

The Global Insurance Protection Gap Assessment and Recommendations

A GENEVA ASSOCIATION RESEARCH REPORT

Edited by Kai-Uwe Schanz and Shaun Wang



November 2014

The Geneva Association

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Acknowledgements

The following individuals have contributed to this report:

- Giovanni Millo and Lorenzo Savorelli of Assicurazioni Generali contributed to the section on life and pensions insurance.
- Ginger Turner and Clarence Wong of Swiss Re contributed to the sections on non-life insurance and root causes of underinsurance.
- Katsuo Matsushita of The Geneva Association contributed a Japanese case study.

The authors thank Inga Beale, CEO, Lloyd's of London, and Michel Liès, CEO, Swiss Re, for their guidance and insightful comments.

FOREWORD

The insurance industry is a major sector in the world economy. In 2013, total insurance premiums amounted to about US\$4.65 trillion, which is equal to 6.3 per cent of global GDP. This sizeable proportion reflects the industry's crucial role in assessing, transferring and managing insurable risks to human life, health and property. However, there are significant regional differences and protection gaps. Industrialised countries, where regulation, product innovation, distribution and general awareness are more developed, account for the lion's share of global premiums (approximately 83 per cent). In emerging markets, however, insurance solutions are much less prevalent. These markets' share of 17 per cent of global insurance premiums falls considerably short of their share of global GDP of close to 40 per cent, suggesting large-scale underinsurance and potential threats to sustainable economic development. Even in advanced economies, there are 'pockets' of underinsurance.

Underinsurance represents a gap between the current state and the full potential of the insurance industry in serving the economy. This is a hindrance or even threat to economic development and the well-being of society. Insurance provides vital support to both society and the commercial world through financial compensation for the effects of misfortune. It thus helps stabilise the financial situation of individuals, families and organisations. Based on its fundamental role of risk pooling and sharing, the insurance industry makes an important contribution to boosting societies' risk-absorption and diversification capabilities, promoting economic and social development by greasing the wheels of the economy.

For the insurance industry, underinsurance goes beyond the missed commercial opportunity. In countries where insurers absorb only a fraction of economic losses, stakeholders will inevitably start questioning the social purpose and utility of the industry. Such doubts could ultimately undermine its long-term 'licence to operate'. Therefore, the industry needs to further strengthen its contribution to economic and societal disaster resilience. Against this background, The Geneva Association has compiled the present report on underinsurance. It addresses two key questions:

1. What is the current scale and scope of the insurance gap and how can it be measured?
2. What are the root causes of underinsurance? What can insurers do to close the protection gap and thereby enhance their contribution to economic development?

This report presents an assessment of the current state of global underinsurance in both non-life and life and pensions insurance. It sets the stage for conducting

FOR THE INSURANCE INDUSTRY, UNDERINSURANCE GOES BEYOND THE MISSED COMMERCIAL OPPORTUNITY. IT ULTIMATELY AFFECTS THE ACTUAL AND PERCEIVED ECONOMIC AND SOCIAL UTILITY OF THE INDUSTRY.

more in-depth research into specific insurance segments in the future. Based on its findings, we have identified three specific topics for future research: the pension gap for selected countries, the insurability of digital economy exposures (e.g. cyber security), and the huge and rapidly growing flood exposure in emerging markets, driven by population growth, urbanisation and value concentration.

We would like to thank our Board Members Inga Beale, CEO, Lloyd's of London, and Michel Liès, CEO, Swiss Re, for co-chairing this workstream of The Geneva Association, and for having made significant intellectual contributions.

Our thanks also go to Shaun Wang and Kai-Uwe Schanz for editing the report. They were able to draw on substantial support from the research departments of Assicurazioni Generali (Giovanni Millo and Lorenzo Savorelli) and Swiss Re (Ginger Turner and Clarence Wong), as well as from Sompo Japan Nipponkoa Insurance.

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EXECUTIVE SUMMARY

MEASURING UNDERINSURANCE

Underinsurance can be defined as the gap between the amount of insurance that is economically beneficial and the amount of insurance actually purchased. In non-life insurance, this phenomenon can be measured by a benchmarked insurance coverage ratio. This ratio is based on a country's non-life insurance penetration (premiums as a share of GDP), adjusted for differences in per capita income and natural catastrophe exposure. An alternative measure is the insurance gap, which describes the difference between insured and total economic losses as a share of GDP.

In life and pension insurance, more specific measurements apply. In the area of pensions, for example, the most commonly used measure is the replacement rate, which indicates to what extent pension levels replace a person's pre-retirement income. In term life insurance, the aggregate protection gap of a country can be defined as the difference between the present value of income needed to maintain the living standard of survivors plus debt outstanding, and the present value of the sum of future pensions to survivors, life insurance in force and a certain share of financial assets.

QUANTIFYING UNDERINSURANCE

The 2012 Lloyd's report on underinsurance (Cebr, 2012) is based on benchmarked insurance coverage. It identifies 17 countries as underinsured—all of them developing or emerging countries, except for Hong Kong and Saudi Arabia. The total coverage gap amounts to US\$168 billion, more than 8 per cent of global non-life insurance premiums in 2013.

Swiss Re uses its sigma catastrophe database to track the non-life insurance gap over time. During the past 40 years, the shortfall has widened continuously, from about 0.02 per cent to 0.13 per cent of global GDP, as total losses have grown significantly faster than insured losses.

An analysis of historical trends in unadjusted non-life insurance penetration (premiums as a share of GDP) also yields some interesting results. Penetration levels for the world as a whole hovered around 3 per cent over the past 30 years, even though GDP per capita has increased significantly. In this context, one may have expected an increase in global penetration.

The past decade's development raises particular concerns: non-life insurance penetration stood at 2.7 per cent in 2013 compared to 3.2 per cent a decade ago, with strong declines observed in the U.S. and the U.K., for example. There are

GIVEN ITS SCALE, SCOPE AND COMPLEXITY, THE CHALLENGE OF UNDERINSURANCE REQUIRES A CONCERTED APPROACH FROM ALL RELEVANT PRIVATE AND PUBLIC-SECTOR STAKEHOLDERS.

increasing signs that growth in insurance has failed to match the rise in economic activity and risk exposures, leading to widening underinsurance.

The life insurance coverage gap also seems to be widening. A particularly alarming example is the U.S. where, over the past three decades, the share of households holding individual life insurance has declined from 62 to 44 per cent. As a result, the life protection gap in the U.S. has reached a staggering US\$20 trillion notional amount of insurance, which is equivalent to 135 per cent of the country's GDP.

ROOT CAUSES OF UNDERINSURANCE

In developing and emerging markets in particular, underinsurance reflects the still-low levels of risk awareness and risk culture, also attributable to institutional legacies and inherent cultural peculiarities such as decades of state monopolies (e.g. in China and India) and cultural or religious reservations towards the very concept of insurance (such as in the Islamic world).

Affordability is another major reason for underinsurance, particularly for lower-income households and small and medium-sized enterprises. In general, insurance penetration levels tend to rise markedly as soon as economies have reached a certain stage of development and basic needs such as food and housing are met.

In developing and emerging markets, especially, immature regulatory and legal frameworks are an important impediment to insurance market development.

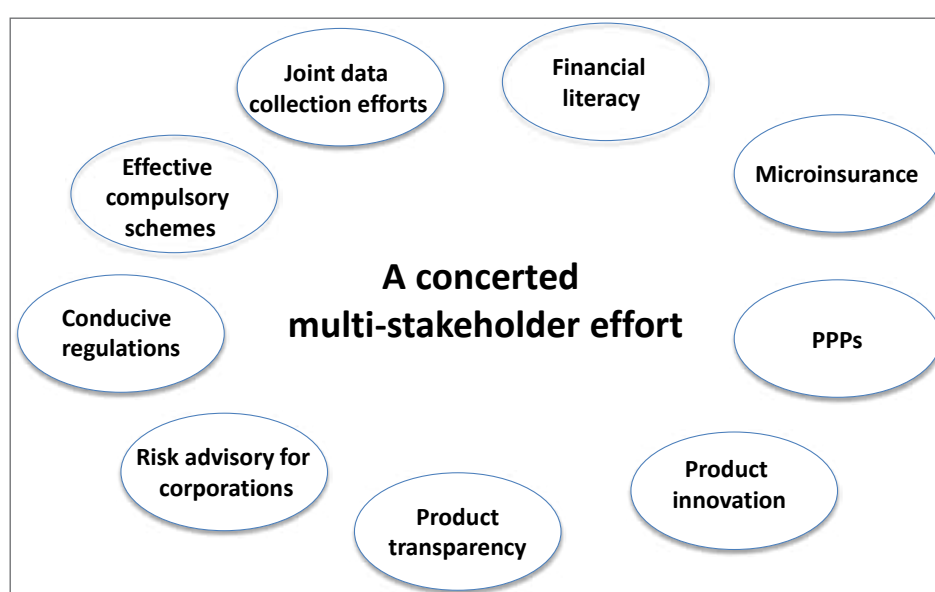
Limits to insurability are another relevant factor. When assessing risks, any insurer or reinsurer must carefully take into consideration the fundamental principles of insurability such as randomness, calculability and economic viability. Disregarding these constraints would ultimately undermine the (re)insurer's solvency and jeopardise its ability to honour its obligations. Therefore, certain exposures remain—and rightly so—uninsurable.

CLOSING THE GAP

Given its scale, scope and complexity, the challenge of underinsurance requires a concerted approach from all relevant private and public-sector stakeholders, in addition to any necessary isolated efforts by insurers, governments and businesses (See Figure 1). The following section offers specific actions to be considered.

FINANCIAL LITERACY EDUCATION CAN HELP FAMILIES MAXIMISE THEIR LONGER-TERM FINANCIAL WELL-BEING.

Figure 1: Closing the insurance gap—a concerted multi-stakeholder effort



Source: The Geneva Association.

a. Financial literacy programmes could be jointly funded by insurers, advisors and governments

Often, insurance is either ignored or not regarded as relevant and important in finance, despite the fact that, arguably, it is one of the most vital elements of personal finance. Against this backdrop, financial literacy education and the acquisition of basic financial planning skills facilitate the identification of insurance gaps and can help families maximise their longer-term financial well-being.

Measures to promote financial literacy could be jointly funded by insurers, advisors and governments, with the latter already being particularly active in this field, going so far as introducing their respective financial literacy programmes in school curricula.

Specific initiatives supported by the insurance industry usually focus on those areas where the gap between awareness and understanding on the one hand, and relevance to financial well-being on the other is arguably largest, for instance, in life, critical illness and disability insurance.

FOUR BILLION PEOPLE ARE STILL UNINSURED.

b. Micro-insurance could cater to the needs of four billion uninsured people

Four billion people or approximately 55 per cent of the world's population are still uninsured. Providing insurance to poorer communities would boost its societal relevance and generate an additional premium volume of US\$40 billion (see Swiss Re, 2010). Current micro-insurance penetration is estimated to reflect a mere 5 per cent of this potential. In order to fully capture micro-insurance opportunities, formidable challenges need to be overcome, such as reaching the potential customer base (more often than not in distant rural areas), conveying the concept of insurance and building the necessary infrastructure to process claims, to name but a few.

c. Public-private partnerships (PPPs) to address the protection gap

There is no shortage of (re)insurance capital potentially available to cover uninsured exposures, especially as alternative capital from pension funds and hedge funds has entered the (re)insurance industry in recent years. Therefore, in order to address the insurance protection gap, demand for insurance protection needs to be boosted. Effective partnerships between insurers and governments can go a long way towards achieving this objective. Governments and international/regional development banks can stimulate insurance demand through conducive regulation, subsidies and incentives, while allowing the private insurance industry to perform its vital risk selection and management roles.

d. There is a need for new products catering to the digital and globalised economy

Since the beginning of the 21st century, global non-life penetration has eroded. Premiums as a share of GDP have declined from 3.2 to 2.7 per cent. This suggests that the industry is losing ground.

Some market experts attribute this trend to the insurance industry's inability to properly respond to fundamental changes in the risk landscape such as globalising value and supply chains, disruptive (digital) technologies, rapidly growing middle classes and accelerating urbanisation, to name but a few. New solutions are needed to address the increasingly relevant acts of man. The risk of losing or impairing real assets is declining in importance to many policyholders. Instead, intangible assets, like brand and reputation, are seen as equally or even more valuable.

e. Insurance policies need less complexity and more transparency

Insurers need to remove perceived complexity if they are serious about reducing the insurance gap. The complexity of the products, introduced through product enhancements, for example, could even be viewed as a risk to overall industry

PERCEIVED PRODUCT COMPLEXITY AND OPACITY IS A MAJOR ROADBLOCK TO CLOSING THE PROTECTION GAP.

sustainability. Policyholders often do not understand or misinterpret the scope of coverage, which can result in massive underinsured exposures.

Addressing this shortcoming would also make distribution more cost-effective. One way of achieving this is to embrace technology to improve the customer experience, lower the cost of issuing a policy and of providing advice, tailor the policy to the customer's actual needs and improve risk selection.

f. Businesses need help from insurers in determining the right level of cover and anticipating new exposures

Many (small and medium-sized) businesses are arguably risking their survival as a result of a major (insurable) loss. For example, in the U.K., according to the Royal Institution of Chartered Surveyors' Building Cost Information Service (BCIS), 80 per cent of British commercial properties are underinsured (Zurich®, 2013, citing the BCIS). Moreover, the Chartered Institute of Loss Adjusters found that 40 per cent of business interruption policies are underinsured, with the average shortfall amounting to 45 per cent.

This state of affairs is not only an issue of cost. For many businesses, an even bigger challenge is to determine the right level of cover. Therefore, insurers need to step up their game in advising clients on choosing the most adequate insurance options.

g. Regulators need to understand and respect the key principles of insurability

The viability of insurance depends on the ability for insurers to set premium rates which are commensurate with the underlying individual or corporate risk profile. In order to maximise the industry's contribution to economic growth and societal progress, policymakers should resist the temptation to distort market forces. Private incentives to mitigate and adapt to risk must not be undermined by ill-designed public vehicles.

