance groups: investment portfolio credit profile, 2018
(%)

Credit rating	Allianz		Axa	Generali		Aegon		Zurich	MAPFRE
	Sovereign	Corporate	Total	Sovereign	Corporate	Sovereign	Corporate	Total	Total
Grade 0 (AAA or equivalent)	20.8%	20.9%	20.0%	5.5%	8.9%	74.9%	15.0%	25.2%	11.8%
Grade 1 (AA or equivalent)	44.3%	15.2%	27.0%	32.9%	10.6%	18.1%	8.3%	26.7%	13.8%
Grade 2 (A or equivalent)	14.2%	22.6%	24.0%	18.9%	25.3%	2.2%	33.2%	15.0%	51.5%
Grade 3 (BBB or equivalent)	15.9%	33.7%	24.0%	41.7%	48.0%	3.5%	34.4%	28.3%	19.5%
Grade < 3	3.9%	2.7%	2.0%	0.9%	6.3%	1.3%	6.8%	3.8%	2.3%
No credit rating (non-rated)	0.9%	4.8%	3.0%	0.0%	0.9%	0.0%	2.3%	1.0%	1.2%

Source: MAPFRE Economic Research (with information from the consolidated financial statements of the previously mentioned insurance groups)

Table 3-d
Selected insurance groups: changes in investment portfolio credit profile, 2017–2018
(%)

Credit rating	Allianz		Axa	Generali		Aegon		Zurich	MAPFRE
	Sovereign	Corporate	Total	Sovereign	Corporate	Sovereign	Corporate	Total	Total
Grade 0 (AAA or equivalent)	0.7%	-1.3%	-0.0%	-1.8%	-0.9%	0.1%	-2.8%	-	4.2%
Grade 1 (AA or equivalent)	0.6%	1.7%	-2.0%	-0.1%	-0.6%	-0.6%	0.9%	-	-3.1%
Grade 2 (A or equivalent)	5.1%	-2.0%	2.0%	7.2%	-3.3%	1.2%	-2.7%	-2.5%	38.0%
Grade 3 (BBB or equivalent)	-6.4%	1.0%	-	-5.4%	5.8%	-0.6%	3.0%	2.4%	-39.3%
Grade < 3	0.1%	0.4%	-	0.1%	-1.1%	-0.2%	-0.5%	-0.3%	-0.0%
No credit rating (non-rated)	-0.1%	0.1%	-	-	-	-	2.2%	0.5%	0.1%

Source: MAPFRE Economic Research (with information from the consolidated financial statements of the previously mentioned insurance groups)

credit quality can be seen in investments in sovereign fixed income. However, the changes in credit rating of the corporate fixed income portfolios have generally been the opposite to that of sovereign debt, with the trend toward increases in their risk profiles.

4. Capital risk weights applicable in the European Union

As a general reference for analysis, the following section contains a comparison of the different gross regulatory capital risk weights applicable to the most representative categories within the insurance companies' investment portfolios is shown for the insurance companies that apply the Solvency II standard formula, which, as noted above, have some influence on the composition of insurance group investment portfolios in this region of the world.

4.1 Investment in fixed income bonds

Investments in fixed income bonds have specific capital risk weights arising from differential risk (spread) and concentration risk. Risk weights for differential risks and concentration risks depend on: (i) type of asset, (ii) their credit risk rating, (iii) the residual maturity of the bond weighted by the amount of future flows (with modified duration), and (iv) concentration with the same counterparty. Furthermore, additional capital risk weights may be decided in the event of defective management of the risk of unbundling of cash-flows and/or currency provisions between assets and liabilities.

Capital risk weights by differential risk (spread)

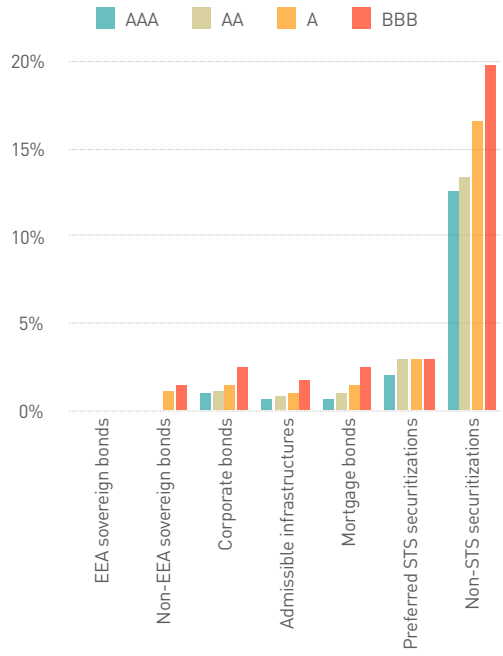
Table 4 shows the gross capital risk weights applicable to different bond types per year of duration. To calculate the total gross risk weight for a specific bond, its modified duration (weighted by the amount of flows) must be multiplied by the percentages appearing in Table 4. For durations higher than five years, the percentages applicable for excessive duration are somewhat lower, with the objective of not penalizing excessively long-term investment[3].

