Fundación MAPFRE

GLOBAL INSURANCE POTENTIAL INDEX

MAPFRE Economic Research

Global Insurance Potential Index

The MAPFRE GIP Index of growth potential in insurance markets

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MAPFRE Economic Research

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Presentation

The insurance industry plays an increasingly significant role in the economy and in society at large, both as a generator of employment and wealth, and also due to to its preventive function. It is generally accepted that a high level of insurance coverage is a valuable asset for the well-being of society, protecting citizens from any unpredictable hazards that may endanger their health or possessions, and providing compensation for the economic consequences that may arise from any such hazard. Insurance also provides similar protection for economic activities, encouraging sustained growth and channeling the savings administered by insurers toward medium- and long-term investments.

Nevertheless, there is a wide disparity in the degree of development of the different markets around the world, which means that some countries and regions do not benefit from the positive impact that the insurance industry can bring. Although it is difficult to determine an optimum level of insurance that will provide effective protection for homeowners, companies and institutions, it would be a sign of welcome progress if those countries that currently have a lower level of insurance coverage could narrow the gap with those that are better protected, and in this way gain a better chance of recovering more quickly from the damage arising when the risks to which all societies are exposed finally materialize.

With this aim in mind, Fundación MAPFRE is pleased to present the analysis conducted by MAPFRE Economic Research for the creation of the MAPFRE GIP Index (*Global Insurance Potential Index*). This indicator provides a global vision of the potential for closing the insurance gap, on the basis of the analysis and classification of a significant number of insurance markets, in both the developed and the emerging economies.

The main objective of Fundación MAPFRE is to promote the well-being of society and citizens, and to improve the economic, social and cultural conditions of the population, particularly of the least privileged. By publishing this report, Fundación MAPFRE seeks to continue to propagate an awareness of the insurance and social protection culture and, in this way, to contribute to the achievement of one of its fundamental objectives.

Fundación MAPFRE

Introduction

The Insurance Protection Gap represents the difference between the insurance coverage that is economically necessary and beneficial to society and the amount of coverage which is actually acquired. In this respect, the insurance gap not only provides a way of measuring an insurance market's degree of development, but also acts as an instrument for estimating its potential. In its various reports on the behavior and performance of insurance markets, MAPFRE Economic Research has used this index for this dual purpose.

On this occasion, on the basis of an analysis of the economic and demographic factors that determine the development of the Insurance Protection Gap, and of the measurement of each market's capacity to narrow the insurance gap (i.e., its speed of convergence with developed markets' levels of penetration and density), this report proposes an index that measures this potential in terms of countries' capacity to both create and harness an insurance gap as they move toward a new type of insurance market.

The MAPFRE GIP Index (*Global Insurance Potential Index*) is an indicator that assigns a score to insurance markets and ranks them in accordance with their potential contribution to closing the global insurance gap (measured in basis points in relation to the global gross domestic product or as a percentage of the total insurance market). It is a measurement tool that is compatible with the concept of "market size". This indicator has been calculated for a total of 96 insurance markets, in both developed and emerging economies, so as to provide a comparative vision of the global potential for the expansion of the insurance industry in the coming years.

Through this report we hope to continue to contribute to a better understanding of the workings of the insurance market and of the factors that determine its growth in different parts of the world, with a view to equipping the insurance industry with a wider range of tools with which to continue to highlight its relevance and its contribution to social and economic development.

MAPFRE Economic Research

Executive summary

The purpose of this report is to develop a measurement to define global insurance capacity (the so-called Insurance Protection Gap, or IPG), at the same time providing both a historical and regional perspective and a breakdown in terms of market segments (Life and Non-Life). The document demonstrates that the IPG has doubled in the last twenty years, essentially due to the dynamism of the emerging insurance markets, particularly in the Life insurance business segment. Nevertheless, in relative terms compared with the size of the actual market, the IPG has in fact stabilized and is now even narrowing down, resulting in a convergence between insurance volume and global income.

The analysis of the insurance gap paves the way for an analysis of the mechanisms that govern its evolution, arising from initial conditions and growth differentials that are closely linked to trends in population, income, market penetration (premiums compared to GDP), density (premiums per capita), and the elasticity of premiums in terms of the economic cycle. By analyzing the relationship between the IPG and these factors, we have been able to create an indicator that, on the basis of current values, anticipates which markets will most contribute to closing the global insurance gap.

The report thus proposes a measurement of insurance potential, the MAPFRE GIP Index (*Global Insurance Potential Index*), which establishes an order of ranking and a classification table for the various markets over time. The ranking established for the Life and Non-Life segments identifies a number of markets with a high insurance potential, referred to as Tier 2, corresponding to approximately 24 markets out of the 96 analyzed. Co-existing with this category and forming a clearly delineated group of their own are the so-called Tier 1 markets, which are characterized by the highest levels of insurance potential.

Unsurprisingly, the Life and Non-Life rankings are headed by the largest economies, being those that can narrow the insurance gap most rapidly. This has remained a constant feature throughout the period analyzed (1997-2017), with only minor changes occurring in each ranking. It has also been demonstrated that the insurance potential is highly concentrated in the Tier 1 countries, which thus include over 50% of the total IPG, despite representing less than 5% of the sample analyzed. The countries with the greatest potential with regard to the MAPFRE GIP index are, overall, China, the United States, India, Japan and, some distance behind, Indonesia, Russia, Brazil, Mexico and Turkey.

1. The Insurance Protection Gap: methodology and measurement

1.1 Definition

The Insurance Protection Gap (IPG) in a region or country represents the difference between the insurance coverage that is economically necessary and beneficial to society and how much of that coverage is effectively acquired. Estimating the IPG helps to determine the potential market for insurance, which is the market size that could be achieved if the gap were to disappear. In this way, the IPG is not a static concept, but rather it evolves in accordance not only with the growth of a country's economy and population, but also with the emergence of new risks inherent to continuing economic and social development.

From a methodological viewpoint, the IPG can be measured in overall terms by applying two approaches. The first of these is an ex-post approach, based on the losses observed. In this case, the IPG is the difference between economic losses recorded over a specific period and the portion of these losses that were covered through the mechanism of insurance compensation. The second is an ex-ante approach, analyzing the optimum levels of protection, estimated as the difference between the socially and economically appropriate level of risk coverage and the real level of protection. For the exercise presented in this document, in line with the methodological focus applied in other reports prepared by MAPFRE Economic Research[1], it is the second approach that has been employed.

In this way, given that the objective when acquiring insurance is to reduce the contingencies affecting present and future income and wealth, the optimum level of insurance identified will correspond to the objective of finding a "completeness" in agents' balance sheets. This means having assets that provide variations in worth for each contingent situation, making it possible to neutralize the risk (i.e., by obtaining coverage or hedging).

It is important to highlight that the IPG is, ultimately, a shortfall in consumption, and is thus subject to the same forces that govern it. Accordingly, factors such as sustained economic growth, increases in personal disposable income, the general development of the financial system, an efficient regulatory framework and the application of public policies aimed at increasing financial inclusion and education, are all elements which reduce the IPG.

1.2 Methodological aspects

As has been noted previously, the IPG represents the difference in insurance coverage between an ideal state of affairs and what each economy really generates. In this way, and in line with the approach referred to above, the IPG can be defined as the differential in penetration (premiums vs. GDP) between the market concerned and a theoretical benchmark.

For the purposes of this study, in terms of market density and penetration this benchmark corresponds to the moving average over 5 years of the 90th percentile in each of the measurements. The selection of this percentile is not accidental, given that the sample is made up of 96 countries. The 90th percentile guarantees the inclusion of at least 9 countries above the benchmark, and ensures that it does not constitute an atypically high value produced by errors of measurement. The measurements of density and penetration in the benchmark thus display stable levels over time, guaranteeing that the IPG and its subsequent growth will be genuine values. In the case of the other variables (e.g., macro-economic and demographic factors), a country is identified that reproduces the ideal conditions that should be in place to attain the levels of penetration and density found in the case of the benchmark; specifically, a mature economy that in terms of its population and economy enjoys a stable level of growth[2].

This differential in terms of penetration with respect to the benchmark may be expressed as a nominal USD value or as a proportion of the local gross domestic product (GDP), of global GDP, of local business or of world business. In this way, the absolute IPG, measured in dollars, will be calculated based on the country's difference in penetration compared with a benchmark reference; i.e., it can be defined through this expression (1.1):

$$B_{i,t} = (\hat{P}_t - P_{i,t}) \cdot Y_{i,t} \qquad (1.1)$$

Where $B_{i,t}$ is the IPG of country *i* during time period *t*, P_t is the penetration, and $Y_{i,t}$ is the GDP in USD values adjusted for purchasing power parity (PPP).

Given the relationship between penetration and density (premiums per capita), and between GDP, population and GDP per capita (see Appendix II), the IPG can be re-expressed as a difference in degrees of insurance density corrected by the differential between income per capita and size of population (1.2):

$$B_{i,t} = Pob_{i,t} \cdot \left[D^*_t \left(\frac{y_{pc,i,t}}{y^*_{pc,t}} \right) - D_{i,t} \right] \qquad (1.2)$$

Where $B_{i,t}$ is the absolute IPG of country *i* during time period *t*, $D_{i,t}$ is the density, $y_{pc,i,t}$ is the GDP per capita, and $Pob_{i,t}$ is the population. The variables with an asterisk (*) refer to the measurements of the benchmark or reference parameter.

It is important to highlight that expressions (1.1) and (1.2) are static versions of the insurance gap. In its dynamic version, the IPG can be expressed as a function of income forecasts, population levels, potential rates of population growth, and of income and premiums vs. income elasticity.

Specifically, the IPG in its dynamic version is calculated in terms of[3]:

$$B_{i,t+k} = Pob^*_{i,t+k}$$

$$\left\{ D^*_t \left[1 + (\alpha\beta \Delta Y^*_t - \Delta Pob^*_t) \right]^k \left[\frac{y_{i,t+k}}{y^*_{t+k}} \right] - D_{i,t} \left[1 + \left(\alpha\beta \Delta Y_{i,t} - \Delta Pob_{i,t} \right) \right]^k \right\} \qquad (1.3)$$

Where *Pob** is the population of the *benchmark market*, $B_{i,t+k}$ is the IPG during the period *t* + *k*, *D* is density (*D**, of the *benchmark market)*, ΔY is the annual variation in GDP, *y* (*y**, of the *benchmark market*) is the GDP *per capita* measured in USD values adjusted to PPP, and $\alpha\beta$ is the elasticity of demand for insurance in relation to income.

The above implies that the future IPG depends on certain relative initial conditions such as insurance density, income per capita, and the elasticity of the growth in premiums in relation to the growth in income and the population. Given also that the closing of the IPG is ultimately an exercise in convergence, it will

Table 1.2
Sensitivity of the IPG

	(Variable)	Formulation (condition)
Initial conditions for growth	Initial IPG	$\frac{\partial B}{\partial B^i_{i=0}} > 0$
	Relative penetration	$\frac{\partial B}{\partial P^R} < 0$
	Relative elasticity	$\frac{\partial B}{\partial a^R} > 0$
	Relative GDP per capita	$\frac{\partial B}{\partial PIBpc^R} < 0$
	Level of population	$\frac{\partial B}{\partial Pob^i_{i=0}} > 0$
Differential	Population growth gap	$\frac{\partial B}{\partial \Delta Pob^R} > 0$
	GDP growth gap	$\frac{\partial B}{\partial \Delta PIB^R} > 0$

Source: MAPFRE Economic Research

also depend on the dynamics of income and population. The effect that each of these factors has on the estimation of the IPG is set out in Table 1.2.

1.3 Data

The analysis of the IPG proposed in this document comes in two phases. The first of these is the calculation of the IPG for the period 1997-2017, which is undertaken with real variables and data. The second is the simulation of future trends for the IPG for the period 2017-2027 through projections.

For the purposes of this report, a sample has been used in both cases consisting of 96 countries, 26 of which are developed economies, the remaining 70 representing economies classified as emerging. The developed markets have in turn been divided up into two sub-groups: (i) countries that are members of the G7 (Canada, France, Germany, Italy, Japan, the United Kingdom and the United States), and (ii) the other developed markets. In the same way, the emerging markets have been divided into: (i) the BRICS countries (Brazil, Russia, India, China and South Africa), and (ii) the other emerging markets.

2. Analysis of the Insurance Protection Gap

2.1 The IPG during 1990-2017

Description

In order to estimate the real IPG corresponding to the range of markets selected, measurements were required for premiums by business segment (Life and Non-Life) and for the local IPG, with both nominal USD values and USD values adjusted for PPP. The premiums taken into account for the calculation of the penetration value[4] are data collected on an annual basis, expressed in nominal USD values, and cover both Life (Risk and Savings) and Non-Life business. In the case of the GDP, the data are collected on an annual basis and expressed in nominal USD values or in USD values adjusted for PPP, based on the ICP (International Comparison Program) 2011 round[5].

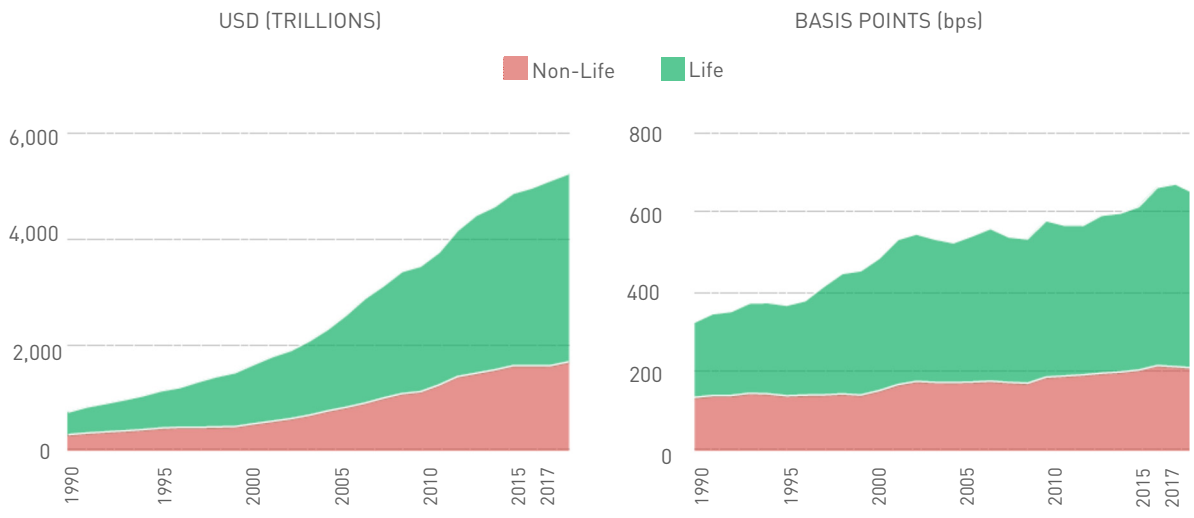
Developments 1990 - 2017

Since 1990, the IPG has displayed a tendency to grow, both in nominal USD values and when measured as a proportion of world GDP. The measurement in USD (see Chart 2.1-a, left) shows that the insurance gap for both market segments (Life and Non-Life) quintupled, increasing from under USD 1 trillion in 1990 to over USD 5 trillion in 2017. In particular, the distribution of the gap between segments showed a 9.5% change in favor of the Life segment between 1990 and 2017. As a result, Life business now represents 68% of the total gap, compared with 59% in the early 1990s.

In addition, the measurement of the IPG as a proportion of the world GDP (Chart 2.1-a, right) has also displayed a tendency to increase for most of the period. This trend started to reverse from 2014 onward, when it reached a maximum close to 700 basis points (bps) of world GDP, later falling back to levels around 650 bps.

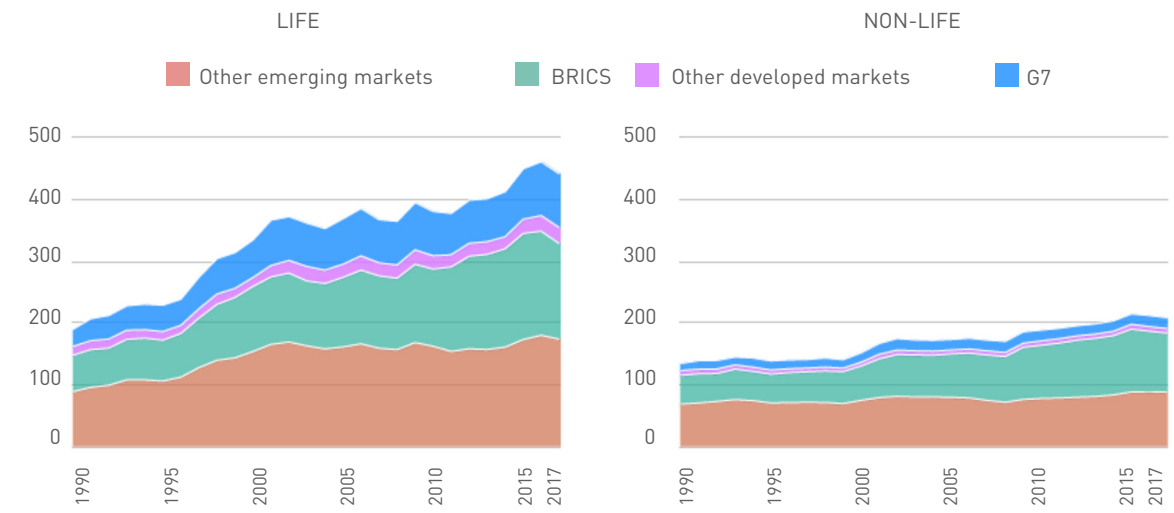
By expressing the IPG in terms of global GDP by economic regions (see Chart 2.1-b) it can be

Chart 2.1-a
IPG levels by market segments, 1990-2017
(trillions of USD, basis points of world GDP)



Source: MAPFRE Economic Research

Chart 2.1-b
IPG levels by market segments and economic regions, 1990-2017
(basis points of the global GDP)



Source: MAPFRE Economic Research

seen that the emerging markets are the main contributors to the global IPG, since they have represented between 70% and 90% of the global insurance gap during the 27 years registered between 1990 and 2017.

Despite the increase in the IPG in absolute terms, the global IPG has stabilized and has even been gradually narrowing down for most of the last three decades. This should not be a cause of surprise, since the process of convergence operating in global insurance trends means specifically that, as countries enjoy increased levels of income and their population's habits are transformed, they tend to converge toward a stable optimum level of insurance[6].

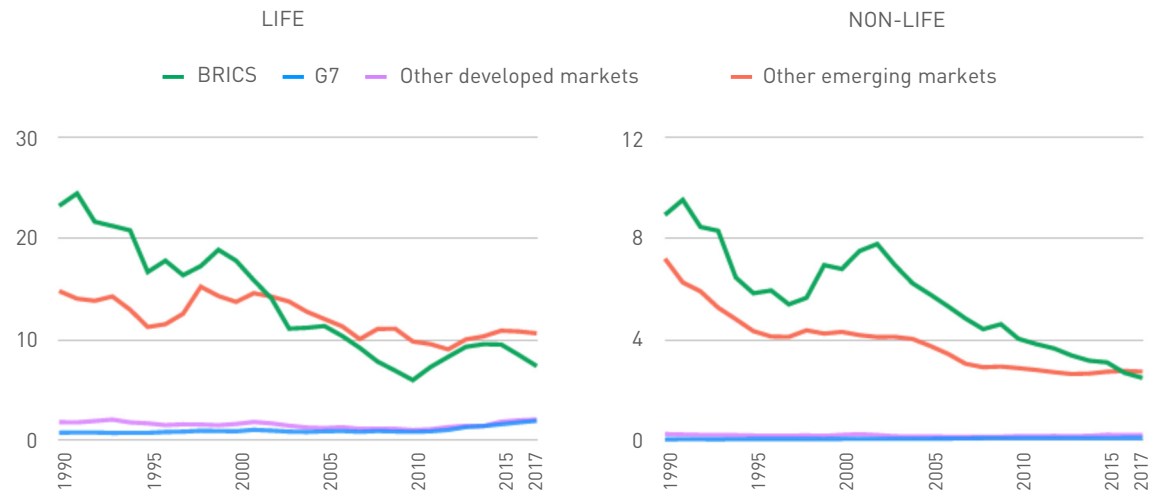
An approach to measuring the IPG that enables us to analyze the speed of this convergence is to measure it as a proportion of the insurance market. In Chart 2.1-c a dynamic can thus be observed in both segments by which the emerging markets narrow the insurance gap to a significant extent, while the developed markets maintain, or even slightly increase, their IPG in the case of the Life segment. In the case of the Life segment, the BRICS countries reduce their gap as a proportion of their business approximately 16.5 times, while the other emerging markets do so four times. With regard to the Non-Life segment, the BRICS narrow the gap approximately six times, while the other emerging economies display a narrowing equivalent to five times as a proportion of the local insurance market.

2.2 Simulation of the IPG during 2017-2027

Description

The simulations of the behavior of the IPG are undertaken by applying the dynamic expression described in equation 1.3 in the previous section of this document. In order to apply this expression, however, estimates and projections of GDP and population are required, in terms of both levels and rates of potential growth. The dynamic definition of the IPG also requires estimates of the elasticity of premiums to GDP. In relation to population levels, United Nations population projections for 2050 are used. The rate of potential population growth is calculated as the average of the growth levels of the last 5 years up to 2017. The GDP levels for 2027 are projected using a moving average calculated from five periods on the basis of real increases

Chart 2.1-c
IPG as a proportion of the regional insurance market, 1990-2017
(number of times real insurance market)



Source: MAPFRE Economic Research

(applying a GDP deflator). Finally, the elasticity of premiums to income level is calculated by applying the results of the structural model estimated by MAPFRE Economic Research[7].