Further, legislators and regulators must respect the key principles of insurability as outlined above. Any interference with insurers' fundamental underwriting mechanisms (e.g. deductibles, coinsurance, contractual liability limits and exclusion causes) prevents the industry from fully performing its vital economic and social role.

h. Effective compulsory schemes can boost penetration levels

More recently, some emerging insurance markets have received a boost from compulsory insurance schemes. In Saudi Arabia, for example, where a mandatory health insurance scheme was established in 2008 for all private-sector employees,

WHEN DESIGNING COMPULSORY SCHEMES, LAWMAKERS NEED TO MINIMISE MORAL HAZARD AND ADVERSE SELECTION.

the segment now accounts for more than 55 per cent of the entire insurance market. The country's insurance penetration has increased from 0.4 to 0.8 per cent since the scheme's inception.

When introducing such systems, lawmakers and regulators need to keep in mind the need to minimise moral hazard and adverse selection. This can be achieved, for example, through risk-based pricing and deductibles. Insurers must be given the leeway to apply such measures in order to ensure that compulsory schemes do not introduce distortions into insurance markets. In addition, using such underwriting tools could help address one of the biggest challenges facing compulsory insurance: the perception of compulsory schemes as taxes.

i. Industry bodies can facilitate joint data collection efforts

In the past, the insurance industry has accumulated data based on internal bookkeeping and external financial reporting. However, there has been a lack of systematic efforts to collect data on risk exposures of individuals, businesses and governments. As a result, we know little as to what extent their needs for coverage are actually met by insurance. The need for data on developing and emerging economies is obviously more pronounced. In light of rapid and transformational economic development and significant exposures (e.g. to natural catastrophes), quality data is scarce in most emerging economies.

Collecting data will help identify areas of underinsurance, thus enabling the expansion of insurance solutions wherever needed. It is essential to gather cross-sector and cross-regional data covering various risk exposures such as natural catastrophes, pandemics and health. Where an insurance market does not yet exist—as in many developing markets—non-governmental organisations can play an important role in facilitating the development of risk transfer solutions through the collection of exposure data. Industry bodies can coordinate and facilitate joint data collection efforts, and create a consortium with other partners, e.g. international organisations.

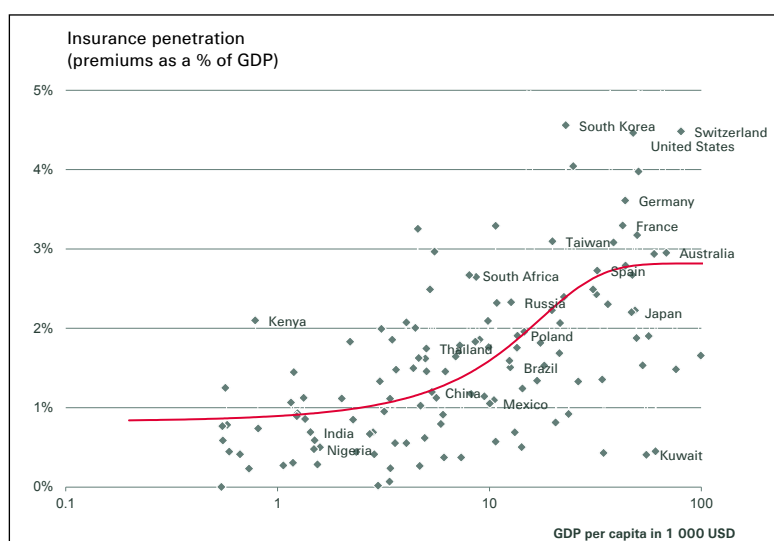
NON-LIFE INSURANCE

UNADJUSTED INSURANCE PENETRATION

Insurance penetration is a frequently used measure for 'diagnosing' non-life underinsurance. It is defined as the level of insurance premiums in a given year compared with the GDP of the country in the same year. In order to examine the maturity of an insurance market, it is customary to compare levels of insurance penetration.

It is an empirically well-established fact that insurance grows in relative importance as GDP per capita increases. Insurance penetration levels tend to rise markedly as soon as economies have reached a certain stage of development. At intermediate GDP per capita (about US\$10,000), premiums tend to grow twice as fast as GDP per capita and insurance penetration rises considerably. At GDP per capita levels of US\$30,000 and above, insurance penetration tends to stagnate, as insurance demand no longer outpaces GDP. This pattern yields what has become known as the 'S curve' of insurance market development (Enz, 2000). Roughly speaking, countries above the curve tend to exhibit more than average levels of insurance; those below the curve can be considered underinsured. Examples of the latter include emerging economies such as Brazil, China, India, Mexico and Nigeria, but also mature markets such as Japan (see case studies below for some background information on underinsurance in advanced economies). Kuwait is the most striking outlier from an underinsurance point of view and illustrates the very low take-up of insurance in the Middle East relative to income levels (see Figure 2).

Figure 2: Non-life insurance penetration (premiums as a share of GDP) and GDP per capita (2013)



Source: Swiss Re Economic Research & Consulting.

Case study 1: Why is commercial earthquake insurance penetration in Japan so low?

According to Munich Re's NatCat Service, less than 20 per cent of economic losses caused by the Great East Japan Earthquake on 11 March 2011 were insured. The following sheds some light on this apparent situation of low insurance coverage.

Shortly after the disaster, the Development Bank of Japan (DBJ) published an aggregated estimated loss of assets in the most heavily affected prefectures. Broken down into the four categories—life and social infrastructure, residential housing, manufacturing industries and others—the total loss amount came to JPY 16,373 billion (or US\$154 billion).

The DBJ put the total damage, excluding damage related to the TEPCO Fukushima nuclear reactor disaster, at JPY 8,387 billion for life and social infrastructure, JPY 2,394 billion for residential housing, JPY 1,637 billion for manufacturing industries and JPY 3,955 billion for others. As far as residential housing is concerned, the Japanese non-life insurance industry and the 'kyosai' scheme (mutual aid insurance) covered more than 72 per cent of economic losses caused to residential buildings in the four most severely affected prefectures.

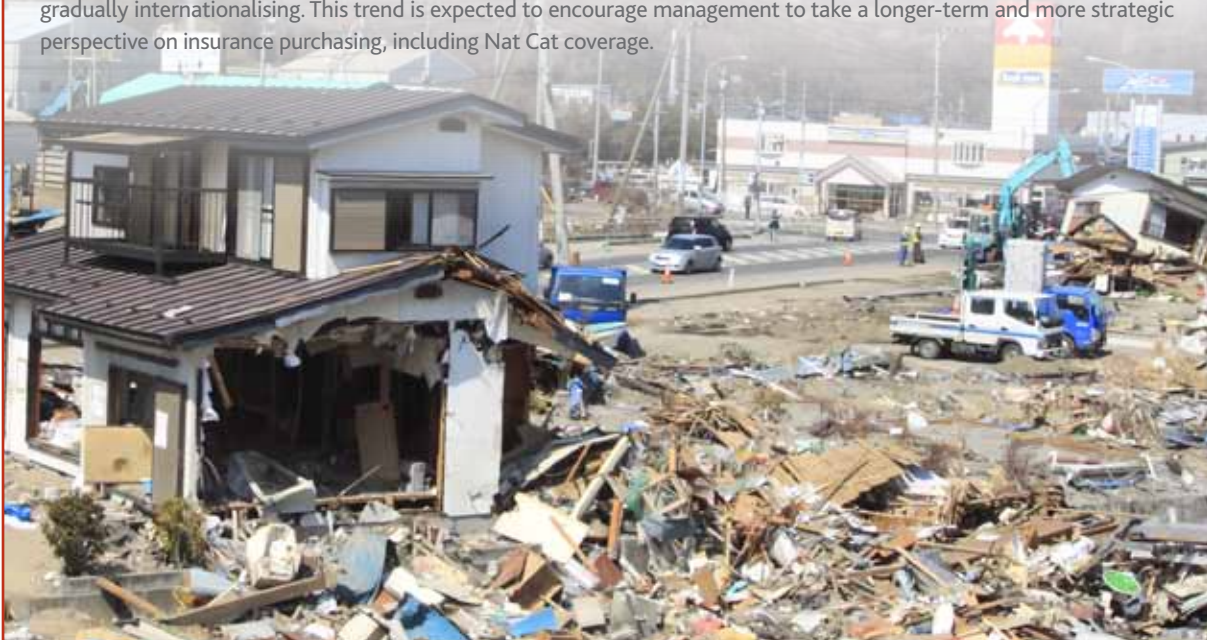
Penetration of earthquake coverage for residential housing has been increasing since the Great East Japan Earthquake. Nationwide, the percentage of homeowner insurance policyholders who purchase earthquake cover rose from 48.1 to 56.5 per cent between 2010 and 2012. This increase is due to people's recognition of risk and the insurance industry's ongoing awareness-building efforts. Recently, it was reported that 74.4 per cent of purchasers of houses with loans from banks are insured against earthquake risk.

In sharp contrast, only 11 per cent of estimated commercial losses were insured. What is behind this strikingly low level?

There is still a huge gap between the insurance prices that the international reinsurance market offers and the prices that Japanese corporations are willing to accept. While Japanese insurers wish to accommodate requests for earthquake cover from corporate customers, they have to carefully balance the total risk assumed against their solvency position. In addition, insurers feel that international reinsurance cover is excessively volatile both in terms of pricing and availability, also reflecting the fact that earthquake risk in Japan is written by a relatively small number of reinsurers. Possible maximum losses (PMLs) are huge.

Another reason for the limited take-up of commercial earthquake insurance in Japan is companies' high level of preparedness, e.g. through measures strengthening the resistance of buildings and elaborate business continuity management (BCM) processes. Therefore, the lack of commercial earthquake insurance cover is (somewhat) offset by effective pre-disaster risk mitigation and adaptation.

Having said this, within Japanese corporations, diversity is advancing not only in terms of human resources, i.e. through the more active involvement of female staff but also in respect of the structure of institutional shareholders, which is gradually internationalising. This trend is expected to encourage management to take a longer-term and more strategic perspective on insurance purchasing, including Nat Cat coverage.



2011, the Great East Japan Earthquake in Iwate

Case study 2: Earthquake underinsurance in California

It is well known that residents of California face substantial exposure to earthquake damages. The 2014 South Napa earthquake is a recent reminder of this exposure. The quake occurred south of the city of Napa, California on 24 August 2014. Measuring 6.0 on the Richter scale, it was the largest earthquake to hit the San Francisco Bay Area since 1989.

The devastating 1994 Northridge earthquake occurred on a previously unknown fault and resulted in approximately US\$23 billion in real (2013) insured losses. The U.S. Geological Survey* predicts that, in the next 30 years, there is a 99.7 per cent chance that California will be struck by a magnitude 6.7 earthquake (the same strength as the 1994 Northridge quake), and a 46 per cent chance of a magnitude 7.5 earthquake (which is 45 times stronger).

There is a huge protection gap: earthquake damage is not covered by regular homeowner policies in California. As the 1994 Northridge earthquake occurred on a previously unknown fault, insurers had not collected premiums for such exposure. After this quake, many homeowner insurers dropped earthquake coverage altogether. As a result, the California legislature created the California Earthquake Authority (CEA) as a pool to offer earthquake insurance cover to residents (Powell, 2012). Earthquake policies carry high deductibles—at least 10 percent of a home's value. The take-up rate for residential home earthquake insurance is currently at about 12 per cent of residential property owners. This is down from 30 per cent in 1996, two years after the Northridge earthquake—the most costly in U.S. history.** A 2014 Insurance Information Institute survey*** reveals that only 7 per cent of homeowners nationwide report having earthquake coverage, down from 10 per cent in 2013. In the western U.S., 10 per cent have taken out earthquake insurance, down from 22 per cent in 2013.****

The vast protection gap in California is a source of major concern. In the event that an uncovered loss occurs, the mortgage lender's collateral becomes worthless. As a result, a large portion of uninsured earthquake exposure is passed on to mortgage holders such as Fannie Mae and Freddie Mac. Fannie Mae's 2010 annual report on Securities and Exchange Commission (SEC) form 10K shows that approximately 18 per cent, or US\$507 billion, of its loan portfolio represents homes in California. Given this situation, actions need to be taken to increase the take-up rate of earthquake insurance.



1994, highway in the Northridge residential area at the epicenter of the earthquake

* <http://www.scec.org/ucerf2/>

** 'Californians are in the quake zone—and uninsured', <http://www.cnbc.com/id/101539440>

*** <http://www.iii.org/press-release/potential-cost-of-earthquakes-is-growing-but-number-of-americans-with-coverage-is-declining-in-many-parts-of-the-country-081814>

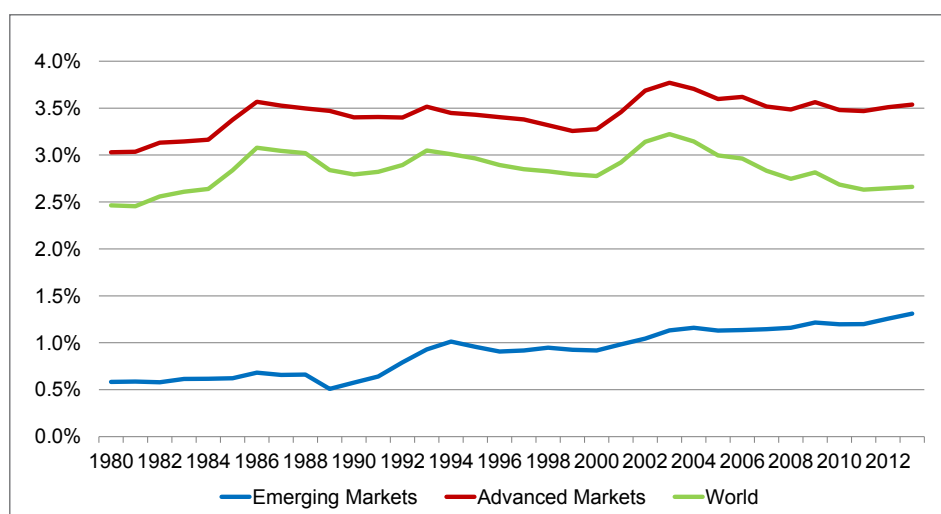
**** <http://www.iii.org/press-release/media-advisory-reporters-covering-insurance-implications-of-bay-area-earthquake-can-contact-the-iii-for-analysis-facts-and-stats-082414>

GLOBAL NON-LIFE INSURANCE PENETRATION HAS NOT KEPT PACE WITH RISING GDP PER CAPITA.

