



# Harnessing Technology to Narrow the Insurance Protection Gap

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# Harnessing Technology to Narrow the Insurance Protection Gap

by Kai-Uwe Schanz and Fabian Sommerrock

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# Foreword



**Anna Maria D'Hulster**

*Secretary General*

The global insurance protection gap is one of the most pressing issues facing our society. It leads to a severe lack of societal resilience in many developing and emerging countries, where insurance today hardly plays any role when it comes to mitigating the impacts of natural disasters or pandemics, to name just two of the major societal risks. More often than not, all economic losses remain basically uninsured. This situation, however, is not limited to emerging markets. A recent example is the devastating earthquake that hit central Italy on 24 August 2016 where about 90% of total losses were uninsured. Therefore, (re)insurers need to further strengthen their contribution to society's resilience to disasters as well as to creeping developments such as ageing or longevity. More broadly, insurance has a fundamental role to play in facilitating and protecting the economic emancipation of people from poverty across the globe by offering a safety net against external shocks such as sickness and accident.

With this in mind, this publication focuses on how digital technology can be a lever for the insurance industry to narrow protection gaps in both mature but also especially in developing insurance markets by enhancing the awareness, affordability and attractiveness of insurance products and solutions. This report also offers an in-depth review of key concepts of insurance economics, practitioner approaches and specific case studies. Its findings were complemented and validated through 23 executive and expert interviews.

The use of technology is one of the most relevant and topical dimensions of the global protection gap debate. With this report, we want to highlight, gauge and quantify win-win situations for insurers, policyholders and societies at large. On this basis, we hope to sensitise the global (re)insurance community, governments, lawmakers, regulators, standard-setters, development banks, supranational organisations and consumers to the enormous leverage technology can deploy to make societies more resilient through risk mitigation, and protection products and solutions.

This publication would not have been possible without substantial inputs from The Geneva Association Members' companies, other insurers and reinsurers, technology and insurtech firms, consultants, the investment community and academia. We are very grateful for their support and contributions.





# Management Summary

The potential of digital technologies to narrow insurance protection gaps is not only a result of rapid advances in connectivity, mobility, cloud computing, 'big data' analytics and social networking. It also reflects long-standing shortcomings of traditional business models and inherent inefficiencies of the insurance market which digitisation is bound to mitigate. This potential is most pronounced in personal lines such as motor, health and homeowners insurance.

## Paving the way for higher insurance penetration by tackling long-standing market inefficiencies

In the digital age, traditional information asymmetries in insurance are likely to disappear, with both insurers and policyholders benefiting from much improved information at much lower cost. The exponentially growing amount of digitally sourced personal data enables both policyholders and their insurers to more clearly discern 'good' and 'poor' risks.

## Mitigating adverse selection and moral hazard

Economic theory suggests that big data could make it less probable that 'good risks' withdraw from insurance markets in order to avoid the subsidisation of 'poor risks'. The scope for the latter, usually a function of information asymmetries, will diminish significantly as transparency and risk-based pricing make quantum leaps. As a result, the availability of insurance could improve, as compared with a situation under adverse selection where primarily high-risk individuals would seek insurance. Ultimately, the traditional role of insurance in risk pooling and mutualisation is strengthened.

Big data can also mitigate moral hazard for those risks that can be controlled by the policyholder and, as such, improve economic efficiency. It becomes much less likely that an insured will be more careless and take greater risks, i.e. behave against the interest of other insureds simply because he is protected. Big data enabled pricing based on risk sends a strong signal to insureds about their riskiness and is likely to encourage insureds to change

their behaviour. However, public- and private-sector decision-makers need to address a major challenge arising from big data: the emergence of a pool of 'uninsurable' people due to factors that people cannot control, e.g. genetic conditions.

Another intriguing notion is that big data might be harnessed to kick-start new types of insurance that are currently not feasible due to informational constraints and create new markets for risks that are currently underinsured or uninsured. Individualised insurance against certain risks will continue to be unfeasible or prohibitively expensive because of moral hazard. However, viable insurance solutions could be designed on an aggregate level by eliminating moral hazard. For example, insurance would be offered only against drops in an aggregate (e.g. a price index), which is beyond the control of any individual.

## Cutting transaction costs

In addition to tackling adverse selection and moral hazard, the digital transformation of the insurance industry could enable a dramatic reduction in its high transaction costs, including claims settlement, acquisition and administration. These cost items absorb about one-third of the insured's premium payments and are perceived as a major inefficiency in insurance which deters many potential buyers from seeking insurance cover. Technology-based disintermediation and gains in operating efficiency can contribute significantly to surmounting this obstacle of high transaction costs and pave the way for a wider adoption of insurance, especially in retail lines of business. As the economics of self-retention change, there will be fewer incentives to carry risks on individual, household or corporate balance sheets.

