Swiss Re

Asia-Pacific 2015

Mortality Protection Gap

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The large protection gap in Asia-Pacific posts opportunities for insurance companies to further unlock the potential, increase societal relevance, and improve their value propositions.

Foreword

Swiss Re published the first Asia-Pacific mortality protection gap study featuring multiple markets in 2011. That report helps to highlight the extent of under-insurance in many key markets in our region, as well as the significant business opportunity for insurers to step up their efforts to help close the gap.

Since 2011, Asian markets have reported robust economic performance, though the growth momentum has slowed more recently. At the same time, backed by the quantitative assessment included in the 2011 Swiss Re report, insurers have launched campaigns to promote financial literacy, raise awareness of the importance of insurance and offer more protection products. We believe now is the right time to update our 2011 report to see how the gap has evolved and which markets have been more successful in closing it.

This fully updated Swiss Re 2015 Mortality Protection Gap report shows that the mortality protection gap for the region as a whole has widened further between 2010 and 2014, but at a slower pace than in the preceding 2006-2010 period. The size of the gap increased to USD 58 trillion in 2014 from USD 42 trillion in 2010 for the 13 Asia-Pacific markets examined. The increase in part reflects higher income and living standards. An alternative measure, using the ratio between protection gap and protection needs, shows a slight moderating trend hinting at early success in stabilising the gap. Nevertheless, it remains formidable in many Asia-Pacific markets.

The results of this latest update should be a wake-up call for everyone involved in this issue. Managing the difficult challenge of closing the protection gap, and seizing the massive business opportunity associated with it, will require the strong cooperation and partnership of all stakeholders – customers, insurers, reinsurers, intermediaries, regulators and governments alike. We need to address this challenge through careful analyses of demand and supply side factors, examining needs such as further educating and guiding consumers to improve awareness, and developing more attractive products and effective distribution channels.

Swiss Re has worked closely with insurers in Asia for more than 100 years, and we are here to work with our clients to close this gap. This study will help us understand where the gaps are and how we can work as an industry to take action and meet local needs. It is important that we take this as one of our top priorities and work smarter together, to deliver relevant value-added products to our customers.

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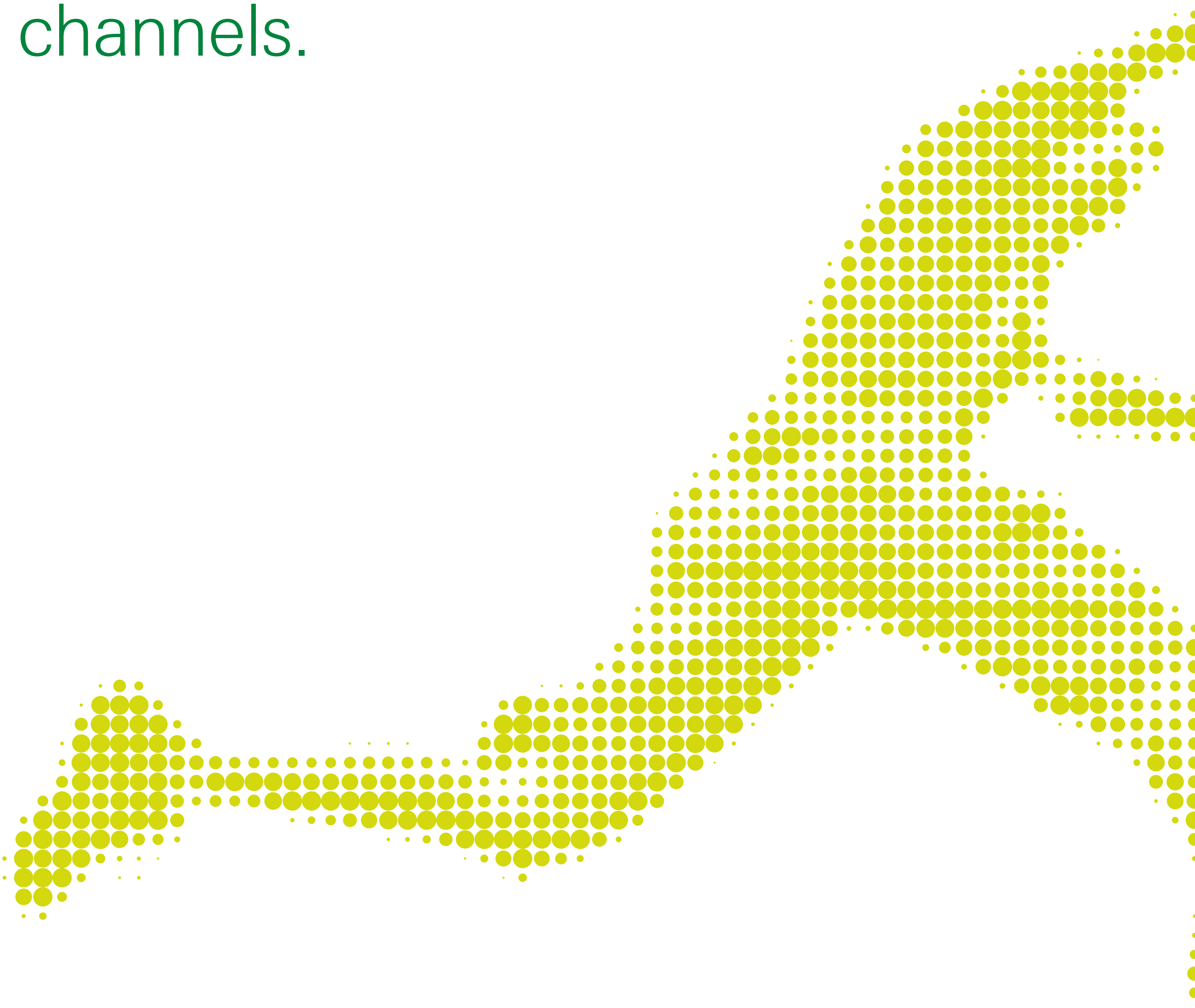
The results of this study are a call to action to find new ways of educating consumers and to innovate products and distribution channels.



Executive summary

The gap is widening but at a slower pace

Mortality protection is at the core of life insurance. At the same time, despite rapid economic and insurance growth in the Asia-Pacific region over the past decade, averaging 7.7% per annum in life and health premiums, there is still extensive under-insurance in many Asia-Pacific markets.

This report provides the latest available estimates on the scale of under-insurance or the "mortality protection gap" across the Asia-Pacific region, including comparisons between markets. We measure this gap as the difference between the resources needed and the resources already available for dependents to maintain their living standards following the death of a working family member. We find that

- The mortality protection gap in the 13 markets covered by our study has widened to USD 58 trillion in 2014 from USD 42 trillion in 2010[1].
- In absolute size, China has the biggest gap among the 13 Asia-Pacific markets. It also accounts for most (>80%) of the increase in the gap between 2010 and 2014.
- The rate of increase in the gap is slowing. In the 2000–2010 decade, the gap rose 10% per annum on average. Over the past three years (2011–2014), the average rate of increase was 6%.
- Measuring the gap as a ratio between "protection gap" and "protection needs" (ie, the unfunded part of financial needs), improvements were observed in most Asia-Pacific markets over the period between 2010 and 2014. Only South Korea and Thailand show deterioration.