An analysis of historical trends in non-life insurance penetration also yields some interesting results. Contrary to the relationship suggested by the S curve, penetration levels for the world as a whole have hovered around 3 per cent over the past 30 years. During the same period, global GDP per capita (in constant 2005 US\$) has increased from about US\$5,000 to almost US\$8,000 (World Bank, 2014). An even more striking observation: global non-life insurance penetration stood at 2.7 per cent in 2013, compared with 3.2 per cent a decade ago, with strong decreases observed in the U.S. and the U.K., for example. This observation suggests that growth in insurance has failed to match the rise in economic activities and risk exposures, leading to widening underinsurance. Figure 3 shows that the global non-life insurance penetration rate peaked in 2003 and has since declined, despite a steady increase in penetration in emerging markets, to 1.3 per cent in 2013.

Even in some emerging markets which saw dramatic improvements in GDP per capita, in Indonesia and India, for example, non-life insurance penetration has only increased modestly. In Indonesia, non-life insurance over the past 10 years has even trailed economic growth. This suggests that the protection gap (in terms of underinsurance) has widened in a number of emerging markets, too.

Figure 3: Non-life insurance penetration (1980-2013): overview



Source: Swiss Re Economic Research & Consulting.

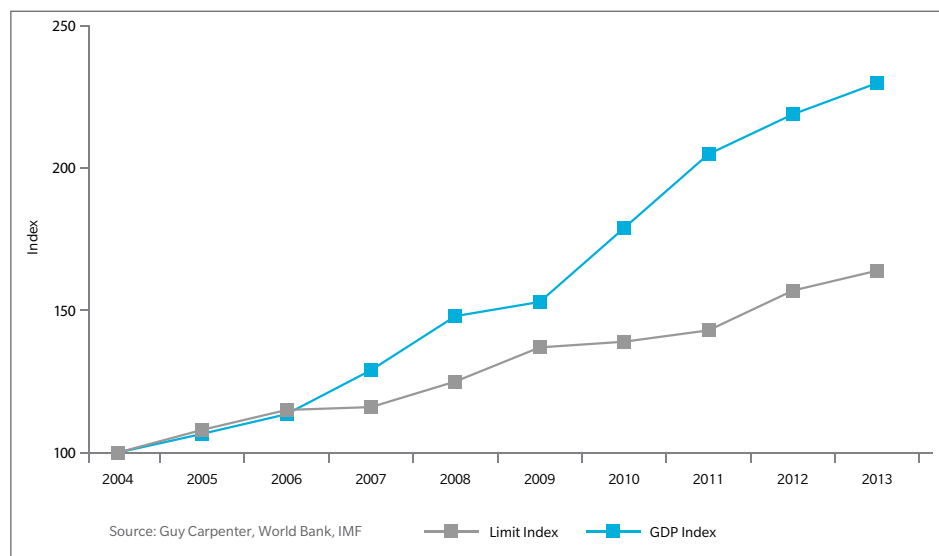
The simple comparison of penetration ratios, however, fails to take into consideration country-specific factors such as exposure to natural catastrophes,

UNADJUSTED PENETRATION FIGURES ARE A CRUDE MEASURE OF UNDERINSURANCE AND NEED TO BE INTERPRETED CAUTIOUSLY.

public health and pension insurance, government-sponsored risk pools and the degree of litigiousness. Furthermore, using GDP as a proxy for risk exposure assumes a constant relation between economic activities and risk exposure, which may not be valid due to trends such as industrialisation, urbanisation and globalisation, which create global supply chain interdependencies and an increasing vulnerability to business interruption.

Also, the use of premiums to measure risk coverage can be misleading if premium rates fluctuate widely; a more consistent measure is the sum insured. As most catastrophe programmes are reinsured, the published Catastrophic Excess of Loss (Cat XL) Limit index (Guy Carpenter, 2014) can be used to illustrate that the growth of catastrophe sums insured has not kept pace with the growth in underlying exposure. Data provided by Guy Carpenter for the Asia-Pacific region (see Figure 4) reveals a significantly widening gap since 2006 between GDP growth and the increase in the Cat XL Limit index.

Figure 4: Cat XL Limit index versus GDP index (Asia-Pacific)



Source: Guy Carpenter (2014, p. 19).

MEANINGFUL PENETRATION MEASURES NEED TO TAKE INTO ACCOUNT DIFFERENCES IN NATURAL CATASTROPHE EXPOSURE AND GDP PER CAPITA.

BENCHMARKED INSURANCE COVERAGE

Adjusting non-life insurance penetration levels by expected catastrophe losses and differences in per capita income allows the penetration levels across countries to be compared in a more meaningful way. Based on this methodology, the authors of the 2012 Lloyd's report (Cebr, 2012) calculate, for example, Brazil's benchmarked insurance coverage as shown in Table 1 below (numbers may not sum due to rounding):

Table 1: Brazil's benchmarked insurance coverage in 2011—worked example

| | |
|--|--------------------|
| Non-life insurance penetration in 2011: | 1.5% |
| <i>LESS</i> Expected annual loss (% of GDP): | (0.11%) |
| Expected loss adjusted insurance penetration: | 1.39% |
| <i>LESS</i> Benchmark requirement (for middle income): | (1.9%) |
| Benchmarked insurance coverage: | -0.51% |
| Underinsurance (0.51% of nominal GDP in 2011 in US\$) | US\$12.68bn |

Source: Cebr (2012, p. 10).

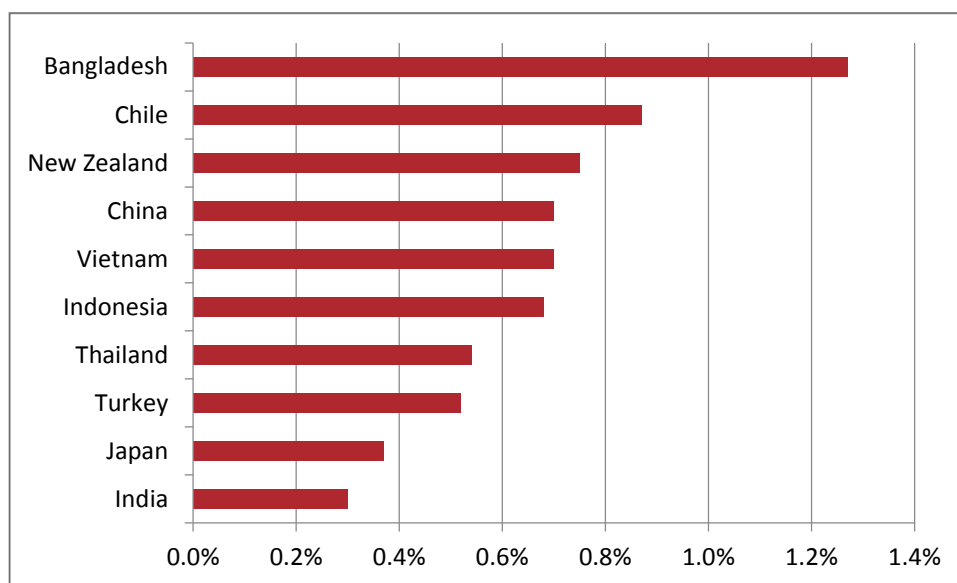
The Lloyd's underinsurance report covers a total of 42 countries and uses data from 2011 and prior years. As described above, the country-specific exposure to natural catastrophes (see Figure 5) is a vital input to calculating the benchmarked insurance coverage, which allows quantifying any level of underinsurance as a percentage of GDP.

On this basis, 17 countries are identified as underinsured, with a total coverage gap of US\$168 billion or more than 8 per cent of global non-life insurance premiums in 2013.

Bangladesh exhibits the highest degree of underinsurance as a percentage of GDP. China, Nigeria, India, Turkey, Egypt, the Philippines, Vietnam and Indonesia also show shortfalls in excess of 1 per cent of GDP. The absolute level of underinsurance is highest for China, with an estimated gap in non-life insurance coverage of about US\$80 billion. This compares with China's 2013 non-life insurance premium volume of about US\$126 billion.

THE PROTECTION GAP DESCRIBES THE DIFFERENCE BETWEEN ECONOMIC AND INSURED LOSSES AS A SHARE OF GDP.

Figure 5: Countries with highest expected natural catastrophe losses per annum (% of GDP)



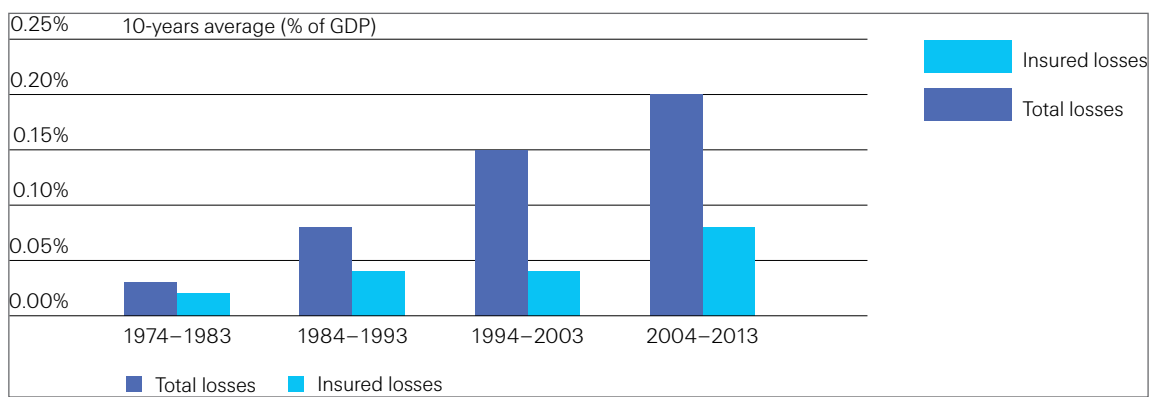
Source: EM DAT, Cebr analysis (2012, p. 7).

PROTECTION GAP

The protection gap is a different approach to measuring underinsurance. Figure 6 compares global total losses resulting from natural catastrophes with associated insured losses as a percentage of global GDP, over the period 1974 to 2013. The protection gap, i.e. the difference between insured and total losses as a share of GDP, has widened consistently over the period. When interpreting the gap, however, one has to bear in mind that it also includes exposures which are generally deemed uninsurable.

THE PROTECTION GAP HAS WIDENED OVER THE PAST FOUR DECADES.

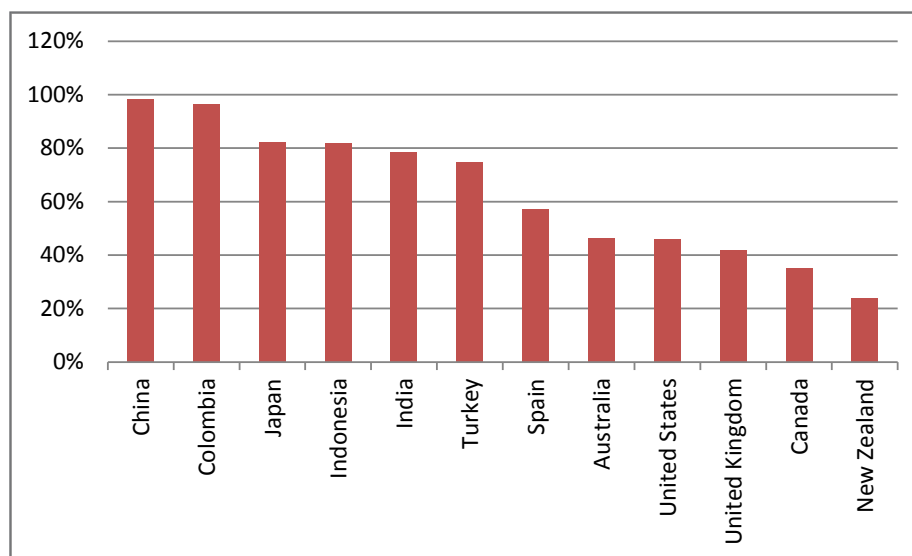
Figure 6: Total global losses vs insured losses resulting from weather-related catastrophes (1974–2013, 10-year average, in % of GDP)



Source: Swiss Re (2014a, p. 19).

Figure 7 shows that most underinsured markets are emerging economies, similar to the findings of the Lloyd’s study. Insurance gaps in many emerging countries are exacerbated by the rapid pace of urbanisation. The Indonesian capital Jakarta is a case in point. A 1-in-a-100-year earthquake loss would leave a US\$10 billion protection gap.

Figure 7: Natural catastrophe protection gap in % of economic losses (1974–2013)



Source: Swiss Re Economic Research & Consulting.

THE WIDENING PROTECTION GAP COULD CAST DOUBTS ON THE (RE)INSURANCE INDUSTRY'S SOCIETAL RELEVANCE.

This shortage is estimated to rise to about US\$30 billion by 2023 on the back of rapidly increasing asset values (see Swiss Re, 2013c, p. 21).

From a public policy perspective, these numbers could cast serious doubt on the economic relevance of the (re)insurance industry in a number of countries, particularly as recent research suggests that decreases in national output subsequent to natural disasters are driven by uninsured losses (von Peter *et al.*, 2012). The reinsurance industry needs to address this challenge, not least in order to preserve its long-term 'license to operate'.



LIFE AND PENSIONS INSURANCE

The primary function of life insurance can be characterised as income protection, relating either to guaranteeing one's dependents' income in case of premature death (life/mortality protection), or the lifetime income of the insured in the case of lower earnings, e.g. after retirement (longevity protection). There is another function which is typical of (life) insurance products: pure saving, focused on investment yields. These categories roughly correspond in standard practice to term life, annuity, pension and capitalisation products, although distinctions blur to some extent in the life products that are actually sold. It is customary, for example, for endowment policies to have an important term life component, entitling the beneficiaries to payment of the face value upon the death of the insured.

In addition, life insurance mitigates the financial impact of the disability to earn income, substantial medical expenses including critical illness, and long-term care. Overall, life insurers offer protection against the three major risks of mortality, morbidity and longevity.

THE LIFE PROTECTION GAP

The life protection function, as formalised by Lewis (1989), is about maintaining the overall welfare of the family, i.e. its living standard, if the breadwinner dies. Therefore, the optimal level of life protection insurance for a given household is a function of the permanent income of the former, and also of the number, individual characteristics and preferences of the beneficiaries.

Life protection in a strict sense (commonly known as term life) has seen its share of total life premiums contracting since the 1990s (Swiss Re, 2004, 2012a, 2013d) despite the very important social function it performs and despite the fact that life insurers have a unique value proposition to address the mortality protection gap, with almost no substitutes available from other parts of the financial services industry. Today term life insurance accounts for roughly 15 per cent of the total life insurance premium volume in most developed markets. Term life insurance is relatively cheap, especially for the younger cohorts. It is sometimes a requirement for other forms of financial contracts, mortgages, for example, where the lending bank often asks the borrower to take out term life insurance as a further protection of its asset beside the collateral.

