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Economics & INSURANCE

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Economics

Posts

Introduction

MAPFRE Economics is proud to present the second issue of its Economics and Insurance review, containing six current affairs articles on economics and the insurance industry.

As pointed out in the first issue, the aim of this publication is to offer a general overview of a selection of relevant topics pertaining to economics and insurance, which have been discussed in reports prepared by MAPFRE Economics, and about which readers can learn more by accessing the complete publication, through the link provided at the end of each article. In this edition, the selected topics deal with the economic and sector-specific prospects of the fourth quarter of 2018, the shift in the Spanish and Latin American insurance markets seen in 2017, and an analysis of how certain countries have moved towards risk-based regulation.

This issue also includes a special collaboration between José Miguel Rodríguez Pardo and Antonio López Farré, whose study on longevity and aging in the 21st century offers a detailed analysis of the aspects relating to both phenomena, with a novel focus combining the two authors' expertise in the fields of biomedicine and actuarial science.

Economics and Insurance also contains its other sections, such as Economic Forecasts, which presents an up-to-date picture of the main macro-economic priorities of the world's foremost economies.

Please visit the MAPFRE Economics website to find out about these and other published studies.

MAPFRE Economics

The Spanish Insurance Market in 2017

Author: MAPFRE Economics

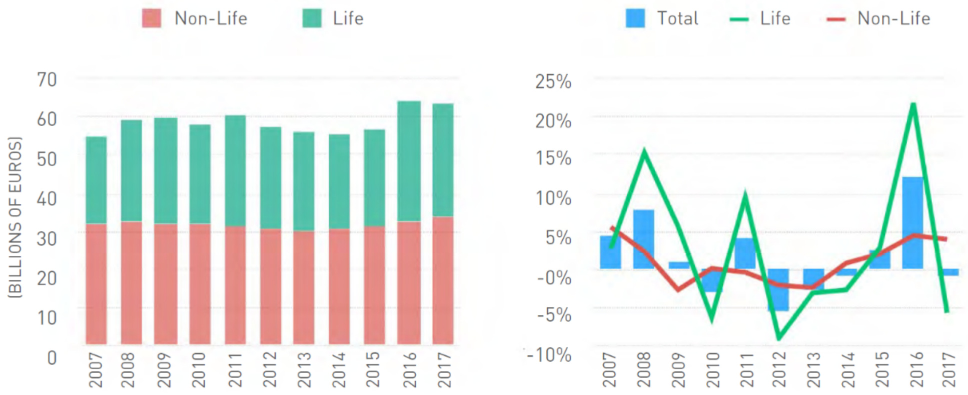
Summary of the report's conclusions:
MAPFRE Economics
The Spanish Insurance Market in 2017
Madrid, Fundación MAPFRE, July 2018

During the course of 2017, global economic growth gained pace across the board in both emerging and developed markets, pushing back the change in the economic cycle that had previously been anticipated. The level of activity was partly encouraged by the continuance of the loose monetary policy in the developed economies and partly by the boost in the Chinese economy. World economic growth averaged around 3.6%, compared with 3.2% in the previous year, with a combined growth rate for the developed economies of 2%, while the emerging economies enjoyed a growth rate close to 5%.

Against this background, the world insurance market registered estimated growth of 1.5% in real terms in 2017, generating a total value of direct insurance premiums of 4.9 trillion dollars. The main driver was the Non-Life business line where there was a 2.8% increase in real terms in premium volumes, revealing the healthy state of the global economy. The Life insurance segment (which represents 54% of total premiums) registered a slight increase in premium volume of 0.5% in real terms.

Spain continued to enjoy the highest growth among the large economies of the eurozone, with economic growth of 3.1% in 2017. The strong performance of the Spanish economy was reflected in the behavior of the Non-Life lines which grew some 4.0% to 34 billion euros. This was the fourth consecutive year in which a growth in premiums was registered in this segment, which has benefited from the recovery of overall economic activity in Spain and, in particular, from the greater capacity for consumption of both companies and households (see Chart 1).

Chart 1
Spain: Trends in direct insurance in Spain, 2007-2017
(accrued direct insurance premiums, billions of euros; annual change, %)



Source: MAPFRE Economic Research (with ICEA data)

However, the Spanish insurance market as a whole showed a 0.7% reduction in premium volumes, amounting to 63.41 billion euros. This was due to the fall of -5.6% registered in the Life insurance segment (which stood at around 29.41 billion euros in premiums). This behavior was, among other factors, strongly influenced by the persistence of a low interest rate environment.

The fall in Life insurance premiums was caused by a fall in Life Savings given that the premium volume for Life Risk insurance remained unchanged. Nevertheless, in terms of managed savings, positive growth and a rising trend were maintained, with technical provisions for Life insurance increasing by 3.3%.

Table 1
Trends in average Automobile insurance premium, 2007-2017
(millions of euros; annual change, %)

	Insured vehicles [1]		Direct insurance premiums [2]		Average premium		
						% change	
Year	(millions)	Annual change	(millions of €)	Annual change	In euros	Nominal	Real
2007	28.3	4.7%	12,593	2.7%	444	-1.9%	-5.8%
2008	28.8	1.7%	12,357	-1.9%	428	-3.6%	-4.9%
2009	28.8	-0.2%	11,662	-5.6%	405	-5.5%	-6.2%
2010	28.7	-0.3%	11,553	-0.9%	403	-0.6%	-3.5%
2011	28.9	0.7%	11,285	-2.3%	390	-3.0%	-5.3%
2012	28.7	-0.7%	10,622	-5.9%	370	-5.3%	-7.9%
2013	28.6	-0.4%	10,033	-5.5%	351	-5.1%	-5.4%
2014	28.8	0.7%	9,888	-1.5%	343	-2.1%	-1.2%
2015	29.1	1.0%	10,054	1.7%	346	0.6%	0.6%
2016	29.8	2.4%	10,566	5.1%	354	2.3%	0.7%
2017	30.6	2.7%	10,922	3.4%	357	0.8%	-0.3%

Source: MAPFRE Economic Research (with FIVA, ICEA and CCS data)
(1) Information Database for Insured Vehicles (FIVA)
(2) Direct Insurance premiums for insurance companies & CCS

An analysis of the main Non-Life lines shows that automobile insurance continues to be the line which is building up the greatest premium volumes, accounting for 32.1%. Premium volume increased for the third consecutive year, totaling 10.92 billion euros, representing 3.4% growth over the previous year, thanks to the increase in the number of vehicles insured, a slight rise in the average premium and an increase in new vehicle sales (see Table 1).

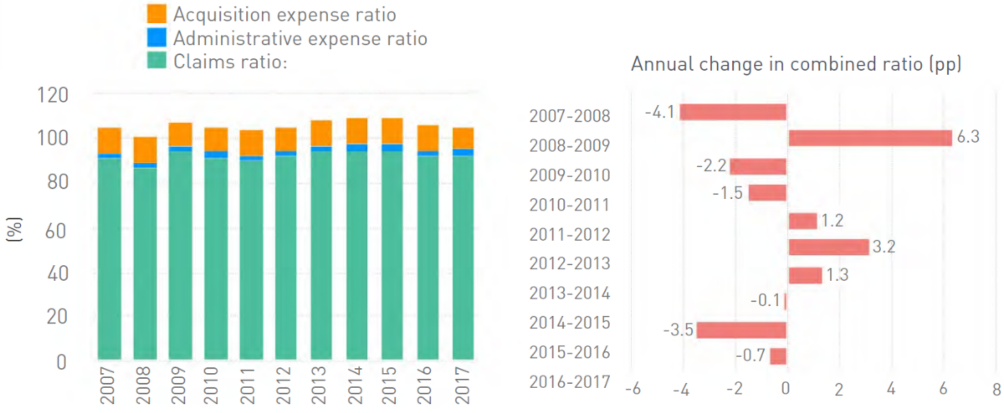
The biggest increase was in Health insurance, at 4.2%, reaching a premium volume of 8.06 billion euros. The continuing growth in Health insurance has made this line attractive for new companies entering the market, relying on direct distribution through essentially digital channels. For yet another year, collective insurances have been the line's main growth driver.

Multirisk insurance accounted for 20.2%, which made it the third largest Non-Life line, with premium volume of 6.88 billion euros in 2017, and growth of 2.2% compared with the previous year. Homeowner insurance has been the growth driver in this line's premiums (3.0%), followed by Condominium (2.3%) and Commerce (1.8%). Industrial Multirisk, for its part, registered a decrease in premiums for the sixth consecutive year, falling to 1.17 billion euros, a similar figure to that of 2006.

As regards the technical performance of the Non-Life segment in 2017, the combined ratio stood at 94.0%, 0.4 pp above the value registered in 2016 (93.6%), due to an increase in the loss ratio, which rose from 71.3% in 2016 to 72.0% in 2017. Despite this deterioration, the combined ratio maintains values under 100%, which indicates that the technical performance of the Spanish insurance industry remains in sound health (see Chart 2).

In addition, 2017 maintained the upward trend in return on equity (ROE) in the industry with an ROE rate of 12.0%, 1.3 pp higher than in 2016. Likewise, profitability measured in terms of return on assets (ROA) also showed a slight increase at 1.6%, compared with 1.5% in 2016.