## Towards the virtual value chain

The impact of digitisation across the value chain is pervasive, permeating the areas of pre-purchase, sales and operations. Firstly, it reshapes the way customers discover and perceive insurance propositions pre-purchase. Secondly, sales are enhanced by dropping costs as a result of disintermediation and of increased conversion of leads on the back of tailored solutions and 'digitally enhanced'

physical distributions channels, which will continue to play a major role as long as the majority of (retail) customers prefer 'hybrid' models of distribution. Thirdly, the adoption of straight-through-processing can lead to a massive reduction in back-office costs; coupled with big data and predictive analytics, it can also translate into significant improvements of the claims ratio.

In summary, the radical changes to the insurance value chain brought about by digitisation are expected to boost insurance demand via all three major levers, i.e. affordability, awareness and appeal.

## **Boosting the affordability, awareness and appeal of insurance**

Affordability improves as the 'production cost' of insurance decreases significantly. Digitisation enables major cost savings in all key cost areas: claims and claims settlement, acquisition and administration. As a result, individuals and households but also corporations will revisit their approach to self-retention and are likely to transfer more risk to professional carriers. Of course, the digitisation of existing value chains requires massive investments over a multi-year period. Therefore, it will take time before cost savings and improvements in affordability materialise.

Social media and mobile tools of communication enable massive improvements in public awareness of insurance and its cost and benefit characteristics, as well as main product configurations. In combination with better affordability, increased levels of awareness are expected

to be a powerful catalyst for higher insurance penetration, in emerging and developing markets in particular. Having said this, access to digital media in low-income countries remains a serious potential obstacle, especially affecting women and elderly persons. Public and private-sector decision-makers need to monitor this issue closely and take remedial action where required.

Finally, digitisation comes with enormous strides in customer experience. Hassle-free and more regular communication, combined with a more favourably perceived cost-benefit ratio of more tailored and individualised insurance products can significantly enhance the appeal of insurance which, in mature markets also, should help address the protection gap.

## **The all-important regulatory response**

Regulators, largely inexperienced in the digital space, are faced with a daunting challenge: how can one promote the development of financial technology and enhance traditional, or enable new, business models in the sector without conjuring up the prospect of failures and a loss of public confidence? How can a balance be struck between innovation and safety? More specifically, regulators need to reconcile data protection and usage; they must define insurers' scope for price differentiation in the age of big data and decide on the treatment of non-insurers engaging in insurance sales. The establishment of 'regulatory sandboxes' can go a long way for both regulators and regulated entities in building experience in this uncharted territory.

# Introduction

In developing and emerging markets in particular, technology offers the potential to increase insurance penetration by addressing obstacles in the areas of distribution and claims settlement which, for example, hinder the wider uptake of microinsurance.

In mature insurance markets, on the other hand, perceived product complexity and opacity at the customer end impede an expansion of the reach of insurance products. Technological advancements could effectively address this issue, for example, by enabling customers to put together products the way they really want to. Based on big data, insurers could predict what customers need, instead of asking them to answer a multitude of underwriting questions. In addition, new technologies and improved analytics can dramatically lower the cost of policy administration, marketing, distribution and claims settlement and, at the same time, improve risk selection and underwriting.

This report elaborates on how to capture this potential, harnessing technology for the purpose of narrowing global protection gaps. We cover private-sector solutions only and do not examine government-sponsored schemes which, in many ways, could complement private-sector solutions by serving segments of the population with a lower capacity to pay for premiums. The report is structured as follows: first, we will shed some light on the current size, nature and root causes of protection gaps in property and health insurance. We will also present some market data illustrating the scope for technology-driven efficiency gains.

Second, we will discuss new technologies from the angle of the traditional business model of insurance. The focus will be on the virtualisation of the insurance value chain and the resultant scope for more cost-efficient, attractive and relevant insurance products, as well as much improved levels of customer centricity. We will look at product design and development and ways of addressing perceived product complexity and opacity. The marketing function will be reviewed from a client interaction point of view and the potential for broadening and deepening the same. The underwriting part of the value chain will be discussed from a data and analytics angle. The potential for cutting transaction costs will guide the discussion of distribution and policy administration in insurance. Last but not least, the claims management function will be analysed with particular emphasis on expediting settlements and more

effective ways of fighting fraud. In order to substantiate our reasoning, we will review some core concepts of insurance economics such as transaction costs and asymmetric information, and their potential to help us gauge the expected impact of digitisation on the business of insurance as well as current and future protection gaps.