Simulation 2017-2027

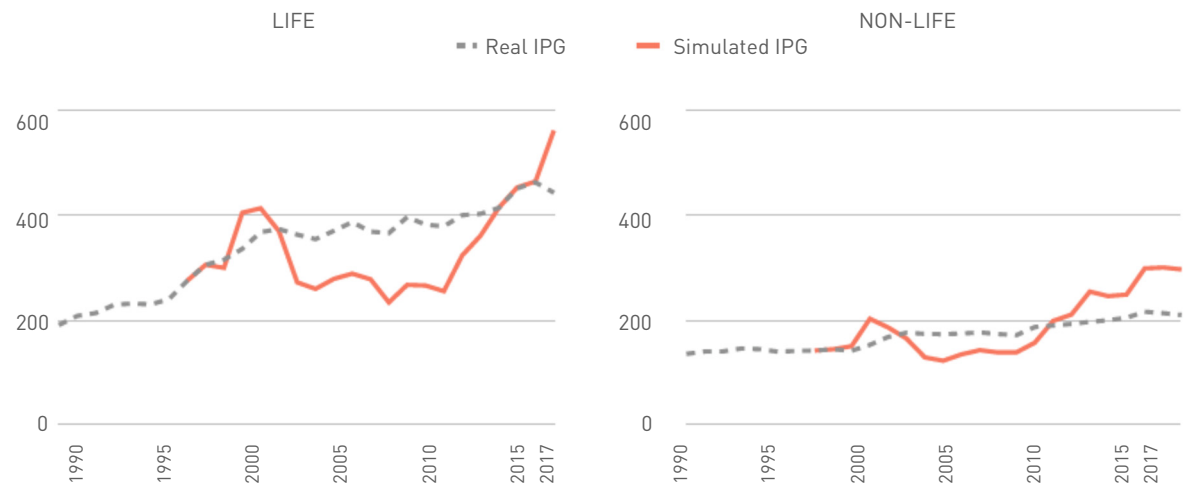
Using the analytical solution described in equation 1.3, the base year was established as 1997. This choice as the initial year is justified by the fact that the global macroeconomic stability that had accumulated up to this time means that the potential growth levels of the 96 countries that make up the sample will not be affected by growth values that are atypically high or low, such as those that would be observed during the following two decades as a result of global phenomena (e.g., the dot-com crisis, the Lehman Brothers crisis and the sovereign debt crisis, among others).

The simulations of the IPG are illustrated in Chart 2.2. From the analysis of this information it can be observed that, in general, the levels simulated are very close to the levels observed during the period of the analysis, for both the Life and the Non-Life segments. It is important to stress that the simulations are positioned around the levels observed, displaying a process of adjustment around the real levels of the insurance gap.

The simulations at a regional level (see Appendix I, Charts A.7 and A.8) display an effective degree of long-term adjustment in that, in general, they converge with the levels observed in 2017. It is worth noting here that during the period from 1997 to 2017 the BRICS countries and the other emerging markets register a better performance than expected, in the sense that their observed insurance gap is below the simulated level projected as a result of the analysis of the levels of income, population and potential growth of the countries concerned. This suggests that the good performance of these economies in the last two decades has had a positive impact on the insurance business, giving rise to levels of IPG that are lower than expected.

With regard to the Non-Life segment (Chart A.8), it is observed that in the case of the BRICS countries, of the other emerging markets and of the other (i.e., non-G7) developed markets, their observed IPG levels are generally situated below the theoretical values simulated, which means that they are net "overperformers". By contrast, the more advanced economies grouped together into the G7 display an opposite tendency to "underperform"), since their observed IPG levels are higher than the simulations. The various financial crises that

Chart 2.2.
IPG: observed and simulated levels, 1990-2017
(basis points)



Source: MAPFRE Economic Research

have affected the developed countries in the last two decades may have contributed to this performance.

With regard to the Life segment (Chart A.7), similar conclusions can be reached as in the case of the Non-Life business. In general terms, the BRICS countries, the other emerging markets and the other (non-G7) developed markets show a tendency to "overperform". However, it should be noted that throughout the period of the analysis, the BRICS countries constantly showed observed IPG levels that were below those expected by the analytical model. By contrast, the G7 economies are clearly "underperformers" to the extent that the insurance gap that they displayed was above the levels expected in the analytical model.

2.3 Sensitivity analysis

Thanks to the IPG simulations, we can carry out a controlled exercise to study the sensitivity of the IPG to the factors that condition its dynamics. The analytical model enables us to construct stress tests in terms of product growth, population growth and elasticity of premiums to the level of income, among other factors. These sensitivity analyses enable us to identify the intrinsic dynamics that affect the performance of their IPG over time.

The results of the sensitivity analysis as a function of the terminal IPG values in 2017 are presented in Table 2.3. These results show that the insurance gap has a negative relationship

Table 2.3
Impact on the IPG of macroeconomic and demographic shocks
(bps)

Shock	Segment	VALUE pre-2017 (bps)	VALUE post-2017 (bps)
+50% relative income per capita	Life	560.1	430.5
	Non-Life	295.5	229.3
+50% relative density	Life	560.1	676.6
	Non-Life	295.5	570.7
+ 50% relative elasticity	Life	560.1	468.0
	Non-Life	295.5	208.3
Growth in emerging markets x2	Life	560.1	502.8
	Non-Life	295.5	268.5
-50% population growth	Life	560.1	516.2
	Non-Life	295.5	284.2

Source: MAPFRE Economic Research

with increases in GDP per capita, relative elasticity and the potential growth of emerging markets. For its part, the IPG has a positive relationship with increases in relative density and population growth.

With regard to the Life segment, the most significant impacts of a shock of similar proportions in terms of the reduction of the IPG can be observed in income levels (129.6 bps), followed by elasticity of premiums to income level (92.1 bps), potential growth (57.3 bps) and population growth (43.9 bps).

As for the Non-Life segment, the most significant impacts of a shock of similar proportions in terms of the reduction of the insurance gap are observed in the levels of relative elasticity (87.2 bps), followed by income per capita (66.2 bps), potential product growth (27 bps) and population growth (11.3 bps).

This exercise enables us to identify the factors that determine the closing of the IPG, and thus to prioritize its monitoring and adherence to the insurance potential index that is presented in the following section of this document.

3. The (MAPFRE GIP) Global Insurance Potential of the index

3.1 Creation of the index

On the basis of the sensitivity analysis of the IPG simulations, it can be observed that they are extremely sensitive to income levels, to the elasticity of premiums to income, to potential product growth and population growth. A synthetic index is thus proposed that seeks to gather as much information as possible concerning the generation of the insurance gap and countries' capacity for closing it. Specifically, the Global Insurance Potential Index (or MAPFRE GIP Index) consists of seven variables that are rescaled and standardized between values of 0 and 1, where 0 indicates a low impact on market potential, and 1 indicates maximum potential. These variables are: (i) the initial IPG; (ii) the relative penetration in respect of the benchmark; (iii) the relative elasticity of premiums to income level in respect of the benchmark; (iv) the relative GDP per capita; (v) the GDP growth gap[8]; (vi) the population growth gap[9]; and (vii) the population level.

On the basis of this information, a process of statistical optimization was implemented in which the explanatory skills of the MAPFRE GIP index were maximized with regard to the closing of the insurance gap, in accordance with the values of each of the variables. The results indicate that the initial insurance gap and the GDP growth gap are by a long way the two variables that best explain a country's capacity for closing its IPG, which is reflected in the high weighting that these indicators have been given (see Table 3.1).

First and foremost, the initial IPG shows the market capacity that is available to be filled by increased insurance demand. Thus a country with a low or nonexistent IPG offers no opportunities for additional growth, so consequently insurance companies should focus on those economies that have a deficit of insurance coverage, as measured by the insurance gap. Secondly, not all countries with a high insurance deficit are alternative candidates for the growth of the insurance industry; the economies with a high growth potential are those that could close this deficit, inasmuch as the growth of wealth and the availability of goods and services also comports a greater demand for insurance. It is therefore not surprising that the product growth gap should be given such a high weighting in the MAPFRE GIP Index.

Table 3.1
Weighting on the components of the MAPFRE GIP Index

	(Variable)	Condition	Weighting
Initial conditions for growth	Initial IPG	Positive	30%
	Relative penetration	Negative	10%
	Relative elasticity	Positive	5%
	Relative GDP per capita	Negative	5%
	Population level	Positive	15%
Differential	Population growth gap	Positive	5%
	GDP growth gap	Positive	30%

Source: MAPFRE Economic Research

3.2 Overall results of the 2017 ranking (Life and Non-Life)

General remarks

The overall results of the MAPFRE GIP estimates and their corresponding ranking table are shown in Appendix I of this report in

Tables A.9 and A.10. These show the measurements and overall results that make up the MAPFRE GIP Index, and which are explained below.

Applying the methodology explained in the previous section, a score has been calculated for each of the 96 markets examined in the study. As indicated, this score reflects each market's potential capacity to close its IPG. This score is referred to as the *Gap Absorption Index* (GAI).

If the GAI is weighted in relation to the size of its market, a re-scaled score is obtained which shows the potential contribution to closing the global gap for each country. This score constitutes the MAPFRE GIP Index (*Global Insurance Potential Index*).

It is important to emphasize that both measurements offer dimensions that are mutually complementary:

a) The **GAI (*Gap Absorption Index*)** provides a score and a ranking (or relative classification) on the basis of each market's potential for closing its insurance gap, which can be considered as the equivalent of a convergence speed with the levels of penetration and density of the selected benchmark.

b) The **MAPFRE GIP Index (*Global Insurance Potential Index*)** provides a score and a ranking that aims to give each market an order of precedence in accordance with its potential contribution to closing the global insurance gap (measured in basis points in relation to the global gross domestic product or as a percentage of the total insurance market). It is thus a measurement tool that is compatible with the concept of "market size".

The abovementioned Tables A.9 and A.10 in Appendix I show both the MAPFRE GIP and GAI scores, together with the corresponding position in terms of ranking.

Given that the MAPFRE GIP and GAI scores are static measurements that are intended to anticipate the dynamism of the IPG in terms of the initial conditions and growth dynamics expected, it has become necessary to compare them with real measurements on the closure of the IPG during the period 1997-2017. Thus Tables A.7 and A.8 of Appendix I of this report provide a view of the registered narrowing of the IPG (for the Non-Life and Life segments), measured in terms of GDP and of the global insurance market. These measurements accompany the estimates of the MAPFRE GIP and GAI indexes in each case. At the same time, in the abovementioned Tables A.7 and A.8, information about the potential reduction of the local IPG for each country (i.e., its GAI) is contrasted with the real reduction of the gap achieved over the same period.

The calculation of the insurance potential was carried out over the period 1997-2017. Charts 3.2-a, 3.2-b, 3.2-c and 3.2-d show the development of the MAPFRE GIP index for the "Top 10" emerging and developed markets over the period mentioned, for both the Life and Non-Life segments. During our current analysis, however, we will focus on comparing the results obtained in 1997 (in terms of rankings versus registered changes in the gap) with those obtained in 2017 (in terms of rankings versus simulated changes in the gap[10]).

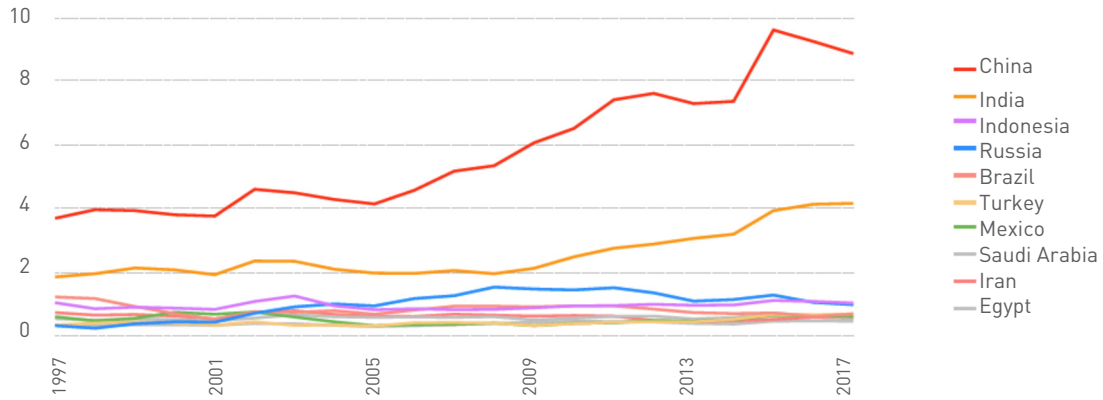
The selection of both these dates was deliberate, since we sought to maximize as much as possible the space given to demographic, economic, political and sectoral factors. A twenty-year period was thus chosen so as to capture any highly relevant long-term effects that have arisen in both the developed and the emerging markets[11].

Main results

For the purposes of the analysis, the countries placed in the Top 24 of the ranking table (i.e., those that are in the highest quartile) have been classified as **"Tier 2" countries**, while those that are in the Top 5 of the ranking (those that are in the 95+ percentile) are classified as **"Tier 1" countries**. This helps to indicate their insurance potential, since they represent countries with a high capacity for their size and/or absolute capacity to close the IPG. On this basis, the main results of the analysis conducted are as follows:

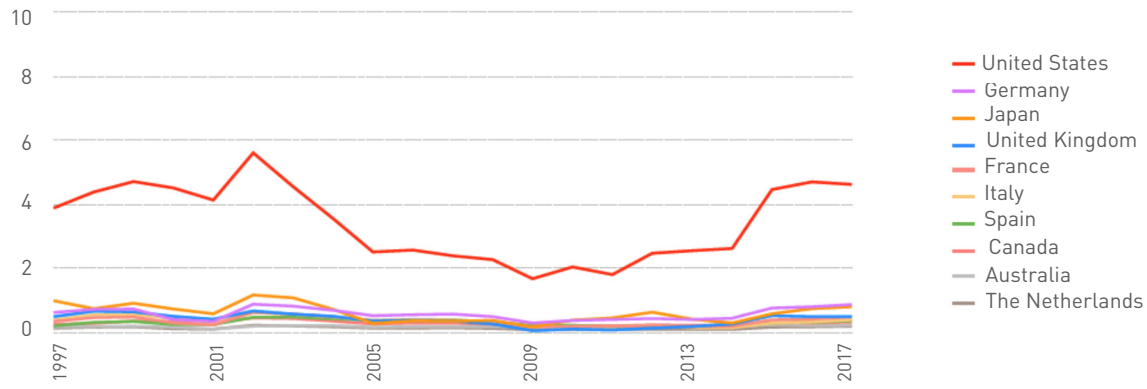
1. There is a **high concentration on the contribution to closing the global IPG,** seen in terms of GDP or in terms of the insurance market. This can be demonstrated given that, in both segments (Life and Non-Life)

Chart 3.2-a
Life: changes in the MAPFRE GIP index for the Top 10 emerging markets, 1997-2017



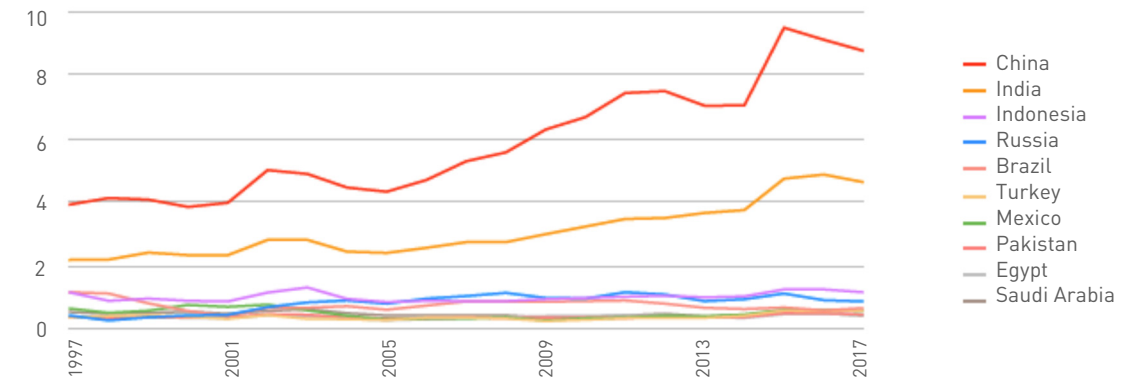
Source: MAPFRE Economic Research

Chart 3.2-b
Life: changes in the MAPFRE GIP index for the Top 10 developed markets, 1997-2017



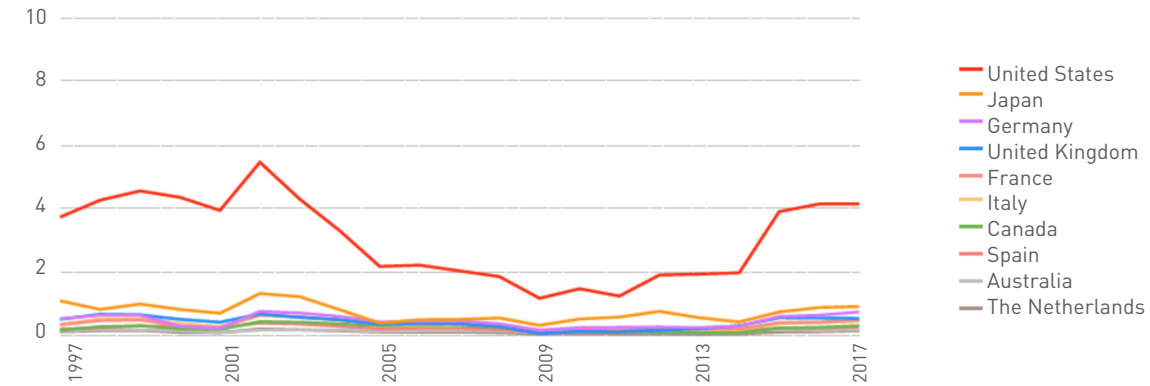
Source: MAPFRE Economic Research

Chart 3.2-c
Non-Life: changes in the MAPFRE GIP index for the Top 10 emerging markets. 1997-2017



Source: MAPFRE Economic Research

Chart 3.2-d
Non-Life: changes in the MAPFRE GIP index for the Top 10 developed markets, 1997-2017



Source: MAPFRE Economic Research

the 75+ or 95+ percentiles of the 96 markets analyzed (which approximately correspond to the first 24 or 25 countries in the ranking) respectively represent over 80% or 50% of the scores of the MAPFRE GIP index.

2. In addition, **this concentration is maintained when we distinguish between developed markets and emerging markets**, but it visibly increases: (a) when we differentiate between the emerging markets and the BRICS, or (b) with the passing of time, since the concentration increases until it represents 85% and 60% of the score mentioned above.

3. The **structure of the MAPFRE GIP ranking** is essentially dominated by China and India among the emerging markets, and by the United States and Japan among the developed markets, with scores that are significantly higher than the other countries. Two specific features should be emphasized:

   a) These four countries (i.e., China, India, the United States and Japan), together with one country from the trio formed by Indonesia, Russia and Brazil, have together formed the Tier 1 group of countries throughout the period 1997-2017.

   b) The Tier 2 group of countries, however, has been less homogeneous over time due to the fact that some emerging markets have exited this category. In general, the countries that have exited Tier 2 are from the Latin America or Emerging Europe groups[12].

4. The **potential for closing the insurance gap (MAPFRE GIP) does not always correspond to the capacity for closing the domestic gap (GAI).** A significant number of countries obtain a high score in the MAPFRE GIP index due to the relative size of their GDP, but their capacity to close the gap is limited, so that their high MAPFRE GIP ranking is accompanied by a low[13] GAI ranking.

   a) The most outstanding examples are the developed countries in Tier 1 and Tier 2 such as the United States, Japan and the rest of the G7. These countries' GAI scores for closing the gap are in the lowest quartile of the ranking table, given that they are mature markets. Mature markets have: (a) little capacity for generating any additional gap compatible with their potential given that they have a lower growth level; and (b) high penetration levels that limit their capacity to close the GAI insurance gap.

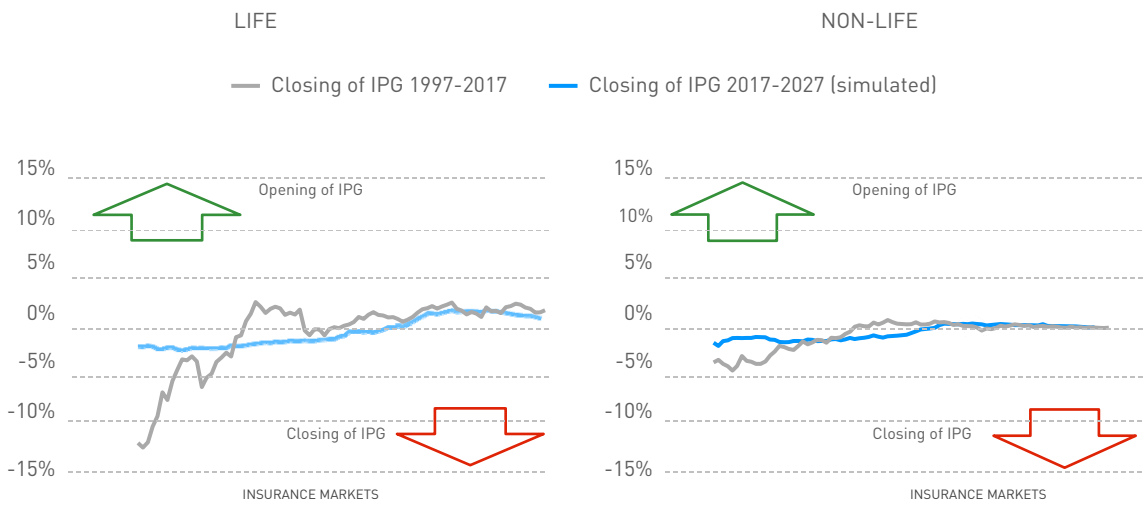
   b) Outside the rankings of the Tier 2 countries there are small markets with a low MAPFRE GIP index for the size of their GDP, but such countries display a very high capacity to close the GAI insurance gap, as is the case of countries in the Indian Subcontinent and Africa, for example.

   c) There are emerging markets with a high MAPFRE GIP index, placed in Tier 2 (such as Brazil, Mexico and Turkey) with a low GAI score for their capacity to close the gap, given that, although they are large markets, they face many obstacles of a sectoral, structural and market-related nature when seeking to increasing their levels of insurance penetration.