Chart 2
Trends in the total combined ratio, 2007-2017
(total combined ratio, %; annual change in combined ratio, pp)



Source: MAPFRE Economic Research (with ICEA data)

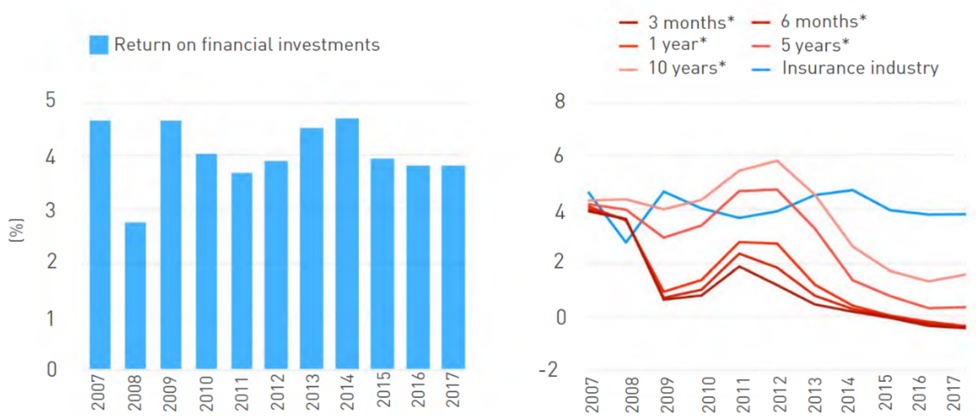
As to investments by Spanish insurance companies, these reached a total of 292.06 billion euros by the end of 2017, estimated at an increase of 1.4% over 2016. An analysis of the investment structure shows that the main category of assets chosen was fixed income, representing 52.9% of the investment portfolio, with sovereign fixed income as the dominant component. The return on financial investments stood at 3.8%, almost the same level as 2016 but, as in previous years, staying above the risk-free, interest-rate curve which is proof of the financial management skills of the insurance industry (see Chart 3).

The credit ratings of most of the industry's investments were to be found in the third rung of the ratings map used under Solvency II (equivalent to BBB), in line with the Spanish sovereign risk rating at the close of 2017. Nevertheless, it should be emphasized that in March 2018, both S&P and Fitch raised Spain's credit rating to A-, and Moody's followed the same trend in April by raising its rating to Baa1, with the result that the credit rating of the Spanish insurance industry's investment portfolio also benefited from these changes.

With regard to solvency levels, May 2018 marked the deadline for the publication of the second Solvency and Financial Condition Report (SFCR) for individual insurance companies, in accordance with the new prudential regulation based on applicable risks in force in the European Union since January 1, 2016 (Solvency II). After analyzing a sample of companies representing 68.9% of the insurance premiums and 79.4% of the technical provisions on the Spanish market in 2017, it can be inferred that, in general terms, the industry's solvency position continues to be sound.

The aggregate total solvency ratio for the analyzed sample of insurance companies operating mainly in the Life insurance business was about 233% in 2017 (compared with 250% in 2016). In the case of composite companies operating in both the Life and the Non-Life insurance business, the aggregate total solvency ratio attained 208% in 2017 (compared with

Chart 3
Return on the insurance industry's financial investments, 2007-2017
(financial income/average investment, %; risk-free interest rate, %)

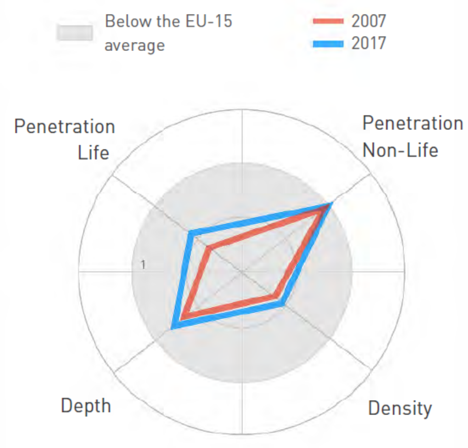


Source: MAPFRE Economic Research (with DGSFP data)
*Average annual Spanish Government bond yield of specified tenor.

190% in 2016). Finally, companies operating either totally or mainly in Non-Life insurance business had an aggregate total solvency ratio of about 275% in 2017 (compared with 291% in 2016). With regard to shareholders' equity, it should be emphasized that practically all the admissible equity from the universe of the companies analyzed was of the highest quality (99% Tier 1 on aggregate for the sample taken into account).

Chart 4
Spain: elements of structural performance of the market, 2007 and 2017

COMPARATIVE INDEX OF STRUCTURAL COEFFICIENTS* VS EU-15 AVERAGE



Source: MAPFRE Economic Research

* Indexes calculated as the quotient between the values of the country of the structural coefficient concerned and the average values for the overall EU-15 market in the year indicated. The unit represents a performance equivalent to the EU-15 average.

In relation to the analysis of the structural growth trends for the industry, it can be inferred that the performance of the Spanish insurance market in 2017 seems to have slowed down and diverged from the trend toward strong growth initiated in 2014. This behavior is underlined by the fact that the indexes for penetration (5.45%), density (1,357.8 euros per capita) and depth (46.4%) registered slight falls in relation to the previous year, remaining below the average of those indexes for the 15 main economies in the European Union (see Chart 4).

The behavior observed in 2017 can essentially be explained by the negative performance of Life Savings insurance business, which is starting to be severely affected by the continuing low interest rate environment into which the eurozone has plunged. This is a context in which the demographic trend in Spain clearly demonstrates the need for savings in order to make provision for retirement, given the progressively increasing pressure that will be brought to bear on public funds in order to maintain the current replacement rates for pensions.

Meanwhile, the Insurance Protection Gap (IPG) stood at 25.3 billion euros for 2017 (2 billion euros more than the 2016 figure). In structural terms, the composition of the IPG continues to demonstrate the scope for further development of the Life insurance segment. The proportion of the IPG corresponding to the Life insurance segment amounted to 96.7% in 2017 (1.1 percentage points more than in 2016), while the IPG for Non-Life insurance (0.8 billion euros) stood at 3.3%.

Finally, it is important to emphasize that 2017 witnessed an increase in claims arising from catastrophic events causing worldwide economic damage. It will take considerable time to assess the final cost involved, given the severity of the damage and the impact of the cover for loss of business, which will doubtless make 2017 one of the costliest years ever in terms of natural disasters. This has had a major impact on the accounts and balance sheets of many reinsurers, and it is estimated that there will be increased pressure to recover acceptable levels of technical profitability, which could lead to a rise in the cost of reinsurance.

The complete analysis can be found in the report The Spanish Insurance Market in 2017, prepared by MAPFRE Economics.

The Latin American Insurance Market in 2017

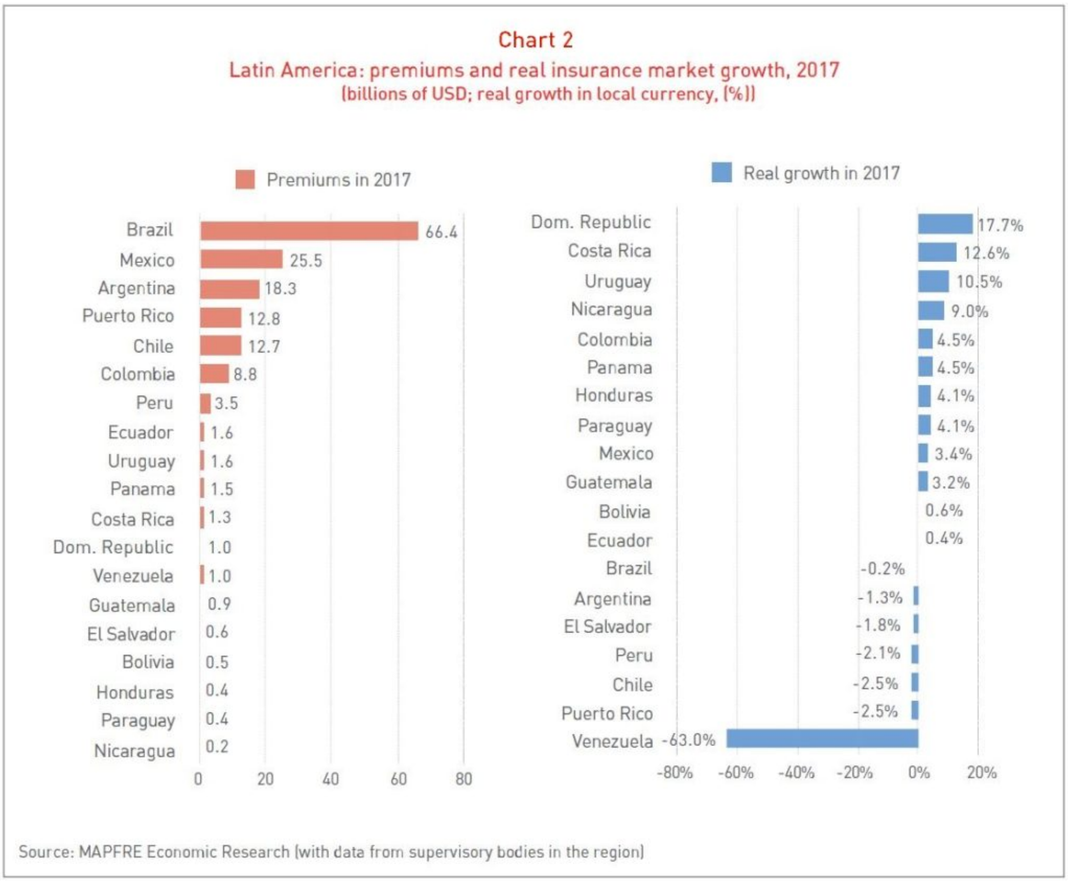
Author: MAPFRE Economics

Summary of the report's conclusions:
MAPFRE Economics
The Latin American Insurance Market in 2017
Madrid, Fundación MAPFRE, September 2018

Latin America returned to growth in 2017 (1.3% of GDP) following more than two years of economic recession. This turnaround was due to an increase in world trade and rising raw material prices, which had the effect of strengthening the regional and domestic markets. This economic recovery was reflected in the aggregate growth in insurance market premiums, which showed an increase of 8.6% compared with 1.2% in 2016, with a balance being struck between the two segments: Non-Life business grew by 8.2% and Life business increased by 9%.