Third, we will explore regulatory responses to the rise of digital insurance, discussing key trade-offs such as safety versus innovation and data privacy versus data usage for the sake of improved risk selection and customer service.

Fourth, we will present and analyse some case studies in order to illustrate and exemplify the potential of digital technology, focusing on emerging markets and their susceptibility to technological change given the absence of legacy distribution channels and ingrained insurance habits.

We will conclude by deriving some recommendations to the stakeholders in the technology-related protection gap debate.

# The Protection Gap: Size, Nature and Root Causes

## Long-standing market inefficiencies exposed by digital technology

It is obvious that the potential of digital technologies to narrow protection gaps is a result of rapid advances in connectivity, mobility, cloud computing, big data analytics and social networking. At the same time, and this requires some closer inspection, the digital potential is also a reflection of long-standing shortcomings of traditional business models in insurance.

One example is the high level of transaction costs, including claims settlement, acquisition and administration. As we will show later in this section, these cost items absorb about one-third of the insured's premium payments. This state of affairs is perceived as an inefficiency in insurance markets and deters many potential buyers from seeking insurance cover. Technology-based disintermediation and gains in operating efficiency can contribute significantly to increasing the affordability, paving the way for a wider adoption of insurance.

Against this backdrop, the following section goes one step back by first of all defining and quantifying protection gaps. We will focus on retail insurance, which is arguably most prone to disintermediation and efficiency gains due to digitisation. The huge potential for digital innovation will be illustrated by data from the world's largest mature and emerging insurance markets, the U.S. and China, respectively.

## Approaching the term 'protection gap'

In property insurance, the protection gap is generally defined as the uninsured portion of losses resulting from an event, i.e. the difference between total economic and insured losses.<sup>1</sup> Having said this, full risk transfer is not desirable from an economic point of view. Households, firms and government agencies sometimes prefer to retain some risks according to their risk bearing capability. This preference also leads to a better alignment of interests between insurers and insureds, as it favours risk prevention

and mitigation. Buying the maximum coverage available may simply not be cost-effective. Therefore, protection gaps should be rather viewed as the difference between the amount of insurance that is economically beneficial and the amount actually purchased.<sup>2</sup>

## The global property protection gap has almost tripled over the past four decades

Figure 1 shows the 10-year average of global insured and uninsured natural catastrophe losses as a percentage of world GDP over the last four decades. Total economic losses from natural catastrophes have increased from 0.09 per cent to 0.27 per cent of GDP or close to USD 200 billion per annum. The uninsured portion of the losses has risen from 0.07 per cent to 0.19 per cent of global GDP. Risk exposure, primarily driven by accelerating urbanisation, has clearly outpaced insurance penetration.<sup>3</sup>

As revealed by Figure 2 the share of uninsured property catastrophe losses varies by region and peril. As expected, the gap is smaller for countries with higher levels of income. In emerging economies, by contrast, 80–100 per cent of economic losses remain uninsured. Having said this, the earthquake risk protection gap in Western Europe is eye-catching, with the most recent tremor hitting central Italy on 24 August 2016 serving as a grim reminder. Only 10 per cent of economic losses were covered by insurance.

Figure 3 shows that the U.S., Japan and China account for the lion's share of the global property protection gap. Expected annual uninsured losses amount to more than USD 80 billion, compared with a total of USD 120 billion for all countries included in the sample.<sup>4</sup>