5. A certain **inertia is observed in the behavioral dynamics of the MAPFRE GIP index**. The abovementioned relative stability of MAPFRE GIP and GAI scores, and the resultant absence of major changes over time in the rankings in both the Life and Non-Life segments of the market, would seem to be explained by two relevant factors:

   a) The inertia observed in the capacity to close the insurance gap. The observation of Chart 3.2-e shows: (i) that the ranking for the capacity to close the GAI insurance gap in 1997 rightly anticipated that countries were going to close the IPG much more during the 1997-2017 period, and (ii) that the countries that would best close the insurance gap between 1997 and 2017 would be those that will best close it during the simulated period 2017-2027. The above may suggest that the markets best positioned in 1997 to reduce the IPG[14] will also be in a similar position in 2017[15].

Chart 3.2-e
Life: closing of IPG in 1997-2017
ordered by MAPFRE GIP 1997 vs. simulated MAPFRE GIP 2017-2027



Source: MAPFRE Economic Research

b) The relationship between the MAPFRE GIP and GAI indexes. It can intuitively be affirmed that those countries that were initially placed (in 1997) in Tier 2 (but which systematically display low positions in the GAI index), subsequently fall in the ranking, and may even exit it altogether[16].

6. The insurance potential measured by the MAPFRE GIP and GAI indexes remains clear if we examine the time that the different markets would take to close their insurance gap. This estimate refers to the years calculated to reduce the penetration differential in relation to the 2017 benchmark, on the basis that the GDP, population and the elasticity of premium to income remain constant, and considering that all is conditional on the initial IPG faced.

   Table 3.2-e provides a summary of these estimated times. From this information it can be confirmed that in such conditions the emerging markets would take respectively 3 and 2 times longer than the developed markets for the Life and Non-Life segments. Among the emerging markets, the BRICS countries are those that would take least time to close the insurance gap, despite the initial size of their IPG, given their high potential economic growth and the elasticity of premiums to GDP. Among the emerging markets, for example, the average time for closing the insurance gap in the Non-Life market is just above 13.5 years (in Latin America), while it is 23 years in the Life segment (in the case of Emerging Europe). Among the body of countries designated as Tier 1 and Tier 2 in the MAPFRE GIP ranking, hardly any difference is noticed between the time needed to close the IPG, although it is clearly seen that it would require much more time to close the insurance gap in the Life market than that of the Non-Life market, in view of the size of the IPG in both markets, in which Life is more than double that of Non-Life.

Changes in the MAPFRE GIP index 1997-2017

Tables 3.2-a, 3.2-b, 3.2-c, 3.2-d and 3.2-e show the changes between 1997 and 2017 both in the values of the MAPFRE GIP index, and in the respective ranking for the Life and Non-Life segments, for all the 96 markets analyzed in this report.

From this information, and from the summary of information that is presented in Table 3.2-3, it can be seen that, overall, substantial increases have been produced in the position

Table 3.2-a
Life: MAPFRE GIP, 1997-2017

Market	MAPFRE GIP 1997	MAPFRE GIP 2017	Change in the GIP
China	3.2243	7.8273	4.6029
United States	2.9357	3.8630	0.9273
India	2.4063	3.6327	1.2264
Japan	0.7498	1.3199	0.5701
Russia	0.3277	0.9789	0.6512
Indonesia	0.9982	0.9323	-0.0659
Germany	0.5867	0.8013	0.2146
Turkey	0.3083	0.6802	0.3719
Brazil	0.7321	0.6085	-0.1236
Mexico	0.4526	0.5437	0.0911
Iran	0.5796	0.5281	-0.0515
Saudi Arabia	0.4319	0.5255	0.0936
France	0.3206	0.4640	0.1434
United Kingdom	0.3009	0.4606	0.1597
Egypt	0.2975	0.4346	0.1371
Pakistan	0.4202	0.4080	-0.0121
Italy	0.3934	0.3774	-0.0160
South Korea	0.1845	0.3641	0.1797
Nigeria	0.4122	0.3633	-0.0489
Spain	0.2030	0.3328	0.1298
Poland	0.1519	0.2876	0.1357
Canada	0.2162	0.2806	0.0644
The Philippines	0.1745	0.2626	0.0881
Thailand	0.2610	0.2567	-0.0043
Bangladesh	0.1637	0.2386	0.0749
Malaysia	0.1381	0.2110	0.0729
Argentina	0.1468	0.2109	0.0641
Algeria	0.1764	0.2109	0.0344
Vietnam	0.2261	0.2090	-0.0170
Australia	0.0952	0.1888	0.0936
The Netherlands	0.1042	0.1708	0.0666
Colombia	0.1511	0.1620	0.0109
UAE	0.1086	0.1615	0.0529
Romania	0.0945	0.1517	0.0572
Kazakhstan	0.0853	0.1353	0.0500
South Africa	0.0874	0.1249	0.0375
Ukraine	0.1198	0.1081	-0.0117
Peru	0.0570	0.1052	0.0482
Czech Republic	0.0780	0.0942	0.0163
Belgium	0.0656	0.0927	0.0271
Austria	0.0550	0.0903	0.0353
Singapore	0.0504	0.0898	0.0394
Switzerland	0.0481	0.0879	0.0398
Sri Lanka	0.0661	0.0877	0.0215
Qatar	0.0000	0.0862	0.0862
Hong Kong	0.0474	0.0848	0.0374
Morocco	0.0541	0.0839	0.0298
Sweden	0.0477	0.0794	0.0317

Market	MAPFRE GIP 1997	MAPFRE GIP 2017	Change in the GIP
Chile	0.0518	0.0781	0.0263
Ireland	0.0195	0.0761	0.0565
Kuwait	0.0592	0.0748	0.0157
Israel	0.0379	0.0722	0.0342
Hungary	0.0368	0.0691	0.0323
Angola	0.0368	0.0635	0.0267
Oman	0.0456	0.0577	0.0120
Portugal	0.0499	0.0572	0.0072
Greece	0.0615	0.0560	-0.0055
Kenya	0.0538	0.0517	-0.0021
Ecuador	0.0392	0.0481	0.0089
Dominican Rep.	0.0259	0.0478	0.0219
Norway	0.0301	0.0475	0.0174
Denmark	0.0287	0.0452	0.0165
Slovakia	0.0228	0.0424	0.0196
Tunisia	0.0275	0.0416	0.0141
New Zealand	0.0237	0.0415	0.0178
Bulgaria	0.0351	0.0409	0.0058
Guatemala	0.0297	0.0393	0.0097
Finland	0.0271	0.0380	0.0109
Serbia	0.0229	0.0299	0.0070
Jordan	0.0179	0.0271	0.0092
Panama	0.0095	0.0263	0.0168
Croatia	0.0185	0.0247	0.0062
Lithuania	0.0144	0.0236	0.0092
Lebanon	0.0151	0.0227	0.0076
Costa Rica	0.0124	0.0195	0.0071
Bahrain	0.0112	0.0194	0.0081
Slovenia	0.0103	0.0161	0.0059
Uruguay	0.0112	0.0159	0.0047
Macao	0.0053	0.0146	0.0093
Latvia	0.0064	0.0136	0.0073
El Salvador	0.0134	0.0125	-0.0009
Luxemburg	0.0047	0.0123	0.0075
Estonia	0.0039	0.0105	0.0066
Botswana	0.0052	0.0100	0.0048
Zimbabwe	0.0179	0.0093	-0.0085
Trinidad and Tobago	0.0057	0.0079	0.0022
Mauritius	0.0035	0.0064	0.0029
Jamaica	0.0070	0.0051	-0.0019
Cyprus	0.0043	0.0049	0.0006
Namibia	0.0041	0.0048	0.0007
Iceland	0.0022	0.0045	0.0023
Malta	0.0022	0.0042	0.0020
Bahamas	0.0019	0.0022	0.0003
Barbados	0.0007	0.0009	0.0002
Liechtenstein	0.0000	0.0000	0.0000
Venezuela	0.1803	0.0000	-0.1803

Source: MAPFRE Economic Research

Table 3.2-b
Non-Life: MAPFRE GIP, 1997-2017

Market	MAPFRE GIP 1997	MAPFRE GIP 2017	Change in the GIP
China	4.0871	9.3751	5.2880
India	2.2818	4.3982	2.1164
United States	3.9940	4.2753	0.2813
Indonesia	1.2404	1.2259	-0.0145
Russia	0.4688	0.8839	0.4151
Japan	1.3999	0.8016	-0.5983
Germany	0.7109	0.7824	0.0716
Brazil	1.3129	0.6734	-0.6395
Turkey	0.4169	0.6196	0.2028
Mexico	0.7202	0.5772	-0.1430
Iran	0.7610	0.5316	-0.2294
France	0.4612	0.5188	0.0576
Saudi Arabia	0.5093	0.5120	0.0028
Pakistan	0.4106	0.5087	0.0981
Nigeria	0.3321	0.5036	0.1715
United Kingdom	0.6422	0.4799	-0.1622
Italy	0.4607	0.4702	0.0095
Egypt	0.3634	0.4474	0.0840
South Korea	0.4248	0.3681	-0.0568
Spain	0.2343	0.3314	0.0971
Thailand	0.3272	0.3125	-0.0147
The Philippines	0.2150	0.2926	0.0775
Bangladesh	0.1382	0.2807	0.1425
Vietnam	0.1917	0.2530	0.0612
Poland	0.2524	0.2398	-0.0126
Malaysia	0.2034	0.2372	0.0338
Canada	0.2835	0.2342	-0.0493
Argentina	0.2448	0.2093	-0.0355
Algeria	0.1633	0.1970	0.0337
EAU	0.1617	0.1629	0.0012
Romania	0.1165	0.1594	0.0429
The Netherlands	0.1529	0.1579	0.0050
Australia	0.2017	0.1550	-0.0467
Kazakhstan	0.0756	0.1537	0.0782
Colombia	0.2402	0.1537	-0.0865
South Africa	0.1018	0.1327	0.0309
Peru	0.1018	0.1151	0.0133
Singapore	0.1152	0.1145	-0.0007
Belgium	0.0877	0.1027	0.0150
Ukraine	0.1006	0.0976	-0.0030
Sri Lanka	0.0719	0.0962	0.0243
Ireland	0.0434	0.0960	0.0526
Hong Kong	0.1169	0.0955	-0.0214
Chile	0.1000	0.0933	-0.0067
Austria	0.0709	0.0864	0.0155
Sweden	0.0779	0.0857	0.0078
Czech Republic	0.1146	0.0840	-0.0306
Switzerland	0.0796	0.0806	0.0010

Market	MAPFRE GIP 1997	MAPFRE GIP 2017	Change in the GIP
Kuwait	0.0853	0.0760	-0.0093
Angola	0.0377	0.0699	0.0322
Qatar	0.0000	0.0697	0.0697
Morocco	0.0426	0.0697	0.0271
Israel	0.0600	0.0695	0.0096
Hungary	0.0564	0.0661	0.0096
Portugal	0.0629	0.0657	0.0027
Greece	0.1001	0.0606	-0.0396
Oman	0.0570	0.0596	0.0026
Ecuador	0.0590	0.0520	-0.0069
Kenya	0.0409	0.0494	0.0085
Dominican Rep.	0.0375	0.0473	0.0098
Norway	0.0607	0.0462	-0.0145
Denmark	0.0535	0.0447	-0.0087
Guatemala	0.0432	0.0436	0.0004
Bulgaria	0.0380	0.0415	0.0035
Finland	0.0506	0.0408	-0.0098
Slovakia	0.0403	0.0389	-0.0015
Tunisia	0.0268	0.0329	0.0061
New Zealand	0.0410	0.0327	-0.0083
Serbia	0.0535	0.0259	-0.0276
Panama	0.0119	0.0259	0.0140
Jordan	0.0176	0.0249	0.0072
Lithuania	0.0232	0.0244	0.0011
Croatia	0.0202	0.0216	0.0014
Costa Rica	0.0172	0.0194	0.0022
Lebanon	0.0255	0.0192	-0.0063
Macao	0.0103	0.0189	0.0086
Bahrain	0.0122	0.0180	0.0058
Uruguay	0.0235	0.0169	-0.0067
Luxemburg	0.0082	0.0137	0.0056
El Salvador	0.0203	0.0132	-0.0070
Latvia	0.0103	0.0127	0.0024
Slovenia	0.0084	0.0123	0.0039
Botswana	0.0069	0.0109	0.0040
Estonia	0.0069	0.0096	0.0027
Zimbabwe	0.0141	0.0096	-0.0045
Trinidad and Tobago	0.0066	0.0081	0.0015
Mauritius	0.0038	0.0060	0.0022
Namibia	0.0038	0.0055	0.0017
Cyprus	0.0070	0.0055	-0.0015
Jamaica	0.0141	0.0049	-0.0091
Malta	0.0027	0.0049	0.0022
Iceland	0.0028	0.0040	0.0012
Bahamas	0.0049	0.0022	-0.0027
Barbados	0.0013	0.0009	-0.0004
Liechtenstein	0.0000	0.0000	0.0000
Venezuela	0.2109	0.0000	-0.2109

Source: MAPFRE Economic Research

Table 3.2-c
Life: MAPFRE GIP Ranking, 1997-2017

Market	MAPFRE GIP ranking 1997	MAPFRE GIP ranking 2017	Change in the ranking
China	1	1	0
United States	2	2	0
India	3	3	0
Japan	5	4	1
Russia	14	5	9
Indonesia	4	6	-2
Germany	7	7	0
Turkey	16	8	8
Brazil	6	9	-3
Mexico	9	10	-1
Iran	8	11	-3
Saudi Arabia	10	12	-2
France	15	13	2
United Kingdom	17	14	3
Egypt	18	15	3
Pakistan	11	16	-5
Italy	13	17	-4
South Korea	23	18	5
Nigeria	12	19	-7
Spain	22	20	2
Poland	28	21	7
Canada	21	22	-1
The Philippines	26	23	3
Thailand	19	24	-5
Bangladesh	27	25	2
Malaysia	31	26	5
Argentina	30	27	3
Algeria	25	28	-3
Vietnam	20	29	-9
Australia	35	30	5
The Netherlands	34	31	3
Colombia	29	32	-3
UAE	33	33	0
Romania	36	34	2
Kazakhstan	38	35	3
South Africa	37	36	1
Ukraine	32	37	-5
Peru	44	38	6
Czech Republic	39	39	0
Belgium	41	40	1
Austria	45	41	4
Singapore	49	42	7
Switzerland	51	43	8
Sri Lanka	40	44	-4
Qatar	95	45	50
Hong Kong	53	46	7
Morocco	46	47	-1
Sweden	52	48	4
Chile	48	49	-1
Ireland	69	50	19
Kuwait	43	51	-8
Israel	56	52	4
Hungary	58	53	5
Angola	57	54	3
Oman	54	55	-1
Portugal	50	56	-6
Greece	42	57	-15
Kenya	47	58	-11
Ecuador	55	59	-4
Dominican Rep.	65	60	5
Norway	60	61	-1
Denmark	62	62	0
Slovakia	68	63	5
Tunisia	63	64	-1
New Zealand	66	65	1
Bulgaria	59	66	-7
Guatemala	61	67	-6
Finland	64	68	-4
Serbia	67	69	-2
Jordan	71	70	1
Panama	80	71	9
Croatia	70	72	-2
Lithuania	74	73	1
Lebanon	73	74	-1
Costa Rica	76	75	1
Bahrain	77	76	1
Slovenia	79	77	2
Uruguay	78	78	0
Macao	84	79	5
Latvia	82	80	2
El Salvador	75	81	-6
Luxemburg	86	82	4
Estonia	89	83	6
Botswana	85	84	1
Zimbabwe	72	85	-13
Trinidad and Tobago	83	86	-3
Mauritius	90	87	3
Jamaica	81	88	-7
Cyprus	87	89	-2
Namibia	88	90	-2
Iceland	91	91	0
Malta	92	92	0
Bahamas	93	93	0
Barbados	94	94	0
Liechtenstein	95	95	0
Venezuela	24	95	-71

Source: MAPFRE Economic Research

Table 3.2-d
Non-Life: MAPFRE GIP Ranking, 1997-2017

Market	MAPFRE GIP ranking 1997	MAPFRE GIP ranking 2017	Change in the ranking
China	1	1	0
India	3	2	1
United States	2	3	-1
Indonesia	6	4	2
Russia	12	5	7
Japan	4	6	-2
Germany	9	7	2
Brazil	5	8	-3
Turkey	16	9	7
Mexico	8	10	-2
Iran	7	11	-4
France	13	12	1
Saudi Arabia	11	13	-2
Pakistan	17	14	3
Nigeria	19	15	4
United Kingdom	10	16	-6
Italy	14	17	-3
Egypt	18	18	0
South Korea	15	19	-4
Spain	25	20	5
Thailand	20	21	-1
The Philippines	26	22	4
Bangladesh	34	23	11
Vietnam	30	24	6
Poland	22	25	-3
Malaysia	28	26	2
Canada	21	27	-6
Argentina	23	28	-5
Algeria	31	29	2
UAE	32	30	2
Romania	36	31	5
The Netherlands	33	32	1
Australia	29	33	-4
Kazakhstan	48	34	14
Colombia	24	35	-11
South Africa	39	36	3
Peru	40	37	3
Singapore	37	38	-1
Belgium	44	39	5
Ukraine	41	40	1
Sri Lanka	49	41	8
Ireland	60	42	18
Hong Kong	35	43	-8
Chile	43	44	-1
Austria	50	45	5
Sweden	47	46	1
Czech Republic	38	47	-9
Switzerland	46	48	-2

Market	MAPFRE GIP ranking 1997	MAPFRE GIP ranking 2017	Change in the ranking
Kuwait	45	49	-4
Angola	67	50	17
Qatar	95	51	44
Morocco	62	52	10
Israel	53	53	0
Hungary	56	54	2
Portugal	51	55	-4
Greece	42	56	-14
Oman	55	57	-2
Ecuador	54	58	-4
Kenya	64	59	5
Dominican Rep.	68	60	8
Norway	52	61	-9
Denmark	58	62	-4
Guatemala	61	63	-2
Bulgaria	66	64	2
Finland	59	65	-6
Slovakia	65	66	-1
Tunisia	69	67	2
New Zealand	63	68	-5
Serbia	57	69	-12
Panama	80	70	10
Jordan	75	71	4
Lithuania	72	72	0
Croatia	74	73	1
Costa Rica	76	74	2
Lebanon	70	75	-5
Macao	81	76	5
Bahrain	79	77	2
Uruguay	71	78	-7
Luxemburg	84	79	5
El Salvador	73	80	-7
Latvia	82	81	1
Slovenia	83	82	1
Botswana	87	83	4
Estonia	86	84	2
Zimbabwe	77	85	-8
Trinidad and Tobago	88	86	2
Mauritius	91	87	4
Namibia	90	88	2
Cyprus	85	89	-4
Jamaica	78	90	-12
Malta	93	91	2
Iceland	92	92	0
Bahamas	89	93	-4
Barbados	94	94	0
Liechtenstein	95	95	0
Venezuela	27	95	-68

Source: MAPFRE Economic Research

Table 3.2-e
Estimated number of years for closing the domestic IPG in 2017, by economic region

Segment	Developed markets	Emerging markets									
		Total	BRICS	Other	Asia	Emerging Europe	Latin America	Africa	Middle East	Tier 1 Countries	Tier 2 Countries
Non-Life	5	15	13	16	19	17	13	18	14	17	18
Life	12	23	21	23	22	23	20	25	25	23	24

Source: MAPFRE Economic Research

in the ranking within the groups selected as having the highest potential. The countries that appeared in Tier 2 have risen by a total of 10 positions in Life, and by a total of 25 positions in Non-Life. Meanwhile, the countries in the most restricted group (Tier 1) have risen by 1 position in Life, and by 2 positions in Non-Life.

In other words, the rise in positions in the ranking table (i.e., the gain in potential as measured by the MAPFRE GIP index) has been positive in the list of countries selected for both segments of the insurance market, although in the Non-Life segment the gain has been double that in the Life segment. The latter factor represents a process of net increase in the MAPFRE GIP index in the Non-Life market that does not arise in the Life segment.