The significant protection gap in the region is telling. It illustrates the real financial hardship that families could face in case of an unexpected adverse event such as early death of the family breadwinner. It also is a call to action for insurers to take on the formidable challenge of securing the right level of protection for their customers, as well as realise the immense business opportunities that exist. Based on simple assumptions, the present gap of USD 58 trillion could translate into new annual life premiums of USD 170 billion.

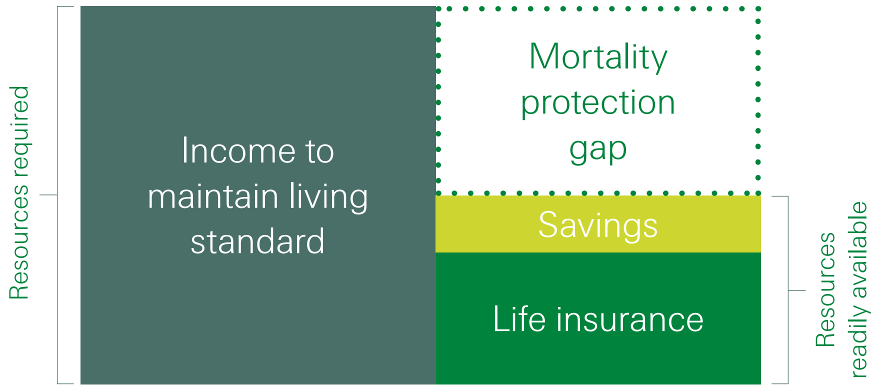
Consumer education is needed to inform them about the benefits of being protected, as well as helping them to understand existing product better. In addition, it is important to share successful experiences, for example in devising products that appeal to consumers and meet their requirements to close the gap. This report discusses several successful case studies where Swiss Re worked in partnership with regional clients to fill local needs, including the development of group risk insurance in Australia, the use of online channels to distribute term life insurance in India, and the sale of innovative cancer products in South Korea. While some of the products focus on health benefits, they illustrate the importance of innovation and taking a client and customer-centric approach to increasing insurance penetration.

[1] This update includes the Philippines, which was not covered in the 2011 estimates due to data issues.

About the protection gap estimates

The study compares the mortality protection gap across the region and the trend over time. This not only provides valuable insights into the stage of development of protection products in different markets, but also quantifies growth opportunities for life insurance across Asia.

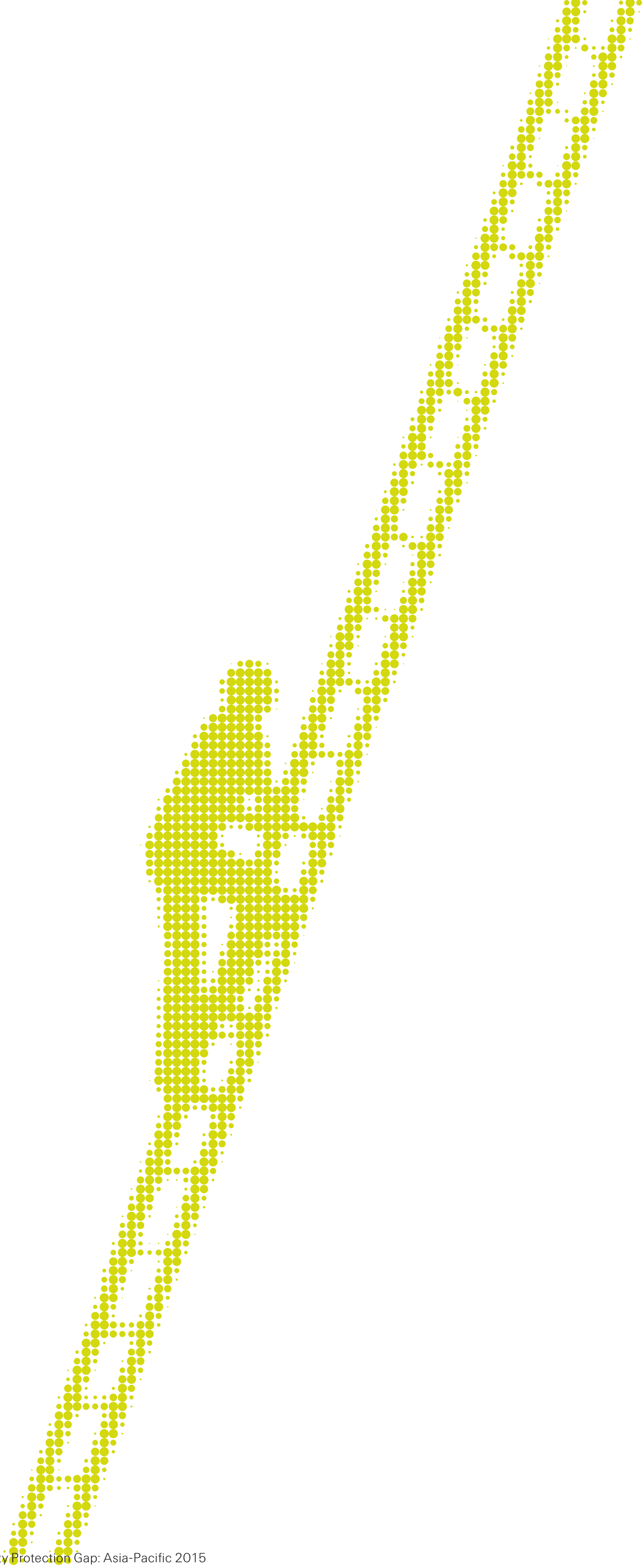
Our analysis specifically measures the mortality protection gap for the working population with dependents – the group that has the greatest need for financial protection. We apply the same methodology used in Swiss Re's previous protection gap studies.[2]