Against this backdrop, it is striking that life insurance ownership tends to decline. A particularly alarming example is the U.S. where, over the past three decades, the share of households holding individual life insurance has declined from 62 to 44

THE US LIFE PROTECTION GAP IS EQUIVALENT TO 135 PER CENT OF NATIONAL GDP.

per cent. As a result, the life protection gap in the U.S. has reached a staggering US\$20 trillion notional amount of insurance which is equivalent to 135 per cent of the country's GDP (Swiss Re, 2012a, p. 4).

There is a wide spectrum of reasons for this state of affairs: social security and government programmes may make life insurance appear redundant, even though governments and employers are increasingly shifting responsibility for managing these risks to individuals. Price and affordability issues are other reasons for the limited take-up of life insurance. In addition, potential buyers are deterred by what they consider a complicated, non-transparent and onerous application and underwriting process, in combination with perceived complex product features. Furthermore, individuals may simply lack the financial literacy required to understand and evaluate the benefits of life insurance. Another reason is the increase in double-income households which dampens demand for term life insurance. Finally, from an economic point of view, market failures impede the spread of life insurance as a result of an asymmetric distribution of information among market participants. These market failures translate into adverse selection, which implies people at higher risk of dying prematurely buying more insurance without the insurer being able or allowed to reflect this in the price.

The life protection gap at the individual level

The life protection gap can be described and measured as the difference between life insurance in force and the amount a family would need in order to maintain its consumption level in case the main breadwinner (or one of them) died.

Bernheim *et al.* (2001, 2003), in two classic studies, assess the gap using survey data of all households and elderly households, respectively, based on a life-cycle model of consumption and saving. They make use of a relatively sophisticated, but proprietary life cycle consumption model embodied in the financial planning software Economic Security Planner (or ESPlanner). They quantify the potential financial impact of each individual's death on his or her survivors, and measure the degree to which life insurance mitigates its consequences.

In the first study, life insurance turns out to be uncorrelated with financial vulnerability at every stage of the life cycle. As a result, there is a significant mismatch between insurance protection and underlying financial vulnerabilities. Thus, the impact of insurance among at-risk households is modest, and substantial uninsured vulnerabilities are widespread, particularly among younger couples. Roughly two-thirds of poverty among surviving women and more than one-third of that among surviving men result from a failure to insure survivors for an

THE GLOBAL LIFE PROTECTION GAP AMOUNTS TO 116 PER CENT OF GDP.

undiminished living standard. They also identify a systematic gender bias: for any given level of financial vulnerability, couples provide significantly more protection for females than for males.

Lin and Grace (2007) challenge Bernheim *et al.*'s results, focusing on a more careful definition of another (this time, publicly available) index of financial vulnerability. Intuitively plausible, they find that there actually is a relationship between financial vulnerability and the amount of term life (or total life) insurance purchased. They also discover an interesting evolutionary pattern: older consumers use less life insurance to protect a certain level of financial vulnerability than younger consumers.

The life protection gap at the national level

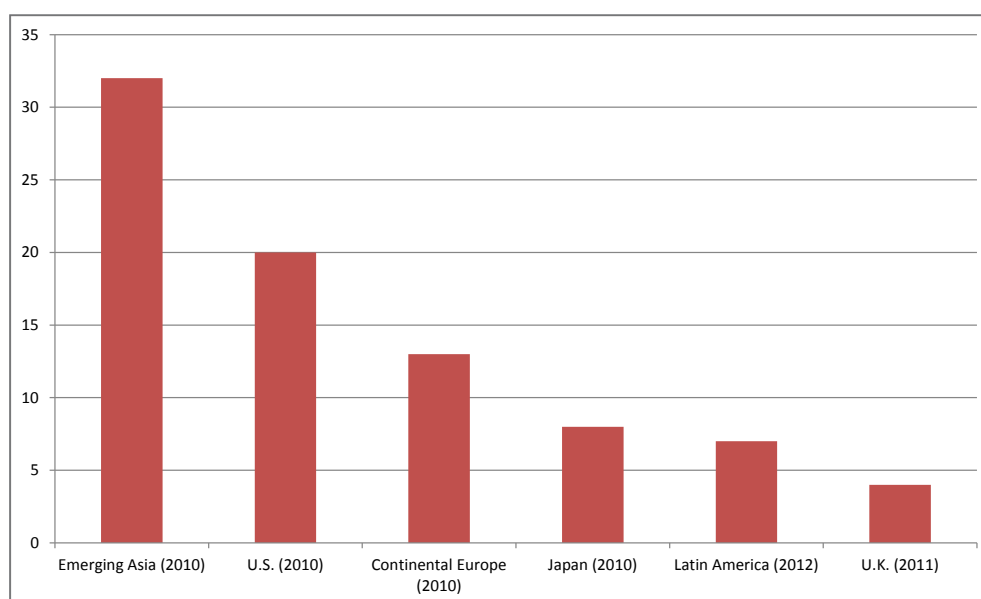
Based on the cited microeconomic studies, sigma (Swiss Re, 2004; 2012a; 2013a) takes a simpler approach, aiming at quantifying the aggregate protection gap on country level. They define the gap as the difference between the present value of income needed to maintain the standard of living of survivors, plus debts outstanding, and the present value of the sum of future pensions to survivors, life insurance in force and one half of financial assets. Such aggregate gaps are estimated for Australia, Germany, Italy, Taiwan (2004), the U.S. (2004, 2012) and Latin America (2013).

The size of aggregate protection gaps is considerable: average U.S. households with breadwinners under 55 would need a lump sum of almost US\$800,000 (present value) to maintain the living standards of survivors. The gap was 68 per cent of needs in 2010, up from 54 per cent in 2001.

The global life protection gap is estimated at US\$86 trillion, 116 per cent of the world's GDP in 2013. Figure 8 illustrates the geographical split of the global protection gap.

IN MOST COUNTRIES THERE IS A WIDENING PENSIONS INSURANCE GAP.

Figure 8: The life protection gap by region (in USD trillions)



Source: Swiss Re (2013d, p. 5).

THE PENSIONS/SAVINGS GAP

Pensions are mostly a social type of insurance provided through a public mechanism, usually a pay-as-you-go (PAYG) public scheme. Nowadays these schemes are almost everywhere complemented by privately managed collective/occupational and individual voluntary pension pillars. In many cases, insurance companies are managing these schemes and assume longevity risks from governments who are obliged to pay state and civil service pensions, employers who still sponsor defined-benefit pension schemes and individuals who proactively seek to ensure the adequacy of future retirement income. The shift towards non-public schemes is primarily a result of people living longer and having fewer children. Changing demographics make PAYG schemes, where today's workers pay for the retirement benefits of today's pensioners, increasingly unsustainable.

In most countries, both developed and developing, there is a widening insurance gap, measured by the extent to which pension levels fall short of a full replacement rate of 100 per cent, i.e. do not match the accustomed standard of living during the years of retirement. This gap is not uniform across countries. A

DURING THE CRISIS YEARS, ADHESION TO PRIVATE PENSION SOLUTIONS HAS DECLINED IN MANY COUNTRIES.

common feature is that, over the last two decades, the gap has been increasing as governments reform public pension systems to ensure fiscal sustainability in the face of ageing populations and strained public resources. The long-standing conflict between financial sustainability in pension systems and the adequacy of retirement income has become exacerbated in the wake of the accelerating retrenchment of public pension systems, prompted by the global financial crisis in 2007 and 2008. In PAYG systems, financial sustainability is the primary policy concern. In countries less reliant on public pension schemes, retirement income adequacy and the avoidance of old-age poverty is the biggest concern.

Against this backdrop, private pillars (collective mandatory and voluntary) have continued to develop in order to fill the gap. For example, the Czech Republic, Israel and the U.K. have introduced defined-contribution pension schemes where ultimate payouts depend on individual contributions and investment performance. In the U.S., over the past three decades, there has been a massive shift within the second pillar, from defined-benefit to defined-contribution plans, which calls for insurance solutions to protect retirement income (see Prudential, 2013).

The challenge is that almost nowhere have private pillars been able to fully make up for the erosion of public schemes. In fact, during the crisis years, adherence to and coverage through private arrangements have even declined in many countries. For example, in some Central European countries, public support of funded private pillars has waned, partially attributable to disappointing investment returns in a protracted low-interest rate environment. Hungary and Poland, for instance, have 'socialised', abolished or scaled down their respective second pillar mandatory pension systems. Moving back to PAYG systems will not help resolve the looming pension crisis due to a rapidly ageing population, the response to which in the first place was the strengthening of pre-funded schemes.

According to a study by Aviva (2010), European Union savers eligible for retirement between 2011 and 2015 will experience an absolute pension gap of EUR 1.9 trillion (US\$2.4 trillion). Looking at individual countries, based on survey data, U.K. workers would individually have to increase their yearly savings by EUR 12.3 trillion (US\$15.7 trillion) to close the gap (the overall estimated U.K. gap is EUR 379 billion (US\$484 billion), 21.5 per cent of 2011 GDP). In the U.S., the Employee Benefit Research Institute (EBRI) estimates that baby boomers (born 1948–1964) and Generation Xers (born 1965–1974) lack US\$4.3 trillion to replace employment income (VanDerhei, 2012, p. 3).

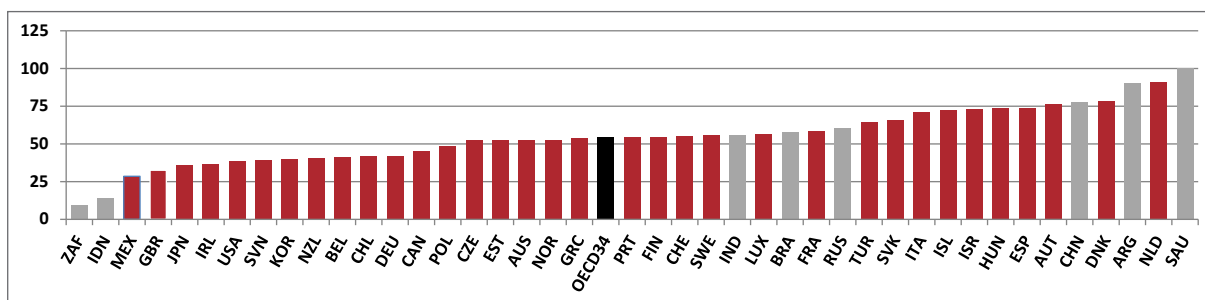
EVEN IN MULTI-PILLAR ENVIRONMENTS THE PENSION PROTECTION GAP REMAINS SUBSTANTIAL.

Every year, the OECD publishes a comprehensive report on pensions. The latest edition (OECD, 2013a) shows how in OECD countries the main thrust of reform has been to improve fiscal sustainability by reducing pension benefits. In Korea, for example, the target replacement rate for pensions is falling from 50 to 40 per cent for workers who have contributed during 40 years. In non-OECD countries, reforms have instead concentrated primarily on increasing the level of coverage, which is currently much lower than in the OECD. Pension promises are set to decline across all earnings distributions, but with different patterns across countries. In some countries, like Greece, Mexico and Portugal, it is the richest earners who will see declines in replacement rates to half of what they are now, while the poorest will be increasingly protected.

If we look at gross pension replacement rates in the first pillar for average, low and high earners, we observe a significant cross-country variation (see Figure 9). The OECD average stands at 41 per cent for the first pillar, 54 per cent for pillars one and two combined, and 68 per cent including voluntary private coverage for average earners. The gap remains substantial even in multi-pillar environments.

Seventeen out of 34 OECD countries exhibit mandatory (pillars I and II) pension schemes which provide a replacement rate below the average of all countries. For these 17 countries, the replacement rate from mandatory schemes is 41 per cent for average earners, a pension gap of 13 per cent on average compared with the total of the OECD countries. *In extremis*, this pension gap amounts to over 26 per cent for an average female earner in Mexico and 21 per cent for average male earners in the U.K.

Figure 9: First pillar gross replacement rates in the OECD (2013)

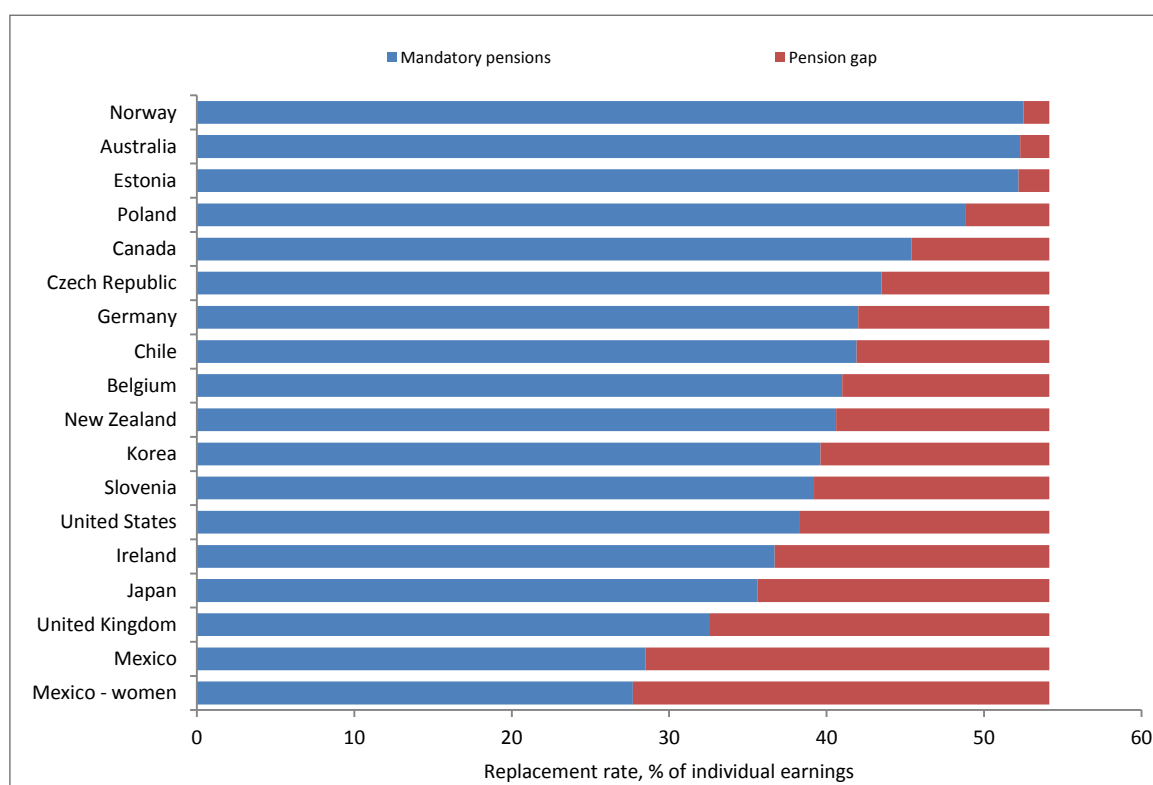


Source: OECD (2013a, p. 135).