Chart 1
Latin America: growth developments in the insurance market, 2007-2017
(premiums, billions of USD; nominal annual growth rates (%))

Source: MAPFRE Economic Research (based on data from supervisory bodies)



In 2017, total premium volume amounted to 159.22 billion dollars, of which 54.6% came from Non-Life insurance and the remaining 45.4% from Life insurance (see Chart 1).

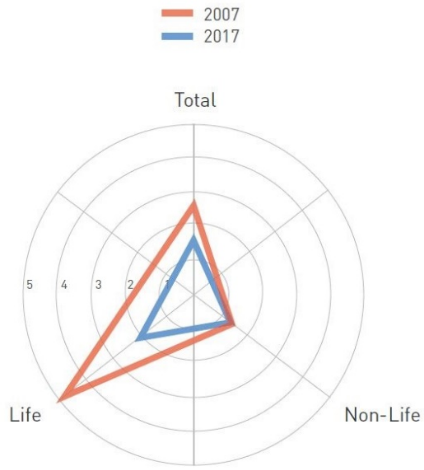
The economic recovery in 2017 has aided the development of the insurance market, which has now returned to positive growth. The region's share of the global market now stands at 3.4% of total insurance premiums (2.9% for the Life business and 4% for the Non-Life business), though still a far cry from the share enjoyed by the more developed markets in the region, which is a good indicator of the region's market potential.

A particular highlight is the improvement in the Non-Life business in 2017, a product of the rallying economy and increased spending by both households and businesses within the region. Automobile insurance enjoyed an increase of 9.3%, which contrasts with the contraction suffered in 2016 of -4.9% Most markets experienced positive growth in real terms in their respective currencies (see Chart 2).

The net aggregate result for the insurance market in Latin America stood at 8.83 billion dollars in 2017. All countries had positive net results although the aggregate result for the Latin American market in 2017 (excluding Panama) fell some 18.7% in comparison with the previous year. Profits in Argentina, Brazil, El Salvador, Honduras, Peru and Venezuela were down year on year, while all the other countries reported growth.

On reviewing the structural trends in the insurance industry in Latin America between 2007 and 2017, it should be noted that the region's insurance market has demonstrated balanced and positive growth in recent years. During that time, the Insurance Protection Gap (IPG) which represents the difference between optimum insurance coverage and that actually purchased, reduced throughout the last decade if measured in relative terms as a multiple of the actual insurance market (see Chart 3).

Chart 3
Latin America: the IPG as a multiple of the actual market, 2007 and 2017



Source: MAPFRE Economic Research

In 2017, the penetration index (premiums/GDP) stayed at similar levels to those of the previous year (2.9%), both in Life (again at 1.3%) and in Non-Life insurance business lines (1.6%). In aggregate over the past ten years, total penetration in the region increased some 27.8% with cumulated growth in Life at 58.7% and 10.1% in Non-Life.

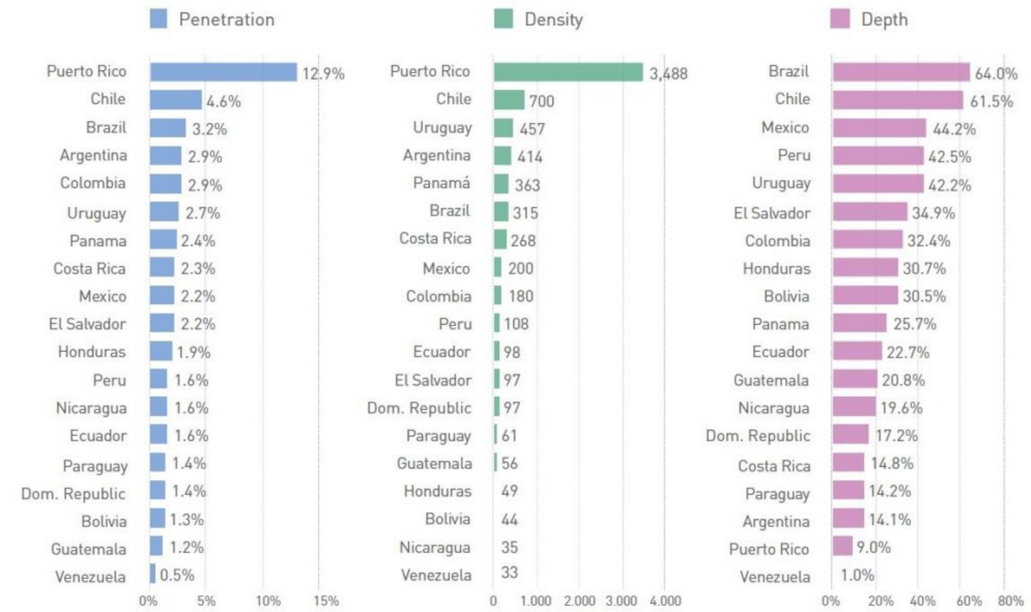
The density index (premiums/population) grew some 65.1% in the reference period and reached 259.5 dollars, although there was a distinction between the Life segment, which grew by 104.9% and the Non-Life segment which saw cumulative growth of 42.1%. However, the major portion of insurance expenditure per person continues to be concentrated on the Non-Life segment (141.7 dollars).

Lastly, the index of insurance depth, which measures the relationship between Life insurance premiums and total premiums, stood at 45.4% in 2017, showing accumulated growth of 24.1% in the analysis period. Puerto Rico and Chile took the lead as regards the penetration and density indexes; Brazil and Chile likewise, as regards the index of insurance depth. The Puerto Rican case is explained by insurance premiums being included in the Health premiums which are managed by the private sector and defrayed by government budgets (see Chart 4).

As a result, the Market Development Index (MDI) for the Latin American insurance industry (an indicator of trends and maturity in insurance markets) has seen sustained annual growth over the last ten years. Once again, this clear upward trend demonstrated by the industry between 2005 and 2017 confirms the positive and balanced growth exhibited by the Latin American insurance market.

Finally, it should be noted that 2017 was a year in which the strength of the Latin American insurance industry was affirmed, as was its capacity to cope

Chart 4
Latin America: penetration, density and depth indexes, 2017
(premiums/GDP, percent; premiums per capita, USD; Life insurance premiums/total premiums, percent)



Source: MAPFRE Economic Research (with data from supervisory bodies in the region)

with the massive impact of catastrophic events. Several countries in the region had to deal with natural disasters which caused significant damage to both people and property, as did Hurricanes Harvey, Irma and María in the Caribbean, the earthquakes in Chiapas and Puebla (Mexico), and the El Niño Costero phenomenon in Peru. Nevertheless, what also emerged was the high level of under-insurance, or Insurance Protection Gap (IPG) for catastrophic risks, leaving a large proportion of damages uninsured.

The full analysis can be found in the report The Latin American Insurance Market in 2017, prepared by MAPFRE Economics.

Global Economic Outlook

Author: MAPFRE Economics

Summary of the report's conclusions:
MAPFRE Economics
2018 Economic and Industry Outlook: Fourth Quarter Perspectives
Madrid, Fundación MAPFRE, October 2018

Signs of a cyclical change crystallize

A number of factors seem to be giving shape to the signs noted in the second quarter of 2018 which indicated a cyclical change (forecast in this report at the end of 2017). Three of these signs seem to be the most relevant: (i) the pace of economic activity; (ii) the state of global liquidity and (iii) the trends in inflation.

Economic activity

Even though the PMIs, (Purchasing Managers Index), both in developed and emerging markets remain positive, a sharp slowdown in global production indexes, global retail sales and orders from industry are noteworthy: all in line with the sharply declining global sales indicators which are already negative. However, they convey a less bullish picture than six months ago, on a par with the majority of traded stock market valuations (except for the United States markets).

Liquidity

A gradual correction in equity valuations has occurred, returning to their basics in most markets, i.e. to lower PBV (price/book value) ratios, in line with less dynamic economic activity. There appears to be frequent but selective financial stress among emerging markets (cash outflows, currency depreciation, increases in market interest rates and risk premiums, and also the depletion of funding possibilities for many corporates). All this generally in a context marked by a Federal Reserve which is transitioning from balance sheet normalization to a withdrawal from monetary neutrality, and by other central banks following suit.

Inflation

Global inflation has been strongly influenced by the upturn in the price of oil which exceeded USD 82 per barrel during September. In the context of the current tensions in supply, it is to be expected that this tendency will continue. This trend in prices has become evident with the widening gap between headline and core inflation over the last three months (+0.5% on average).