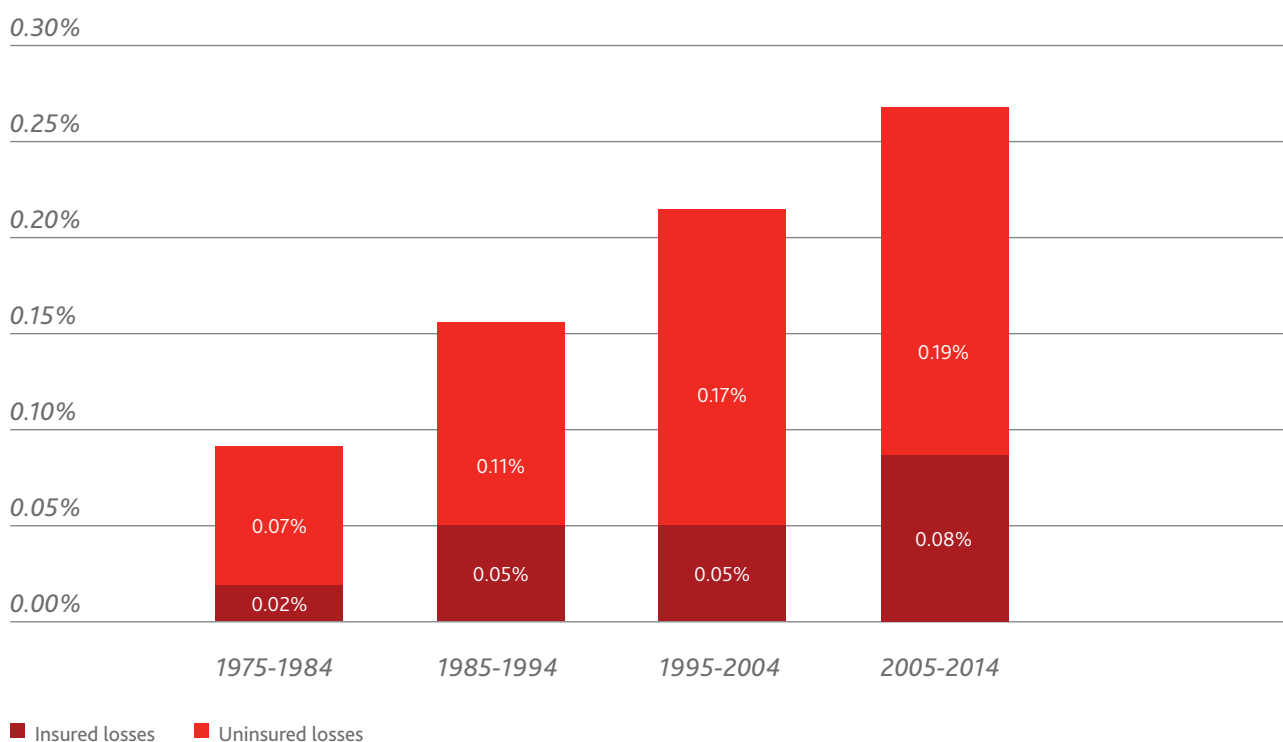
1 Swiss Re (2015a).

2 Schanz and Wang (2014).

3 Swiss Re (2015a).

4 Swiss Re (2015a).

Figure 1: Global insured and uninsured losses in percent of GDP



Source: Swiss Re (2015a).

## The health protection gap

One way of defining the health protection gap is to look at it as the difference between the level of health-care costs required to meet consumer needs and the ability to cover those costs if society's total health-care expenditure remained a constant percentage of GDP.<sup>5</sup> This gap obviously evolves with many factors such as the introduction of new medicines and more people entering formal health-care schemes.

The proportions can be quite staggering: India, for example, is estimated to have a health protection gap of more than USD 200 billion by 2020, about 15 per cent of projected GDP. Amongst the reasons is the strong growth of medical costs, outpacing inflation.<sup>6</sup>

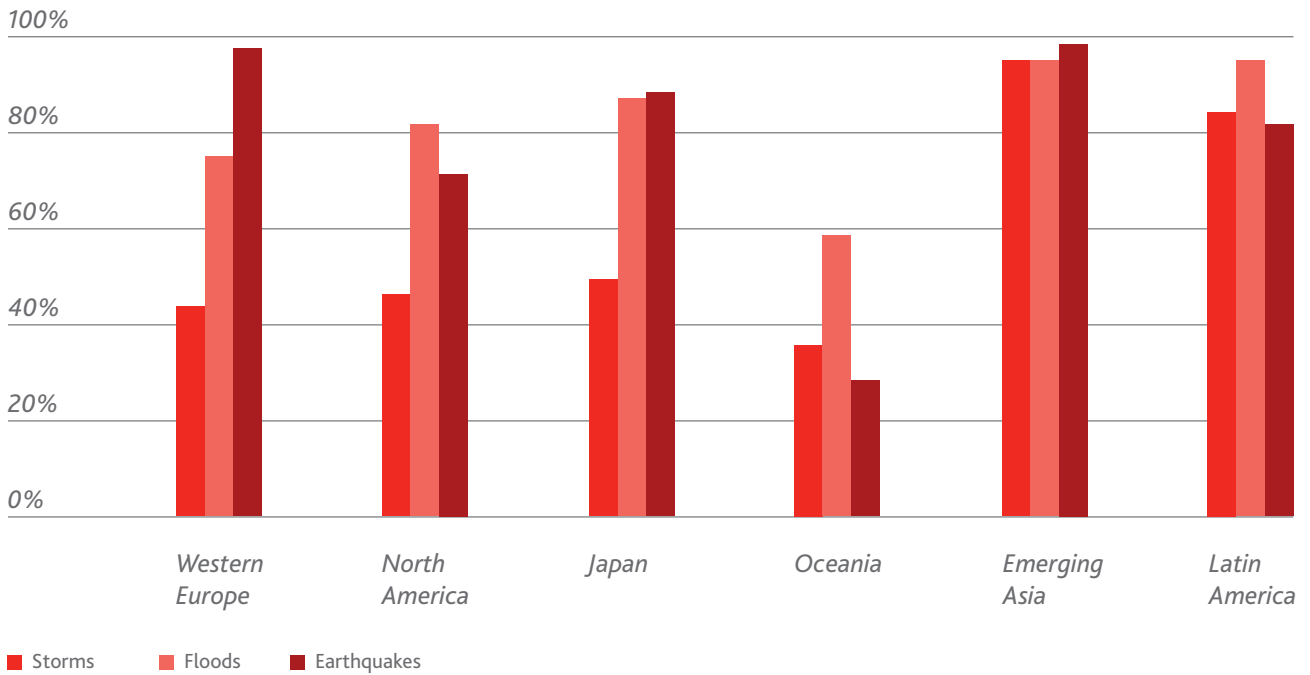
Making up for this shortfall will require additional fiscal spending or higher out-of-pocket funding by individuals—which suggests major challenges when