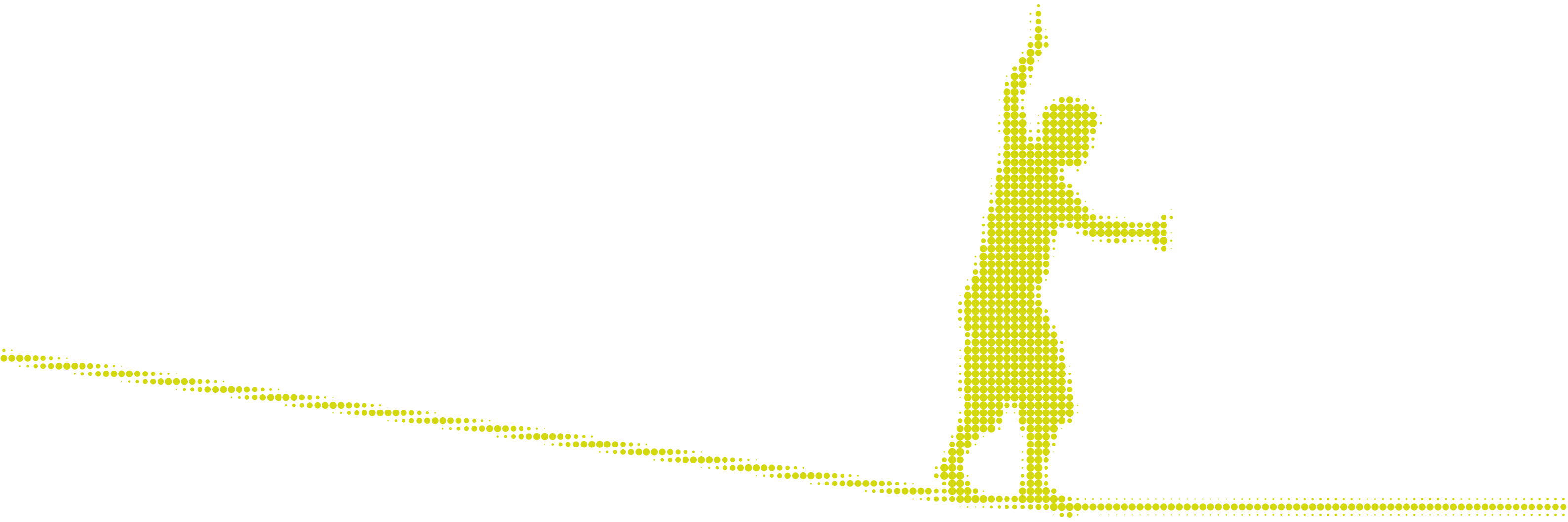
For ease of comparison, our methodology has been standardised across all the 13 markets studied, which means that our mortality protection gap figures may differ from other market-specific investigations. All figures are converted to US dollars using year-average exchange rates for ease of comparison.

Details of the methodology and information on data collection can be found in Appendix I.

[2] Protection gap studies were discussed in *sigma No. 4/2004: Mortality protection: the core of life, European Insurance Report 2010: Customers for life and Mortality Protection Gap: Asia-Pacific 2011.*



In absolute terms the gap has increased to USD 57.8 trillion in 2014 from USD 42.1 trillion in 2010.



Key findings

The mortality protection gap for most markets has widened. Collectively, the size of the gap reached USD57.8 trillion in 2014 from USD42.1 trillion in 2010. Population and wage growth are key drivers behind the increasing gap in many markets. At the same time, while insurance penetration has increased further, this has proven insufficient to rein in the trend of a widening gap.

China had the biggest gap in Asia-Pacific in 2014, amounting to USD 32.1 trillion compared with USD 18.6 trillion in 2010. This was followed by India, Japan and South Korea. India has become the second-largest gap country over the past few years because of higher growth in the labour force and wages.

Figure 1:
Mortality protection gap

USD bn	2000	2004	2007	2010	2014	CAGR* (2004 to 2014)
China	3,735	6,540	11,193	18,573	32,074	17%
India	2,071	3,067	4,998	7,027	8,555	11%
Japan	6,198	6,554	6,305	8,617	6,579	0%
South Korea	1,756	2,479	3,697	3,645	5,296	8%
Australia	542	784	952	1,078	1,087	3%
Indonesia	258	442	526	693	793	6%
Thailand	303	326	438	531	767	9%
Vietnam	97	137	230	363	629	17%
Hong Kong	391	421	430	439	538	2%
Malaysia	170	225	293	397	524	9%
Singapore	155	168	227	300	402	9%
Philippines	80	111	196	274	372	13%
Taiwan	105	234	198	186	177	-3%
Total	**15,861**	**21,487**	**29,686**	**42,123**	**57,794**	**10%**

* CAGR = compound annual growth rate.
Source: World Bank, UN Population Estimates and Projections Section, Swiss Re Economic Research & Consulting; actual figures up to 2013.

As shown in Figure 1, protection gaps for most Asian countries have widened since 2010. The total mortality protection gap of all markets more than doubled over the past ten years from USD 21.5 trillion in 2004 to USD 57.8 trillion in 2014, with an average annual growth rate of 10%. The rate has slowed more recently to 6% over the past three years. In the case of Taiwan, the gap has narrowed due to slower wage growth than savings and insurance protection growth. Japan also reported a stable gap mostly attributable to its shrinking population size.[3]

The substantial variation in mortality protection gap results across Asia-Pacific generally is attributable to differences in demographics and economic performance, as well as the relative success of insurers to sell mortality protection products. In advanced markets, rapidly ageing populations and relatively higher income levels result in larger protection needs. Emerging markets are more driven by general wage increases and a rise in the size of the working population. As such, it is also important to evaluate the protection gaps per working person, as presented in Figure 2. Gap values range from USD 12,951 (in Indonesia) to USD 402,589 (in South Korea) in 2014.

It can be seen that advanced markets[4] mostly have larger per capita protection gaps than emerging markets, reflecting higher income and smaller household size. The increasing protection gaps per capita further reinforce the significant potential demand for life insurance products.

[3] Changes in exchange rates are not expected to alter the US dollar mortality gap figures significantly. Some markets, for instance Indonesia, would see faster growth in the gap in local currency terms (a 9% CAGR in 2004-2014) than in US dollar terms (6%) due to currency depreciation.
[4] In our analysis, the advanced markets in the Asian region are Japan, Singapore, South Korea, Hong Kong, Taiwan and Australia.

Figure 2:
Mortality protection gap per working person with dependents

USD	2000	2004	2007	2010	2014	CAGR* (2004 to 2014)
South Korea	154,912	208,243	302,210	292,095	402,589	7%
Hong Kong	233,497	238,914	235,248	239,070	286,512	2%
Singapore	149,727	157,156	183,009	212,999	254,596	5%
Japan	183,428	196,710	188,421	258,217	201,606	0%
Australia	112,656	153,227	173,292	184,067	175,685	1%
China	10,314	17,376	29,146	47,981	80,937	17%
Malaysia	34,741	41,848	51,511	65,750	79,014	7%
Thailand	17,614	17,714	22,889	27,362	38,416	8%
India	10,225	13,573	21,450	30,135	35,181	10%
Taiwan	21,509	45,747	37,030	33,618	30,762	-4%
Vietnam	4,705	6,024	9,571	14,236	23,161	14%
Philippines	5,116	6,317	10,980	13,989	17,232	11%
Indonesia	5,281	8,466	9,605	12,103	12,951	4%

* CAGR = compound annual growth rate.
Source: World Bank, UN Population Estimates and Projections Section, Swiss Re Economic Research & Consulting; actual figures up to 2013.

A worthwhile measure to gauge the extent of insurance protection is the average sum insured currently in-force per working person with dependents (see Figure 3). The average sum insured has increased in each market over the last decade but varies tangibly from USD 402 (in Vietnam) to USD 303,401 (in Australia) in 2014.