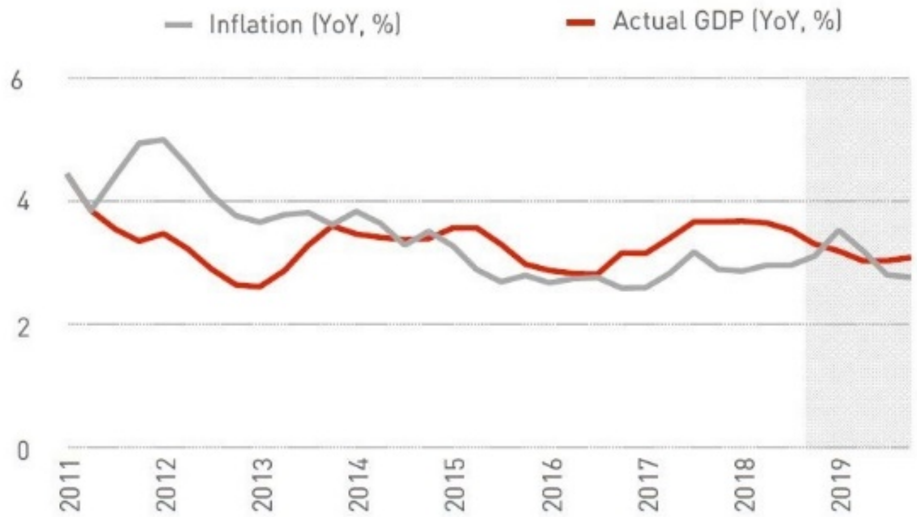
Despite this, it should be pointed out that symptoms of wage inflation have begun to appear given that the growth in salaries in developed markets has exceeded 2% and in some cases is at the threshold pursued by the central banks' objective.

Against this background, although expectations about inflation remain well-founded, the current context could be a catalyst for a sudden inflationary process if: (i) the price of oil continues to rise because of restricted supply (there are analysts who see it going up to USD 100 per barrel); (ii) the effects of trade sanctions are absorbed by the decline in exchange rates of the emerging markets, and (iii) the pro-cyclical policies of some countries are maintained (see Charts 1 and 2).

Cyclical change: the symptoms confirmed

The current situation enables confirmation of the symptoms which anticipate (and characterize) the change in the global economic cycle: (a) loss of cyclical

Chart 1
Global: growth and inflation, 2011-2019



Source: MAPFRE Economic Research (based on Haver data) synchrony and coordination of monetary policies; (b) the rise of protectionism; (c) the increase in the price of oil; (d) the increase in the sources of volatility and financial stress in emerging markets, and (e) the emergence of global risks.

Loss of cyclical synchrony and coordination of monetary policies

The global economy, headed by the United States, continues to lose synchrony at the same time that the loss of coordination in the implementation of monetary policy is worsening.

a) The United States is at the end of the cycle with an output gap that is visibly positive (growing above potential) compared with Europe and Japan which are more behind in the cycle and still have a negative gap. Moreover, the growth of emerging markets is slowing down and in some cases is expected to go into recession at the end of this year.

b) In addition, a new stage of monetary policy has been reached. The US Federal Reserve seems to be accelerating the pace of interest rate rises but remains anchored to its reference natural interest rate (3%-3.5%) which will presumably rise earlier than forecast. Some opinions claim that the Federal Reserve plans to gain a margin on monetary policy for when the cyclical adjustment demands it. This is in contrast to the "dilettante" attitude of the European Central Bank (ECB) which is implicitly putting off the first interest rise to the end of the second half of 2019. This is one of the most significant factors behind the temporary upward movement of the USD/EUR exchange rate (which does not appear to be sustainable in the long-term).

Chart 2
Global: nominal and actual prices of Brent (2010=100), 2000-2018

Source: MAPFRE Economic Research (based on Haver data)

The rise of protectionism

A second symptom has to do with the increase in protectionism in its three dimensions: trade, migration, and finance.

a) Trade. Its real effects are still to come to the extent that the anticipated tariffs are in fact implemented in full (at the moment they fluctuate between 10% and 25% of the value of imports, about USD 200 billion), and that reprisals are implemented by China. At the moment, its effects are felt in the deferral of investment and in the deterioration in confidence and some terms of trade.

b) Migration. Imbued into the discourse that is taking over at global level about the dangers of migration and loss of national identity, "protectionism" regarding migration may have a negative effect which gets channelled through obstacles to regional governance.

c) Finance. This specifically takes the shape of control over capital flows in certain markets. The International Monetary Fund (IMF) has itself gradually changed its stance over the control of capital during the last three years. The new chief economist (Gita Gopinath) is a standard-bearer for the policy of controlling exchange rates through the imposition of certain controls over capital flows.

In spite of these short-term implications, the costs of protectionism could end up being more relevant for the medium and long-term since they have disruptive effects on the global value chain, adversely hitting the current account of importers who are unable to adapt, and sharply depreciating the currency of the smaller economies.

Increase in oil prices

The price of oil which at the beginning of 2016 was around USD 44 per barrel have increased to USD 82 per barrel now (see Chart 2).

This trend has been caused by supply problems (and not demand) and these are: (i) a decline of productive capacity in Venezuela and Angola; (ii) sanctions imposed on Iran; (iii) the run-down of stocks, and (iv) the decision at the latest meeting of the Organization of Petroleum Producing Countries (OPEC) not to increase production in order to contain prices.

This situation is having a dual impact on emerging markets. Firstly, through deterioration of crude importers' terms of trade, and secondly through the erosion of real income due to inflation. However, the increase in price of crude in real terms has still been moderate and it would require the present price per barrel to double for it to resemble the tense situation that occurred at the end of the 1970s.

Increase in sources of volatility and financial stress in emerging markets

Additionally, financial stresses are already showing. These originate in corporate leverage in strong currencies, especially in the emerging economies, and here the disequilibrium committed to with the intensive stage of global liquidity and exposure to the effects of the exchange rate decline and increase in the price of wholesale funding (and therefore its translation into credit) is beginning to become evident.

Emergence of Global Risks

Although the basic scenario put forward in this update report continues to be an orderly cyclical decline, the sources of global risk continue to grow as does their imminence in certain cases. In spite of a genuine origin in each region, all the risks have in common the potential to be activated in one way or another as a result of interaction with the economies of the United States, China, and the emerging markets. As a result, global risks, as they are now, are as follows: (1) Escalating tariffs (with greater severity in the medium-term); (2) loss of regional governability: (3) the potential for miscalculation in monetary policy in an adverse economic and financial environment and (4) a disorderly financial adjustment in China; all this in the context of emerging market vulnerability.

Risk has its protagonists

Finally, it is important to emphasize that there exist certain sources and channels which amplify our risk scenarios. This means that risk has its protagonists.

Europe

Sovereign and regional governance risk are increasing within the European Union. Two elements essentially make up this risk: (i) a Brexit without agreement becomes a likely scenario even though it has been ratified by the EU. Prime Minister May will find it very difficult to reach the necessary consensus so that the agreement as it is currently formulated will be supported in the British parliament on December 11. (ii) Italy is casting doubt on the Eurozone's fiscal stability plans, gambling on a larger public deficit based on budget growth that will be difficult to sustain (risk premiums of surrounding countries go up). On January 13 the ECB will confirm the finalization of its asset purchase program thus initiating a new era for European monetary policy.

Emerging markets

The emerging countries are operating as amplifiers of global risk and, given the vulnerabilities they bear, they are particularly sensitive to a global financial event with its origin, for example, in the United States economy. In the last quarter, we reviewed how global factors such as the United States monetary policy are playing out in financial stress and the depreciation of some emerging market currencies in proportion to the misalignments and vulnerabilities they bear.

China

The Chinese economy is the source of the most serious risks in the medium-term for the global economy. This risk can operate through real and financial channels and has two fundamental root causes. The first, escalating protectionism vis-a-vis the USA which, although it has only just started, can occasion real and serious financial effects beyond the effects related to the tariffs themselves, and could lead to certain measures which could end in reprisals such as a sharp fall in the value of the renminbi or a disorderly sale of US debt.

And the second, the slowdown in deleveraging and the nominal and real adjustment in progress by means of which a gamble has been taken on lower growth and greater nominal stability, facilitating greater imbalance in corporate non-payment, stress on so-called "shadow banking", and an (even greater) increase in the Chinese public debt.

United States

The United States continues to be the main source of the most imminent risk (for reasons noted in the previous report). Among these risks, the most relevant (and the one which is in accordance with our risk scenario) would be a mistake in monetary policy (in which the expectations of the market and the members of the Federal Reserve converge) because of a misreading of actual inflation in a context of fragility in the financial markets where mismatches exist in the stock market valuations of a large portion of the Corporate sector and where a certain generalized exuberance in asset classes is noticeable.

The United States is also encountering public and private balances in a delicate situation, with high debt, no fiscal space, erosion of corporate and family savings, and (still) a loose monetary policy, with little room for downward adjustments. This is in accordance with our risk scenario, a scenario in which the Federal Reserve could increase interest rates quickly, causing a sharp domestic downturn with real and financial impact especially vis à vis the Eurozone (which would see an appreciation of its exchange rate and with the emerging markets, in particular those in a vulnerable position.

The complete analysis can be found in the report 2018 Economic and Industry Outlook: Fourth Quarter Perspectives, prepared by MAPFRE Economics.