CLOSING THE PENSION GAP WOULD REQUIRE A RELATIVELY LITTLE PORTION OF EARNINGS.

The pension gap indicates how much people would have to contribute to voluntary private pension solutions to raise overall replacement rates to the OECD average (see Figure 10). Assuming the purchase of defined-contribution plans as well as a full contribution history, the proportion of earnings that would have to be put into additional retirement savings plans to close the pension gap would be relatively modest: 5 per cent in Japan and the U.K., 4 per cent in the U.S. and 2 to 3.5 per cent in countries such as Belgium, Canada and Germany.

Figure 10: Gross replacement rate for an average earner from mandatory pension schemes and difference from OECD average replacement rate



Source: OECD (2013a, p. 193).

That having been said, the pension challenge goes beyond insufficient retirement savings. It also encompasses the 'coverage challenge'. For example, in the U.S., more than half of private-sector workers have no workplace retirement programme. In addition, even if retirement savings are sufficient, the challenge

THE PENSION PROTECTION GAP WIDENS AS GOVERNMENTS AND EMPLOYERS ARE SHIFTING RISKS TO INDIVIDUALS.

(for defined-contribution plan participants in particular) is to properly convert retirement savings into steady and reliable retirement income. One common mistake, for example, is to withdraw assets too quickly, which leaves individuals exposed to longevity risk (see Prudential, 2012a, for a comprehensive overview of these challenges).

When looking at the replacement rates in emerging markets, one has to exercise some caution as, more often than not, the reach of formal pension systems is very limited. For example, for Asia, the Asian Development Bank (Handayani, 2010) indicates that coverage of the labour force by formal pension systems ranges from 13 per cent in Vietnam to 58 per cent in Singapore.

In addition to pension shortfalls, liabilities associated with long-term care need to be taken into consideration when analysing the challenges arising from underinsurance and coverage gaps. In the OECD countries, on average, care costs of 25 hours a week may exceed 60 per cent of the disposable income of four-fifths of the elderly population, dwarfing any replacement rate deficiencies (OECD, 2013a, p. 16).

In conclusion: gross replacement rates are heterogeneous and far below 100 per cent. There is no clear pattern across countries. Reforms aimed at fiscal sustainability and reducing first pillar coverage are the main reason behind declining gross replacement rates. Private pensions do not seem to be filling the gap; in some countries (Italy, Hungary, and Poland, for example), pillars II and III even recede.

CAPTURING THE POTENTIAL

The relevance of underinsurance in the areas of life and pension protection goes beyond the fact that it presents a major commercial opportunity for insurers. Life insurance often covers risks that are, at least partially, assumed by the public (through social security systems) and the corporate sector (through employer-sponsored schemes). Both governments and employers increasingly shift risk to individuals, for example, through reduced public pension schemes and the shift from defined-benefit to defined-contribution schemes in corporate retirement plans. This trend has led to rising levels of underinsurance, which conjures up the prospect of financial hardship for families facing an unexpected loss. Ultimately, underinsurance can imply a severe additional financial burden on society, as families who have lost their breadwinner and individuals who outlive their assets are thrown into poverty.

MORTALITY PROTECTION IS AT THE CORE OF LIFE INSURANCE WITH NO SUBSTITUTES AVAILABLE FROM OTHER PARTS OF THE FINANCIAL SERVICES INDUSTRY.

Such scenarios are generally unnecessary, in particular, as far as mortality protection is concerned. The annual cost of term life insurance in the U.S. is only about 0.4 per cent of the average household income (Swiss Re, 2012a, p. 8). Therefore, it is up to the insurance industry to dispel obviously unwarranted concerns about affordability and remove other roadblocks to purchasing insurance (such as product complexity and opacity). In addition, mortality protection is arguably at the core of life insurance. There are no substitutes available from other parts of the financial services industry, which puts insurers in a unique position to help society address the life insurance gap and mitigate its social and individual costs.

Addressing longevity risk is even more challenging from an insurance point of view. Each additional year of life expectancy can raise pension liabilities of up to 5 per cent (see Swiss Re, 2012c)—an enormous financial impact and potential vulnerability for both governments and the corporate sector, whose pension promises tend to be significantly underfunded. Even though products such as annuities for individuals and pension funds are well established, the insurance industry's role in transferring longevity risk is still relatively limited. Private pension assets in the OECD amount to more than US\$32 trillion (see OECD 2013b), with insurance pension assets accounting for as little as 13 per cent of this total. Pension funds are the dominant vehicle by far, with a 68 per cent share, followed by banks and investment managers (18 per cent). Even more telling and relevant: global reserves backing immediate annuity books are estimated to be less than US\$700 billion (Swiss Re, 2012c). This illustrates that there is still much potential for insurers in removing longevity risk from pension funds and individuals.

Given the size of the protection gap, the commercial potential for life insurers is as vast as their responsibility vis-à-vis society to make a meaningful contribution to risk mitigation and live up to their claimed relevance. The insurance industry needs to explore innovative approaches to developing a more meaningful proposition towards the challenge of rising longevity risk facing society. One approach, discussed later in this report, involves insurance protection for pension plans, for example.¹ One example is Asia: given the different shapes of population pyramids in Asian countries (Japan, for instance, has an ageing and shrinking population, whereas the Philippines boast a young and growing population), it would be of interest for international insurers to explore non-traditional and innovative solutions that can help bridge the protection gap. This area will form part of The Geneva Association's future research agenda.

¹ Defined-benefit plans imply liabilities which can easily dwarf their sponsoring organisations' net worth. See Prudential (2012b).



ROOT CAUSES OF UNDERINSURANCE

ECONOMIC REASONS FOR NOT FULLY INSURING

Individuals and corporations, when faced with the probability of losses, may choose not to fully insure against the replacement value of their assets. There are legitimate reasons for not fully insuring. In many countries, extensive social security and public insurance schemes reduce the need to take out private insurance coverage. Large corporations may be able to self-insure part of the risk, given their global scale of operations and diversified portfolios. Similarly, individuals, when faced with low severity and high frequency losses, often choose not to insure. Moreover, insurance also relies on mechanisms like retention to manage the challenge of moral hazard, leading to lower sums insured. Also, underinsurance can arise from valuation difficulties, such as when the (replacement) value of the property is not clearly and easily identifiable, or when the property value fluctuates after the inception of the insurance policy.

Therefore, underinsurance should be defined as the gap between the amount of insurance that is economically beneficial and the amount of insurance actually purchased.

LACK OF AWARENESS

In developing and emerging markets in particular, underinsurance reflects the still-low levels of risk awareness and risk culture, also attributable to institutional legacies and inherent cultural peculiarities. Many markets are still in their infant stage of development considering a relatively recent liberalisation of the sector following decades of state monopolisation in countries such as China and India.

In emerging markets, many, if not most, potential customers have never before had formal insurance. For example, a global survey by Bima, one of the major micro-insurance intermediaries operating in 13 markets across Africa, Asia, and Latin America, and LeapFrog Labs, LeapFrog Investments' Impact, Innovation and Insight Hub, shows that 77 per cent of customers have never had insurance before. Especially in markets where there is very little previous experience with insurance products, personal experience can be critical in making a 'first impression'» in the market.

In some Asian countries, a general inclination towards saving also further challenges the marketing of insurance as a form of contingent capital, with many companies and individuals assuming their balance sheets to be robust enough to take on their own risks.

Left: flooded Don Muang Airport, Bangkok, during the November 2011 monsoon flood.

IN PUBLIC 'CRADLE-TO-GRAVE' ENVIRONMENTS IT IS HARD TO CONVEY THE NEED FOR AND BENEFITS OF PRIVATE INSURANCE.

The Middle East offers additional reasons for apparent underinsurance, including religious reservations and generous social security systems which hinder awareness of insurance. Many scholars of Islam criticise conventional insurance as exploitative. They point out that paying money with no guarantee of benefit involves high ambiguity and risk, which could be considered a form of gambling.

In addition, governments in the Gulf region usually fund the welfare of their citizens without having to impose many financial obligations upon them. Nationals are automatically provided with extensive state support, including medical care, sickness cover, pensions and disability benefits. In the wake of the 'Arab Spring' some governments have further augmented their already lavishly funded 'cradle-to-grave' protection schemes for their citizens (see Schanz, 2014).

But in mature markets as well, there are major gaps in awareness, especially in the area of life and pension insurance, exacerbated by product complexity and a lack of product transparency. Governments and insurers should join forces to promote financial literacy and education in order to help reduce life and pension protection gaps.

Furthermore, there are fundamental features of human behaviour which may favour underinsurance: research indicates that people underestimate the risk of low-probability events such as natural catastrophes. In the U.S., economists have observed that people often fail to purchase insurance against low-probability high-loss events even when it is offered at favourable premiums. Such behaviour may occur because people cannot invest the extra time or cognitive effort 'cost' of discovering the true probability of events.

Underinsurance under conditions of sufficient awareness and attractive prices

There are examples which put the relevance of awareness and affordability as stand-alone inhibitors to insurance purchases into perspective. In the U.S., consumer awareness of insufficient life insurance cover has improved, with half of U.S. households believing that they were not holding enough life insurance coverage, up from 39 per cent in 1998 when LIMRA surveys began. The latest 2010 Trends in Life Insurance Ownership study, conducted every six years by LIMRA, found that only 44 per cent of U.S. households have individual life insurance. The number of U.S. households that have no life insurance whatsoever is growing. Today, 30 per cent of households have no life insurance coverage, compared to 22 per cent in 1998. In short: while awareness has improved, coverage levels have continued to decline. This outcome is even more puzzling as the real cost of term life insurance, for example, has mostly fallen and, in the U.S., is as little as 0.4 per cent of the average household income (for a US\$500,000 coverage for 20 years), about half the price of a cup of coffee per day (Swiss Re, 2012a, p. 8). 'Thus the onus is on life insurers to convey the value of their products and to creatively contrast the cost of life insurance coverage with everyday household expenses so that fewer consumers view the product as unaffordable' (Swiss Re, 2012a, p. 8).

LACK OF AFFORDABILITY IS ONE OF THE BIGGEST REASONS FOR UNDERINSURANCE.

One reason for lack of awareness about low-probability risks is the lack of experience with rare events. Personal experience is a key determinant of disaster mitigation behaviour; for example, people are more likely to evacuate from hurricanes if they have previous experience with evacuations. By definition, much of the population has not experienced a 1-in-100-year flood or earthquake in their lifetimes, so risk salience for such low-probability catastrophic events would tend to be lower than for more frequent events.

LACK OF AFFORDABILITY

Affordability is perhaps one of the biggest reasons for underinsurance, particularly for lower-income households and small and medium-sized enterprises.² Choosing private insurance requires setting aside some capital for protection from unlikely events. Government officials may find it difficult to justify allocating taxpayer funds to purchase catastrophe insurance annually for events that occur only rarely, in the face of other pressing budget priorities. Similarly, homeowners and businesses may not be able to forego either consumption or savings in order to purchase insurance annually.

In general, insurance penetration levels tend to rise markedly as soon as economies have reached a certain stage of development and basic needs such as food and housing are met. At very low levels of per capita income, insurance generally only grows in line with the economy, as it does not yet play any particular role in society's 'pyramid of needs'. A simple lack of affordability holds back insurance markets. At intermediate GDP per capita (about US\$10,000), however, premiums tend to grow significantly faster than GDP per capita, and insurance penetration rises considerably. At GDP per capita levels of US\$30,000 and above, a certain saturation sets in and insurance penetration tends to stagnate (see Enz, 2000).

IMMATURE REGULATORY FRAMEWORKS

In developing and emerging markets in particular, immature regulatory frameworks are a major impediment to insurance market development. One example is the Middle East. Measured against GDP per capita, the region is heavily underinsured. In addition to cultural reasons, regulatory shortcomings are widely considered to

² For example, a white paper by Cerno (<http://www.cerno.co/TheTopAreasofUnderinsurance.pdf>) concluded that the perceived high cost of insurance is the most common driver of underinsurance. Yet the paper also reveals that small businesses were spending less than 1 per cent of their total expenses on insurance.

ADEQUATE REGULATIONS ARE VITAL TO ENSURING INSURANCE MARKETS' OVERALL RESILIENCE AND STABILITY.

be partially responsible for this state of affairs. A lack of solvency margins, not to mention risk-based solvency rules, insufficient minimum capital requirements and a general lack of cohesion, transparency, consultation and implementation are most frequently mentioned regulatory deficiencies. In addition, regulations on insurers' investments and reserving practices are deemed inadequate (Qatar Financial Centre Authority, 2014).

Rudimentary and/or insufficiently enforced frameworks are clearly not conducive to risk-based pricing, adequate risk retention, product innovation and the overall resilience and stability of an insurance market. Under such circumstances, corporate defaults and mis-selling scandals, for example, are more likely, potentially shaking customer confidence in the industry as a whole. This threat is particularly virulent in nascent insurance markets.

In addition, the absence of compulsory insurance requirements (e.g. in health care and certain liability lines of business) explains striking levels of underinsurance in a number of countries.

LIMITS TO INSURABILITY ³

When assessing risks, any insurer or reinsurer must carefully take into consideration the fundamental principles of insurability. In this context, we refer to a set of basic criteria which must be fulfilled for a risk to be insurable. Disregarding these constraints would ultimately undermine the (re)insurer's solvency and jeopardise its ability to honour its obligations. Consequently, certain exposures remain—and rightly so—uninsurable.

Which criteria must be met to enable insurability? First of all, randomness: the time and location of an insured event must be unpredictable and the occurrence itself must be independent of the will of the insured. In this context, insurers need to understand that the existence of insurance may change the behaviour of insureds and, therefore, affect the probability of the occurrence of an insurable event (moral hazard). Second, the frequency and severity of claimable events must be quantifiable within reasonable confidence limits. Third, economic viability: the premium rate needs to cover the insurer's expected cost of acquiring and administering the business as well as claims costs. In addition, the price must allow for an appropriate return on the capital allocated to the risk, a return which meets shareholder's return requirements.