Figure 3:
Sum insured per working person with dependents

USD	2000	2004	2007	2010	2014	CAGR* (2004 to 2014)
Australia	67,496	111,628	170,354	248,785	303,401	11%
Singapore	46,316	58,537	87,206	110,096	154,585	10%
Japan	139,684	125,711	103,983	128,264	104,968	-2%
Taiwan	108,839	77,549	89,136	94,671	97,409	2%
Hong Kong	48,422	53,756	58,567	67,080	92,821	6%
South Korea	19,727	29,551	44,395	37,475	49,958	5%
Malaysia	6,735	8,910	11,074	13,389	16,244	6%
Thailand	1,018	1,257	2,165	3,787	5,843	17%
India	238	448	1,456	2,080	2,101	17%
China	109	338	491	1,237	1,570	17%
Philippines	1,007	635	676	843	1,310	8%
Indonesia	204	322	643	1,078	1,198	14%
Vietnam	49	237	268	297	402	5%

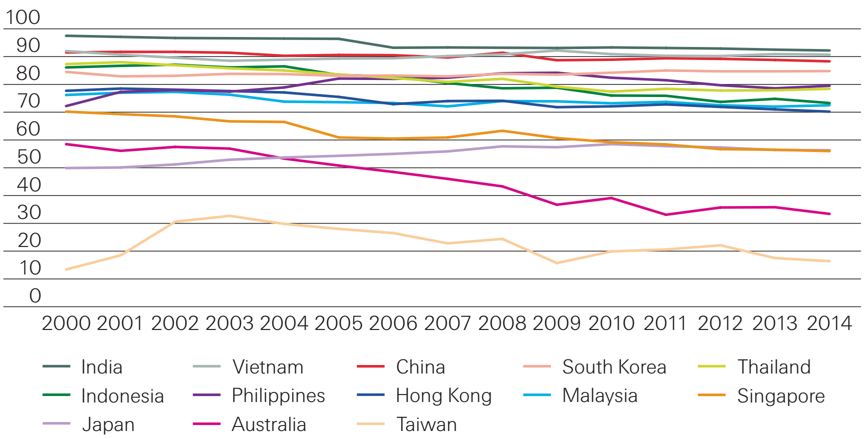
* CAGR = compound annual growth rate.
Source: World Bank, UN Population Estimates and Projections Section, Swiss Re Economic Research & Consulting; actual figures up to 2013.

In Figure 4, we present the "protection margin" which is measured as the ratio between protection gap and protection needs. While figures presented so far measure the protection situation in absolute terms, each line in Figure 4 indicates the proportion of protection needed that is not covered by existing insurance or savings. Taking India as an example, the ratio of 92.2% in 2014 reveals that for every USD 100 needed for protection, only USD 7.8 of savings and insurance is in place, leaving a massive protection gap of USD 92.2.

The graph highlights the lack of protection in Asia, particularly in emerging markets, despite improvement since our last study in 2011. In major emerging markets (eg India and China), the growth of insurance coverage has been faster than economic and demographic growth, thus resulting in a narrowing of the protection margin between 2010 and 2014. However, the "protection margin" remains uncomfortably high for most markets in the region.

The large protection gap also emphasises the significant business opportunities for insurers in the region. Based on simple assumptions, the present gap of USD 57.8 trillion could translate into new annual life premiums of USD 170 billion.[5]

Figure 4:
Ratio of protection lacking/ protection needed



Source: World Bank, UN Population Estimates and Projections Section, Swiss Re Economic Research & Consulting; actual figures up to 2013.

[5] This assumes a rate of 0.003 per dollar.

Table 1:
Protection gap analysis by market, 2014

	Total mortality protection gap (USD, bn)	Protection margin (%)	Protection gap per working person with dependent (USD)	Sum insured per working person with dependent (USD)	Remarks
China	32,074	88.3%	80,937	1,570	Although the protection margin has been declining, indicating improving conditions, in absolute terms the gap has expanded nearly fivefold over the past decade. Given the large size and high ratio of unprotected needs, life insurance has considerable potential.
India	8,555	92.2%	35,181	2,101	India has the highest protection margin in the region as growth in savings and life insurance coverage has lagged behind economic and wage growth.
Japan	6,579	56.3%	201,606	104,968	Unlike other markets in Asia, Japan's population has been shrinking since 2010, though at a very slow pace. Timid wage growth also has helped to stabilise the protection margin over the past few years.
South Korea	5,296	84.8%	402,589	49,958	South Korea has the highest per capita protection gap in Asia, as well the highest protection margin among advanced Asian markets. This in part reflects the country's relatively low insurance protection per worker.
Australia	1,087	33.4%	175,685	303,401	Australia features one of the most mature insurance markets in the region with a high level of individual and group life protection. Concerted efforts by the insurance industry to educate consumers and robust sales of term products have helped narrow the gap.
Indonesia	793	73.3%	12,951	1,198	The protection margin has narrowed by more than 10 percentage points in the past decade, though in absolute terms the gap has almost doubled. Life insurance coverage and savings have outgrown the economy, whereas the total sum insured per working person increased over fourfold between 2004 and 2014.
Thailand	767	78.4%	38,416	5,843	Thailand has a fairly mature insurance market among Asian emerging markets, with per capita sum insured of USD 5,843 in 2014. However, the larger proportion of working-age population compared with similar sized economies has contributed to the protection gap.
Vietnam	629	90.7%	23,161	402	Savings and insurance account for only around 10% of protection needs in Vietnam. This in part reflects the relatively sluggish growth of the insurance sector between 2005 and 2009. Vietnam has the second-highest protection margin in Asia after India.
Hong Kong	538	70.2%	286,512	92,821	Despite fast insurance growth and a relatively high level of average sum insured, Hong Kong still features the second-highest protection margin among advanced markets in the region. This reflects in part the high wage level in the territory.
Malaysia	524	72.5%	79,014	16,244	The average sum insured in Malaysia is relatively high, at USD 16,244 per working person in 2014, nearly three times higher than in Thailand. The economy has not fully recovered from the crisis thus impacting on savings, which has grown very slowly since 2008.
Singapore	402	56.0%	254,596	154,585	Singapore has managed to reduce the protection margin by more than 10 percentage points over the past decade. This reflects a high national savings rate, as well as robust insurance sales including protection products.
Philippines	372	79.5%	17,232	1,310	The protection gap both in absolute terms and in per capita amounts has seen strong growth, while per capita sum insured has remained relatively slow. Around 80% of the protection needs in this market remain unmet.
Taiwan	177	16.4%	30,762	97,409	The size of the protection gap as well as per capita insured has shrunk between 2004 and 2014, in stark contrast with the pattern observed in many other regional markets. The improvement is likely due to more timid wage increases, as average sum insured per worker has risen only by 3% per annum over the past decade, one of the slowest in the region.