Industry Outlook for the Insurance Market

Author: MAPFRE Economics

Summary of the report's conclusions:
MAPFRE Economics
2018 Economic and Industry Outlook: Fourth Quarter Perspectives
Madrid, Fundación MAPFRE, October 2018

Global economic growth is losing momentum across the board which seems to confirm the signs of exhaustion that herald a change in the economic cycle. At the moment, the current growth environment is favorable to the development of the insurance market, particularly in the Non-Life and Life risk segments which are closely linked to movements in the economic cycle

Table 1
Non-Life market: growth forecasts for selected insurance markets, 2018-2019
(central scenario, growth in local currency, %)

	Non-Life market	
	2018	2019
Eurozone	3.3%	3.2%
Spain	4.1%	4.2%
Turkey	13.7%	11.1%
United States	4.1%	4.0%
Brazil	10.9%	12.4%
Mexico	8.8%	12.8%
China	13.9%	15.5%

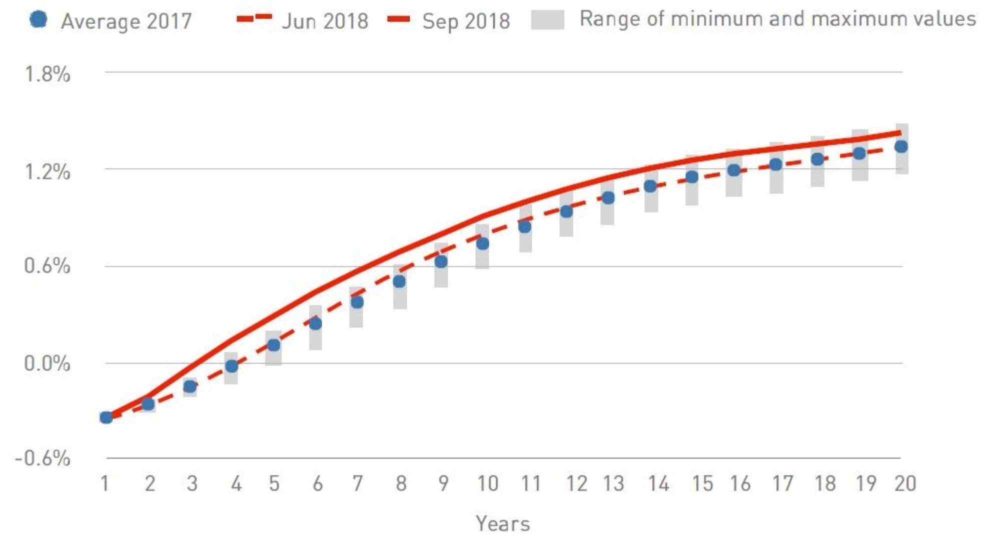
Source: MAPFRE Economic Research
Forecasting end date: October 11, 2018.

(see Table 1). However, the forecast for world economic growth has been adjusted downwards compared with that of the previous six months, being estimated at around 3.6% (3.8% in 2017 according to available data).

Moreover, the calibration of monetary policy and protectionist measures in the United States, among other factors, mean the level of uncertainty remains high. Some emerging markets continue to experience financial stress with cash outflows and declining interest rates and are having to take action to defend their currencies. The increase in market interest rates and risk premiums have a negative impact on potential financing of governments and businesses by those markets. This translates into reductions in the value of asset portfolios of insurance companies. The currency depreciation and inflation this generates is accompanied by a fall in profitability as the cost of claims increases. In spite of this, the market until now has distinguished between emerging markets depending on their underlying strength.

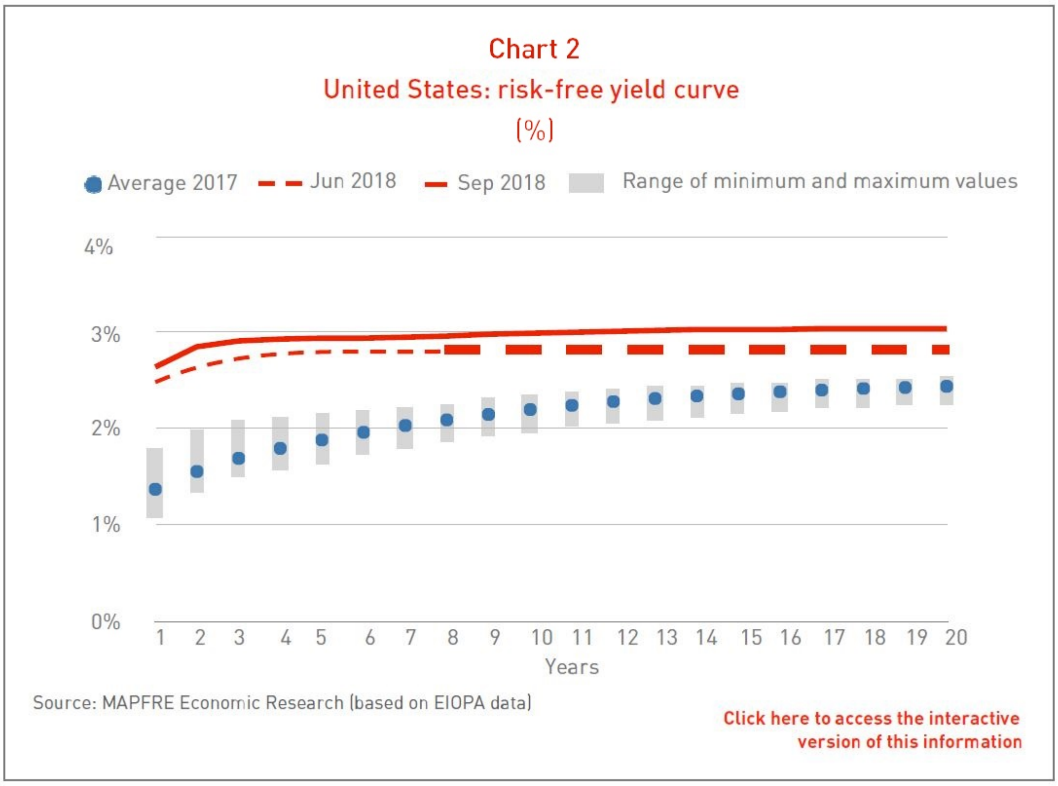
In the Eurozone, the timetable for the gradual calibration of monetary policy continues despite a slowdown in Eurozone growth, the increased risk arising from Italy's expansionary budget, and the possibility of a Brexit without agreement. Against this background, the low interest environment will still continue for some time. This will constrain development in the Life insurance segment (especially in the Life Savings and Annuity business). In the Eurozone risk-free interest rate graphs produced by the European Insurance and Occupational Pensions Authority (EIOPA), a slight rise in rates along the length of the curve is to be noted, positioned above the average values attained in 2017 and those observed in the previous quarter (see Chart 1; click here to access the interactive version of this information). The graph continues to show a positive trend with higher rates at longer maturities, but

Chart 1
Eurozone: risk-free yield curve
(%)



Source: MAPFRE Economic Research (based on EIOPA data)

Click here to access the interactive version of this information

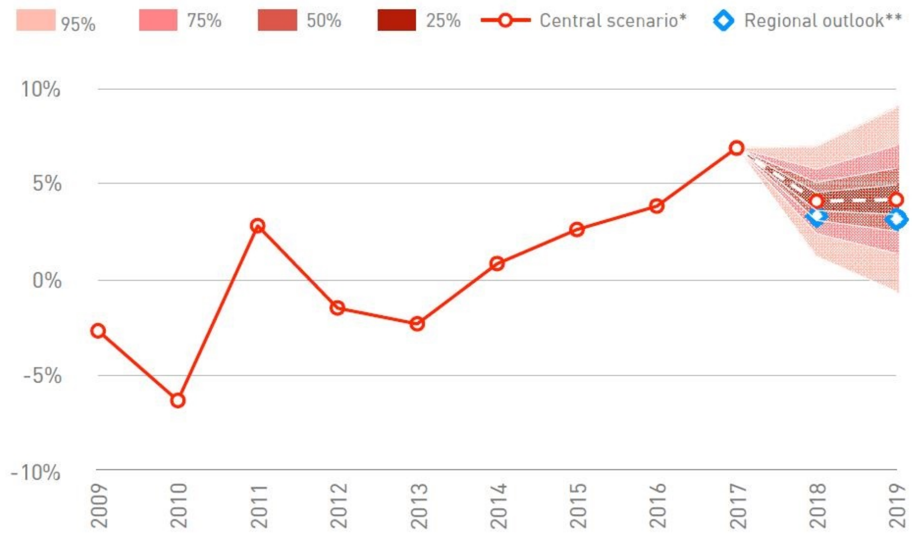


the levels are low and the short maturities on the curve continue to show negative values.

In the United States, the consistent increase in employment and gradual growth in salaries will continue to support growth in disposable income and consumption, although at a lower rate as a result of the effects of the fiscal stimuli slackening off and finance costs caused by the calibration of monetary policy increasing. Although a change in the cycle is expected, the economy is at a stage that continues to be favorable for the insurance industry, especially with reference to the Non-Life and Life risk businesses. However, the current economic cycle is already the longest in this country's post war history, so it is possible that we are at a very advanced stage which the latest fiscal stimulus is prolonging.