³ See Swiss Re, 2013b.

TO SOME EXTENT, UNDERINSURANCE REFLECTS FUNDAMENTAL LIMITS TO INSURABILITY.

From time to time, the insurance industry is faced with events which test the limits of insurability. The destruction of the World Trade Centre on 11 September 2001 is a prominent example. Previously, losses from terrorist acts were comparable in size to other property losses, and terrorism was rarely excluded from property policies. The 9/11 attacks, however, clearly demonstrated the human toll and financial consequences of international terrorism.

The potential losses from a major terrorist attack could involve multiple lines of insurance and could far exceed the financial capacity of the insurance industry. This calls for new solutions, including public-private partnerships. Without state involvement, extremely large losses may remain substantially underinsured.



CLOSING THE INSURANCE GAP: WHAT CAN BE DONE?

PROMOTE FINANCIAL LITERACY AND RISK AWARENESS

Often insurance is either ignored or not regarded as relevant and important in finance, despite the fact that, arguably, it is one of the most vital elements of personal finance. Insurance is one of the very few products that people purchase with the hope of never having to use it. Against this challenging backdrop, risk awareness and financial literacy education as well as the acquisition of basic financial planning skills facilitate the identification of insurance gaps and 'can help families meet their near-term obligations and to maximise their longer-term financial well-being' (Greenspan, 2002).

Measures to promote financial literacy could be co-funded by insurers, advisors and governments, with the latter already being particularly active in this field, going as far as introducing financial literacy programmes in school curricula.⁴

Specific initiatives supported by the insurance industry usually focus on those areas where the gap between awareness and understanding on the one hand and relevance to financial well-being on the other is arguably largest:

- life insurance, which is still ignored by many breadwinners, as its role is not to increase individual net worth or benefit but to protect families from low-frequency, high-severity scenarios such as premature death;
- critical illness insurance, which is often seen as a 'luxury' even though it might be considered even more important than life insurance, as it is a living benefit that protects both the policyholder and his or her family;
- disability insurance, which is frequently not understood despite the significant value of future income and the fact that most insurance policies cover much smaller asset values. This form of cover is particularly important to those individuals whose employers do not offer it in group plans.

The degree of financial literacy generally depends on people's education, occupation, lifestyle, marital status, gender and age. It is not only important to individuals and families but also to (principles-based) financial services systems at large, which are enhanced greatly by educated customers who are able to make informed choices among a wide range of market offerings and channels for distribution (See Ernst & Young, 2014).

⁴ See Greenspan (2002) for an overview of specific measures taken in Australia, Canada, Hong Kong, Singapore, the U.K. and the U.S., as well as Chan (2010).

Left: Italy, May 2012—destroyed cars under the collapsed Modenesi bell tower caused by the earthquake in Finale Emilia.

MEASURES TO PROMOTE FINANCIAL LITERACY COULD BE CO-FUNDED BY GOVERNMENTS, INSURERS AND ADVISORS.

A lack of financial planning and insurance literacy can be observed in both mature (see Case Study 3) and developing insurance markets. Given low income levels and the still marginal role of insurance in the pyramid of needs, financial illiteracy is particularly prevalent in large parts of the Southern Hemisphere. In a number of larger countries, government activities are complemented by risk awareness-building programmes sponsored by global (and regional) insurers.⁵

Case Study 3: A lack of financial planning and awareness of recent pension reform among the U.K. population

A recent survey commissioned by AXA Wealth (2014) has revealed a shortage of awareness about recent pension reforms among the U.K. population. Thirty-one per cent of U.K. adults do not know what (revolutionary) changes to pensions were announced in the Government's March 2014 budget or what these changes mean for them.

The report found that 'while the pension changes in the Budget constituted the biggest reform of pensions in over 100 years, it is alarming to discover the low levels of understanding and knowledge among UK adults. With the end of compulsory annuitisation, the flood gates have been opened to a whole new raft of at-retirement possibilities. If pension literacy is not improved many people will have insufficient means to support themselves during retirement. We [the insurance industry] can't blame consumers for this. It is our job to communicate clearly and in everyday language.' (AXA Wealth, 2104)

Only a small minority of U.K. adults have a clear 'financial strategy' for their retirement savings in light of these sweeping changes. This lack of financial strategy is mirrored by concerns about insufficient retirement income voiced by 63 per cent of respondents. The disparity between people's concerns over retirement and their absence of financial planning suggests that inertia or lack of awareness around retirement saving is a major road block to adopting robust retirement strategies.



⁵ See, for example, <http://knowledge.allianz.com/finance/microfinance/?2485/Financial-education-boosts-Indonesias-economic-growth>, a programme not only addressed at potential microinsurance clients but also the emerging middle-class.

THE CURRENT MICRO-INSURANCE LEVEL OF PENETRATION IS A MERE 5 PER CENT OF ITS POTENTIAL.

Case Study 4: Evaluating the impact of a radio-based insurance awareness campaign in Kenya

Between August 2010 and January 2011, the Association of Kenyan Insurers (AKI) spearheaded a radio-campaign-based effort to increase awareness and knowledge of insurance and risk management among Kenyans, with the ultimate goal of increasing individual insurance use and closing existing knowledge gaps in insurance literacy among low-income household members. Quantitative and qualitative data were collected to analyse the impact of the radio programme.

The evaluation team, funded by the International Labour Organization (ILO) and partnering with Microfinance Opportunities (MFO) and the AKI, developed methods to measure uptake and understanding of the radio content and messages, as well as changes in behaviour. Their findings reveal that the radio campaign had a measurable impact in changing listener awareness and knowledge, towards insurance. Listeners scored 19 per cent higher on measures of awareness and 8 per cent higher on measures of knowledge than non-listeners. As far as behavioural changes are concerned, however, the study found that repeated, more prolonged exposure to insurance terms and risk management techniques would be required.*

* See 'A friend indeed: Evaluation of an insurance education radio campaign in Kenya', *Microfinance Opportunities*, 2011, <https://www.microlinks.org/library/friend-indeed-evaluation-insurance-education-radio-campaign-kenya>

PROMOTE MICRO-INSURANCE

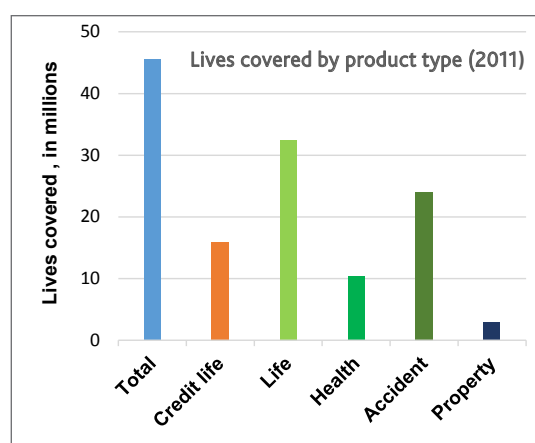
Four billion people, about 55 per cent of the world's population are still uninsured. Over the past decade, micro-insurance has made significant contributions to closing this gap (see Case Study 5), mainly driven by increasing microfinance penetration and microfinance institutions' (MFIs) push for bundling life protection with microcredit. However, the current micro-insurance penetration level is estimated to be a mere 5 per cent of this potential, with the most significant shortcomings in health and agricultural micro-insurance. In order to fully capture micro-insurance opportunities, formidable challenges need to be overcome, such as reaching the potential customer base (more often than not in distant rural areas), conveying the concept of insurance and building the necessary infrastructure to process claims, to name but a few.

Traditionally, insurance companies have teamed up with microfinance institutions, focusing on credit life insurance policies. Alternative distribution channels include mobile phone networks in Africa—many households may not have bank accounts but they do own mobile phones—affinity (faith-based) groups or utilities firms in Latin America, where utility bills have proven effective in reaching micro-insurance customers.

THE BIGGEST POTENTIAL IN MICRO-INSURANCE LIES IN THE HEALTH AND AGRICULTURE SEGMENTS.

Case Study 5: Impressive growth of micro-insurance coverage in Latin America and the Caribbean (LAC)

Figure 11: Lives covered by types of covers



Source: McCord et al. (2012, p.4).

In 2012, the Microinsurance Centre, on behalf of the Inter-American Development Bank (IDB) and with support from the Munich Re Foundation, published a study according to which micro-insurance covers 44.9 million lives in 19 LAC countries (McCord *et al.*, 2012). This corresponds to 7.6 per cent of the total LAC population. Despite an average annual growth in lives covered of 16 per cent from 2005 to 2011 (see Figure 11) the potential remains significant, with a reasonable coverage ratio goal put at 40-50 per cent of the LAC population.

Micro-insurance allows low-income households to better manage their risks. From an insurance point of view, it not only offers an attractive business case for insurers looking for a vast and untapped pool of a large number of small and homogeneous risks (with an estimated potential premium volume of up to US\$40 billion), but equally, if not more importantly, it enables insurers to make a vital contribution to economic and societal development in low-income countries.

However, the evolution of products away from simple credit-life covers has made distribution more of a challenge. Health and agricultural insurance would be hugely beneficial to the low-income population, but these products tend to be more complex in terms of their design, pricing and administration. In addition, they are less suitable for piggybacking on existing channels, such as those set up by MFIs. New routes to customers would be needed. But this requires significant scale to make investments into very low-premium customers economic.

In light of these challenges, capturing the micro-insurance potential would require a concerted effort by various stakeholders including insurers, reinsurers, NGOs and governments (see Swiss Re, 2010, p. 1).

GIVEN THE ABUNDANCE OF (RE)INSURANCE CAPITAL, THE REAL CHALLENGE IS TO STIMULATE DEMAND.

BUILD PUBLIC-PRIVATE PARTNERSHIPS (PPPs)⁶

In order to address the insurance gap by boosting demand, risk partnerships between insurers and governments (or multilateral organisations) should be carefully considered. This is particularly important as trends such as the higher frequency and severity of extreme weather events in combination with rapid population growth, urbanisation and value concentration, are expected to further widen the coverage gap.

There is no shortage of (re)insurance capital potentially available to cover uninsured exposures, especially as alternative capital from pension funds and hedge funds has entered the (re)insurance industry in recent years. In order to stimulate demand, governments and international/regional development banks can consider a wide spectrum of conducive regulations, subsidies and incentives, while allowing the private insurance industry to perform its vital risk selection and management roles.

Insurers should support governments in playing their role as owners of the relevant legal framework for such pre-disaster risk management. Governments are also instrumental in promoting prevention, mitigation and risk avoidance measures such as stringent building codes and early warning systems to facilitate the evacuation of the population, thereby mitigating the eventual losses, acting as enablers of risk transfer and, ultimately, strengthening the resilience of local economies and societies.

In developing markets in particular, governments may be needed to 'kick-start' insurance by helping collect data, supporting risk research and modelling and initially subsidising insurance premiums. The latter, however, should be limited to developing countries and offered on a temporary basis only.

In contrast to the success of its agricultural insurance programme, China's natural catastrophe insurance coverage is still at a nascent stage (see Figure 12). The Wenchuan earthquake in 2008 caused direct economic losses of RMB 845.1 billion but compensation paid out by insurers was just over RMB 2 billion, accounting for 0.2 percent of the total losses. The successful agricultural insurance programme may offer interesting lessons for effectively covering natural catastrophe risks, too.

⁶ See Swiss Re (2011).

Case Study 6: Mexico's 'MultiCat' catastrophe bond programme

An example of an effective PPP is a joint transaction of the World Bank and the Mexican government, with Swiss Re serving as a co-lead manager of the transaction. 'MultiCat Mexico 2009 Ltd'* is an innovative three-year deal based on insurance-linked securities. The transaction, which was extended by another three years in 2012, offers the Mexican government additional financing options following a major natural catastrophe (the programme covers earthquakes and hurricanes) and helps mitigate the negative impact on public finances. Most governments shoulder the burden of financing after a disaster event, for example, by issuing debt, reallocating budget positions or raising taxes. With this transaction, Mexico is diversifying its financing mix by means of risk transfer instruments and significantly enhancing its sovereign catastrophic risk transfer strategy. The programme combines risk mitigation and risk modelling, as well as traditional and parametric insurance. The programme demonstrates that emerging markets can effectively build resilience through the use of innovative insurance solutions and the public-private partnership model.**

There are also examples from mature markets: for instance, if the 2012 Biggert-Waters Act is fully implemented in the U.S., Congress will mandate that the National Flood Insurance Program consider private reinsurance to help financial sustainability in the face of increasing storm-surge risks.

* http://www.artemis.bm/deal_directory/multicat-mexico-2009-ltd/

** See World Bank (2012). Other countries, too, are exploring the issuance of catastrophe bonds. The Philippines, for example, is continuing its investigation and feasibility studies with the World Bank to obtain protection from natural catastrophes such as earthquakes or typhoons such as Super Typhoon Haiyan in 2013 (see <http://www.reuters.com/article/2014/04/10/imf-philippines-bonds-idUSL6N0N24G620140410?irpc=932>).

Case Study 7: Agricultural insurance in China

The Chinese government provides insurance premium subsidies which have made agricultural insurance affordable for farmers and have led to the rapid growth in the Chinese agricultural insurance market. Since the implementation of the trial agricultural insurance (mainly crop farming insurance) premium subsidy policy in 2007, central and local governments have continuously broadened the scale and scope of premium subsidies for farmers. In 2013, total subsidies were equivalent to nearly 80 per cent of China's agricultural insurance premium.

On the back of this successful public-private partnership, China has become the world's second largest agricultural insurance market (while the United States, where public subsidies also play a major role, is number one). From 2007 to 2013, total coverage offered by China's agricultural insurance providers rose from RMB 112.6 billion to RMB 1.4 trillion; over this period of time, a total of RMB 76 billion was paid to 143 million farmers as compensation. In 2013, China recorded agricultural insurance premium income of RMB 30.7 billion and paid RMB 20.9 billion to 31.8 million affected farmers; 1.1 billion mu* of main crops were covered (73 million hectares), accounting for 45 per cent of the country's main crops sowing area.