Table 4
Gross capital risk weights applicable to bonds per year of duration
(%)

Credit rating**	EEA sovereign bonds*	Non-EEA sovereign bonds	Corporate bonds	Admissible infrastructures	Mortgage bonds	Preferred STS securitizations	Non-STS securitizations
Grade 0 (AAA or equivalent)	0.00%	0.00%	0.90%	0.64%	0.70%	1.00%	12.50%
Grade 1 (AA or equivalent)	0.00%	0.00%	1.10%	0.78%	0.90%	1.20%	13.40%
Grade 2 (A or equivalent)	0.00%	1.10%	1.40%	1.00%	1.40%	1.60%	16.60%
Grade 3 (BBB or equivalent)	0.00%	1.40%	2.50%	1.67%	2.50%	2.80%	19.70%
Grade 4 (BB or equivalent)	0.00%	2.50%	4.50%	4.50%	4.50%	5.60%	82.00%
Grade 5 (B or equivalent)	0.00%	4.50%	7.50%	7.50%	7.50%	9.40%	100.00%
Grade 6 (less than B or equivalent)	0.00%	4.50%	7.50%	7.50%	7.50%	9.40%	100.00%

Source: MAPFRE Economic Research (based on (EU) Delegated Regulation 2015/35)
* European Economic Area (EEA)
** See link to EIOPA credit ratings equivalence table (see reference 4/ of this report)

Chart 4
Capital risk weights per year of duration: investment-grade bonds
(%)



Source: MAPFRE Economic Research (with information from EIOPA)

Chart 4 illustrates the pattern of capital risk weights, comparing the gross risk weights per year of duration for bonds situated in the investment grade range. It can be seen that investments in sovereign bonds from countries in the European Economic Area (EEA) do not have capital risk weights for spread risk, provided that they are denominated and financed in their own currency. Nevertheless, if currencies and durations are not correctly managed, this could give rise to a capital risk weight as a result of fluctuations in risk-free interest rates and/or exchange rates, in the event of the unbundling of cash flows and/or currency provisions between assets and liabilities. In addition, an increase in market spreads would affect eligible own funds to cover capital requirements, in the event of a fall in the market value of the sovereign bonds concerned. If sovereign debt investments from countries other than Member States with a credit rating of AAA or AA (or equivalent[4]) are involved, they do not have a differential capital risk weight either. For lower credit ratings, the capital risk weight will depend on the rating and the modified duration of the bond concerned.

As an example, a sovereign debt bond from countries other than EU Member States with a credit rating of A and a duration of five years would have a gross capital risk weight of 5.5%. If its duration is ten years, the risk weight would be 8.4%. If the bond had a rating of BBB, the risk weights would be 7% and 10.5%, respectively. Bonds that lack a rating have specific capital risk weights that fluctuate in a range somewhere between the risk weights applicable to BBB and BB ordinary corporate bonds.

It is important to point out that these percentages are applied both to direct investments and to investments implemented through mutual funds, to which the so-called "look-through" approach is applied.

Capital risk weights by concentration risk

Further, if there are concentrated risks with a specific counterparty over and above a specific threshold, an additional capital risk weight is applied. In general, insurance companies do not usually exceed such thresholds, which are normally above those specified in their risk management policies and within limit control parameters. Nevertheless, the capital risk weights arising from non-compliance strongly penalize concentration risk.

As an example of the above, an investment in an AA bond belonging to a counterparty whose exposure exceeds 3% of the company's total assets would have an additional risk weight 12% above the excess exposure. If a BBB bond is involved, the capital surcharge would be 27% above excess exposure greater than 1.5% above the company's total assets. However, investments in sovereign bonds from countries in the EEA do not have capital risk weights for concentration risk, provided that they are denominated and financed in their own currency.

4.2 Investment in shares

The gross capital risk weight applicable to investments in shares listed on regulated markets within Organization for Economic Cooperation and Development (OECD) countries is 39% of the value of the shares concerned.

This risk weight must in its turn be adjusted by the so-called "symmetrical adjustment," which has countercyclical effects within limits of between -10% and +10%. Nevertheless, there currently continues to be a transitory regime that allows for the application of lower risk weights until 2022, inclusive, increasing progressively by 2.5% until reaching 39% by 2023 (plus/minus the countercyclical adjustment).

For variable income instruments for investment in infrastructures and which comply with the admissibility requirements for receiving preferential treatment, the gross capital risk weight is 30%, plus 77% of the symmetrical adjustment foreseen for investment in shares. For non-listed shares, the capital risk weight is 49% plus symmetrical adjustment. There are also special cases in which capital risk weights can end up being lower, as in the case of strategic acquisitions.

4.3 Capital risk weights for real estate investments

The gross capital risk weight for market risk for real estate investments is 25% of the value of the property. As in the case of other assets, this percentage is applied both to direct investments and to investments implemented through mutual funds, to which the so-called "look-through" transparency approach is applied.

There is an additional capital risk weight in the event of excess exposure in the case of a single property. The excess threshold is 10% of the value of all the assets of the insurance company, excluding from this calculation certain assets such as those corresponding to Life Insurance contracts in which the insurance policyholder fully assumes the investment risk (unit-linked). The additional capital risk weight would be 12% above the excess. Properties located in the same building are considered as a single property.

4.4 Diversification benefits and loss absorption capacity

Finally, it is important to point out that exposed capital risk weights are gross risk weights. Profits from diversification, the capacity to absorb losses for deferred taxation, and the fact that investments may be assigned to portfolios of products with participation in discretionary profits mean that capital risk weights in terms of shareholders' equity requirements may be lower, depending on the risk profile of the insurance company concerned. The capacity to absorb losses for deferred taxation may reduce the capital risk weight to a percentage equivalent to the rate of corporation tax. Likewise, the capacity to absorb losses through technical provisions will depend on the products that the company has in its portfolio of participation in discretionary profits.

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1/ https://www.mof.go.jp/english/jgbs/publication/debt_management_report/2019/index.html

https://www.moodys.com/research/Moodys-Japanese-life-insurers-post-profits-for-more-than-20--PR_385153

2/ See: MAPFRE Economic Research, *The Latin American insurance market in 2018,* Madrid, Fundación MAPFRE, (Table 3.2.3-c).

3/ These reduced percentages can be found in Article 176 of (EU) Delegated Regulation 2015/35 (Solvency II).

4/ Table of Equivalence of credit ratings from EIOPA:
https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:02016R1800-20180515&from=EN

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