Moreover, inflation has stayed close to the Federal Reserve's objective for some months. It is expected that the quarter-point rise in interest rates will happen in December, followed by two or three rate increases in 2019. To be noted from the risk-free interest rate graphs produced by EIOPA are the increases, affecting all points on the curve which in the last quarter stays level and moves in parallel, except for a slight upturn in the two-year rate (see Chart 2; click here to access the interactive version of this information). This higher interest rate environment, which should in principle be favorable, does however complicate the development of the Life Savings and Annuity business. A flat curve, an increase occurring more suddenly than initially forecast, and the very expectation of interest-rate rises damage this business in the short-term, given that companies need time to adapt to new products, and guaranteed rates in their portfolios and the surrender of policies with guarantees sold at interest rates lower than market rates can occur. In these

Chart 3
Spain: outlook for growth in the Non-Life insurance market
(%)



Source: MAPFRE Economic Research
* ARIMA model ** Structural model for eurozone markets
Forecasting end date: October 11, 2018.

circumstances also, the demand for savings products can be slowed down whilst the rate rises materialize.

In Spain, the estimated economic growth for the whole of 2018 stands at around 2.6% (3% in 2017). The end of the expansionary monetary cycle being close, and the foreseeable increase in the tax burden, are leading to downward adjustments in growth forecasts. In spite of this, expectations for the insurance industry continue to be favorable, especially in the development of the Non-Life and Life risk lines of business, although their growth could be affected by the slowdown in the economy (see Chart 3).

As regards regulatory trends, there is news about International Financial Reporting Standard (IFRS) 17 on Insurance Contracts. In principle, this standard will be applicable to the 2021 consolidated accounts of quoted companies. However, in order for it to be obligatory for European insurance groups, it has to be adopted by the European Union after consultation with the European Financial Reporting Advisory Group (EFRAG).

In the second quarter of 2018, EFRAG informed the body that issued the standard (IASB) that it had identified a number of issues which in its view merited further consideration. Insurance Europe (an association which represents the big European insurance companies) issued its position on this request, asking for a delay in the planned timescale for implantation of the standard, extending it by two years. The IASB has currently allowed a delay of one additional year.

Moreover the International Association of Insurance Supervisors (IAIS) launched a public consultation about the new version of the International Capital Standard (ICS Version 2.0), which concluded at the end of October. This consultation is an important milestone in the process for adopting the definitive standard which is planned for the end of 2019.

The full analysis of the sectoral prospects for the insurance market can be found in the report 2018 Economic and Industry Outlook: Fourth Quarter Perspectives prepared by MAPFRE Economics.

Insurance Solvency Regulation Systems

Author: MAPFRE Economics

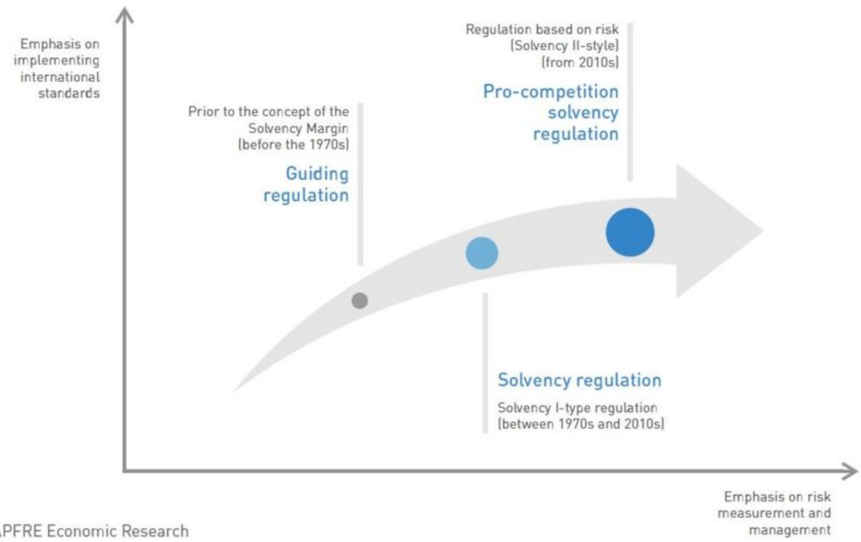
Summary of the report's conclusions:
MAPFRE Economics
Insurance Solvency Regulation Systems
Madrid, Fundación MAPFRE, January 2018

Progress toward risk-based regulation is an element that can stimulate supply growth and therefore raise the participation of insurance in the economy, in that it allows for a more efficient allocation of capital, and creates incentives for more professional management of insurance companies. As such, it is possible to align the prudential objectives of regulation with incentives for an environment favorable to competition and supported by efficient risk management.

Significantly, in recent years, in particular over the course of the last two decades of the 20th century, financial regulation has been developing and keeping pace with the process of economic and financial globalization. This progress in regulation has been led by the banking regulators who have developed and refined risk measures as an essential factor in the determination of capital risk weights and incorporated additional pillars into quantitative requirements (strengthening the governance and discipline of the market) in order to help in maintaining solvency and integrity in the banking system, in particular because of the latest global crises.

In the case of insurance companies, which represent one of the main institutional investors worldwide, the evolution of prudential regulations has followed a different path to the one taken by credit and securities firms, although in recent years it has had to converge with conceptual elements common to the rest of the financial system. Despite insurance industry regulations having traditionally been limited to domestic markets, they are currently undergoing a regulatory homogenization process (see Chart 1)

Chart 1
General trends in prudential insurance regulation



Source MAPFRE Economic Research

Regulatory progress concerning insurance markets comprises three key dimensions. The first consisted of the International Association of Insurance Supervisors (IAIS) which started to prepare the regulation and supervision principles and standards. The second, regionally and in terms of the main markets, was the decision to modernize existing solvency regulation systems. And the third was the definition and establishment of macro-prudential oversight measures to limit the potential systemic effects resulting from insurance activities, thereby contributing to maintaining financial stability worldwide.

However, regulatory evolution in the insurance industry is taking place progressively and asymmetrically by country and region. This is what can be inferred from the analysis of a sample of countries and regions of the world that is considered to be representative.

To measure the state of progress in a regulatory system that is purely based on risks, a specific metric has been employed that achieves this comparison. It is called the "proximity to risk-based regulation index" (I-RBR)). The outcome of the analysis produced the results shown in Chart 2 (refers to the regulatory position in January 2018).

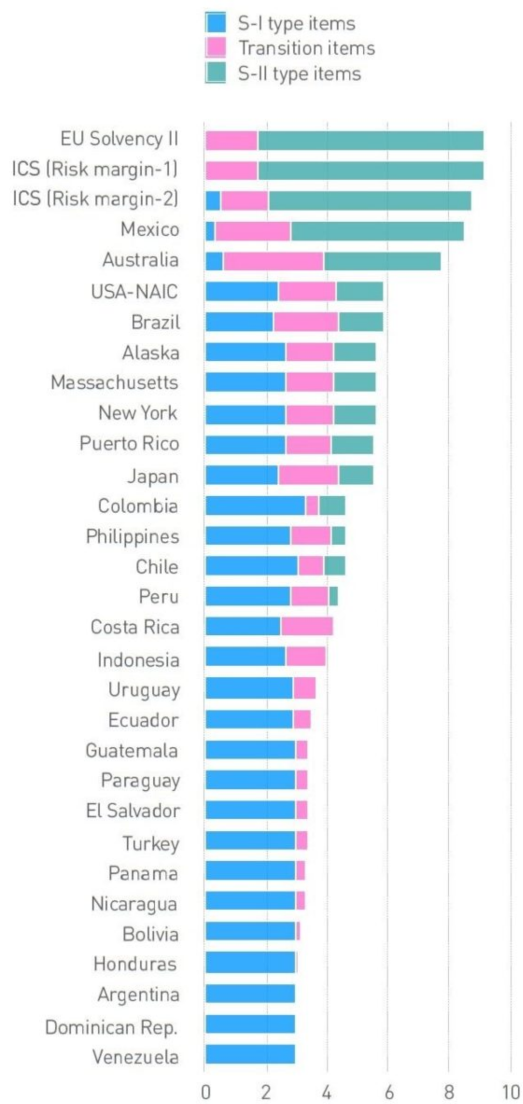
It is important to note that the I-RBR does not seek to rate the effectiveness or quality of market regulation or the effectiveness of supervision tasks, but rather to measure the transition process from regulatory frameworks to risk-based regulations, both for purposes of establishing capital risk weights and to consolidate better management of capital, based on the terms established in the respective regulations.

In 2016, the European Union took a definitive step following the entry into force of Solvency II, one of the most advanced risk-based solvency regulatory capital systems, alongside the Swiss Solvency Test, which seek to adapt capital requirements to the risk profile of each insurance company and its groups. Thus, an efficient allocation of capital is sought, within confidence levels considered adequate for the protection of policyholders.

Worldwide, the International Association of Insurance Supervisors (IAIS) is working on creating harmonized solvency supervision frameworks, both for global systemically important insurers (GSIIs) and internationally active insurance groups (IAIGs) with a view to creating a common supervision framework (known as ComFrame), which includes, as one of its key elements, an international standard for the calculation of regulatory capital based on market-adjusted risks and valuations – the International Capital Standard (ICS).