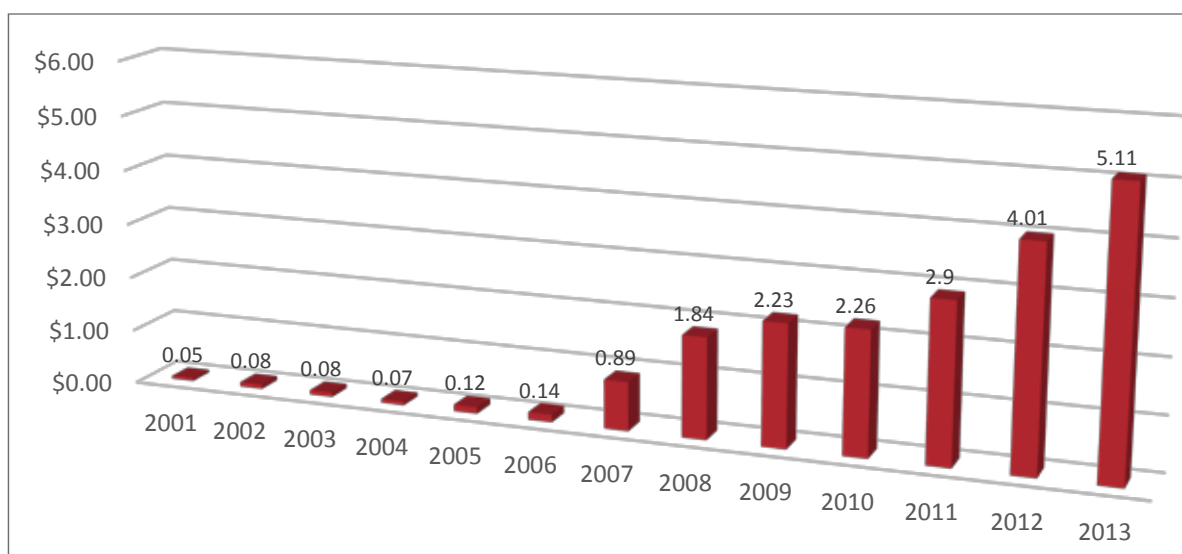


Rice harvest in South Central China

* Chinese unit of area equivalent to about 667 sq m.

SINCE THE BEGINNING OF THE 21ST CENTURY GLOBAL NON-LIFE INSURANCE PENETRATION HAS ERODED.

Figure 12: Agriculture insurance premiums in China (in US\$ billion)



Data source: Research in China (2014).

DEVELOP NEW PRODUCTS

As discussed above, since the beginning of the 21st century, global non-life insurance penetration has eroded. Aggregate global non-life insurance premiums as a share of GDP have declined from 3.2 per cent of the global economy to 2.7 per cent. This suggests that the industry has been serving a shrinking portion of society and is considered less relevant to economic growth. Even in a number of emerging economies such as Indonesia, Malaysia and the Philippines, non-life penetration has decreased over the past ten years—contrary to economic wisdom.

Some market experts attribute this trend to the insurance industry's inability to properly respond to fundamental changes to the risk landscape such as the increasing share of the digital economy in overall GDP, and associated risks such as loss of consumer data or proprietary technology. Other elements of the new risk landscape include globalising value and supply chains, disruptive technologies, the emergence of new intangible risks such as a loss of reputation linked to social media, rapidly growing middle classes and accelerating urbanisation, to name but a few. In order to cope with these socio-economic dynamics and the increasing size, scope and complexity of exposures, the industry needs to come up with new products and solutions—or face the risk of falling behind and losing relevance.

IT IS NO LONGER SUFFICIENT TO FOCUS ON HANDLING 'ACTS OF GOD'. NEW ANSWERS ARE NEEDED WHICH ADDRESS THE INCREASINGLY RELEVANT 'ACTS OF MAN'.

It is no longer sufficient to focus on handling 'acts of God'. New answers are needed which address the increasingly relevant 'acts of man'. The risk of losing or impairing real assets is declining in importance to many policyholders. Instead, intangible assets, like brand and reputation, are seen as equally or even more valuable. Also, firms increasingly wish to protect revenue flows and profits as much as balance sheets.

Of course, such a shift would require sufficient data to model and price risk exposures, as well as sufficient overall risk capacity to manage aggregated exposures.

Some examples of relevant product innovation include tailored enterprise risk solutions which offer non-damage business interruption and reputational harm coverage.

Against this backdrop, we consider product innovation as a key theme for future in-depth research. This also includes life insurance, where there is an urgent need for new solutions, in longevity protection in particular: with the help of capital markets, indemnity-based longevity instruments could be offered to consumers to provide not only pension annuities but also solutions for health and loss of self-sufficiency risks. Insurance-linked securities (ILS) offer a potentially attractive (index-based) tool for reinsurers to manage longevity exposure on their balance sheets. In short: effective risk mitigation through capital markets can boost the availability of affordable indemnity and parametric solutions for longevity risk. This will be an area of future Geneva Association research activity. Other areas will include new products and solutions in the context of cyber risk, compounded by the growing share of the digital economy in overall GDP, and the flood insurance protection gap in emerging markets where growing populations and an accelerating pace of urbanisation and value concentration call for more comprehensive and innovative risk transfer and funding solutions.

MORE FLEXIBLE ANNUITY PRODUCTS AND LONGEVITY BONDS COULD HELP NARROW THE PROTECTION GAP.

Case Study 8: The low popularity of annuity products

The take-up of annuities as the most effective protection from longevity risk is still relatively limited. Whereas global private pension assets amount to more than US\$30 trillion, reserves backing immediate annuity books are estimated to be less than US\$700 billion (Swiss Re, 2012c). The modest popularity of annuity products may have to do with the requirement of many solutions that retirees irrevocably surrender control of their assets to the insurance company in exchange for a guaranteed stream of regular payments.

To remedy this situation, over the last decade, insurers have developed new types of guaranteed lifetime income products such as variable annuities with optional guaranteed lifetime benefits. In contrast to traditional annuities, the retiree maintains access to the assets invested under such schemes. At the same time, he or she receives a guaranteed income for life no matter how stock markets perform or yield curves behave. However, income can be flexibly stopped, restarted and adjusted at any time. Also, any assets remaining in the variable annuity account upon the holder's death are passed on to a beneficiary (see Prudential, 2013).

Such innovative products are helping spread the use of insurance solutions which offer income protection and relieve policyholders from the worry that income generated from their financial assets will be exhausted during their lifetime. Regulators are well-advised to keep these benefits in mind when considering or imposing higher capital requirements and new layers of supervisory scrutiny which could reduce the beneficial individual and societal effects of innovative retirement solutions.

Case Study 9: Transferring longevity risk to capital market investors and reinsurers

In late 2013, the Dutch insurer Aegon entered into a longevity risk transfer transaction covering EUR 1.4 billion (US\$1.79 billion) of its longevity reserves in the Netherlands. The risk was transferred to reinsurers (with SCOR Global Life taking over the biggest share) and capital markets investors, with the assistance of Société Generale as intermediary. The transaction made use of a medically founded model of longevity risk developed by Risk Management Solutions (RMS). Investors were also provided with scenario-based modelling results in order to better understand the investment risk. The transaction has a maturity of 20 years.

Following this transaction, a number of market experts suggested that the use of longevity models and scenarios will pave the way for a full-blown longevity bond market, with an estimated potential five times greater than the natural catastrophe bond market. Reinsurers in particular are believed to tap into capital markets in order to offload a portion of longevity risk from their balance sheets. However, some reinsurers caution that pricing for such capital markets-based longevity products is not yet attractive.

* See http://www.willkie.com/files/tbl_s29Publications%5CFileUpload5686%5C4549%5CRecent%20Developments%20and%20Current%20Trends%20in%20Insurance%20Transactions%20and%20Regulation%20Year%20in%20Review%202013.pdf and <http://www.aegon.com/en/Home/Investors/News-presentations/Press-Releases/2013/Aegon-completes-second-innovative-longevity-transaction/>

PREDICTIVE ANALYTICS BASED ON 'BIG DATA' ARE SET TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF INSURANCE COVER.

ENHANCE PRODUCT CLARITY AND TRANSPARENCY

Insurers need to tackle complexity in order to reduce the insurance gap. In a number of major life insurance markets, trust has suffered during the financial crisis. Pension insurance, especially when it involves consumers taking important investment risks upon themselves, must move from a 'push' to a 'pull' product, catering to consumer needs.

The complexity of the products, introduced through product enhancements, for example, could even be viewed as a risk towards overall industry sustainability. Products are often loaded with multiple enhancements from the outset without having ascertained the customers' willingness to bear the associated cost.

From an economic point of view, market inefficiencies resulting from inadequacy or asymmetry of information are bound to lead to underinsurance. The 'right' level of insurance requires adequately informed buyers and sellers who agree on a particular level of insurance coverage at a particular price. Effective, mandatory disclosure would be one way of addressing this deficiency, provided it does not lead to heightened complexity (Klein, 2011).

Reducing complexity would also make distribution more cost-effective. One way of achieving this is to embrace technology to improve the customer experience, lower the cost of issuing a policy, lower the cost of advice and, at the same time, improve risk selection. Technology could, for example, enable customers to build the product the way they want. Based on 'big data', insurers could predict what customers need, instead of asking them to answer hundreds of underwriting questions. Predictive analytics could enhance customer segmentation and enable improvements in pricing, underwriting and marketing. Complexity would continue to exist but rather internally at the insurers than in their customer relationships.

HELP BUSINESSES ASSESS AND ANTICIPATE EXPOSURES

According to Zurich® (2013), many small and medium-sized businesses are unwittingly risking their survival as a result of a major (insurable) loss. In the tough post-recession economic climate, they tend to shy away from regularly reviewing the valuation, risk assessment and longer-term adequacy aspects of their insurance programme, fearful that it may result in higher costs of insurance. Quoting the Royal Institution of Chartered Surveyors' Building Cost Information

UNDERINSURANCE IN THE COMMERCIAL SPACE IS NOT ONLY AN ISSUE OF COST. SOMETIMES, AN EVEN BIGGER CHALLENGE IS TO DETERMINE THE RIGHT SUMS INSURED.

Case Study 10: Australia flood insurance

In 2011, Australia experienced an unprecedented number and scope of natural disasters—massive floods and a cyclone in Queensland, two storms and floods in Victoria and two large bushfires in Western Australia. Following the devastating 2011 Queensland flood, several recommendations were proposed and some of them were adopted by the government and the insurance industry.

The most significant of these reforms was the introduction of a standard definition of flood following 18 months of discussions with the federal government. The standard definition of flood greatly helped the rapid roll-out of flood cover by insurers and sharply reduced the number of disputes between insurers and customers. Today, policyholders and insurers have greater peace of mind about flood cover, and insurance companies have rolled out more attractive, effective and transparent flood-based products. More than 90 per cent of residential policies in Australia have flood cover, compared with only 3 per cent of policies in 2006 (Whelan, 2014).



Brisbane, Australia, 27 January 2013: street corner under flood waters

Service (BCIS), it states that 80 per cent of British commercial properties are underinsured.⁷ Also, the Chartered Institute of Loss Adjusters found that 40 per cent of business interruption policies are underinsured with the average shortfall amounting to 45 per cent.

Underinsurance in the commercial space is not only an issue of cost. For many businesses, an even bigger challenge is to determine the right sums insured. The complexity of this task is exacerbated by significant changes in valuation.⁸ In the area of business interruption, for example, insurers define gross profits in a different way than accountants do. Businesses also tend to underestimate how long it will take to fully resume operations after a major calamity. Standard business interruption indemnity periods may be insufficient.

⁷ See <http://insider.zurich.co.uk/industry-talking-point/the-hidden-perils-of-underinsurance/>

⁸ See Chan (2010) for a similar discussion from an Asian perspective.

ANY INTERFERENCE WITH INSURERS' FUNDAMENTAL UNDERWRITING PRINCIPLES PREVENTS THE INDUSTRY FROM FULLY PERFORMING ITS VITAL ECONOMIC AND SOCIAL ROLE.

Another example is the property market where businesses frequently fail to properly differentiate between the market value of a property and its rebuild cost which is driven by volatile charges for building materials and labour and could also include the cost of removing debris and clearing the site before any rebuilding works commence.

All this suggests that insurers need to step up their game by proactively offering tailored advice to small and medium-sized commercial policyholders. This ultimately also needs to include helping businesses take a more systematic, diligent and longer-term view on how to protect their balance sheets and income statements from calamity. Of course, insurance is just one of the areas which should be reviewed. Others include self-insurance and active steps towards risk reduction, based on a thorough stocktake of the risk landscape facing the organisation. Specific areas to be addressed by small and medium-sized businesses, too, include measures to protect ever more interconnected and vulnerable supply chains as well as investments abroad.⁹

CREATE A CONDUCTIVE REGULATORY, LEGAL AND TAX ENVIRONMENT¹⁰

Insurers set premium rates which are commensurate with the underlying individual or corporate risk profile. In order to maximise the industry's contribution to economic growth and societal progress policymakers should resist the temptation to distort market forces. As a matter of fact, in most jurisdictions, the focus of insurance regulation has shifted over the past two decades, from product regulation, also covering terms of coverage and pricing, to solvency regulation. In addition, private incentives to mitigate and adapt to risk must not be undermined by ill-designed public vehicles, e.g. public disaster relief schemes which remove individuals' incentives to manage risk or which even encourage moral hazard, i.e. a particularly risky behaviour as a result of pricing signals that are disconnected from underlying risks. Such interference, in extreme cases, may cause insurance markets to fail, as risk mitigation no longer works and loss ratios rise.

Further, legislators and regulators must respect the key principles of insurability as outlined above. Any interference with insurers' fundamental underwriting mechanism (e.g. deductibles, coinsurance, contractual liability limits and exclusion causes) prevents the industry from fully performing its vital economic and social role.

⁹ See <http://newwww.lloyds.com/news-and-insight/risk-insight/underinsurance-report>

¹⁰ See Baltensperger and Bodmer (2012).

TAX INCENTIVES CAN BE A VERY POWERFUL DRIVER OF SUCCESSFUL PRIVATE PENSION REFORM.

Also, in order to capture the potential of insurance, governments must refrain from protecting local markets. A liberal market access regime is a precondition for the local economy and insurance industry to benefit from international players' knowledge, expertise and capital. This, of course, is also true for the reinsurance industry, which helps spread the financial impact of a disaster among many carriers outside the national economy. The business model of insurance is based on risk pooling and diversification and '(...) national borders should not limit the pool' (Baltensperger and Bodmer, 2012, p. 13).