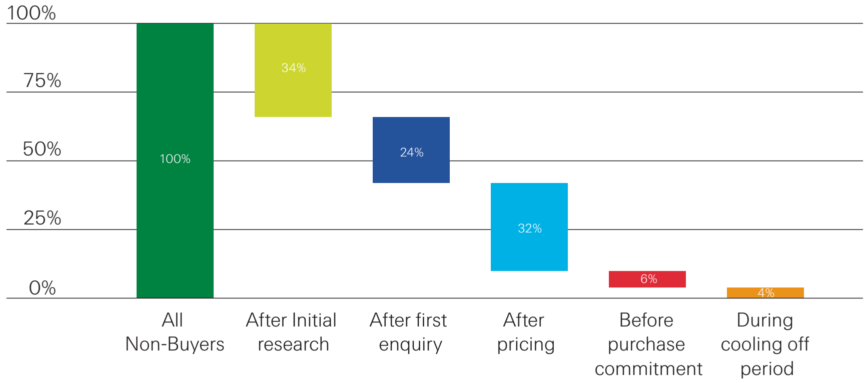
Source: Swiss Re Economic Research & Consulting

Closing the Gap

There are various reasons for not being fully insured, such as access to extensive social security benefits and public health insurance. However, in many Asian emerging markets, social security is not yet at a sufficiently advanced stage to fully protect families from unexpected loss. A perceived lack of affordability, low insurance and risk awareness, regulatory and social barriers, as well as limits to insurability are other key factors inhibiting the purchase of insurance.[6]

While affordability is often highlighted as a major barrier to insurance purchase, some of Swiss Re's recent research reveals that price is not the most important driver of consumers' buying decision. A recent regional survey[7] gauging consumers' preference for life and health insurance products and distribution channels showed that most prospective buyers choosing to drop out did so before receiving quotations. More than half dropped out after conducting initial research or making their first enquiry. Only a third dropped out after receiving specific pricing and product details.

Figure 5:
Stages at which non-buyers drop out of insurance purchase

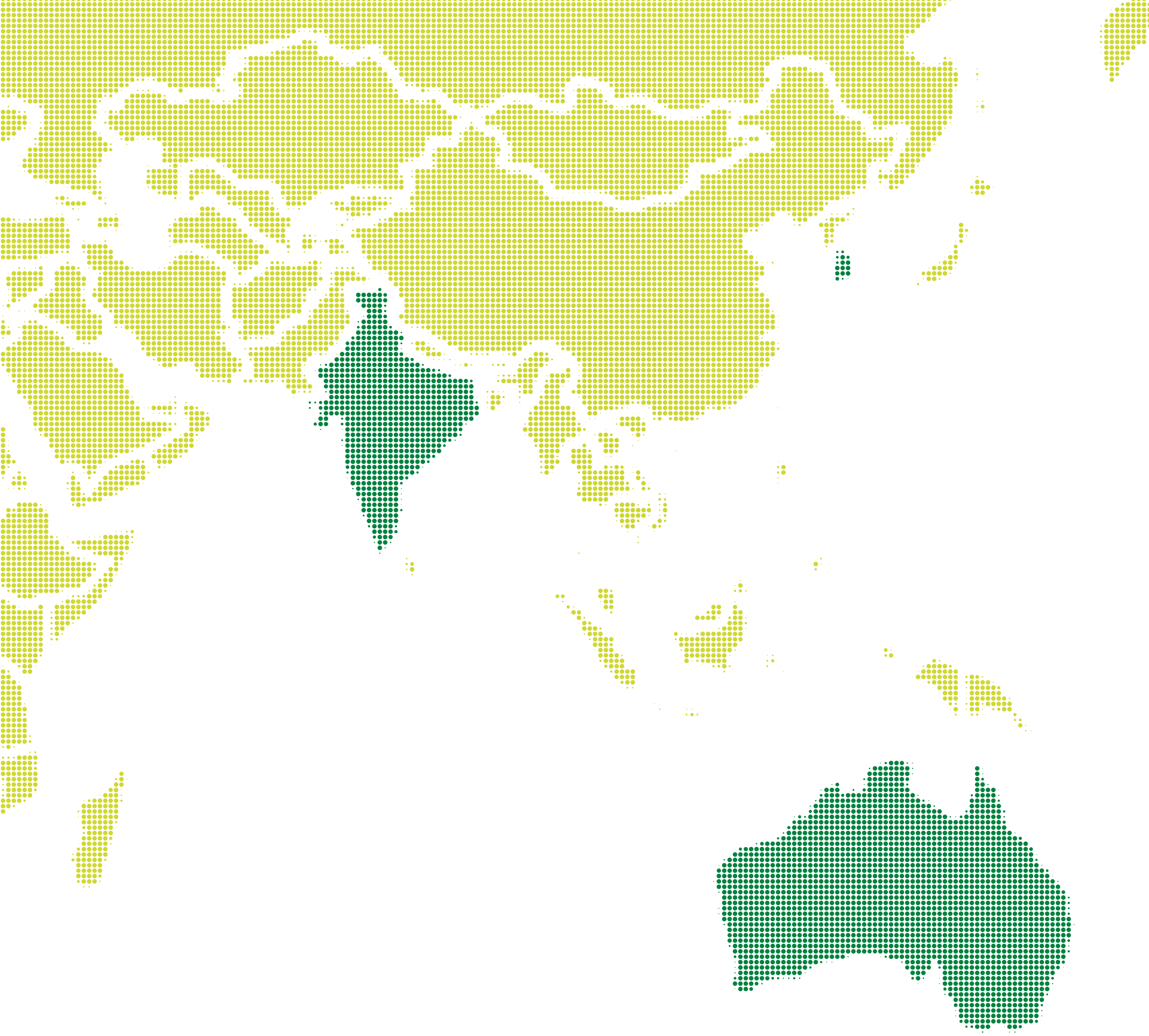


Source: Swiss Re – LIMRA: Spotlight on Distribution in Asia.

Understanding the drivers behind consumer choice helps insurers devise appropriate strategies and take action to close the gap. The Geneva Association offers the following list of actions for insurers to consider[8]

- Promote financial literacy and risk awareness
- Promote micro insurance
- Build public-private partnerships (PPPs)
- Develop new products
- Enhance product clarity and transparency
- Help business assess and anticipate exposures
- Create a conducive regulatory, legal and tax environment
- Establish effective compulsory schemes
- Collective data gathering and sharing

[6] For more details on the reasons for underinsurance, please refer to chapter 4, "Root causes of underinsurance", in *The Global Insurance Protection Gap, Assessment and Recommendations, Geneva Association*, November 2014.
[7] Swiss Re – *LIMRA: Spotlight on Distribution in Asia, 2015*
[8] Ibid. The Geneva Association focuses on both life and health as well as property and casualty protection gaps, thus some of the recommendations will be more relevant to property protection gaps.



Swiss Re actively works with key stakeholders to innovate products and distribution channels to help close the protection gap in Asia-Pacific. Specific examples of successful collaboration include

1. Group risk market in Australia
2. Online term insurance in India
3. Cancer products in South Korea

While some of the following case studies focus more on health than mortality protection, we include them to illustrate the value of innovation and the need to build strong partnerships with stakeholders to help close the gap.