Chart 2

Models analyzed: proximity index to a risk-based regulation (I-RBR)



Source: MAPFRE Economic Research

Analysis by regions

In the United States, the National Association of Insurance Commissioners (NAIC) has, since the 1990s, been developing a standard methodology for calculating the minimum capital considered necessary to underpin insurance companies, depending on their size and risk profile, (called Risk-Based Capital – RBC). This is currently being revised via the Solvency Modernization Initiative (SMI). A characteristic of this system is that it is not a standardized one because regulatory powers are decentralized down to individual States which can incorporate into their respective legal systems the model rules drafted by the NAIC. To date, some States have adopted it with amendments that do not affect the RBC designed by the NAIC. As such, it cannot be said that it is generally applied across the insurance market in the United States.

In Latin America, although some markets like Mexico and Brazil have made significant progress in the regulatory adjustment process, generally speaking, there is still progress to be made at regional level for the implementation of risk-based regulatory solvency capital calculation models, especially with regard to the pillar of quantitative requirements. It is worth noting that in countries with relatively small markets, steps have been taken to implement the governance requirements, dividing functions as part of which the risk function plays a significant role in the management of insurance companies, which in any case, must be looked upon positively.

In the Asia Pacific region, Australia and Japan, two mature and developed insurance markets, have shown a greater degree of progress with their regulations. Of the two, Australia is closer to implementing a risk-based regulatory system. Nonetheless, Japan has taken significant steps in terms of handling insurance and financing risks. At present, Japan's regulatory and supervisory authorities are in the process of developing aspects that require further improvement, performing field tests to assess the impact of their introduction, with a particular focus on the effects caused by long-term low-interest rates.

Furthermore, the sample of Asia Pacific region markets analyzed includes three emerging markets: the Philippines, Indonesia, and Turkey. The Philippines and Indonesia have made progress in the handling of financial risks and those deriving from insurance obligations, maintaining, nonetheless, limits in terms of assets in which insurers can invest and a strict system concerning the authorization of new products. Finally, Turkey has the system that most closely mirrors Solvency I type systems, although some progress can be seen in relation to the handling of financial risks.

Global vision of regulatory progress

Regulatory progress can greatly contribute to the goal of developing the market, when it is carried out gradually and in parallel to the development of technical capacities of both the industry and regulators, as well as to the creation of the necessary market infrastructure for its proper implementation. Therefore, particularly in terms of emerging markets, the first phase for implementing risk-based regulations entails the development of these institutional and market conditions, which involves coordination work in the medium-term between financial authorities and the insurance industry.

Concerning quantitative requirements, insurance companies must firstly have statistical information that makes it possible to model the risks that quantitative requirements entail. Risk measurements employ intensive statistical techniques (stochastic modeling) in terms of the use of information. The same occurs with qualitative requirements, as part of which appropriate risk management by insurance companies is supported by the ability to employ this type of quantitative analysis technique. As a result, a first indispensable precondition for the application of a risk-based regulatory system consists of there being (in the form of a public good available to all market participants) sufficient, reliable, appropriate and homogeneous information concerning insurance operations, which makes it possible to model inherent financial and technical (underwriting) risks. Furthermore, this information must comprise a sufficiently far-reaching and detailed series and be generated from continuous bases.

Secondly, trained, knowledgeable and skilled professionals must be available to undertake risk modeling work (actuaries, mathematicians and, in general, professionals with skills in the field of quantitative techniques). These professional profiles will be required both by the supervisory body and the insurance industry and demand for them may increase insofar as, first, these types of measurements are performed internally as part of institutional operations and additionally, in line with market growth and development. Furthermore, the market itself may require this type of professional profile to perform parallel functions (external auditing, consultancy, external analysis, etc.).

Thirdly, efficient financial markets are required, the development of which makes it possible to undertake efficient asset-liability management (ALM), which represents one of the essential activities in the risk management process. This process consists of matching terms, duration, interest rate and the currency comprising the obligations deriving from insurance policies and the investments of insurance companies with an appropriate approach to credit risk management. To this end, having adequate knowledge of the characteristics of the company's technical liabilities is insufficient; efficient financial markets are also required, markets in which the level of development makes it possible to retain investment instruments that provide for an efficient ALM process.

Fourthly, and linked to the preceding precondition, it is essential that the guidelines framework does not establish limits (other than rationale of insurance activity regulations) relating to the acquisition of financial assets available on financial markets (for example, financial assets in foreign currency). The presence of this type of limitation in specific markets would impede or significantly hinder the ALM process and, as a result, the adequate implementation of risk-based regulations.

And finally, legal barriers to reinsurance operations must be removed, as applicable, in such a way that it is possible to adequately disperse and mitigate technical risks so that, by pooling other risks on the international stage, their potential impact on the insurance company that directly assumed them can be mitigated.

In terms of governance requirements, progress made implementing this type of regulatory model requires the development of an organizational and business culture to a certain extent, insofar as governing bodies are able to formally and genuinely act as a driving force in the management of companies, structured around an appropriate risk management strategy.

Therefore, the adaptation process is by no means a quick process; rather, it involves, in most cases, an organizational adaptation and maturity that makes it possible to internalize regulatory standards. This process must be based on solid bases in the medium-term, as demonstrated by the mature regulatory systems developed in this regard.

As far as products and competition go, the absence of legal limitations (the logical limitations of a prudent approach to solvency management aside) is an essential prerequisite so that companies can launch and adjust the pricing of their products, first in terms of essential tools that protect the financial position and solvency of companies in the event that specific financing and underwriting risks materialize and, in addition, facilitate a reaction in the light of competition on the market.

The complete analysis can be found in the report Insurance Solvency Regulation Systems, prepared by MAPFRE Economics.

Longevity and Aging in the Third Millennium

Authors: José Miguel Rodríguez-Pardo
& Antonio López Farré

The phenomenon of human longevity can be addressed from two different approaches. Firstly, from a population demography perspective, by applying complex biometric statistical models, the results of which have proven this to be a robust approach for understanding the dynamic of survival and projecting it in the medium term with reasonable predictive capacity. The second approach can be found in biomedicine, where the level of biological deterioration of the individual or senescence is determined through the analysis of specific biomarkers.

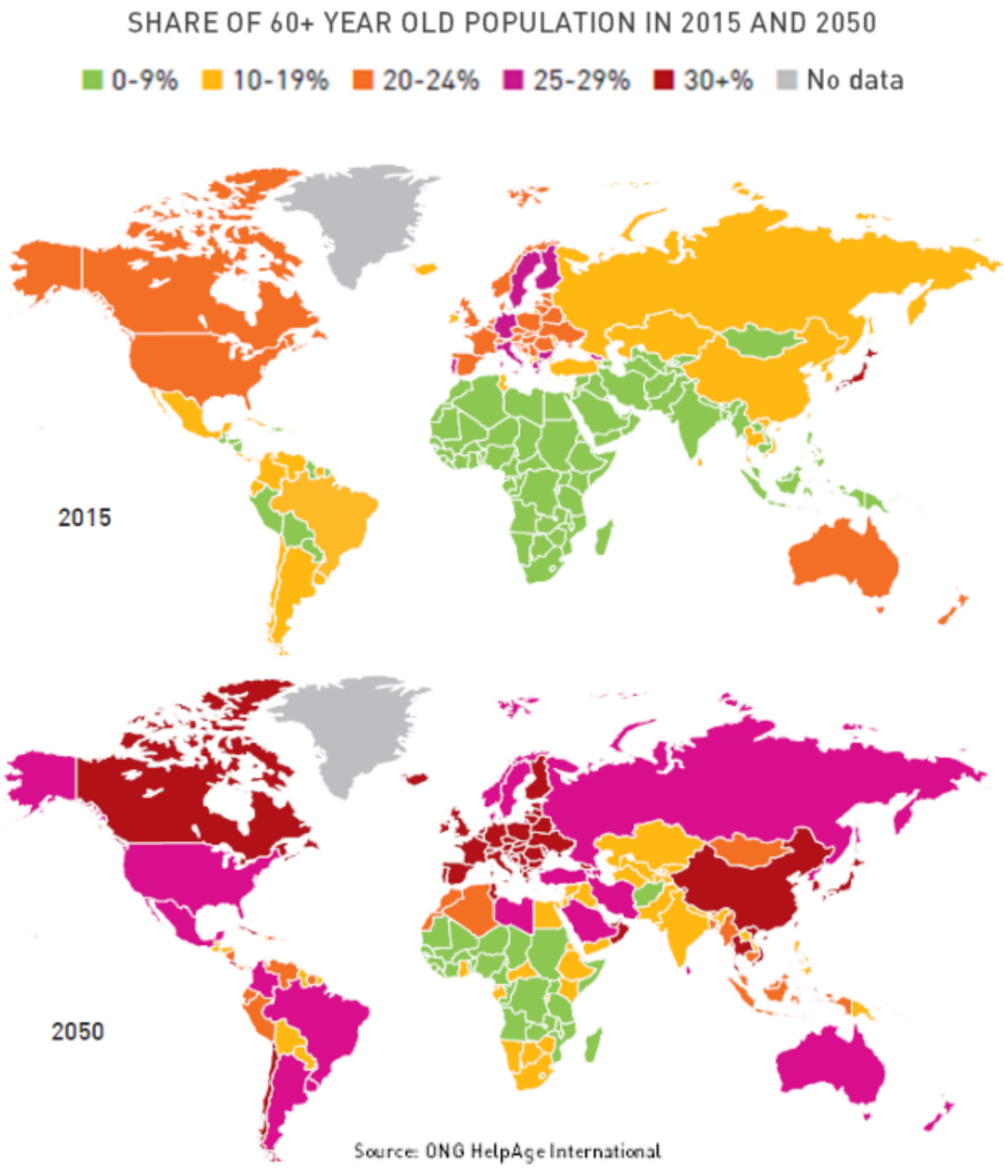
Both fields of knowledge may encounter the use of the variable biological age insofar as it explains individual aging and is capable of determining life expectancy as a predictor with a higher degree of precision than that provided by chronological age.