Taking into account that the most extreme cases (i.e., the largest increases and decreases) are similar, it can be seen that on average a rise in position occurs throughout the sample (i.e., in all 96 countries) in the case of Non-Life, while this is not the case for Life business. This means that the markets that have gone up in position display an upward trend that does not arise in the Life market (which is neutral) and, on examining the list in greater detail, it can be observed that this upward trend is produced specifically by the emerging markets. This is an obvious indication of the process of convergence acting on the emerging markets in general (which in fact dominate the sample), and of the particular contribution made by those making up the list of markets with the highest potential.

In summary, it can be stated that for the Life and Non-Life markets it is observed that the insurance potential, measured as the capacity to contribute to the overall reduction of the global gap, is in fact fairly concentrated. This concentration is irrespective of the type of market (developed or emerging), and has maintained a similar pattern since 1997. It is thus foreseeable that it will continue in the same way during the next decade.

The 2017 ranking does not display any major changes in relation to the past. The major players are China, India, Indonesia, Brazil and Russia, among the emerging markets, and the United States and Japan, among the developed markets, although in the second case this is essentially due to the size of the economy and the maturity of the insurance markets, rather than to the capacity to close the IPG. In fact, just as this capacity has become relatively diminished in the developed markets, it is also limited in some emerging markets, and may lead to a future fall in the rankings as these markets advance toward a process of greater maturity. This seems to be particularly the case in the countries of Latin America and Emerging Europe. Other countries that currently appear toward the bottom of the ranking in the MAPFRE GIP index show a strong capacity for closing the

Table 3.2-f
Synthesis of variations in the MAPFRE GIP ranking, 1997-2017.

Variations 1997-2017	Life	Non-Life
Largest increases in the ranking	+ 21	+ 20
Average growth in the ranking	0	+ 1
Largest falls in the ranking	-13	-12
Balance of rises and falls of Tier 1 countries in the ranking	+ 1	+ 2
Balance of rises and falls of Tier 2 countries in the ranking	+10	+ 25

Source: MAPFRE Economic Research

insurance gap and, if this is accompanied by sustained economic growth, may play a leading role in the ranking in the future. This is the case of some large countries in emerging Asian markets and Africa.

As indicated previously, this study enables us to observe that there is a certain trend toward consistency in the results, so that it can be stated that the markets that have most successfully closed the insurance gap in previous stages, will also do so in the future.

A detailed examination

Below we present a more exhaustive examination of the ranking of the MAPFRE GIP index on the basis of groups of countries and market segments (Life and Non-Life). The results will refer to 2017, although comparisons will be established with predictions made in 1997 and the performance during the 1997-2017 period in order to compare the consistency not only of the interpretation of the rankings at both moments in time, but also of the forecasts arising from the dynamics of the IPG in 2017 (which must be consistent with what was experienced in the previous two decades).

This comparison between the dates will also establish a precedent for future annual updates of the MAPFRE GIP ranking, which will provide not only an interpretation of the current ranking but also a comparison with the past, in both cases depending on the forecasts of economic growth and population that may be available at the time.

This detailed analysis will focus on the concentration and distribution of the markets classified as Tier 1 and Tier 2[17] in the ranking, in the case of both the emerging and developed markets, on the basis of the MAPFRE GIP score and supplemented by the GAI score. In the same way, the information provided by the indicator in 2017 will be compared with a reasonable forecast of the contribution to the closing of the gap over the next 10 years. To ensure the reliability of these forecasts, past experience recorded over the period 1997-2017 has been used.

3.3 Results of the 2017 Life ranking

Concentration

With regard to the MAPFRE GIP Life ranking for 2017, the 5 markets classified as Tier 1 are China, the United States, India, Japan and Russia. These markets concentrate 56% of the insurance potential, according to the MAPFRE GIP index. For their part, the 25 markets that make up Tier 2 concentrate 85% of this potential (see Table 3.3-a and Chart 3.3-a).

In 1997, ranking order and concentration were little different. There were 4 countries in Tier 1 (China, the United States, Japan and Indonesia), and their concentration was 50%. The number of countries in Tier 1 and Tier 2 has not changed, although their concentration has increased from the 83% registered in 1997 (see Table A.1 and Chart A.1 in Appendix I).

The increased concentration of the insurance potential can be observed by comparing Chart 3.3-b with the equivalent chart for 1997 (Chart A.1 of Appendix I), in which the growth of the Chinese and Indian markets can clearly be seen.

Emerging markets vs developed markets

In the case of the Life segment, in the proposed list of Tier 1 and Tier 2 countries, 16 are emerging markets[18], while 8 are developed markets (see Table 3.3-a). If this information is compared with that shown in Table A.1, it can be observed that the proportion has not altered with respect to the situation in 1997.

Emerging markets: ranking of insurance potential (MAPFRE GIP index) and capacity for closing the gap (GAI)

The MAPFRE GIP index in 2017

In 2017, on the basis of the insurance potential (as measured by the MAPFRE GIP index), China, India and Russia were the clear leaders among the emerging markets and formed part of Tier 1 of this segment, closely followed by

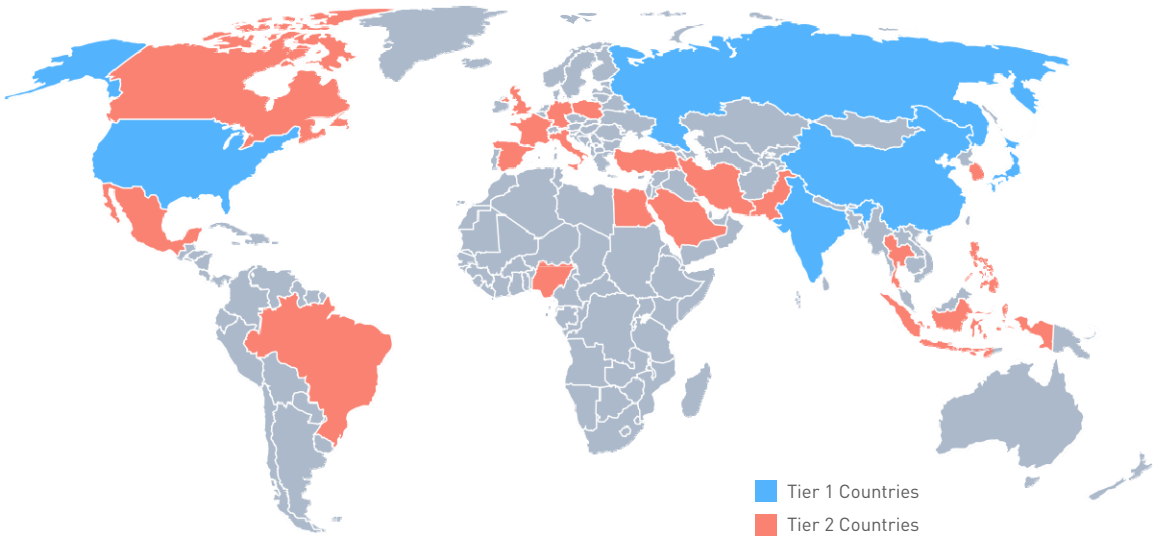
Table 3.3-a
Life: MAPFRE GIP ranking (75+ percentile of 96 countries), 2017*

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
China	1	7.8	5	42.9
United States	2	3.9	64	25.4
India	3	3.6	2	49.1
Japan	4	1.3	48	30.3
Russia	5	1.0	31	33.3
Tier 2				
Indonesia	6	0.9	21	36.7
Germany	7	0.8	68	24.4
Turkey	8	0.7	15	38.5
Brazil	9	0.6	70	24.0
Mexico	10	0.5	51	29.6
Iran	11	0.5	12	39.7
Saudi Arabia	12	0.5	19	37.8
France	13	0.5	87	20.6
United Kingdom	14	0.5	89	20.3
Egypt	15	0.4	1	49.1
Pakistan	16	0.4	3	47.9
Italy	17	0.4	91	20.0
South Korea	18	0.4	74	23.6
Nigeria	19	0.4	8	41.5
Spain	20	0.3	71	24.0
Poland	21	0.3	33	33.0
Canada	22	0.3	84	21.0
The Philippines	23	0.3	16	38.3
Thailand	24	0.3	60	26.6

Source: MAPFRE Economic Research

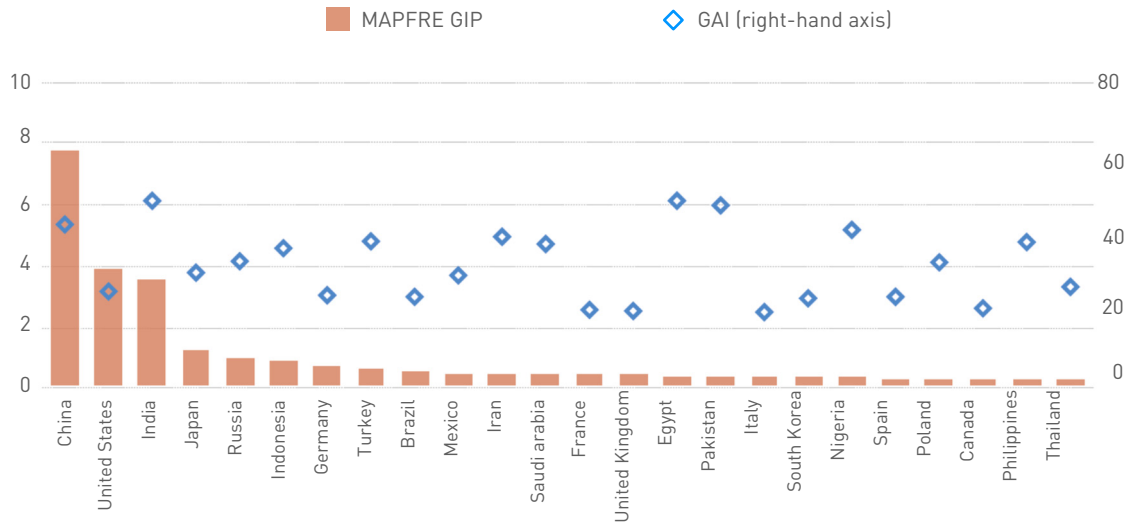
Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list
* For comparative purposes, the equivalent table for 1997 may be consulted in Appendix I of this report.

Chart 3.3-a
Life: MAPFRE GIP ranking, 2017



Source: MAPFRE Economic Research

Chart 3.3-b
Life: MAPFRE GIP vs. GAI, 2017-2027



Source: MAPFRE Economic Research

Indonesia, Turkey and Brazil. In the analysis of this ranking of emerging markets, outstanding features include the rise of Russia from 14th position (in Tier 2) to 5th position (in Tier 1) between 1997 and 2017, and the ongoing competition for the top position in Tier 2 over the last two decades between Brazil, Turkey, Indonesia and Mexico (see Table 3.3-b and Table A.2 in Appendix I). All the movements in the Life ranking between 1997 and 2017 can also be found in the abovementioned Tables 3.2-a and 3.2-c.

The MAPFRE GIP and GAI scores are presented in Chart 3.3-c. On comparing these charts in 1997 and in 2017 (Chart A.2 in Appendix I) it can be seen that the capacity for closing the gap has become more homogeneous in 2017, i.e., there is less dispersion in the GAI scoring than was observed in 1997.

MAPFRE GIP versus GAI in 2017

On the basis of the capacity for closing the gap (GAI) it can be confirmed that the top three countries in the MAPFRE GIP ranking representing emerging markets (China, India and Russia) also display high scores in the GAI, while Brazil, Turkey and Mexico (placed at the top of Tier 2) have a relatively low ranking in the GAI (see Table 3.3-b).

At the same time, it can also be observed that some emerging markets with a lower MAPFRE GIP score nevertheless have a very high capacity to close the gap (and thus have high levels on the GAI indicator). This is the case of Pakistan, Egypt and Nigeria, whose indicator equals or exceeds that of the Tier 1 countries. It should be pointed out that Egypt[19] and Nigeria also had high scores for their capacity to reduce the gap in 1997 (see Table A.[2] in Appendix I).

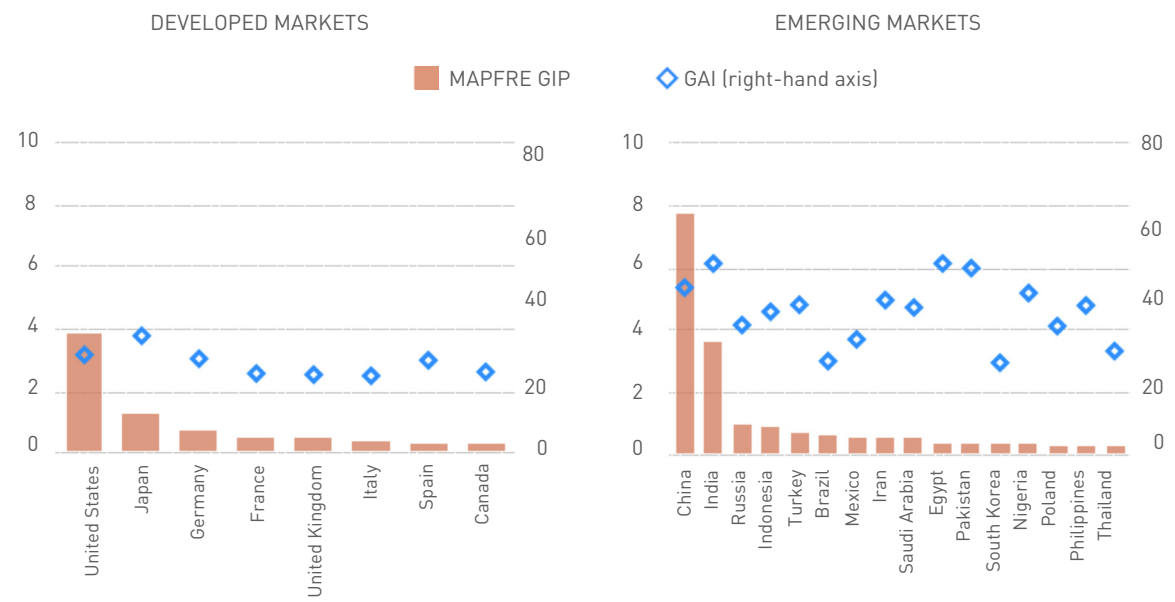
Table 3.3-b
Life: MAPFRE GIP ranking (75+ percentile of emerging markets), 2017*

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
China	1	7.8	5	42.9
India	3	3.6	2	49.1
Russia	5	1.0	31	33.3
Tier 2				
Indonesia	6	0.9	21	36.7
Turkey	8	0.7	15	38.5
Brazil	9	0.6	70	24.0
Mexico	10	0.5	51	29.6
Iran	11	0.5	12	39.7
Saudi Arabia	12	0.5	19	37.8
Egypt	15	0.4	1	49.1
Pakistan	16	0.4	3	47.9
South Korea	18	0.4	74	23.6
Nigeria	19	0.4	8	41.5
Poland	21	0.3	33	33.0
The Philippines	23	0.3	16	38.3
Thailand	24	0.3	60	26.6

Source: MAPFRE Economic Research

Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list
* For comparative purposes, the equivalent table for 1997 may be consulted in Appendix I of this report.

Chart 3.3-c
Life: MAPFRE GIP vs. GAI by type of market, 2017-2027



Source: MAPFRE Economic Research

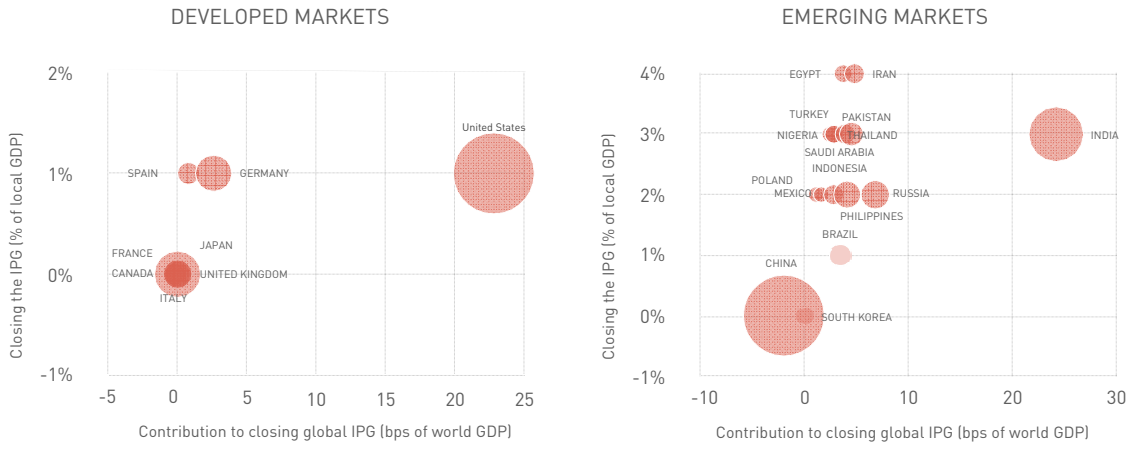
Consistency between scoring and reality

Chart 3.3-d provides a joint view of the registered narrowing of the insurance gap, measured as a percentage of the GDP of each market in the ranking (*Y axis*), against the registered contribution to the closing of the global IPG, measured in basis points of global GDP (*X axis*). The size of the spheres indicates the MAPFRE GIP score assigned to each market at the start of the reference period. In the case of the MAPFRE GIP index for 1997, the data are registered real values; in the case of 2017, the data correspond to simulations. The equivalent chart for the analysis of 1997 is Chart A.3 in Appendix I.

The chart displaying the 1997 ranking compared with the real results shows that there is indeed a consistent link between the forecasts (the size of the spheres giving the MAPFRE GIP scores), the contribution to the closing of the global insurance gap, and the closing of the local IPG. The relationship between the three variables is positive (diagonal and with the spheres growing in size). In addition, it can be observed that the ranking was accurate when classifying the insurance potential in accordance with the MAPFRE GIP index, since there are few cases that have scores indicating contributions under zero and, in any case, this occurs only with those having only very low scores.

Extrapolating the quality of the forecast for the decade 2017-2027 on the basis of the MAPFRE GIP 2017 ranking, three aspects can be highlighted. First, that there is an apparent contradiction between the score that is assigned to China (the highest), what is expected in terms of contribution to the closing of the global gap and capacity for closing the local IPG. This is due to the fact that the calculation for the closing of the IPG used in the simulation takes into account forecasts for GDP growth and population, while the MAPFRE GIP index is calculated on the basis of the potential for the economic growth actually registered to date[20]. For this reason, if the forecasts for economic growth point to a slight fall in the potential, it is to be expected that there will be discrepancies between the MAPFRE GIP index and the forecasts for the IPG. The second comment is that India is the great promise in terms of insurance potential, given that, as anticipated by the MAPFRE GIP index, its foreseeable contribution to the closing of the global insurance gap in the Life segment will be enormous (and consistent with its demographic weight), which will be due both to the growth of its GDP and to the dynamics of its population,

Chart 3.3-d
Life: registered closing of the IPG, contribution to the closing of the global IPG and the MAPFRE GIP index, 2017-2027



Source: MAPFRE Economic Research

MAPFRE GIP score

and, in particular, to the IPG currently existing. The third comment is that the other countries making up Tier 1 and Tier 2 within the emerging markets segment have consistent scores and growth levels that lead us to anticipate from them a significant narrowing of the global gap and significant contributions to this end.

Developed markets: ranking of insurance potential (MAPFRE GIP index) and capacity for closing the gap (GAI)

The MAPFRE GIP index in 2017

With regard to the Life segment for the developed markets in 2017, on the basis of the insurance potential measured using the MAPFRE GIP index, both the United States and Japan constitute the group of Tier 1 countries (see Table 3.3-c), while in the past (as measured in 1997) this tier consisted of the United States alone (see Table A.3 in Appendix I). The other developed markets included in Tier 2 represent the five largest economies in the European Union (EU-5) plus Canada.

MAPFRE GIP versus GAI in 2017

The MAPFRE GIP and GAI scores (as presented in the abovementioned Chart 3.3-c) show that the developed markets' capacity for closing the gap (GAI) is relatively low and, in fact, corresponds to the last quartile of the ranking table. This is to be expected, since these are mature markets that already register high levels of insurance penetration.

Nevertheless, it is interesting to note that the GAI has doubled during the 1997-2017 period, rising from an average score of around 10 to a score of about 20 for practically the same number of countries (for the comparative analysis in relation to 1997 see Chart A.2 in Appendix I).

This factor is, moreover, particularly striking, given that the MAPFRE GIP score has hardly changed at all between 1997 and 2017, which shows that it is a factor that is not linked to growth but to insurance in its own right. In other words, what has changed is the elasticity of the demand for insurance products over time, which is understandable, among other aspects, in view of the increasing need for prevision saving in a context of uncertainty concerning pension systems in the developed markets.

Table 3.3-c
Life: MAPFRE GIP ranking (75+ percentile of developed markets), 2017*

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
United States	2	3.9	64	25.4
Japan	4	1.3	48	30.3
Tier 2				
Germany	7	0.8	68	24.4
France	13	0.5	87	20.6
United Kingdom	14	0.5	89	20.3
Italy	17	0.4	91	20.0
Spain	20	0.3	71	24.0
Canada	22	0.3	84	21.0

Source: MAPFRE Economic Research
Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list
* For comparative purposes, the equivalent table for 1997 may be consulted in Appendix I of this report.

Consistency between scoring and reality

As in the case of the analysis dedicated to the emerging markets, Chart 3.3-d provides a joint view of the registered narrowing of the insurance gap, measured as a percentage of the GDP of each market in the ranking (*Y axis*), against the registered contribution to the closing of the global IPG, measured in basis points of global GDP (*X axis*), in the case of the developed insurance markets.