Group risk market in Australia

In Australia, group risk plays an important role in protecting customers. These schemes offer coverage such as pure life, total and permanent disability (TPD), trauma (critical illness) and disability income. In recent years, industry superannuation schemes have started competing aggressively for new members, with risk benefits featured as a key value differentiator. Scheme trustees have leveraged their vast buying power when negotiating group risk benefit terms with insurance providers. As a consequence, scheme members have been able to benefit from improved term coverage.

However, intense market competition has led to aggressive pricing and low margins for primary insurers. At the same time, the scale of the industry superannuation group risk means that direct insurers require risk quota share reinsurance to manage the volatility of premium flows. In 2013, deteriorating TPD claims experience resulted in substantial losses for both direct insurers and reinsurers.

The fast development of group risk insurance has helped underpin an improving protection margin in Australia. For this reason, it is important that life reinsurers work together with the industry to create a sustainable market for group risk, with sufficient capacity in the long term. This will help to keep the group risk market sustainable while at the same time ensuring benefits and returns flows to the appropriate stakeholders.

Swiss Re has developed a New Business Framework, which sets out five key principles for writing group risk business in the future:

- Alignment of interests: Reinsurer's and insurer's goals should be aligned through close risk share.
- Appropriate risk controls: There should be limited cover provisions for late entrants into the scheme and reduced cover for riskier groups in the policy.
- Claims definitions: Definitions need to be tightened up so that benefits are true to label, eg to provide benefits on total and permanent disablement.
- Operational model and data: The operational model should be simplified. Timely and quality data should be readily available as it is critical to the pricing and managing of ongoing risk.
- Benefit design: The industry should facilitate early claims notification and enable quicker decisions. For example, disability benefits should be redesigned, with a shift of reliance away from lump sum payments.

The group industry will benefit from a more sustainable operating environment by having a structure in place ahead of the next market downturn. More importantly, members of superannuation funds will be able to enjoy continuous and sustainable coverage at reasonable prices. This should facilitate continued improvements in the levels of coverage in Australia including the reduction in the mortality protection gap.

Online term product in India

India has a large mortality protection gap. Despite recent rapid growth of insurance penetration, savings and insurance still meet less than 10% of the population's protection needs. Pure protection insurance and term products have sometimes been perceived as presenting poor value, and remain less popular with consumers. Furthermore, the inability to reach a wider range of customers is hampering efforts to close the gap.

The digital revolution - with the proliferation of the Internet, smartphones, tablets, wearable technology and social media - has affected the value proposition of existing goods and services. Tapping into the digital space for insurance product distribution, therefore represents both a challenge and an opportunity.

In India as well as in many other emerging markets, one of the challenges of marketing to digital consumers is the need for multiple iterative testing and the ability to scale up rapidly. Recognising that the online insurance sales model is more than a static one-way process for consumers to complete an online application form, Swiss Re has focused on helping our Indian clients design a digital process that fits within their existing operational models and offers consumers an optimal, engaging experience.

To enable this, we implemented tested behavioural economics concepts to steer more "clicks" and ultimately higher product take up, as well as more reliable, honest disclosures. We also helped our Indian clients apply gamification and web optimisation techniques such as clear "Calls to Action" and meaningful graphics to attract and retain the attention of web surfers.

By identifying and enhancing the customer journey, our clients are presenting their insurance solutions in a more interactive and enjoyable purchasing environment. This helps capture the attention of consumers and allows protection products to be presented in a manner that meets consumer needs.

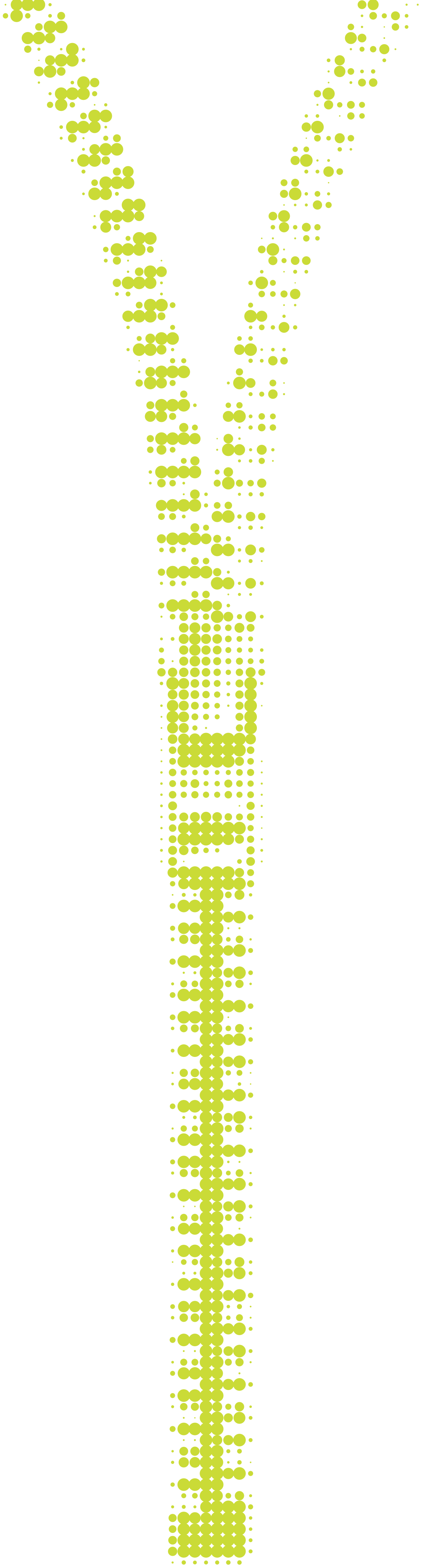
Senior cancer product in South Korea

Korea has one of the fastest-growing ageing populations in the world, and a mature insurance market. The average sum insured per working person, however, is relatively low and the mortality protection margin has remained stubbornly high at more than 80% during the past decade. Concerns over mortality as well as health protection have increased in recent years against the backdrop of tightening public finances and population ageing. At the same time, due to public health screening campaigns, awareness of cancer risks has heightened, and this has translated into stronger demand for cancer insurance products. Despite this, before 2012 Koreans over the age of 60 generally were unable to purchase cancer coverage.

Swiss Re's mission was to create a completely customised solution for Korean customers aged 60-80. In collaboration with a life insurance partner that owns a strong distribution network catering to this customer segment (ie telemarketing), we developed a cancer product that is affordable, easy to understand and simple to purchase. It offers lump sum benefits payable on the diagnosis of cancers most relevant to elderly customers in South Korea.

We used our knowledge and understanding of the dynamics of morbidity in older ages in a demographically similar market to design and develop a product that worked for South Korea. This helped fill a gap in one market using our knowledge from another market where we had data and expertise. The cancer product is tailored for the client's main distribution channel, which is heavy on telemarketing and home shopping. This distribution method fits well with the purchasing expectations of elderly customers in South Korea.

For a relatively small monthly payment, consumers can buy a lump sum benefit which will give them the financial support they are likely to need, when they need it most. South Korea's relatively generous national health insurance system provides cover for serious illnesses, but having this policy expands the protection and the lump sum payment helps cover other unanticipated costs. For a small payment, customers buy peace of mind.