Longevity in the third millennium

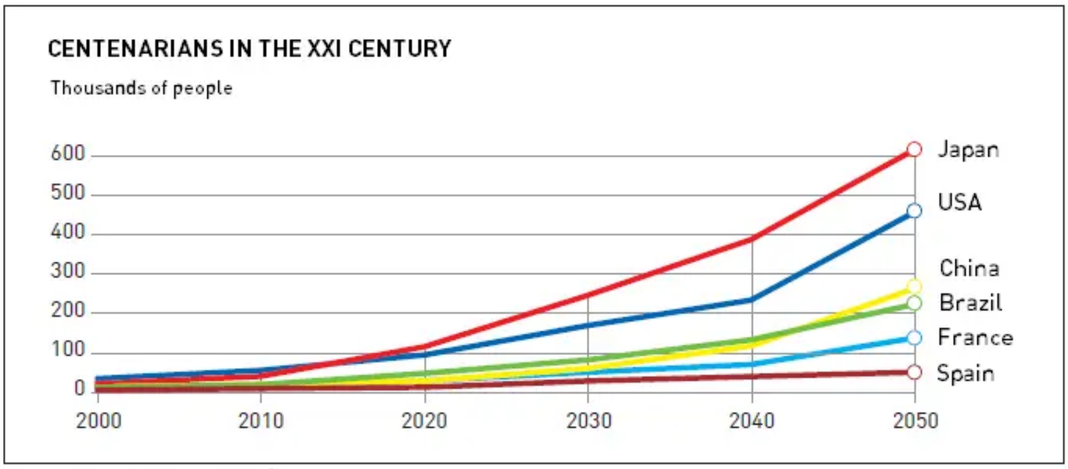
The 20th century can be considered the century that has contributed, like no other period in history, to the increase of life expectancy in all four corners of the planet. The analysis of the causes that explain this unprecedented increase is based on multiple factors, such as improved sanitary conditions, universal access to medicine, the gradual decrease of poverty rates, and the development of medicine itself.

The improvement in life expectancy can be seen in all age cohorts and it was at the end of the century that we began to reach ages known as the fourth age (85 years), defined as the new age used to define an elderly person.

In the 21st century, in terms of human survival, we are seeing a new phenomenon emerge in the form of the gradual increase of the centenarian population. While today it remains exceptional to live to the age of 100, as the century progresses, it will not be uncommon to know and live with people who have lived for over 100 years.



It can be said that the societies with the best longevity records have started a process of considering age independently of mortality at least until the age of retirement. The only biometric uncertainty is that of knowing whether future generations will be capable of surviving to over the age of 115 (known as super-supercentenarians), and whether 120 will be surpassed as the maximum age for human life. Recent studies that model the survival of these extreme age cohorts conclude that the mortality rate does not increase with age. On the contrary, it remains constant from the age of 105.



Source: Financial Times. EL PAÍS

The individual study of lifestyle in the regions singled out as the longest-living on the planet and of people who have surpassed the real human biological barrier of 115 years of age, enable us to know the gradients that explain differential human longevity. Indeed, specific lifestyle habits classed as modifiable contribute to achieving not only a better survival rate, but also a healthy existence.

Preventive medicine vs. healing medicine

Traditional medicine presents a clinical or healing approach, in other words, the purpose is to cure an illness when it manifests itself. In this third millennium, the field of action has broadened to embrace an approach known as 4P medicine, i.e., preventive, personalized, predictive, and participative.

This vision is centered around the capacity to act on human life before the biological activity of an illness has begun. In this context, knowledge of the human genome enables preventive medicine to be used to take a sub-clinical approach focused on trying to avoid the manifestation of an illness in the genetic substrate.

Biomedicine focused on the repair of cell damage – regenerative – or modification of deleterious genes, presents promising avenues for achieving a healthy senescence. Biomedical research tries to identify the genetic load that is distinctively present in people who have considerably exceeded human life expectancy.

The knowledge contributed by cellular or genetic preventive and regenerative medicine combined with complex modeling using algorithms developed with artificial intelligence techniques enables us to build a new field within biomedicine, i.e., predictive medicine. This discipline has much in common with the actuarial life insurance technique, the purpose of which is to estimate the morbimortality of the insured individual for the duration of an insurance contract.

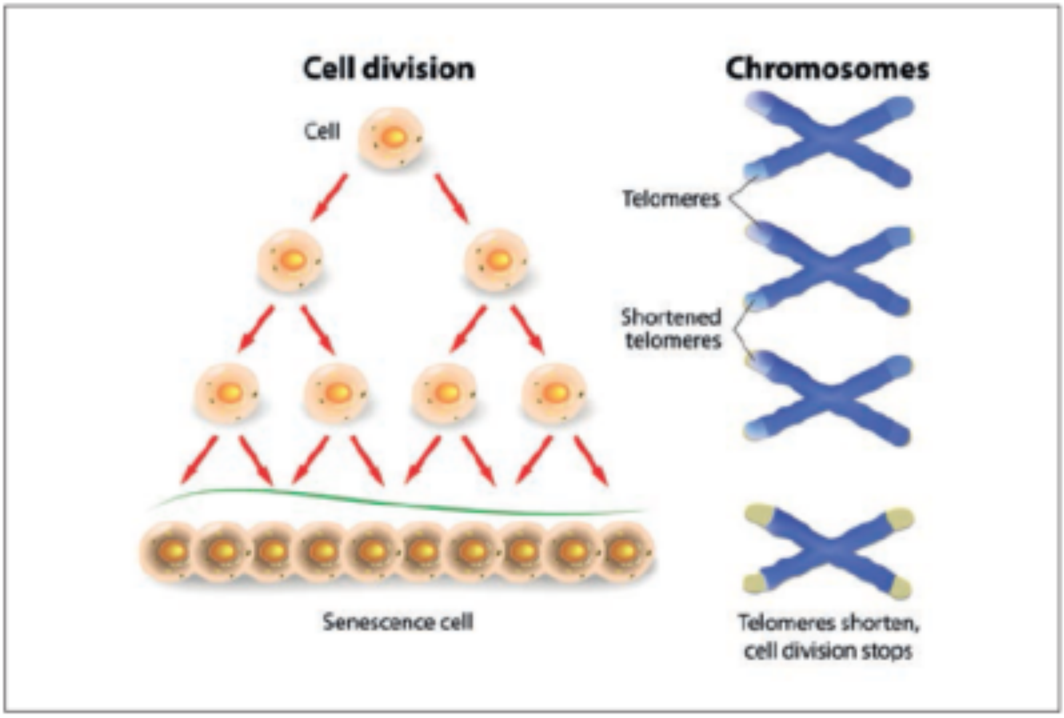
Biological age

We can define biological age as that which corresponds to the functional state of our organs compared to standard patterns for a specific age. It is a physiological concept of the state of aging of our body. According to scientific literature, the observable difference between chronological and biological age may vary by up to around 12 years.

The process of aging is a complex one in which the cells involve different molecular mechanisms the end result of which will be cellular aging (senescence) the most noticeable reflection of which is the reduction in the proliferative capacity of the cells and in the turnover of the oldest cells as they are replaced new ones. Many of these mechanisms associated to cellular aging have been identified, such as a stimulus for the oxidation process, the reduction in length of some structures present in chromosomes known as telomeres, changes in inflammatory capacity, changes in energy metabolism and in mitochondria function or changes in molecular mechanisms associated to the functionality of blood vessels, to name but a few.

The insurance industry shows great interest in advances related to the knowledge and calculation of biological age. However, before this industry can translate the use of biological age into the measurement of mortality or morbidity risk in order to calculate the premium, several considerations need to be taken into account.

- The first is of a technical nature, consisting of the need for the unit measured to meet the necessary requirements of a variable for incorporation into the price calculation, such as representativeness and statistical sufficiency.



- The second requirement, is of an ethical nature, due to the fact that its use must uphold the principal of non-discrimination of the variable of proportionality, clinical relevance, and predictive capacity of biomarkers of all types (genetic, protein, peptide, etc.), that would make up a potential algorithm for the calculation of biological age.

The personal vision of the longevity

We can only understand the phenomenon of human aging if we tackle it from a holistic approach. Aspects such as the public and/or private supplementary pension that a person receives upon reaching retirement, equity management during this period, the sanitary system where the old person lives, illnesses specific to senescence, and the public protection system to provide for dependency, must all be incorporated into the study of longevity.

These aspects must be analyzed in detail to understand longevity not as a mere statistical indicator, but to consider the individual reality of a person who is aging. Moreover, in developed societies this process already covers a period of over 20 years of life.

Last but not least, "agedness" must go hand in hand with a favorable psychosocial environment adapted to this period, guaranteeing the elderly person the dignity they deserve, in a society that is in the midst of the third millennium, where living to older than 100 years of age is becoming commonplace.

The full analysis can be found in the report Longevity and aging in the third millennium: new perspectives, prepared by José Miguel Rodríguez-Pardo del Castillo and Antonio López Farré.

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