Likewise, as indicated above, in the case of the MAPFRE GIP index in 1997, the data are real records (1997-2017); in the case of 2017, the data with which they are compared are simulations made for the period 2017-2027. The equivalent chart for the analysis of 1997 is Chart A.3 in Appendix I.

In Charts 3.3-c and 3.3-d referred to above, it can be observed how the MAPFRE GIP and GAI scores in the case of the developed markets under consideration here are consistent with the greater contribution to closing the global gap made by the United States and, to a lesser extent, by Germany and Spain.

3.4 Results of the 2017 Non-Life ranking

Concentration

In relation to the analysis of the ranking corresponding to the Non-Life segment for 2017, the 4 markets classified as Tier 1 are China, India, the United States and Indonesia (see Table 3.4-a and Chart 3.4-a). These markets concentrate 56% of the insurance potential in accordance with the MAPFRE GIP index, while the 25 markets making up the Tier 1 and Tier 2 countries concentrate 86% of the potential concerned.

In 1997, the order and concentration levels of the respective rankings were different (see Table A.4 in Appendix I). There were six Tier 1 countries (China, the United States, India, Japan, Brazil and Indonesia), and their concentration was 53% (in 2017, Japan and Brazil were classified in Tier 2). The number of countries in Tier 2, however, has risen to 21 and their concentration has increased from 83% in 1997 to 86% in 2017. The increase in the level of concentration during this time may be observed by comparing Charts 3.4-b and A.4 (in Appendix I), in which it can be seen how the scores of China and India have increased, as also happened in the case of the Life segment referred to above.

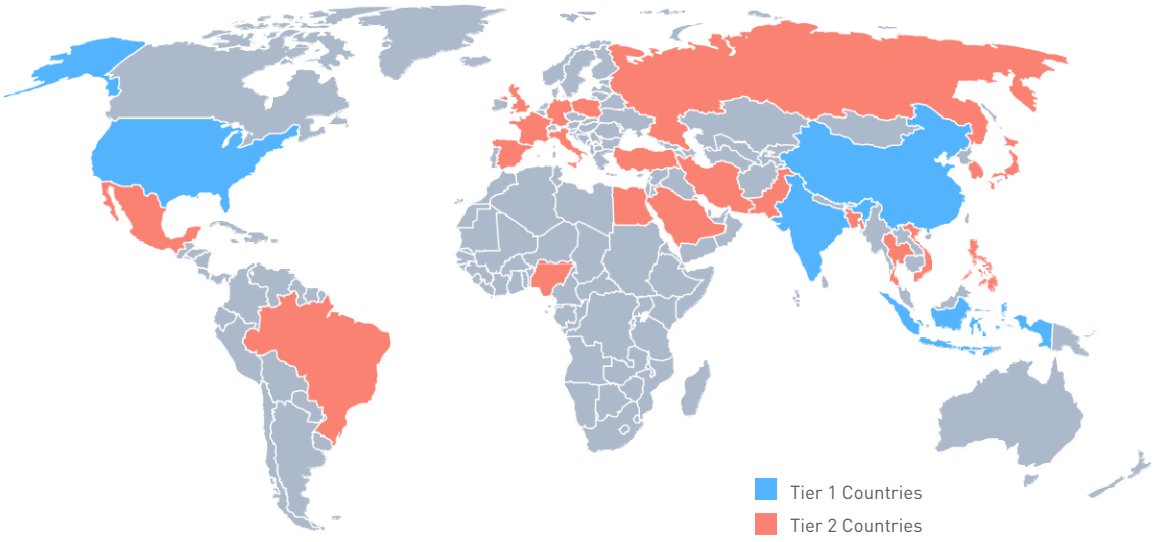
Table 3.4-a
Non-Life: MAPFRE GIP ranking (75+ percentile of 96 countries), 2017*

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
China	1	9.4	5	51.4
India	2	4.4	2	59.5
United States	3	4.3	53	28.2
Indonesia	4	1.2	8	48.3
Tier 2				
Russia	5	0.9	44	30.1
Japan	6	0.8	91	18.4
Germany	7	0.8	77	23.8
Brazil.	8	0.7	63	26.5
Turkey	9	0.6	23	35.1
Mexico	10	0.6	39	31.4
Iran	11	0.5	15	39.9
France	12	0.5	80	23.1
Saudi Arabia	13	0.5	19	36.9
Pakistan	14	0.5	1	59.7
Nigeria	15	0.5	3	57.5
United Kingdom	16	0.5	86	21.2
Italy	17	0.5	70	24.9
Egypt	18	0.4	6	50.6
South Korea	19	0.4	74	23.9
Spain	20	0.3	75	23.9
Thailand	21	0.3	38	32.4
The Philippines	22	0.3	11	42.7
Bangladesh	23	0.3	4	56.3
Vietnam	24	0.3	7	49.9
Poland	25	0.2	56	27.5

Source: MAPFRE Economic Research

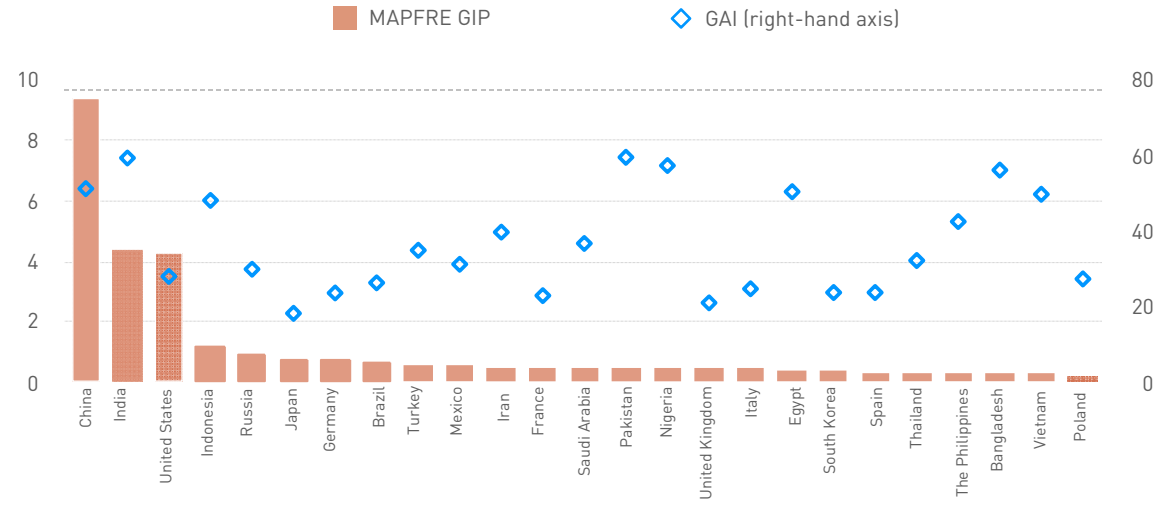
Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list
* For comparative purposes, the equivalent table for 1997 may be consulted in Appendix I of this report.

Chart 3.4-a
Non-Life: MAPFRE GIP ranking, 2017



Source: MAPFRE Economic Research

Chart 3.4-b
Non-Life: MAPFRE GIP vs. GAI, 2017-2027



Source: MAPFRE Economic Research

Emerging markets versus Developed Markets

In the case of the Non-Life segment, in the list of Tier 1 and Tier 2 markets, 18 are emerging markets and 7 are developed markets (see Table 3.4-a); it should be noted that the proportion has not changed in relation to 1997 (see Table A.4 in Appendix I).

Emerging markets: ranking of insurance potential (MAPFRE GIP index) and capacity for closing the gap (GAI)

The MAPFRE GIP index in 2017

On the basis of insurance potential as measured by the MAPFRE GIP index, in 2017 China, India and Indonesia were clear leaders of the ranking and constituted the Tier 1 group, closely followed by Russia and Brazil. It can be seen that Brazil has relocated from Tier 1 to Tier 2 between 1997 and 2017, while Turkey has risen from 16th position to 9th position during the same period (see Table 3.4-b and Table A.5 in Appendix I). All the movements in the Non-Life ranking between 1997 and 2017 can also be found in the abovementioned Tables 3.2-b and 3.2-d.

The MAPFRE GIP and GAI scores are presented in Chart 3.4-c. On comparing these charts in 1997 and in 2017 (Chart A.5 in Appendix I) it can be confirmed that, as happened in the Life segment, the capacity for closing the gap in the Non-Life market has become more homogeneous in 2017, i.e., there is less dispersion in the GAI scoring,

Table 3.4-b
Non-Life: MAPFRE GIP ranking (75+ percentile of emerging markets), 2017*

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
China	1	9.4	5	51.4
India	2	4.4	2	59.5
Indonesia	4	1.2	8	48.3
Tier 2				
Russia	5	0.9	44	30.1
Brazil	8	0.7	63	26.5
Turkey	9	0.6	23	35.1
Mexico	10	0.6	39	31.4
Iran	11	0.5	15	39.9
Saudi Arabia	13	0.5	19	36.9
Pakistan	14	0.5	1	59.7
Nigeria	15	0.5	3	57.5
Egypt	18	0.4	6	50.6
South Korea	19	0.4	74	23.9
Thailand	21	0.3	38	32.4
The Philippines	22	0.3	11	42.7
Bangladesh	23	0.3	4	56.3
Vietnam	24	0.3	7	49.9
Poland	25	0.2	56	27.5

Source: MAPFRE Economic Research

Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list
* For comparative purposes, the equivalent table for 1997 may be consulted in Appendix I of this report.

than that observed during the measurement taken in 1997.

MAPFRE GIP versus GAI in 2017

As is shown in the abovementioned Table 3.4-b, concerning the capacity for closing the insurance gap (GAI) it is confirmed that the first three countries in the MAPFRE GIP ranking (China, India and Indonesia) also display high scores in the GAI index, while Russia, Brazil, Turkey and Mexico have fallen behind a little in this indicator.

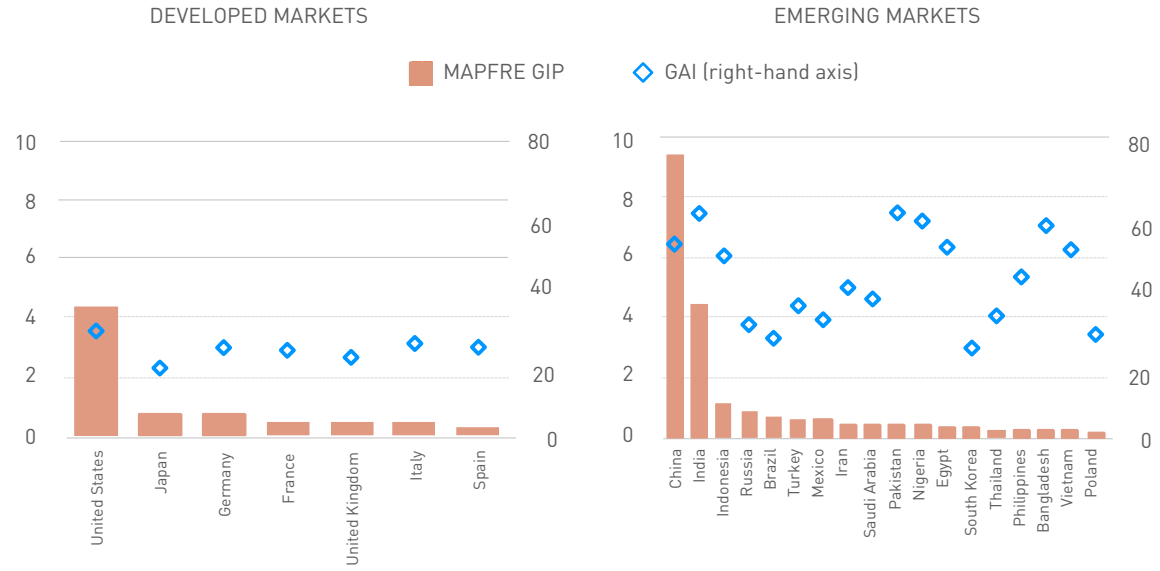
At the same time, it is also confirmed that some emerging markets with a lower score in the MAPFRE GIP index nevertheless have high capacities of absorption of the insurance gap (and thus high GAI values). This is the case for Pakistan, Bangladesh, Nigeria and Egypt, which are equal to or even exceed the Tier 1 countries. It should be noted that Nigeria and Pakistan were also highly-placed for their capacity to reduce the gap in 1997, while Iran, which was among the top places at the time, has seen its capacity to narrow the IPG substantially reduced (see Table A.5 in Appendix I).

Consistency between scoring and reality

Chart 3.4-d provides a joint view of the registered narrowing of the insurance gap, measured as a percentage of the GDP of each market in the ranking (*Y axis*), against the registered contribution to the closing of the global IPG, measured in basis points of world GDP (*X axis*). The size of the spheres indicates the MAPFRE GIP score assigned to each market at the start of the same period. As in the analysis dealing with the Life segment, in the case of the MAPFRE GIP index for 1997, the data are real records; in the case of 2017, the data correspond to simulations. The equivalent chart for the analysis of 1997 is Chart A.6 in Appendix I.

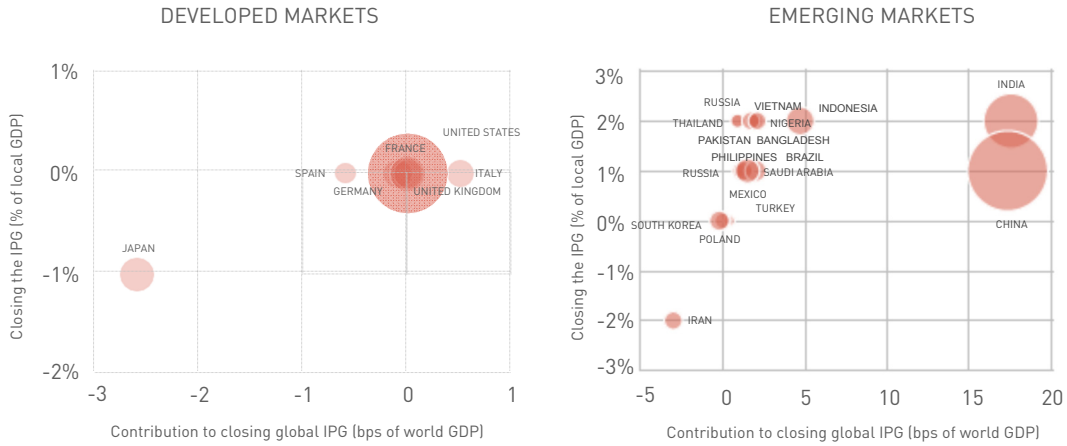
The chart displaying the 1997 MAPFRE GIP ranking compared with the real results shows that there is a consistent link between the forecasts (the size of the spheres giving the MAPFRE GIP scores), the contribution to the closing of the global insurance gap, and the closing of the local IPG. As was confirmed in the analysis of the Life segment, in the case of Non-Life the relationship between the three variables

Chart 3.4-c
Non-Life: MAPFRE GIP vs. GAI by type of market, 2017-2027



Source: MAPFRE Economic Research

Chart 3.4-d
Non-Life: registered closing of the IPG, contribution to the closing of the global IPG and the MAPFRE GIP index, 2017-2027



Source: MAPFRE Economic Research

MAPFRE GIP score

is also positive (diagonal and with spheres of increasing size). In addition, it is observed that the ranking has been quite accurate, classifying the insurance potential in accordance with the MAPFRE GIP index, on the basis that only a few cases have a score with contributions under zero and, in any case, this occurs for those that have very low scores. The above implies that the instrument worked correctly in 1997 for the Non-Life segment of emerging markets.

Extrapolating the quality of the forecast for the decade 2017-2027 on the basis of the MAPFRE GIP 2017 ranking, two aspects worthy of comment can be highlighted. The first is that China and India represent the great promise, given that, as anticipated by the MAPFRE GIP index, the foreseeable contribution to closing the global insurance gap in the Non-Life segment will be extensive, which will be due both to the growth of the GDP and to the dynamics of population figures, especially in India. The second comment is that the other countries that form Tier 1 and Tier 2 for the emerging markets have consistent scores and growth levels that anticipate a significant closing of the global gap and significant contributions to the closing of the local IPG.

Developed markets: ranking of insurance potential (MAPFRE GIP index) and capacity for closing the gap (GAI)

The MAPFRE GIP index in 2017

In relation to the Non-Life segment for the developed markets in 2017, on the basis of the insurance potential as measured by the MAPFRE GIP index, only the United States insurance market constitutes the Tier 1 group. The other developed countries taken into consideration that are in the Tier 2 group represent the five largest economies in the European Union (EU-5) plus Japan. In the same way, it should also be noted that Canada, which was in the Tier 2 group in 1997, no longer forms part of it in 2017 (see Table A.6 in Appendix I).

MAPFRE GIP versus GAI in 2017

As could be concluded from the analysis of the Life segment, in the Non-Life segment the MAPFRE GIP and GAI scores presented in the abovementioned Chart 3.4-c show that the capacity for closing the gap (GAI) for the developed markets is relatively low (in fact it corresponds to the last quartile of the ranking), which is to be expected, given that these are mature markets that already register high levels of insurance penetration. Analyzing this

Table 3.4-c
Non-Life: MAPFRE GIP ranking (75+ percentile of developed markets), 2017*

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
United States	3	4.3	53	28.2
Tier 2				
Japan	6	0.8	91	18.4
Germany	7	0.8	77	23.8
France	12	0.5	80	23.1
United Kingdom	16	0.5	86	21.2
Italy	17	0.5	70	24.9
Spain	20	0.3	75	23.9

Source: MAPFRE Economic Research

Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list
* For comparative purposes, the equivalent table for 1997 may be consulted in Appendix I of this report.

information with regard to that observed during the measurement in 1997 (see Chart A.5) the low capacity for reducing the gap (GAI) has hardly changed during the course of the last twenty years.

Consistency between scoring and reality

As in the case of the analysis dedicated to the emerging markets within the Non-Life segment, Chart 3.4-d provides a joint view of the registered narrowing of the insurance gap, measured as a percentage of the GDP of each market in the ranking (*Y axis*), against the registered contribution to the closing of the global IPG, measured in basis points of world GDP (*X axis*), in the case of the developed insurance markets. As was indicated above, in the case of the MAPFRE GIP index in 1997, the data with which they are compared are real records; in the case of 2017, the data used for comparison are simulations made for the period 2017-2027. The equivalent chart for the analysis of 1997 is the Chart A.6 in Appendix I.

From the analysis of the chart corresponding to 2017, it can be confirmed that the MAPFRE GIP and GAI scores are consistent with a larger contribution to closing the global gap made by the United States and, to a lesser extent, by Spain and Italy.

4. Conclusions

The Insurance Protection Gap

In this report a measurement of the Insurance Protection Gap (IPG) has been presented, and its dynamics over time have been analyzed by segment (Life and Non-Life) and by market. The current IPG is thus placed at around 650 basis points of world GDP, which corresponds to approximately USD 5 trillion.

Within this, the insurance gap in the Life segment represents over double that of the Non-Life segment. This IPG structure is the result of an insurance gap of greater volume in the case of Life business, but also with different dynamics, since the growth of the IPG in the Life segment was four times greater than the growth of the insurance gap for Non-Life business between 1997 and 2017. Thus, while the IPG for the Life segment grew by around 200%, that for Non-Life only grew by 50%.

In addition, the largest contribution to the global IPG was produced in the emerging markets, which represent 75% of the insurance gap in the Life segment, and 90% of the IPG for Non-Life. Among the emerging markets, which represent over two-thirds of the sample, the BRICS countries (Brazil, Russia, India, China and South Africa) are responsible for over approximately half of the IPG.

It is important to highlight that although the insurance gap represents approximately double the volume of 20 years ago in terms of global GDP, in terms of the size of the insurance market it has tended to stabilize and, over the last few years, even to decrease. This has been essentially due to the fact that the emerging markets have reduced the IPG in terms of the real market down to approximately half the volume, in both the Life and Non-Life segments. For their part, the developed markets have maintained a relatively low and stable insurance gap over time. It should be noted, however, that in the case of the Life segment the IPG in developed markets has opened out slightly over the last decade, showing the problems that exist with the prevision system (given that Life insurance constitutes one of the complementary mechanisms within prevision systems).

The analysis of the mechanisms that govern the dynamics of the IPG have led to the conclusion that its mechanics depend on certain initial conditions, and on particular macro-economic and demographic dynamics, and, in substance, the reduction of the differential of these conditions in relation to a benchmark, given that all these forces are governed by an economic, demographic and sectoral convergence.

It has thus been noted that the insurance gap closes progressively if the initial IPG is wider and the density and penetration levels are lower, if the relative income per capita is unfavorable for the country analyzed, the elasticity of premiums to income is higher, and the growth differential of income per capita is also higher.

The analysis of the IPG and the MAPFRE GIP index

This analysis of the behavior and dynamics of the insurance gap has enabled us:

1) To acquire an instrument for creating simulations of the IPG based on the abovementioned prior conditions and macro-economic forecasts, and

2) To create an advanced indicator (the MAPFRE GIP Index) that can use the

abovementioned variables to assign a consistent score to insurance markets in two ways:

a) In accordance with their capacity to close their own IPG (the *Gap Absorption Index*, GAI), and

b) In accordance with their capacity to contribute to the closing of the global insurance gap, which is defined as their insurance potential (the *Global Insurance Potential Index*, MAPFRE GIP Index). In particular, the MAPFRE GIP Index constitutes a means of identifying and cataloging the different insurance markets in accordance with their potential for growth.