Conclusion

The mortality protection gap in the Asia-Pacific region has widened to USD 58 trillion in 2014, equivalent to 255% of the region's GDP. Improved efforts over the past few years by various stakeholders have helped rein in the rapid pace of increase in the gap. However, the extent of under-insurance remains striking in many Asian, particularly emerging markets. For instance, households in India and Vietnam have less than 10% of the financial resources required to sustain their daily life in case of unexpected loss.

The prognosis for the coming years is less than sanguine. With government finances increasingly under pressure, it is doubtful that regional governments will be able to increase spending on social security. Indeed, there are growing signs of governments passing the responsibility to individuals and corporations. The expectation of a prolonged period of low interest rates also challenges the ability of households to accumulate savings to meet contingency needs.

Business as usual is no longer an option for the Asian insurance industry. Now is the time for insurers to take action to ensure their long-term societal relevance and reinforce their value to customers. Admirable progress has been made over the past few years, as evidenced in the stabilisation of the pace of protection gap widening in many regional markets, but this is not enough. Building on its successes, the insurance industry will need to sharpen its focus on meeting consumers' protection needs, and term life insurance is a very cost effective alternative to precautionary savings as a means of protection.

Consumer behaviours and perceptions are as important as product and distribution strategies. Various studies have shown that consumers overestimate the cost of buying adequate life protection for themselves and their families. Even under conditions of sufficient awareness and attractive prices, consumers may decline the opportunity to buy. In the US for example, awareness has risen while the real cost of term life insurance has mostly fallen, yet coverage levels have continued to decline over the past two decades. As concluded in a Swiss Re report, "... 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."[9]

While closing the gap will require close cooperation among all stakeholders, the large protection gap in this region also represents one of the biggest business opportunities for the insurance industry. A deep understanding of the local market landscape, socioeconomic trends, regulations and consumer preferences will be needed to succeed. Clearly the opportunities are there – it is now up to the life insurance sector to take advantage of them.

[9] *The mortality protection gap in the US,* Swiss Re, 2012, http://media.swissre.com/documents/Exp_Pub_mortality_protection_gap_US.pdf

Appendix I: Methodology

Data has been collected from various public sources, such as national insurance associations and the World Bank. Missing data points have been estimated by Swiss Re Economic Research and Consulting.

As noted previously, this study uses a simple definition of mortality protection gap: Only the gap for the working population with dependents is considered. This gap is measured as the difference between the income needed to maintain living standards for a person's dependents and the sum of savings and life insurance in force available to them after the breadwinner's death.

Key assumptions are as follows:

(i) **Population distribution:** We assume that 50% of the working population has dependents. "Income to maintain living standards" is measured by multiplying the average annual salary by 10, which is in line with similar studies conducted by Swiss Re.

(ii) **Savings:** Household financial assets, excluding life insurance, are taken for each market. In case of missing data, we apply the proportion of savings, excluding life insurance, to the GDP of a comparable market. We assume that the savings of each market are equally distributed across the working-age population. It is also assumed that only half of the savings are for protection purposes.

(iii) **Life in force:** The in force sum insured is generally available for most markets. In Australia, where such data was unavailable in the early years, we take a proportion of the sum insured and risk premium in 2008 and 2009 and apply the ratio to other years. Similar to the approach we use for savings, we assume that protection in force is equally distributed across the working-age population, and we apportion accordingly.

Appendix II: Mortality protection gap model results

(i) Mortality protection gap

(in USD bn)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
China	6,540	7,629	9,038	11,193	14,644	16,194	18,573	22,620	26,034	29,267	32,074
India	3,067	3,612	3,950	4,998	5,379	5,551	7,027	7,820	7,694	7,951	8,555
Japan	6,554	6,520	6,262	6,305	7,358	7,789	8,617	9,028	8,832	7,137	6,579
South Korea	2,479	2,945	3,370	3,697	3,314	2,944	3,645	4,399	4,507	4,844	5,296
Australia	784	843	850	952	952	805	1,078	1,089	1,237	1,204	1,087
Indonesia	442	401	492	526	527	567	693	811	807	867	793
Thailand	326	348	386	438	512	473	531	604	663	729	767
Vietnam	137	158	182	230	290	357	363	388	470	573	629
Hong Kong	421	417	385	430	440	415	439	481	499	514	538
Malaysia	225	240	263	293	332	337	397	455	475	495	524
Singapore	168	169	192	227	282	265	300	351	364	385	402
Philippines	111	131	158	196	242	243	274	301	325	342	372
Taiwan	234	234	224	198	224	131	186	214	231	185	177
	21,487	**23,647**	**25,751**	**29,686**	**34,498**	**36,070**	**42,123**	**48,561**	**52,139**	**54,492**	**57,794**

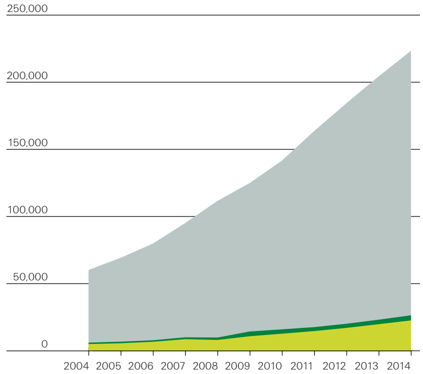
(ii) Mortality protection gap per working person with dependents

(in USD)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
South Korea	208,243	245,920	278,676	302,210	269,151	239,013	292,095	346,624	349,849	371,547	402,589
Hong Kong	238,914	234,202	213,482	235,248	239,219	224,465	239,070	260,540	267,452	274,857	286,512
Singapore	157,156	151,144	162,438	183,009	213,462	193,792	212,999	241,621	241,177	250,362	254,596
Japan	196,710	195,702	187,902	188,421	220,225	234,084	258,217	275,375	270,585	217,769	201,606
Australia	153,227	159,656	157,291	173,292	168,726	139,655	184,067	183,218	205,593	197,345	175,685
China	17,376	20,114	23,669	29,146	37,988	41,863	47,981	57,820	66,107	73,785	80,937
Malaysia	41,848	43,787	47,002	51,511	57,272	56,931	65,750	73,448	74,707	75,927	79,014
Thailand	17,714	18,626	20,609	22,889	26,547	24,462	27,362	30,884	33,638	36,771	38,416
India	13,573	15,552	16,973	21,450	23,076	23,778	30,135	33,290	32,595	33,045	35,181
Taiwan	45,747	45,168	42,630	37,030	41,338	24,076	33,618	38,222	40,823	32,295	30,762
Vietnam	6,024	6,817	7,705	9,571	11,811	14,241	14,236	14,928	17,786	21,328	23,161
Philippines	6,317	7,497	8,967	10,980	13,143	12,834	13,989	14,919	15,747	16,170	17,232
Indonesia	8,466	7,539	9,116	9,605	9,499	10,042	12,103	13,944	13,633	14,410	12,951