In the topical context of the European Union's upcoming Solvency II framework, governments should realise that some of its elements are high on the list of potential stoppers for the insurance industry to offer long-term savings products, variable annuities and long-term care insurance (LTCI). Insurers would be required to hold significant additional capital to back their annuity liabilities, for example. Solvency II also creates disincentives to invest in long-term market securities and equities which are vital to economic growth.

Also in the context of life insurance, the German example shows that tax incentives can be a very powerful driver of successful private pension reform. Such incentives should be embraced by governments to reduce old-age poverty and effectively address people's tendency to underestimate the risk of low-probability and high-severity events, a fundamental feature of human behaviour which may favour underinsurance.

ESTABLISH EFFECTIVE COMPULSORY SCHEMES

The requirement of compulsory insurance is intended to protect the interests of everyone affected by an insured event, i.e. offer a guarantee on behalf of potential victims. In the absence of mandatory insurance, if the injurer is unwilling or unable to pay, the victim, his first-party insurer or the public may have to cover the losses. Mandatory insurance offers the advantage that the victim gets paid and the injurer is monitored, and his future behaviour influenced by the insurer. Therefore, traffic, health and environmental insurance are often of a mandatory nature.

By mandating such forms of risk transfer, governments also effectively enable it by creating sufficiently large risk communities where the law of large numbers applies: the larger a portfolio of independent risks, the higher the probability that actual losses are close to expected losses.

Public insurance is also mandatory. There could be an economic case for it in the presence of adverse selection: if good and bad risks are forced to pay a premium,

THERE IS A THIN LINE BETWEEN COMPULSORY SCHEMES ENABLING OR DISTORTING INSURANCE MARKETS.

Case Study 11: Boosting insurance penetration in high-income Arab states of the Persian Gulf through compulsory health insurance

Some emerging insurance markets have received a boost from compulsory health insurance. In Saudi Arabia, where such a scheme was established in 2008 for all private-sector employees, the health segment accounted for an estimated 55 per cent of the entire insurance market in 2012, up from 40 per cent in 2008 (Standard & Poor's, 2014). From 2008 to 2013, the country's insurance penetration increased from 0.4 to 0.8 per cent, on the back of an average annual inflation-adjusted market premium growth of 13 per cent (Qatar Financial Centre Authority, 2014).

However, medical insurance is a high-volume, low-margin line of business in Saudi Arabia. Loss ratios usually exceed 80 per cent, leaving a less than 20 per cent margin to cover acquisition and administration expenses. Against this backdrop, the Saudi Council of Cooperative Health Insurance monitors risk pricing to make sure that insurers are offering sustainable rates and service levels to policyholders and covered employees.

The United Arab Emirates as well have seen non-life insurance penetration increase from 1.3 per cent to 1.6 per cent from 2008 to 2013, partially attributable to mandatory health regimes in some emirates such as Abu Dhabi, where compulsory cover was introduced for all employees in 2005 and health insurance premiums account for 40 per cent of the market's total, up from less than 8 per cent 10 years ago, due to the fact that more people have obtained health insurance coverage. Another surge in premium income is widely expected from the impending introduction of compulsory medical insurance in Dubai.



COLLECTING DATA CAN EFFECTIVELY HELP IDENTIFY AND ADDRESS AREAS OF UNDERINSURANCE.

all can be insured. This outcome might be superior to no one being insured. Also, as mentioned above, the need for large risk pools could require public schemes of insurance. And, finally, the state may cover highly uncertain, high-severity events for which there would be no private-sector market (Baltensperger and Bodmer, 2012, p. 11).

Lawmakers and regulators, when introducing compulsory schemes run by private insurers, need to keep in mind the need to minimise moral hazard and adverse selection. This can be achieved, for example, through risk-based pricing and deductibles, and insurers must be given the leeway to apply such measures in order to ensure that compulsory schemes do not introduce distortions into insurance markets. In addition, using such underwriting tools could help address one of the biggest challenges facing compulsory insurance: the perception of compulsory schemes as taxes.

COLLECTIVE DATA COLLECTION AND SHARING

In the past, the insurance industry has accumulated data based on internal bookkeeping and external financial reporting. There has thus been a lack of systematic efforts to collect data of risk exposures of individuals, businesses, and governments. As a result, we know little as to what extent their needs for coverage are actually met by insurance. The need for data is obviously more pronounced for developing countries and emerging economies. In light of rapid and transformational economic development and significant exposures (e.g. to natural catastrophes), quality data is scarce in most emerging economies.

Collecting data will help identify areas of underinsurance, thus enabling the expansion of insurance solutions wherever needed. It is essential to gather cross-sector and cross-regional data covering various risk exposures such as Nat Cat, pandemics and health. Another example is longevity risk—which, according to many experts, requires the involvement of—capital market instruments to facilitate risk transfer. Consequently, a reliable and widely accepted benchmark index would be of the essence.

Where an insurance market does not yet exist, as in many developing markets, governments and non-governmental organisations can play an important role in facilitating the development of risk transfer solutions through the collection of exposure data. Industry associations and bodies can coordinate and facilitate collective data collection efforts, and create a consortium with other partners such as the Micro Insurance Academy and international organisations. The

GOVERNMENTS AND INDUSTRY ASSOCIATIONS CAN PROMOTE THE DEVELOPMENT OF CAPITAL MARKETS-BASED LONGEVITY SOLUTIONS BY PUBLISHING MORTALITY DATA ON A REGULAR AND TIMELY BASIS.

consortium can also involve a global network of universities to provide the human resources for cleaning data, developing databases and conducting regular updates. A consortium approach can help facilitate data sharing, lower the costs and maximise the benefits.

Developed databases will enable insurers to evaluate which segments of the population and the economy are under-served. Based on this intelligence, insurers can systematically address areas of underinsurance through tailored products and distribution channels.

Case Study 12: The Life & Longevity Markets Association (LLMA)*

The LLMA, established in 2010, publishes longevity and mortality indices as well as consistent demographic data covering England and Wales, Germany, the Netherlands and the U.S. In the medium term, the organisation plans to provide templates for standardised longevity products, a longevity trading index and standardised valuation models for longevity risk.

The indices published by the LLMA offer investors a basic reference for transactions, improving their understanding of the risk and promoting liquidity in the trading of financial instruments through secondary markets which allow investors to exit positions efficiently.**

The primary focus of the LLMA is pension-related longevity and mortality. Current members of the LLMA are Aviva, Axa, Deutsche Bank, JP Morgan, Legal & General, Morgan Stanley, Munich Re, Prudential plc, Royal Bank of Scotland plc and Swiss Re.

The consortium is not a commercial or for-profit venture. Any intellectual property developed by it will be made available for public use.

* See <http://www.llma.org/>

** Similarly, governments can promote the development of capital markets-based longevity solutions by publishing mortality data on a regular and timely basis.

CONCLUSIONS

Underinsurance describes the gap between the amount of insurance that is economically and socially beneficial and the amount of insurance actually purchased. Therefore, underinsurance should not be mistaken as the gap between full insurance coverage and actual coverage. In fact, levels of less than full coverage can be socially desirable if they help promote risk-conscious behaviour and avoid moral hazard, for example. What really matters from an overall economic and societal perspective is the adequacy of cover, which can be judged against its effectiveness in relieving insureds (and ultimately society at large) from severe and unbearable financial hardship. With this in mind, underinsurance could be viewed as a situation in which the cost of having less than full coverage is so burdensome for insured households and firms that they offset the benefits of limiting the scope of coverage.

Due to its normative nature, 'adequacy of cover' usually escapes quantification. Therefore, the measures of underinsurance presented in this report can only provide some rough guidance as to the actual size of the problem: in non-life insurance, the premium equivalent of underinsurance ranges between US\$100 and 200 billion per annum, or 5–10 per cent of total premiums, based on the methodologies developed by Lloyd's and Swiss Re, respectively. In life insurance, the global mortality protection gap (i.e. the income gap resulting from a family's breadwinner's premature death) is estimated to exceed the world's GDP, according to Swiss Re. Aviva and EBRI calculate the current pensions gap (i.e. the difference between retirement and employment income) for the U.K. and U.S. at between 20–30 per cent of GDP.

Even though underinsurance is impossible to quantify with full accuracy, there is a general consensus that the problem exists and needs to be addressed. The figures (e.g. non-life insurance penetration or the share of households holding individual life insurance) suggest that the protection gap is widening further—at a time when the global risk landscape is undergoing structural changes which would call for a bigger rather than a smaller role of insurance-based risk transfer: urbanisation and industrialisation, in combination with increasing climate risk, cause exposure levels to rise exponentially. This is particularly true for emerging markets where national disaster risk resilience remains generally weak and increasingly affluent middle classes highly exposed to catastrophe losses. In addition, the digital transformation and increasing integration of the economy gives rise to fundamentally different and new risks which need to be quantified, managed and transferred. As far as old-age protection is concerned, both governments and employers increasingly shift risks to individuals, for example,

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through reduced public pension schemes and the transition from defined-benefit to defined-contribution corporate retirement schemes. These developments have exacerbated underinsurance and conjure up the prospect of massive financial hardship for families which will have to be partially mitigated by society.

Against this backdrop, the insurance industry needs to continue to innovate, drawing on its traditional strengths of risk assessment, pricing and diversification. In short, insurers must preserve their economic relevance and social legitimacy by offering solutions which reflect the rapid evolution of the global risk landscape. The successful pursuit of this goal does not only matter to insurers and their commercial viability. More importantly, it matters to society, as insurance-based risk transfer has always been and will always be a key ingredient to economic growth and social stability and resilience.

This report shows that addressing underinsurance requires multifaceted solutions, reflecting the wide spectrum of root causes, ranging from attitudinal (lack of awareness), economic (lack of affordability) and institutional (immature regulations) to fundamental reasons (lack of insurability, due to quantification issues in particular). As both the demand and supply sides of the equation need to be tackled, the most promising response to the insurance protection gap is a joint effort comprising the industry and its capital providers, consumer groups (both retail and wholesale), governments and regulators, and a coordinated approach to implementing the measures proposed by the authors of this report.

This report presents an assessment of the current state of global underinsurance in both non-life and life and pensions insurance. It sets the stage for conducting more in-depth research into specific insurance segments in the future. Based on its findings, we have identified three specific areas for future research: the pension gap for selected countries, the insurability of digital economy exposures (e.g. cyber security) and innovative insurance products for flood exposure in emerging markets.

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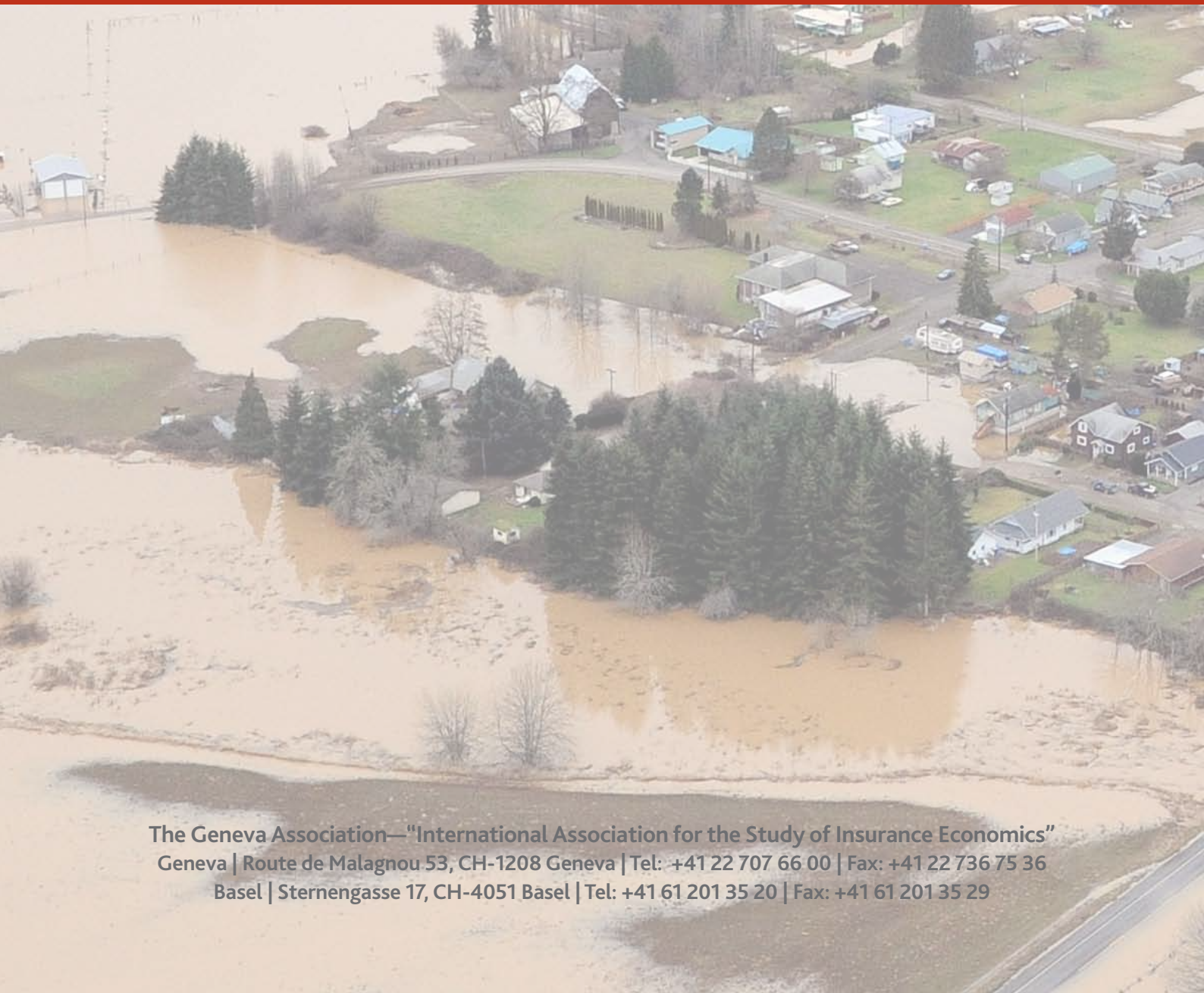
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Insurance makes an important contribution to boosting societies' risk absorption and diversification capabilities, promoting economic and social development by greasing the wheels of the economy. Underinsurance represents a gap between the current state and the full potential of the insurance industry in serving the economy. This report presents an overview assessment of the current state of underinsurance in non-life, life and pensions insurance. It also proposes specific actions by the insurance industry in collaboration with governments that can help close the protection gap and thereby add to their contribution to economic development.



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