Throughout this report, it has been demonstrated that the MAPFRE GIP Index makes forecasts that are consistent with the real behavior subsequently observed. This means that where this indicator assigns a score for an extensive insurance potential, the most significant contributions are indeed produced to the closing of the global IPG, measured in basis points of the world GDP.

In this way, the MAPFRE GIP Index has been employed to establish a ranking table (or ordered list) of insurance markets that will potentially be relevant contributors to the closing of the global IPG and, therefore, have a high potential for the future of the insurance business in the Life and Non-Life segments.

The conclusions that are reached from the use of this indicator are that the most advantageous markets are those from which the best results can be expected due to their size (since they currently have a large IPG) or due to their capacity to close the abovementioned insurance gap. For 2017 this means the BRICS countries, other large emerging markets, and the markets of the countries that make up the G7.

It is nevertheless important to point out that a proviso should be expressed. In some markets, the high MAPFRE GIP score is due more to their size than to their actual capacity to close their insurance gap, which in some emerging markets is strictly limited (as is the case in some still backward markets in Latin America and the emerging European economies), and virtually non-existent in developed markets that have already attained a high degree of maturity and development. Furthermore, it is a striking fact that over the last 20 years the ranking of these markets in both Life and Non-Life categories has not substantially changed, or at most has been limited to certain minor adjustments within a wider group of countries. This points to the conclusion that the capacity to close the insurance gap is subject to a certain inertia, and it can therefore be stated that markets that have closed the gap in the past will also be capable of doing so in the future.

Appendix I

Additional Tables and Charts

To accompany the analysis of the MAPFRE GIP Index (*Global Insurance Potential Index*) and of the GAI (*Gap Absorption Index*) indicator, the following Tables and Charts are included (and referred to in the text of the report):

Tables

Charts

Table A.1
Life: MAPFRE GIP ranking (75+ percentile of 96 countries), 1997

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
China	1	3.2	6	47.7
United States	2	2.9	65	14.1
India	3	2.4	3	60.3
Indonesia	4	1.0	9	41.0
Tier 2				
Japan	5	0.7	89	9.8
Brazil	6	0.7	41	21.2
Germany	7	0.6	74	12.0
Iran	8	0.6	11	40.0
Mexico	9	0.5	43	20.6
Saudi Arabia	10	0.4	21	27.7
Pakistan	11	0.4	4	52.8
Nigeria	12	0.4	2	70.6
Italy	13	0.4	73	12.0
Russia	14	0.3	56	16.1
France	15	0.3	86	10.0
Turkey	16	0.3	28	24.5
United Kingdom	17	0.3	91	9.3
Egypt	18	0.3	12	36.8
Thailand	19	0.3	26	25.0
Vietnam	20	0.2	1	71.4
Canada	21	0.2	76	11.9
Spain	22	0.2	78	11.8
South Korea	23	0.2	82	10.8
Algeria	24	0.2	14	34.3
The Philippines	25	0.2	15	31.1

Source: MAPFRE Economic Research

Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list

Table A.2
Life: MAPFRE GIP ranking (75+ percentile of emerging markets), 1997

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
China	1	3.2	6	47.7
India	3	2.4	3	60.3
Indonesia	4	1.0	9	41.0
Tier 2				
Brazil	6	0.7	41	21.2
Iran	8	0.6	11	40.0
Mexico	9	0.5	43	20.6
Saudi Arabia	10	0.4	21	27.7
Pakistan	11	0.4	4	52.8
Nigeria	12	0.4	2	70.6
Russia	14	0.3	56	16.1
Turkey	16	0.3	28	24.5
Egypt	18	0.3	12	36.8
Thailand	19	0.3	26	25.0
Vietnam	20	0.2	1	71.4
South Korea	23	0.2	82	10.8
Algeria	24	0.2	14	34.3
The Philippines	25	0.2	15	31.1

Source: MAPFRE Economic Research

Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list

Table A.3
Life: MAPFRE GIP ranking (75+ percentile of developed markets), 1997

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
United States	2	2.9	65	14.1
Tier 2				
Japan	5	0.7	89	9.8
Germany	7	0.6	74	12.0
Italy	13	0.4	73	12.0
France	15	0.3	86	10.0
United Kingdom	17	0.3	91	9.3
Canada	21	0.2	76	11.9
Spain	22	0.2	78	11.8

Source: MAPFRE Economic Research

Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list

Table A.4
Non-Life: MAPFRE GIP ranking (75+ percentile of 96 countries), 1997

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
China	1	4.1	2	60.5
United States	2	4.0	75	19.2
India	3	2.3	3	57.2
Japan	4	1.4	79	18.3
Brazil	5	1.3	17	38.0
Indonesia	6	1.2	8	50.9
Tier 2				
Iran	7	0.8	6	52.5
Mexico	8	0.7	31	32.8
Germany	9	0.7	90	14.6
Ukraine	10	0.6	67	19.9
Saudi Arabia	11	0.5	32	32.7
Russia	12	0.5	63	23.1
France	13	0.5	92	14.3
Italy	14	0.5	93	14.1
South Korea	15	0.4	53	24.9
Turkey	16	0.4	30	33.2
Pakistan	17	0.4	7	51.6
Egypt	18	0.4	10	44.9
Nigeria	19	0.3	4	56.9
Thailand	20	0.3	39	31.3
Canada	21	0.3	86	15.6
Poland	22	0.3	46	30.4
Argentina	23	0.2	56	24.2
Colombia	24	0.2	13	39.5
Spain	25	0.2	95	13.6

Source: MAPFRE Economic Research

Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list

Table A.5
Non-Life: MAPFRE GIP ranking (75+ percentile of emerging markets), 1997

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
China	1	4.1	2	60.5
India	3	2.3	3	57.2
Brazil	5	1.3	17	38.0
Indonesia	6	1.2	8	50.9
Tier 2				
Iran	7	0.8	6	52.5
Mexico	8	0.7	31	32.8
Ukraine	10	0.6	67	19.9
Saudi Arabia	11	0.5	32	32.7
Russia	12	0.5	63	23.1
South Korea	15	0.4	53	24.9
Turkey	16	0.4	30	33.2
Pakistan	17	0.4	7	51.6
Egypt	18	0.4	10	44.9
Nigeria	19	0.3	4	56.9
Thailand	20	0.3	39	31.3
Poland	22	0.3	46	30.4
Argentina	23	0.2	56	24.2
Colombia	24	0.2	13	39.5

Source: MAPFRE Economic Research

Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list

Table A.6
Non-Life: MAPFRE GIP ranking (75+ percentile of developed markets), 1997

Name	Position in the MAPFRE GIP global ranking	MAPFRE GIP	Position in the GAI global ranking	GAI
Tier 1				
United States	2	4.0	75	19.2
Japan	4	1.4	79	18.3
Tier 2				
Germany	9	0.7	90	14.6
France	13	0.5	92	14.3
Italy	14	0.5	93	14.1
Canada	21	0.3	86	15.6
Spain	25	0.2	95	13.6

Source: MAPFRE Economic Research

Tier 1: Sub-group of Tier 2 whose MAPFRE GIP score places them in the 95+ percentile
Tier 2: Countries in the ranking whose MAPFRE GIP score places them in the highest quartile of the list

Table A.7
Non-Life: MAPFRE GIP ranking, 1997

MARKET	MAPFRE GIP 1997		GAI 1997		Closing of IPG 1997-2017		IPG (% GDP)		
	Ranking	Score	Ranking	Score	Global GDP (bps)	% of market	1997	2017	Difference 1997-2017
China	1	4.09	2	60.48	26.64	6.86	7.0%	3.1%	3.9%
United States	2	3.99	75	19.23	0.00	0.00	0.0%	0.0%	0.0%
India	3	2.28	3	57.21	4.73	1.46	10.5%	9.3%	1.2%
Japan	4	1.40	79	18.31	-5.83	1.42	0.6%	1.3%	-0.8%
Brazil	5	1.31	17	37.95	-0.91	0.14	2.5%	2.7%	-0.3%
Indonesia	6	1.24	8	50.93	5.52	0.24	12.0%	9.7%	2.3%
Iran	7	0.76	6	52.46	11.54	-0.05	14.0%	6.1%	8.0%
Mexico	8	0.72	31	32.79	-0.64	-0.01	4.5%	4.7%	-0.3%
Germany	9	0.71	90	14.58	-0.47	1.39	0.0%	0.1%	-0.1%
United Kingdom	10	0.64	67	19.90	-3.20	6.40	0.3%	1.3%	-1.0%
Saudi Arabia	11	0.51	32	32.69	7.41	-0.02	10.3%	5.5%	4.8%
Russia	12	0.47	63	23.06	-0.43	0.28	5.6%	5.8%	-0.2%
France	13	0.46	92	14.34	-0.67	0.86	0.1%	0.4%	-0.2%
Italy	14	0.46	93	14.10	-2.05	-0.00	1.1%	1.7%	-0.6%
South Korea	15	0.42	53	24.88	0.28	-0.16	0.2%	0.0%	0.2%
Turkey	16	0.42	30	33.19	1.18	0.13	7.0%	6.1%	0.9%
Pakistan	17	0.41	7	51.60	2.46	0.02	14.7%	11.6%	3.1%
Egypt	18	0.36	10	44.92	-3.22	0.03	11.1%	15.1%	-4.0%
Nigeria	19	0.33	4	56.86	4.20	0.12	17.1%	9.9%	7.2%
Thailand	20	0.33	39	31.32	0.28	0.03	5.2%	4.9%	0.3%
Canada	21	0.28	86	15.62	0.00	0.00	0.0%	0.0%	0.0%
Poland	22	0.25	46	30.36	0.05	0.05	3.1%	3.0%	0.1%
Argentina	23	0.24	56	24.23	1.08	-0.17	2.9%	1.8%	1.1%
Colombia	24	0.24	13	39.51	0.40	-0.00	4.2%	3.5%	0.7%
Spain	25	0.23	95	13.57	-0.19	0.02	0.8%	0.9%	-0.1%
The Philippines	26	0.22	14	38.34	-0.90	0.04	6.6%	8.2%	-1.6%
Venezuela	27	0.21	34	32.07	n/a	-0.07	4.7%	n/a	n/a
Malaysia	28	0.20	37	31.60	-2.11	0.12	2.8%	6.1%	-3.3%
Australia	29	0.20	71	19.69	-0.02	0.02	0.0%	0.0%	-0.0%
Vietnam	30	0.19	1	60.54	1.66	0.00	13.0%	7.8%	5.3%
Algeria	31	0.16	36	31.70	0.43	0.01	11.4%	10.5%	0.8%
UAE	32	0.16	38	31.36	2.69	-0.02	6.5%	1.3%	5.2%
The Netherlands	33	0.15	85	15.79	0.00	0.00	0.0%	0.0%	0.0%
Bangladesh	34	0.14	12	40.71	-0.01	0.00	8.5%	8.5%	-0.0%
Hong Kong	35	0.12	47	29.40	0.66	-0.07	1.9%	0.2%	1.7%
Romania	36	0.12	15	38.22	0.97	0.00	9.2%	6.1%	3.2%
Singapore	37	0.12	26	34.31	-0.15	0.02	2.7%	3.1%	-0.5%
Czech Republic	38	0.11	40	31.32	0.01	0.01	3.2%	3.1%	0.0%
South Africa	39	0.10	94	13.73	-1.02	0.11	0.3%	1.7%	-1.4%
Peru	40	0.10	27	34.10	-0.13	0.01	5.0%	5.4%	-0.4%
Ukraine	41	0.10	55	24.27	0.96	-0.00	9.2%	6.8%	2.3%
Greece	42	0.10	64	22.71	-0.17	-0.02	3.0%	3.4%	-0.4%
Chile	43	0.10	33	32.58	0.10	0.00	3.0%	2.7%	0.3%
Belgium	44	0.09	87	14.93	-0.41	0.13	0.3%	1.0%	-0.7%
Kuwait	45	0.09	23	34.79	0.29	0.00	8.4%	7.2%	1.2%
Switzerland	46	0.08	89	14.64	0.00	0.00	0.0%	0.0%	0.0%
Sweden	47	0.08	88	14.92	-0.28	0.04	1.1%	1.6%	-0.5%
Kazakhstan	48	0.08	41	30.98	1.09	0.00	13.2%	8.8%	4.5%

Source: MAPFRE Economic Research

Table A-7 (continued)
Non-Life: MAPFRE GIP ranking, 1997

MARKET	MAPFRE GIP 1997		GAI 1997		Closing of IPG 1997-2017		IPG (% GDP)		
	Ranking	Score	Ranking	Score	Global GDP (bps)	% of market	1997	2017	Difference 1997-2017
Sri Lanka	49	0.07	11	43.91	0.25	0.00	10.6%	9.1%	1.5%
Austria	50	0.07	91	14.51	-0.25	0.07	0.0%	0.5%	-0.5%
Portugal	51	0.06	83	16.35	-0.31	0.01	1.0%	1.8%	-0.8%
Norway	52	0.06	66	19.98	-0.04	0.01	1.3%	1.4%	-0.1%
Israel	53	0.06	68	19.88	-0.18	0.04	0.6%	1.1%	-0.6%
Ecuador	54	0.06	25	34.50	0.38	-0.00	5.8%	3.6%	2.2%
Oman	55	0.06	28	33.88	0.88	-0.00	10.5%	5.3%	5.2%
Hungary	56	0.06	62	23.16	-0.24	0.01	3.4%	4.4%	-1.0%
Serbia	57	0.05	5	52.48	0.06	0.00	5.4%	4.9%	0.5%
Denmark	58	0.05	82	16.83	-0.05	-0.00	0.5%	0.7%	-0.2%
Finland	59	0.05	77	18.76	-0.11	0.00	1.1%	1.5%	-0.4%
(Ireland)	60	0.04	65	21.66	-0.43	0.11	0.4%	2.6%	-2.2%
Guatemala	61	0.04	18	37.88	0.20	0.00	6.4%	4.6%	1.8%
Morocco	62	0.04	70	19.74	-0.16	0.00	3.2%	3.9%	-0.7%
New Zealand	63	0.04	59	23.48	0.00	0.00	0.0%	0.0%	0.0%
Kenya	64	0.04	22	35.57	0.10	0.00	5.1%	4.2%	0.9%
Slovakia	65	0.04	42	30.87	-0.13	0.00	2.8%	3.8%	-1.0%
Bulgaria	66	0.04	29	33.32	0.57	-0.00	9.3%	4.3%	5.0%
ANGOLA	67	0.04	9	48.23	0.67	0.00	13.1%	4.5%	8.6%
Dominican Rep.	68	0.04	24	34.69	-0.08	0.00	4.6%	5.4%	-0.7%
Tunisia	69	0.03	60	23.30	-0.29	0.00	3.9%	6.4%	-2.5%
Lebanon	70	0.03	20	36.03	-0.04	0.00	1.7%	2.3%	-0.5%
Uruguay	71	0.02	45	30.36	-0.05	0.00	2.2%	2.8%	-0.6%
Lithuania	72	0.02	16	38.14	0.07	0.00	6.5%	5.4%	1.1%
El Salvador	73	0.02	21	35.59	0.08	-0.00	5.2%	3.8%	1.4%
Croatia	74	0.02	72	19.57	-0.17	0.00	1.8%	3.4%	-1.6%
Jordan	75	0.02	48	29.09	0.14	0.00	6.0%	3.7%	2.3%
Costa Rica	76	0.02	49	28.07	0.05	0.00	3.0%	2.2%	0.8%
Zimbabwe	77	0.01	54	24.32	0.01	-0.00	4.3%	4.1%	0.2%
Jamaica	78	0.01	19	36.46	0.04	-0.00	1.7%	0.7%	0.9%
Bahrain	79	0.01	52	25.79	0.10	0.00	5.5%	3.4%	2.1%
Panama	80	0.01	61	23.21	-0.05	0.00	1.7%	2.8%	-1.1%
Macao	81	0.01	43	30.80	0.00	0.00	4.4%	4.3%	0.1%
Latvia	82	0.01	50	27.03	0.04	0.00	4.9%	3.8%	1.1%
Slovenia	83	0.01	96	11.46	-0.00	0.00	0.0%	0.1%	-0.1%
Luxemburg	84	0.01	76	18.83	-0.04	0.00	0.7%	1.7%	-1.0%
Cyprus	85	0.01	57	24.07	0.01	-0.00	1.6%	1.4%	0.3%
Estonia	86	0.01	51	26.17	0.02	0.00	3.8%	3.2%	0.6%
Botswana	87	0.01	58	23.65	-0.03	0.00	5.2%	6.3%	-1.0%
Trinidad and Tobago	88	0.01	74	19.36	-0.00	0.00	2.7%	2.7%	-0.0%
Bahamas	89	0.00	35	31.97	0.00	-0.00	0.2%	0.0%	0.2%
Namibia	90	0.00	69	19.86	0.01	0.00	2.9%	2.6%	0.3%
Mauritius	91	0.00	78	18.70	-0.03	0.00	2.1%	3.5%	-1.3%
Iceland	92	0.00	84	16.05	-0.01	0.00	0.6%	1.0%	-0.4%
Malta	93	0.00	73	19.42	-0.03	0.00	1.3%	3.2%	-2.0%
Barbados	94	0.00	80	18.29	0.00	0.00	0.0%	0.0%	0.0%
Liechtenstein	95	0.00	44	30.65	n/a	0.00	0.0%	n/a	n/a
Qatar	96	0.00	81	17.89	0.00	0.00	0.0%	3.5%	-3.5%

Source: MAPFRE Economic Research

Table A.8
Life: MAPFRE GIP ranking, 1997

MARKET	MAPFRE GIP 1997		GAI 1997		Closing of IPG 1997-2017		IPG (% GDP)		
	Ranking	Score	Ranking	Score	Global GDP (bps)	% of market	1997	2017	Difference 1997-2017
China	1	3.22	6	47.71	37.12	9.35	11.0%	5.6%	5.5%
United States	2	2.94	65	14.14	-39.99	362.33	0.9%	2.8%	-1.9%
India	3	2.41	3	60.33	12.67	2.35	13.5%	10.3%	3.2%
Indonesia	4	1.00	9	40.99	17.11	0.13	18.8%	11.8%	7.0%
Japan	5	0.75	89	9.81	0.00	0.00	0.0%	0.0%	0.0%
Brazil	6	0.73	41	21.16	4.36	-0.19	6.5%	5.2%	1.3%
Germany	7	0.59	74	12.03	-7.86	6.98	1.8%	3.4%	-1.6%
Iran	8	0.58	11	39.95	4.47	0.01	23.5%	20.4%	3.1%
Mexico	9	0.45	43	20.61	-4.05	0.17	7.5%	9.3%	-1.8%
Saudi Arabia	10	0.43	21	27.73	4.79	0.00	17.5%	14.4%	3.1%
Pakistan	11	0.42	4	52.80	3.77	0.01	22.6%	17.8%	4.7%
Nigeria	12	0.41	2	70.58	8.04	0.01	30.2%	16.4%	13.8%
Italy	13	0.39	73	12.04	9.83	-5.19	3.0%	0.0%	3.0%
Russia	14	0.33	56	16.12	-8.37	0.77	8.3%	12.4%	-4.1%
France	15	0.32	86	9.97	0.00	0.00	0.0%	0.0%	0.0%
Turkey	16	0.31	28	24.55	-2.75	0.06	12.0%	14.2%	-2.2%
United Kingdom	17	0.30	91	9.33	0.00	0.00	0.0%	0.0%	0.0%
Egypt	18	0.30	12	36.78	-5.40	0.01	18.6%	25.3%	-6.7%
Thailand	19	0.26	26	24.98	4.37	-0.03	9.6%	5.4%	4.2%
Vietnam	20	0.23	1	71.39	3.03	0.00	22.0%	12.4%	9.6%
Canada	21	0.22	76	11.91	-1.36	0.99	1.8%	2.5%	-0.7%
Spain	22	0.20	78	11.76	-2.35	0.76	2.8%	4.2%	-1.4%
South Korea	23	0.18	82	10.80	0.00	0.00	0.0%	0.0%	0.0%
Venezuela	24	0.18	22	27.42	n/a	-0.00	14.1%	n/a	n/a
Algeria	25	0.18	14	34.25	-0.34	0.00	19.8%	20.5%	-0.7%
The Philippines	26	0.17	15	31.10	-0.69	0.03	10.9%	12.2%	-1.2%
Bangladesh	27	0.16	5	48.22	-0.23	0.01	12.6%	13.3%	-0.7%
Poland	28	0.15	47	18.27	-1.24	0.07	8.3%	9.8%	-1.5%
Colombia	29	0.15	27	24.86	-0.65	0.02	9.8%	10.8%	-1.1%
Argentina	30	0.15	63	14.53	-1.74	0.05	5.8%	7.5%	-1.7%
Malaysia	31	0.14	37	21.46	-0.18	0.05	6.4%	6.7%	-0.3%
Ukraine	32	0.12	20	28.91	-1.11	0.00	15.4%	18.0%	-2.7%
UAE	33	0.11	42	21.06	1.64	0.00	11.8%	8.6%	3.2%
The Netherlands	34	0.10	83	10.76	-3.94	2.03	0.0%	4.1%	-4.1%
Australia	35	0.10	92	9.30	-2.92	2.38	0.0%	2.9%	-2.9%
Romania	36	0.09	16	31.02	0.91	0.00	15.8%	12.8%	3.0%
South Africa	37	0.09	77	11.78	0.00	0.00	0.0%	0.0%	0.0%
Kazakhstan	38	0.09	13	34.96	1.01	0.00	20.5%	16.4%	4.1%
Czech Republic	39	0.08	39	21.31	0.47	0.01	9.5%	8.2%	1.3%
Sri Lanka	40	0.07	10	40.37	0.36	0.00	18.1%	15.9%	2.2%
Belgium	41	0.07	80	11.16	-0.34	0.04	1.7%	2.2%	-0.6%
Greece	42	0.06	67	13.95	-0.91	-0.00	4.8%	6.9%	-2.1%
Kuwait	43	0.06	29	24.14	0.30	0.00	14.8%	13.5%	1.2%
Peru	44	0.06	45	19.11	-0.22	0.00	9.1%	9.9%	-0.7%
Austria	45	0.05	79	11.25	-1.01	0.10	2.4%	4.5%	-2.1%
Morocco	46	0.05	25	25.08	-0.49	0.00	9.1%	11.4%	-2.3%
Kenya	47	0.05	8	46.82	0.57	0.00	14.9%	9.9%	5.0%
Chile	48	0.05	53	16.88	-0.09	0.02	3.6%	3.9%	-0.3%