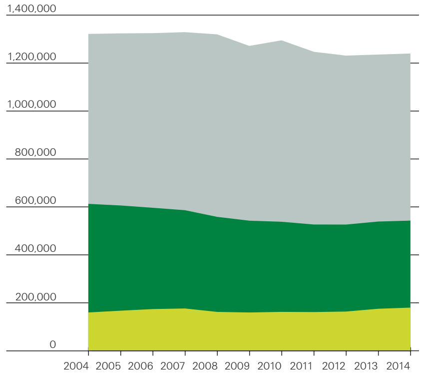
(iii) Mortality protection gap per market

- Protection gap
- Relevant life inforce
- Relevant savings

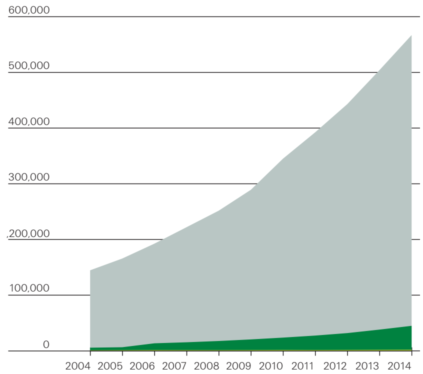
China (CYN bn)



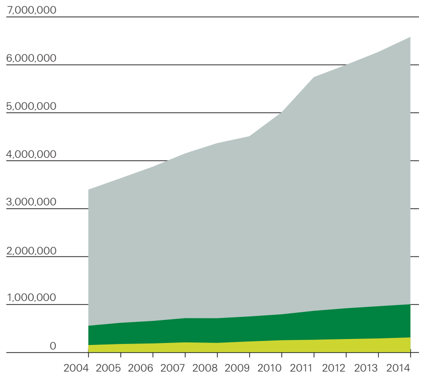
Japan (JPY bn)



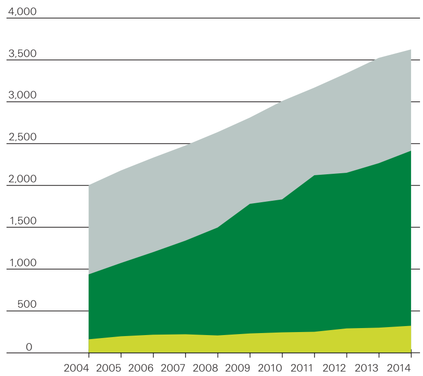
India (INR bn)



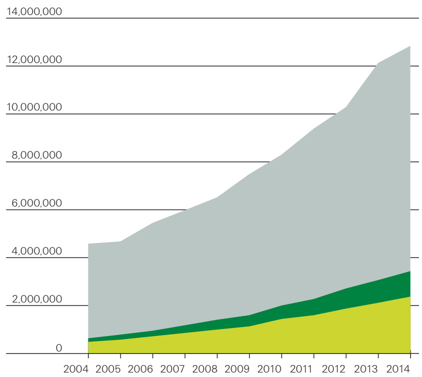
South Korea (KRW bn)



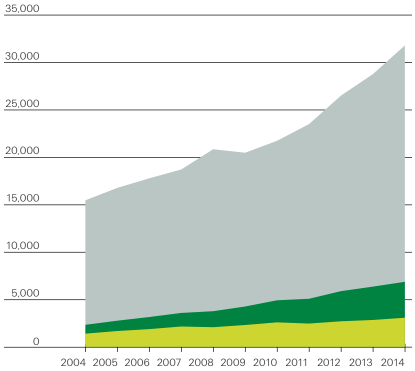
Australia (AUD bn)



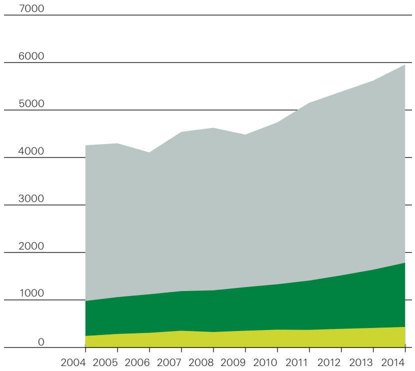
Indonesia (IDR bn)



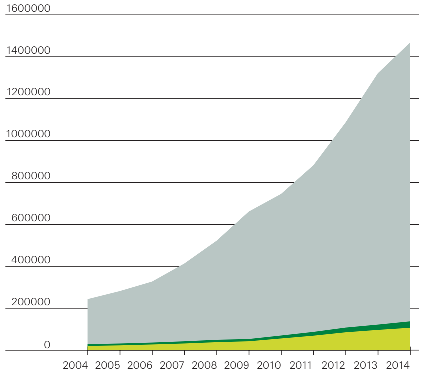
Thailand (THB bn)



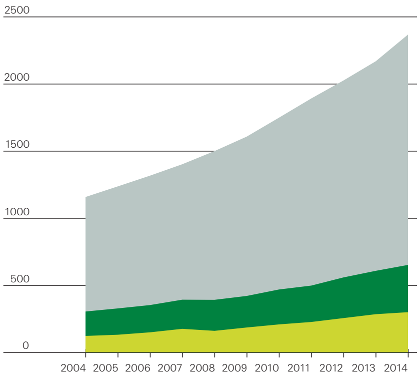
Hong Kong (HKD bn)



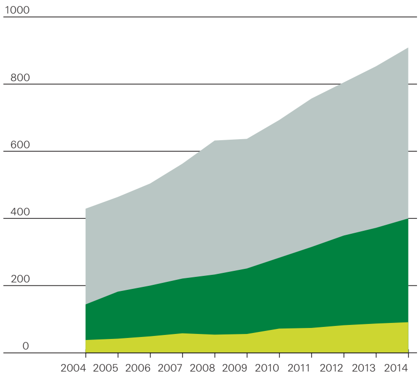
Vietnam (VND bn)



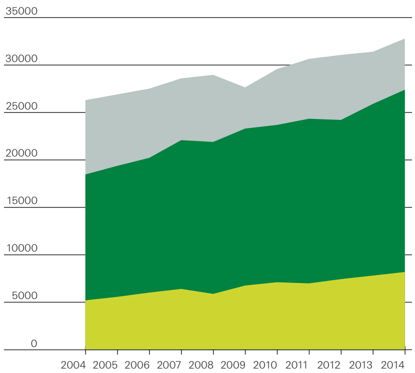
Malaysia (MYR bn)



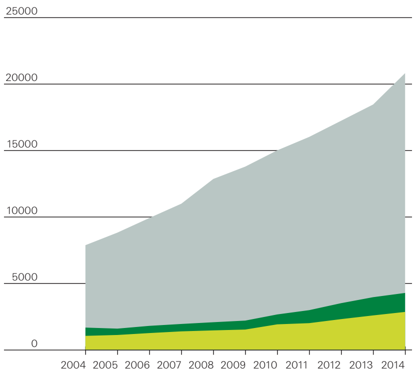
Singapore (SGD bn)



Taiwan (TWD bn)



Philippines (PHP bn)



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