Source: MAPFRE Economic Research

Table A-8 (continued)
Life: MAPFRE GIP ranking, 1997

MARKET	MAPFRE GIP 1997		GAI 1997		Closing of IPG 1997-2017		IPG (% GDP)		
	Ranking	Score	Ranking	Score	Global GDP (bps)	% of market	1997	2017	Difference 1997-2017
Singapore	49	0.05	60	15.02	0.41	-0.03	1.2%	0.0%	1.2%
Portugal	50	0.05	69	12.97	0.20	-0.02	3.4%	2.9%	0.5%
Switzerland	51	0.05	95	8.84	-0.52	0.42	0.0%	1.0%	-1.0%
Sweden	52	0.05	93	9.15	0.28	-0.08	1.1%	0.6%	0.5%
Hong Kong	53	0.05	75	11.93	0.79	-0.09	2.0%	0.0%	2.0%
Oman	54	0.05	23	27.15	0.81	0.00	19.1%	14.3%	4.8%
Ecuador	55	0.04	35	22.96	0.01	0.00	9.8%	9.7%	0.1%
Israel	56	0.04	71	12.57	-0.16	0.04	2.3%	2.8%	-0.5%
Angola	57	0.04	7	47.13	0.82	0.00	19.0%	8.6%	10.5%
Hungary	58	0.04	59	15.08	-0.16	0.00	8.1%	8.7%	-0.7%
Bulgaria	59	0.04	17	30.78	0.61	0.00	18.6%	13.2%	5.3%
Norway	60	0.03	88	9.91	-0.12	0.03	1.8%	2.2%	-0.4%
Guatemala	61	0.03	24	26.02	0.19	0.00	11.4%	9.7%	1.7%
Denmark	62	0.03	94	9.02	0.19	-0.04	0.6%	0.0%	0.6%
Tunisia	63	0.03	31	23.92	-0.87	0.00	10.1%	17.7%	-7.6%
Finland	64	0.03	85	10.05	0.00	0.00	0.0%	0.0%	0.0%
Dominican Rep.	65	0.03	30	23.93	-0.26	0.00	9.8%	12.2%	-2.4%
New Zealand	66	0.02	68	13.57	-0.24	0.02	3.1%	4.5%	-1.4%
Serbia	67	0.02	36	22.49	-0.53	0.00	7.9%	13.1%	-5.2%
Slovakia	68	0.02	51	17.43	-0.12	0.00	7.6%	8.5%	-0.9%
Ireland	69	0.02	90	9.74	0.00	0.00	0.0%	0.0%	0.0%
Croatia	70	0.02	49	17.92	-0.15	0.00	7.6%	9.1%	-1.5%
Jordan	71	0.02	19	29.62	0.15	0.00	14.2%	11.8%	2.4%
Zimbabwe	72	0.02	18	30.76	-0.07	0.00	5.2%	6.4%	-1.2%
Lebanon	73	0.02	38	21.40	-0.03	0.00	7.6%	8.0%	-0.4%
Lithuania	74	0.01	33	23.63	0.04	0.00	10.9%	10.1%	0.7%
El Salvador	75	0.01	34	23.49	-0.00	0.00	9.8%	9.8%	-0.0%
Costa Rica	76	0.01	44	20.31	0.07	0.00	8.8%	7.7%	1.1%
Bahrain	77	0.01	32	23.74	0.12	0.00	12.9%	10.4%	2.5%
Uruguay	78	0.01	64	14.43	-0.04	0.00	5.7%	6.3%	-0.5%
Slovenia	79	0.01	66	14.02	-0.04	0.00	5.6%	6.1%	-0.5%
Panama	80	0.01	46	18.64	-0.04	0.00	7.3%	8.1%	-0.8%
Jamaica	81	0.01	48	18.09	-0.02	-0.00	5.7%	6.3%	-0.6%
Latvia	82	0.01	54	16.74	0.04	0.00	10.6%	9.6%	1.0%
Trinidad and Tobago	83	0.01	55	16.73	-0.13	0.00	3.3%	7.1%	-3.8%
Macao	84	0.01	57	15.75	0.05	0.01	4.6%	3.2%	1.4%
Botswana	85	0.01	50	17.91	0.03	0.00	9.6%	8.5%	1.0%
Luxemburg	86	0.00	81	10.90	0.01	0.01	2.9%	2.7%	0.2%
Cyprus	87	0.00	61	14.74	-0.06	0.00	3.1%	5.1%	-2.0%
Namibia	88	0.00	40	21.26	0.12	-0.00	6.9%	0.5%	6.5%
Estonia	89	0.00	62	14.55	0.03	0.00	9.4%	8.3%	1.0%
Mauritius	90	0.00	52	17.19	-0.05	0.00	4.8%	7.1%	-2.3%
Iceland	91	0.00	70	12.57	0.00	0.00	4.2%	4.1%	0.1%
Malta	92	0.00	58	15.47	0.02	0.00	5.3%	3.6%	1.7%
Bahamas	93	0.00	72	12.08	-0.04	0.00	0.5%	3.0%	-2.5%
Barbados	94	0.00	87	9.95	-0.00	-0.00	3.0%	3.0%	-0.0%
Liechtenstein	95	0.00	84	10.58	n/a	0.00	0.0%	n/a	n/a
Qatar	95	0.00	96	7.92	0.00	0.00	0.0%	11.3%	-11.3%

Source: MAPFRE Economic Research

Table A.9
Non-Life: MAPFRE GIP ranking, 2017

MARKET	MAPFRE GIP 2017		GAI 2017		Closing of IPG 2017-2027	IPG (% GDP)		
	Ranking	Score	Ranking	Score		2017	2027	Difference 2017-2027
China	1	9.38	5	51.39	17.29	3.1%	2.1%	0.9%
India	2	4.40	2	59.45	17.49	9.3%	7.0%	2.4%
United States	3	4.28	53	28.16	-	0.0%	-	-
Indonesia	4	1.23	8	48.29	4.66	9.7%	7.9%	1.8%
Russia	5	0.88	44	30.11	1.48	5.8%	5.3%	0.5%
Japan	6	0.80	91	18.41	-2.63	1.3%	1.9%	-0.6%
Germany	7	0.78	77	23.83	-	0.1%	-	-
Brazil	8	0.67	63	26.54	2.01	2.7%	1.9%	0.8%
Turkey	9	0.62	23	35.11	-0.16	6.1%	6.2%	-0.1%
Mexico	10	0.58	39	31.45	1.15	4.7%	4.1%	0.6%
Iran	11	0.53	15	39.93	-2.97	6.1%	8.3%	-2.2%
France	12	0.52	80	23.08	-	0.4%	-	-
Saudi Arabia	13	0.51	19	36.88	1.27	5.5%	4.6%	0.9%
Pakistan	14	0.51	1	59.66	2.06	11.6%	9.1%	2.4%
Nigeria	15	0.50	3	57.50	1.68	9.9%	8.0%	1.9%
United Kingdom	16	0.48	86	21.16	-0.09	1.3%	1.3%	-0.0%
Italy	17	0.47	70	24.91	0.52	1.7%	1.4%	0.3%
Egypt	18	0.45	6	50.57	2.05	15.1%	12.8%	2.3%
South Korea	19	0.37	74	23.87	-	0.0%	-	-
Spain	20	0.33	75	23.86	-0.65	0.9%	1.4%	-0.5%
Thailand	21	0.31	38	32.36	1.79	4.9%	3.0%	1.9%
The Philippines	22	0.29	11	42.69	0.96	8.2%	6.8%	1.4%
Bangladesh	23	0.28	4	56.28	0.89	8.5%	6.8%	1.8%
Vietnam	24	0.25	7	49.91	0.86	7.8%	6.1%	1.7%
Poland	25	0.24	56	27.54	0.39	3.0%	2.6%	0.4%
Malaysia	26	0.24	36	32.55	-0.10	6.1%	6.2%	-0.1%
Canada	27	0.23	93	17.57	-	0.0%	-	-
Argentina	28	0.21	49	29.04	-	1.8%	-	-
Algeria	29	0.20	16	39.87	0.67	10.5%	9.2%	1.4%
UAE	30	0.16	45	29.96	-0.01	1.3%	1.3%	-0.0%
Romania	31	0.16	14	40.23	0.64	6.1%	4.4%	1.6%
The Netherlands	32	0.16	81	22.24	-	0.0%	-	-
Australia	33	0.15	94	17.10	-	0.0%	-	-
Kazakhstan	34	0.15	12	41.22	0.42	8.8%	7.6%	1.1%
Colombia	35	0.15	57	27.50	-0.45	3.5%	4.3%	-0.8%
South Africa	36	0.13	82	22.14	-0.28	1.7%	2.1%	-0.5%
Peru	37	0.12	28	34.03	0.36	5.4%	4.3%	1.1%
Singapore	38	0.11	54	27.76	0.28	3.1%	2.4%	0.7%
Belgium	39	0.10	71	24.26	0.25	1.0%	0.5%	0.6%
Ukraine	40	0.10	30	33.87	0.52	6.8%	5.0%	1.8%
Sri Lanka	41	0.10	10	44.72	0.37	9.1%	7.3%	1.7%
(Ireland)	42	0.10	32	33.39	0.05	2.6%	2.4%	0.2%
Hong Kong	43	0.10	62	26.82	-	0.2%	-	-
Chile	44	0.09	60	27.41	0.32	2.7%	1.7%	0.9%
Austria	45	0.09	76	23.84	-	0.5%	-	-
Sweden	46	0.09	84	21.70	0.03	1.6%	1.5%	0.1%
Czech Republic	47	0.08	59	27.44	0.17	3.1%	2.6%	0.5%
Switzerland	48	0.08	90	18.72	-	0.0%	-	-

Source: MAPFRE Economic Research

Table A-9 (continued)
Non-Life: MAPFRE GIP ranking, 2017

MARKET	MAPFRE GIP 2017		GAI 2017		Closing of IPG 2017-2027 (bps of global GDP)	IPG (% GDP)		
	Ranking	Score	Ranking	Score		2017	2027	Difference 2017-2027
Kuwait	49	0.08	35	32.60	0.21	7.2%	6.3%	0.9%
Angola	50	0.07	9	46.91	0.16	4.5%	3.4%	1.1%
Qatar	51	0.07	67	26.28	-0.16	3.5%	4.1%	-0.6%
Morocco	52	0.07	46	29.83	0.28	3.9%	2.7%	1.2%
Israel	53	0.07	64	26.54	-	1.1%	-	-
Hungary	54	0.07	42	30.40	0.24	4.4%	3.3%	1.1%
Portugal	55	0.07	69	25.30	0.22	1.8%	0.9%	0.9%
Greece	56	0.06	68	25.86	0.12	3.4%	2.9%	0.5%
Oman	57	0.06	17	39.40	-0.06	5.3%	5.7%	-0.4%
Ecuador	58	0.05	26	34.41	0.27	3.6%	1.8%	1.8%
Kenya	59	0.05	18	38.62	0.25	4.2%	2.3%	2.0%
Dominican Rep.	60	0.05	25	35.03	0.13	5.4%	4.4%	1.0%
Norway	61	0.05	92	18.32	-0.04	1.4%	1.6%	-0.2%
Denmark	62	0.04	89	19.58	0.05	0.7%	0.4%	0.2%
Guatemala	63	0.04	13	40.37	0.20	4.6%	2.8%	1.8%
Bulgaria	64	0.04	20	36.85	0.11	4.3%	3.4%	0.9%
Finland	65	0.04	88	20.93	0.09	1.5%	1.1%	0.5%
Slovakia	66	0.04	50	28.44	0.08	3.8%	3.2%	0.6%
Tunisia	67	0.03	41	30.62	0.00	6.4%	6.4%	0.0%
New Zealand	68	0.03	85	21.31	-	0.0%	-	-
Serbia	69	0.03	40	31.28	0.15	4.9%	3.1%	1.8%
Panama	70	0.03	34	33.03	0.16	2.8%	0.8%	2.0%
Jordan	71	0.02	21	35.76	0.10	3.7%	2.3%	1.4%
Lithuania	72	0.02	27	34.29	0.09	5.4%	4.1%	1.3%
Croatia	73	0.02	66	26.46	0.06	3.4%	2.7%	0.7%
Costa Rica	74	0.02	47	29.64	0.05	2.2%	1.4%	0.8%
Lebanon	75	0.02	58	27.48	-0.03	2.3%	2.7%	-0.5%
Macao	76	0.02	31	33.67	0.08	4.3%	3.0%	1.3%
Bahrain	77	0.02	37	32.42	0.04	3.4%	2.6%	0.8%
Uruguay	78	0.02	55	27.61	0.07	2.8%	1.7%	1.1%
Luxemburg	79	0.01	51	28.21	0.00	1.7%	1.6%	0.1%
El Salvador	80	0.01	33	33.14	0.08	3.8%	1.9%	1.9%
Latvia	81	0.01	43	30.24	0.05	3.8%	2.7%	1.1%
Slovenia	82	0.01	83	21.75	-	0.1%	-	-
Botswana	83	0.01	24	35.06	0.05	6.3%	4.7%	1.5%
Estonia	84	0.01	48	29.59	0.04	3.2%	2.1%	1.1%
Zimbabwe	85	0.01	22	35.61	0.05	4.1%	2.0%	2.0%
Trinidad and Tobago	86	0.01	73	23.90	-	2.7%	-	-
Mauritius	87	0.01	61	27.29	0.03	3.5%	2.2%	1.3%
Namibia	88	0.01	65	26.47	0.02	2.6%	1.8%	0.8%
Cyprus	89	0.01	78	23.63	-	1.4%	-	-
Jamaica	90	0.00	72	24.16	-	0.7%	-	-
Malta	91	0.00	29	33.97	-0.00	3.2%	3.4%	-0.1%
Iceland	92	0.00	52	28.18	-	1.0%	-	-
Bahamas	93	0.00	79	23.16	-	0.0%	-	-
Barbados	94	0.00	87	21.03	-	0.0%	-	-
Liechtenstein	95	0.00	95	16.08	-		-	-
Venezuela	95	0.00	96	5.31	-		-	-

Source: MAPFRE Economic Research

Table A.10
Life: MAPFRE GIP ranking, 2017

MARKET	MAPFRE GIP 2017		GAI 2017		Closing of IPG 2017-2027 (bps of global GDP)	IPG (% GDP)		
	Ranking	Score	Ranking	Score		2017	2027	Difference 2017-2027
China	1	7.83	5	42.91	-1.99	5.6%	5.7%	-0.1%
United States	2	3.86	64	25.45	22.77	2.8%	1.3%	1.5%
India	3	3.63	2	49.11	24.24	10.3%	7.0%	3.3%
Japan	4	1.32	48	30.31	-	0.0%	-	-
Russia	5	0.98	31	33.35	6.83	12.4%	10.1%	2.3%
Indonesia	6	0.93	21	36.72	4.10	11.8%	10.2%	1.6%
Germany	7	0.80	68	24.40	2.56	3.4%	2.6%	0.8%
Turkey	8	0.68	15	38.54	4.47	14.2%	11.7%	2.5%
Brazil	9	0.61	70	23.98	3.42	5.2%	3.9%	1.3%
Mexico	10	0.54	51	29.62	2.79	9.3%	7.8%	1.5%
Iran	11	0.53	12	39.67	4.82	20.4%	16.8%	3.6%
Saudi Arabia	12	0.53	19	37.85	3.87	14.4%	11.6%	2.8%
France	13	0.46	87	20.64	-	0.0%	-	-
United Kingdom	14	0.46	89	20.31	-	0.0%	-	-
Egypt	15	0.43	1	49.13	3.74	25.3%	21.1%	4.2%
Pakistan	16	0.41	3	47.86	2.80	17.8%	14.6%	3.3%
Italy	17	0.38	91	19.99	-	0.0%	-	-
South Korea	18	0.36	74	23.62	-	0.0%	-	-
Nigeria	19	0.36	8	41.47	2.75	16.4%	13.3%	3.1%
Spain	20	0.33	71	23.96	0.80	4.2%	3.6%	0.6%
Poland	21	0.29	33	33.02	1.57	9.8%	8.0%	1.8%
Canada	22	0.28	84	21.05	-0.16	2.5%	2.7%	-0.1%
The Philippines	23	0.26	16	38.31	1.11	12.2%	10.5%	1.6%
Thailand	24	0.26	60	26.58	2.42	5.4%	2.9%	2.5%
Bangladesh	25	0.24	4	47.84	1.11	13.3%	11.0%	2.2%
Malaysia	26	0.21	55	28.96	-1.79	6.7%	9.2%	-2.5%
Argentina	27	0.21	52	29.27	1.24	7.5%	5.8%	1.7%
Algeria	28	0.21	6	42.68	1.92	20.5%	16.6%	3.9%
Vietnam	29	0.21	9	41.24	0.24	12.4%	12.0%	0.5%
Australia	30	0.19	85	20.84	0.08	2.9%	2.8%	0.1%
The Netherlands	31	0.17	69	24.05	0.54	4.1%	3.3%	0.8%
Colombia	32	0.16	54	28.98	0.89	10.8%	9.2%	1.6%
UAE	33	0.16	50	29.70	0.85	8.6%	7.0%	1.6%
Romania	34	0.15	17	38.28	1.01	12.8%	10.2%	2.5%
Kazakhstan	35	0.14	23	36.28	1.13	16.4%	13.3%	3.0%
South Africa	36	0.12	86	20.83	-	0.0%	-	-
Ukraine	37	0.11	20	37.51	1.22	18.0%	13.8%	4.2%
Peru	38	0.11	44	31.09	0.65	9.9%	7.9%	1.9%
Czech Republic	39	0.09	46	30.79	0.46	8.2%	6.7%	1.5%
Belgium	40	0.09	80	21.89	0.33	2.2%	1.5%	0.8%
Austria	41	0.09	67	24.90	0.33	4.5%	3.6%	0.9%
Singapore	42	0.09	81	21.77	-	0.0%	-	-
Switzerland	43	0.09	88	20.40	0.18	1.0%	0.5%	0.4%
Sri Lanka	44	0.09	10	40.75	0.71	15.9%	12.7%	3.3%
Qatar	45	0.09	35	32.50	0.58	11.3%	9.1%	2.2%
Hong Kong	46	0.08	73	23.82	-	0.0%	-	-
Morocco	47	0.08	26	35.91	0.42	11.4%	9.6%	1.8%
Sweden	48	0.08	90	20.13	-	0.6%	-	-

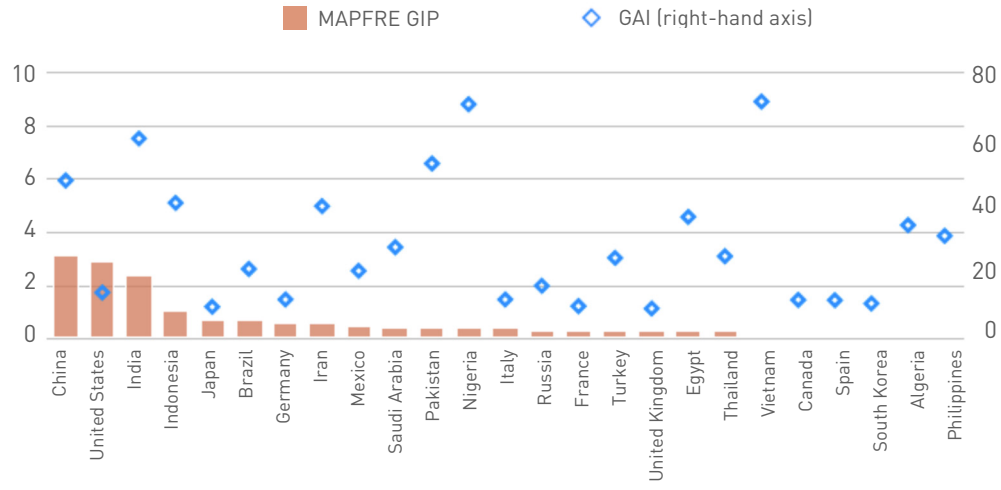
Source: MAPFRE Economic Research

Table A.10 (continued)
Life: MAPFRE GIP ranking, 2017

MARKET	MAPFRE GIP 2017		GAI 2017		Closing of IPG 2017-2027 (bps of global GDP)	IPG (% GDP)		
	Ranking	Score	Ranking	Score		2017	2027	Difference 2017-2027
Chile	49	0.08	78	22.93	0.46	3.9%	2.6%	1.3%
Ireland	50	0.08	61	26.45	-	0.0%	-	-
Kuwait	51	0.07	37	32.12	0.59	13.5%	11.0%	2.5%
Israel	52	0.07	58	27.54	0.65	2.8%	0.3%	2.5%
Hungary	53	0.07	41	31.80	0.39	8.7%	6.9%	1.8%
Angola	54	0.06	7	42.59	0.25	8.6%	6.9%	1.7%
Oman	55	0.06	18	38.12	0.39	14.3%	11.7%	2.6%
Portugal	56	0.06	79	22.03	0.29	2.9%	1.8%	1.1%
Greece	57	0.06	72	23.91	0.27	6.9%	5.7%	1.1%
Kenya	58	0.05	11	40.46	0.33	9.9%	7.3%	2.6%
Ecuador	59	0.05	40	31.83	0.32	9.7%	7.6%	2.1%
Dominican Rep.	60	0.05	27	35.36	0.32	12.2%	9.8%	2.4%
Norway	61	0.05	94	18.83	-0.07	2.2%	2.5%	-0.3%
Denmark	62	0.05	92	19.79	-	0.0%	-	-
Slovakia	63	0.04	45	31.01	0.21	8.5%	7.0%	1.5%
Tunisia	64	0.04	14	38.70	0.34	17.7%	14.5%	3.1%
New Zealand	65	0.04	59	27.01	0.15	4.5%	3.5%	1.0%
Bulgaria	66	0.04	24	36.28	0.29	13.2%	10.7%	2.5%
Guatemala	67	0.04	22	36.44	0.23	9.7%	7.6%	2.1%
Finland	68	0.04	93	19.48	-	0.0%	-	-
Serbia	69	0.03	25	36.06	0.22	13.1%	10.4%	2.7%
Jordan	70	0.03	13	39.03	0.16	11.8%	9.6%	2.3%
Panama	71	0.03	30	33.57	0.12	8.1%	6.5%	1.5%
Croatia	72	0.02	47	30.31	0.14	9.1%	7.3%	1.7%
Lithuania	73	0.02	32	33.23	0.15	10.1%	8.1%	2.0%
Lebanon	74	0.02	36	32.45	0.07	8.0%	7.0%	1.0%
Costa Rica	75	0.02	49	29.82	0.10	7.7%	6.2%	1.5%
Bahrain	76	0.02	28	34.88	0.11	10.4%	8.4%	2.0%
Slovenia	77	0.02	57	28.63	0.06	6.1%	4.9%	1.1%
Uruguay	78	0.02	63	26.03	0.09	6.3%	4.9%	1.4%
Macao	79	0.01	62	26.03	0.05	3.2%	2.4%	0.8%
Latvia	80	0.01	34	32.50	0.08	9.6%	7.7%	1.9%
El Salvador	81	0.01	43	31.33	0.09	9.8%	7.4%	2.3%
Luxemburg	82	0.01	65	25.20	-0.01	2.7%	2.9%	-0.2%
Estonia	83	0.01	38	32.11	0.05	8.3%	6.7%	1.7%
Botswana	84	0.01	39	32.06	0.06	8.5%	6.6%	1.9%
Zimbabwe	85	0.01	29	34.59	0.09	6.4%	3.2%	3.2%
Trinidad and Tobago	86	0.01	75	23.22	0.14	7.1%	2.8%	4.2%
Mauritius	87	0.01	56	28.79	0.04	7.1%	5.3%	1.8%
Jamaica	88	0.01	66	24.95	0.03	6.3%	4.6%	1.7%
Cyprus	89	0.00	83	21.12	0.05	5.1%	2.8%	2.3%
Namibia	90	0.00	77	22.97	-	0.5%	-	-
Iceland	91	0.00	42	31.74	0.01	4.1%	3.2%	0.9%
Malta	92	0.00	53	29.03	-0.02	3.6%	5.3%	-1.7%
Bahamas	93	0.00	76	23.16	0.01	3.0%	2.0%	1.0%
Barbados	94	0.00	82	21.28	0.00	3.0%	2.1%	0.9%
Liechtenstein	95	0.00	96	6.04	-	-	-	-
Venezuela	95	0.00	95	6.12	-	-	-	-

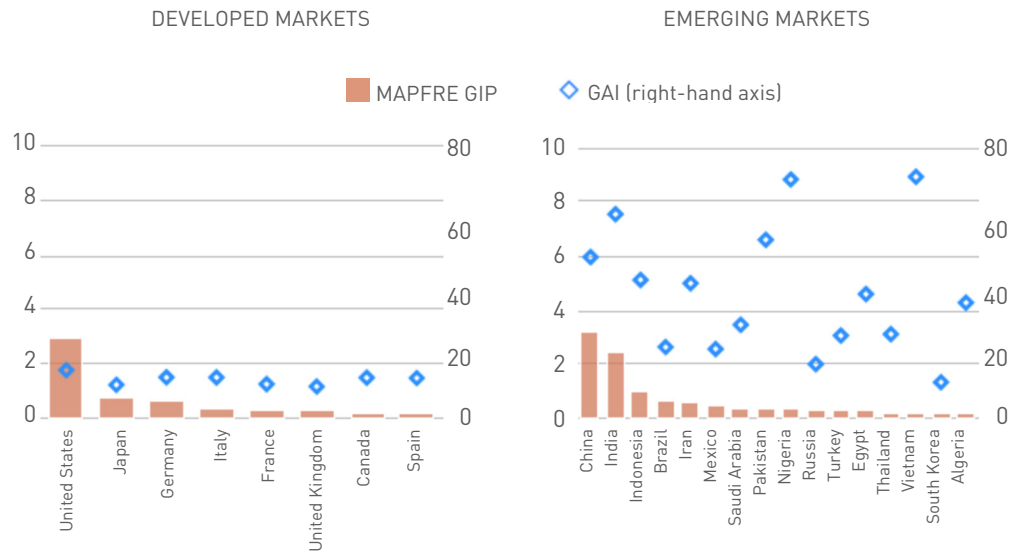
Source: MAPFRE Economic Research

Chart A-1
Life: MAPFRE GIP vs. GAI, 1997-2017



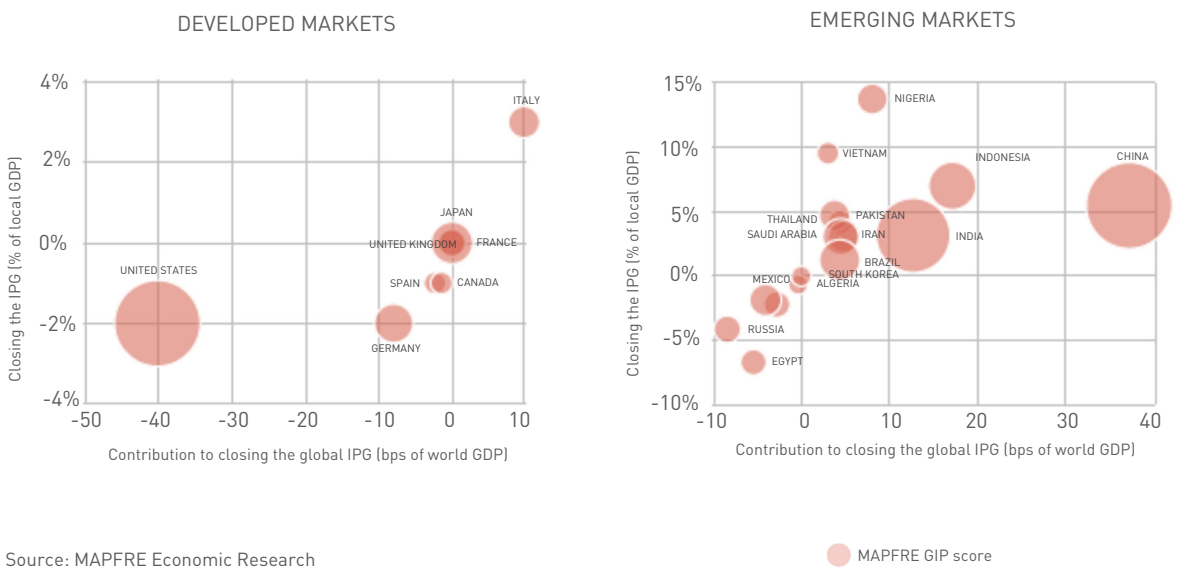
Source: MAPFRE Economic Research

Chart A-2
Life: MAPFRE GIP vs. GAI by type of market, 1997-2017



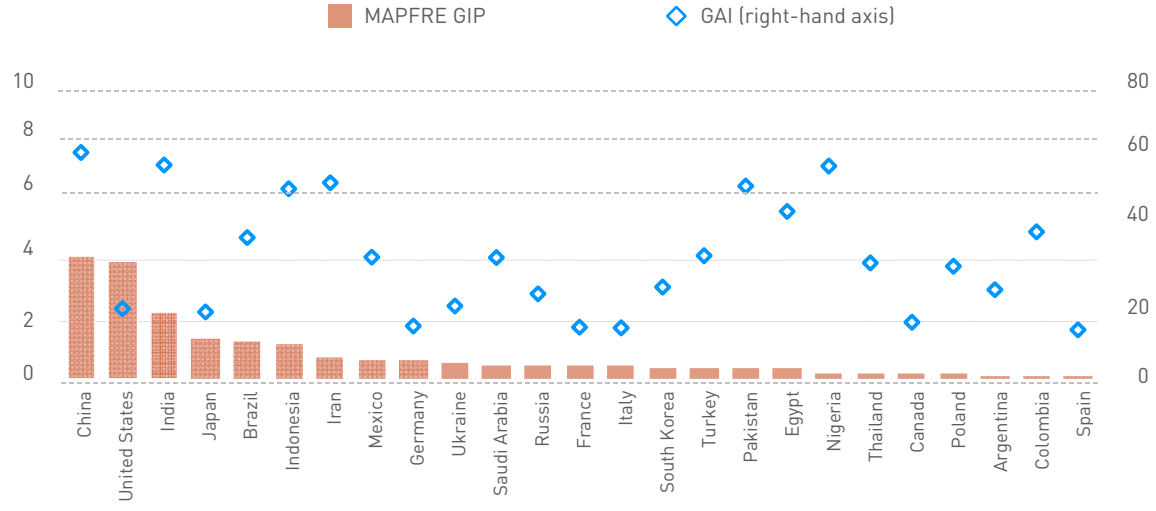
Source: MAPFRE Economic Research

Chart A-3
Life: registered closing of the IPG, contribution to the closing of the global IPG and the MAPFRE GIP index, 1997-2017



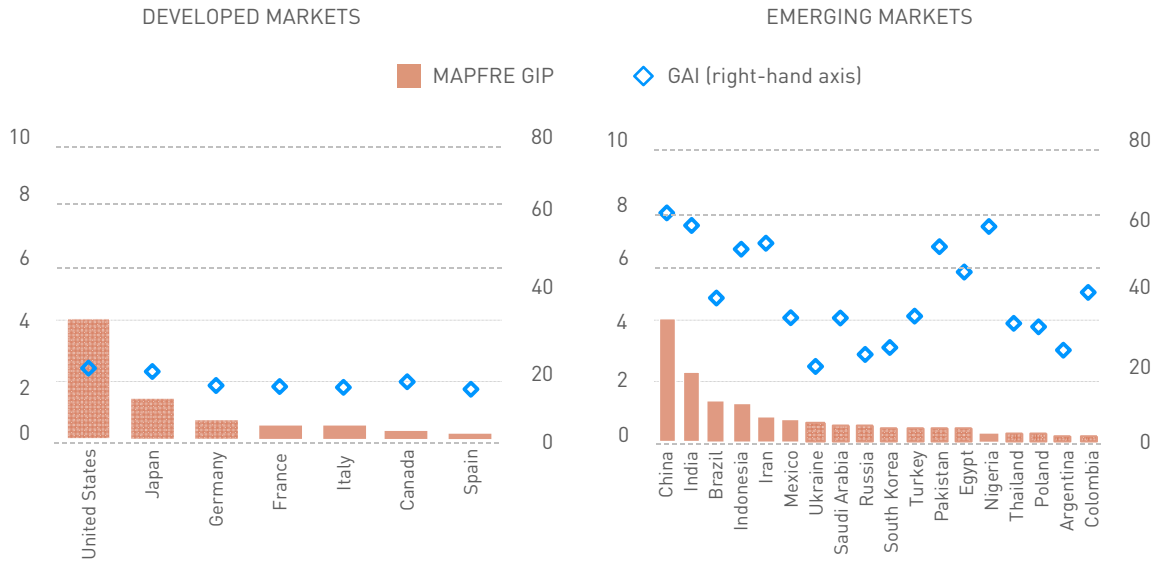
Source: MAPFRE Economic Research

Chart A-4
Non-Life: MAPFRE GIP vs. GAI, 1997-2017



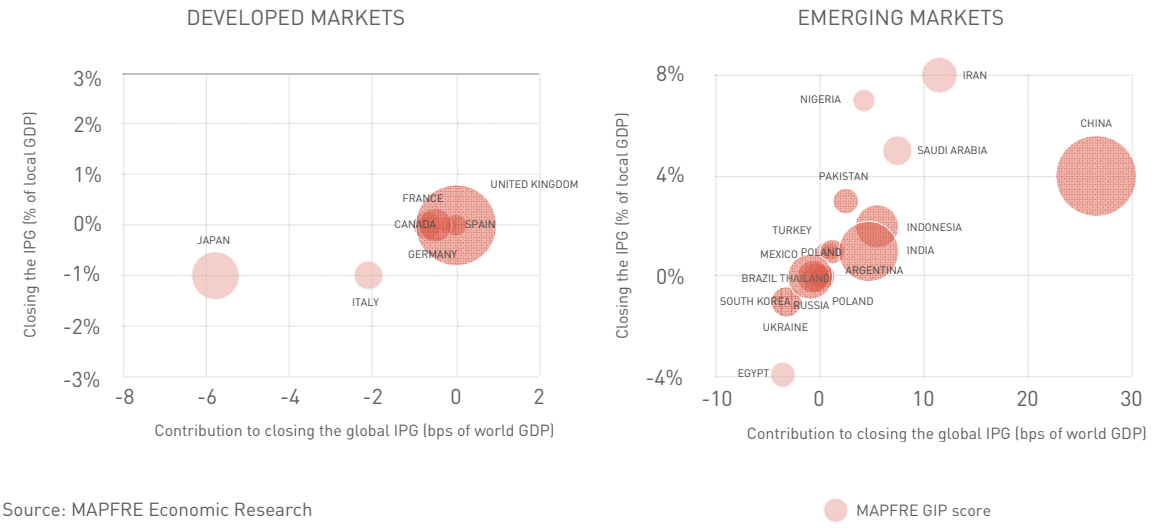
Source: MAPFRE Economic Research

Chart A-5
Non-Life: MAPFRE GIP vs. GAI by type of market, 1997-2017



Source: MAPFRE Economic Research

Chart A-6
Non-Life: registered closing of the IPG, contribution to the closing of the global IPG and the MAPFRE GIP index, 1997-2017



Source: MAPFRE Economic Research

Chart A-7
Non-Life IPG: observed and simulated levels, 1990-2017
(basis points)

Source: MAPFRE Economic Research

Chart A-8
Life IPG: observed and simulated levels, 1990-2017
(basis points)

Source: MAPFRE Economic Research

Appendix II

Analytical solution for the Insurance Protection Gap in a dynamic environment

In the static version of the model employed, the IPG of country *i* during the time period *t* is given by:

$$B^{A}_{i,t} = Pob*_{i,t}\,[D*_{t}\,(\frac{y_{i,t}}{y*_{t}}) - D_{i,t}] \qquad \text{(II.1)}$$

In fact, for the period *t+1* the previous expression can be re-written as:

$$B^{A}_{i,t+1} = Pob*_{i,t+1}\,[D*_{t}\,(1+\Delta D*)(\frac{y_{i,t+1}}{y_{t+1}}) - D_{i,t}(1+\Delta D_{i})] \qquad \text{(II.2)}$$

The intertemporal growth of density ΔD can be written as the difference between the variation of penetration (premiums/GDP) and of population:

$$\Delta D = \Delta P - \Delta Pob \qquad \text{(II.3)}$$

where ΔP is a proportional variation of the nominal GDP:

$$\Delta P = \rho\,\Delta Y_{n} = \beta\alpha\Delta Y_{n} \qquad \text{(II.4).}$$

and where $\beta\alpha$ is the dynamic correlation of 60 quarters between premiums and nominal GDP.

In accordance with the above, and knowing that the growth of nominal GDP is approximately equal to the growth of the nominal GDP per capita and population growth, the equation (II.4) can be re-written as:

$$\Delta P = \Delta y_{n} * \beta\alpha + \Delta Pob * \beta\alpha \qquad \text{(II.5)}$$

Replacing ΔP in the equation (II.3), we obtain:

$$\Delta D = \beta\alpha\,\Delta y_{n} + \beta\alpha\Delta Pob - \Delta Pob \qquad \text{(II.6)}$$

$$\Delta D = \beta\alpha\Delta y_n - (1 - \beta\alpha)\Delta Pob \quad \text{(II.7)}$$

$$\Delta D = \beta\alpha\Delta y_n + \Delta Pob \quad \text{(II.8)}$$

This specification of the intertemporal variation of density can be replaced in equation (II.2) in such a way that a general equation is found that characterizes the absolute levels of the insurance gap. The absolute IPG during the period would thus be given by:

$$B^A_{t+k} = Pob^*_{i,t+k}\,[D^*_t\,(1+(\alpha\beta\Delta Y^*_t - \Delta Pob^*_t))^k\,(\frac{y_{i,t+k}}{y^*_{t+k}}) - D_{i,t}(1+\ (\alpha\beta\Delta Y_{i,t} - \Delta Pob_{i,t}))^k] \quad \text{(II.9)}$$

where *Pob* is population, *B* is gap, *D* is density, ΔY is the annual variation in the GDP, *y* is the GDP *per capita* measured in USD adjusted to PPP, and $\beta\alpha$ is the elasticity of the demand for insurance to income.

Index of tables and charts

Tables

Charts

References

1/ See for example: MAPFRE Economic Research, *The Spanish insurance market in 2017*, Madrid, Fundación MAPFRE, 2018, and MAPFRE Economic Research, *The Latin American insurance market in 2017*, Madrid, Fundación MAPFRE, 2018.

2/ In this case, the reference market selected for the purposes of the benchmark is that of The Netherlands.

3/ The mathematical development of (1.2) to (1.3) can be found in Appendix II in this document, together with the relationship between penetration and density.

4/ The premiums collected for the calculation of penetration and used in this document originate from Swiss Re. In the case of the United States, the amount of the premiums does not include those corresponding to *monoline* health insurers.

5/ The primary source of information concerning the gross domestic product (GDP) is the World Bank.

6/ For the purposes of this study, the level of convergence is assimilated to that of the defined benchmark, which is represented by levels of density and penetration of the Dutch insurance market.

7/ This is the model used by MAPFRE Economic Research to prepare its macroeconomic forecasts. See MAPFRE Economic Research, *Economic and industry outlook 2018*, Madrid, Fundación MAPFRE, 2018.

8/ The GDP growth gap is estimated as the difference in the potential growth of the product between the country concerned and the selected benchmark.

9/ The population growth gap is calculated as the difference in the potential growth of the population between the country concerned and the selected benchmark.

10/ Carried out in accordance with the functional method described in the equation (1.3).

11/ Events such as; the crises in emerging and developed markets (Asian Tigers -1997, Tequila Effect -1994 and Russian Crisis -1998, Dot-com Crisis -2003, Lehman Brothers Crisis - 2008, Euro Crisis - 2011, etc.); the demographic transition that led to the increase in longevity in the emerging countries, especially in China, and to the reduction in fertility in some OECD countries (such as Spain and Japan); the technological revolution and the process of long-term decline in potential growth, productivity, physical capital and especially interest rates among developed countries.

12/ In the Non-Life segment: Colombia, Venezuela and Poland. And in the Life segment: Argentina.

13/ The score is described as "low", when the ranking in which the score for closing the insurance gap (GAI) does not correspond to (i.e., is below the level of) the quartile in which the MAPFRE GIP index places it.

14/ On the basis of initial conditions and capacity for economic growth.

15/ This capacity is attributable to structural factors in each country which escape the nature of the indicator but have an effect on economic growth, on population and on income, among other factors.

16/ This is the case of Venezuela and Argentina, for example, in the case of the Non-Life segment, which can be motivated by the loss of economic weight when negative economic growth is installed, but also to resistance in the generation of demand for insurance that closes the IPG for purely market-related motives.

17/ Always remembering that the Tier 1 countries constitute a restricted sub-group of Tier 2.

18/ For the purposes of this analysis, South Korea has been considered as an emerging market throughout the sample.

19/ In the case of Egypt this behavior can be attributed, among other factors, to the permanent effect on growth caused by the social and political upheavals following the Arab Spring.

20/ Assimilated to the average economic growth of the last five years.

Bibliographical references

BBVA Research. (2015) Strategic Map by countries. Spain

BBVA Research. (2016). Emerging Economies and Growth Leaders. The EAGLEs. Spain: BBVA.

Claros, A. L. (2016). Doing Business. The World Bank Group.

Jiang, G. J., & Tian, Y. S. (2007). Extracting Model-Free Volatility from Option Prices : An examination of the VIX index.

Schwab, K. (2011). The Global Competitiveness Report. Geneva, Switzerland: World Economic Forum.

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