looking at the current breakdown of health-care expenditure in India (and other emerging markets—see Figure 4). At about 60 per cent of total health-care costs, out-of-pocket expenses in India are already Asia's highest. Private prepaid plans based on commercial insurance solutions are of limited relevance, at a share of less than 5 per cent.

<sup>5</sup> Swiss Re (2015b).

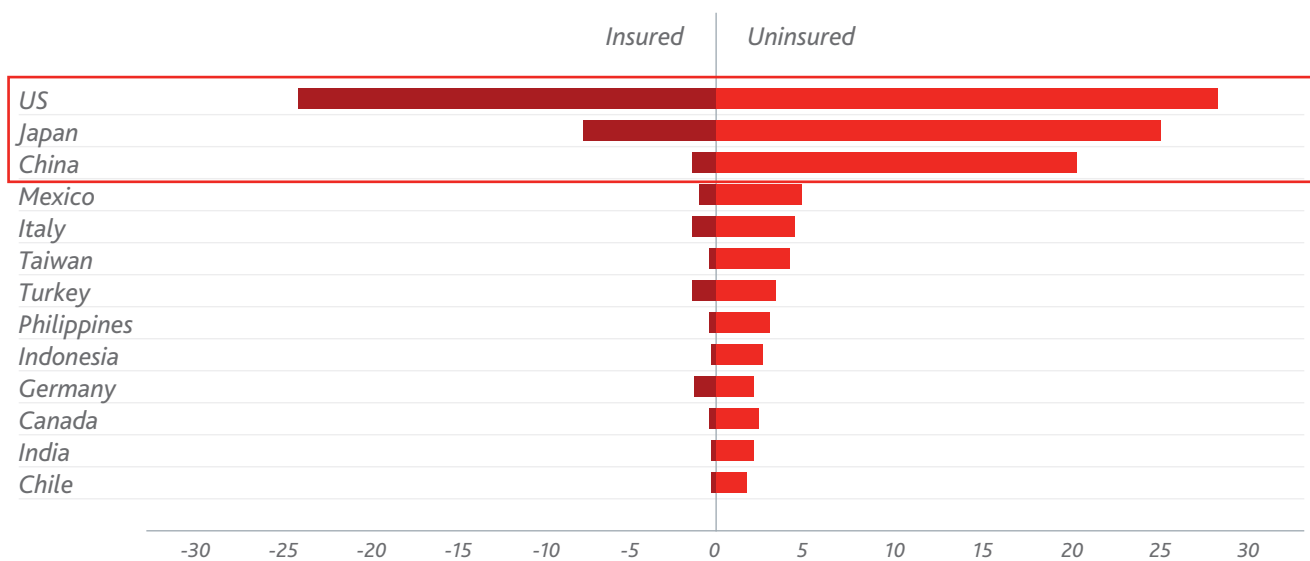
<sup>6</sup> See <http://economictimes.indiatimes.com/industry/healthcare/biotech/healthcare/indias-health-protection-gap-among-biggest-in-asia-report/articleshow/51244717.cms>

Figure 2: Uninsured losses as a share of total losses, 1975-2014



Source: Swiss Re (2015a).

Figure 3: Expected insured and uninsured losses from natural catastrophes, 2014, in USD billion



Source: Swiss Re (2015a).

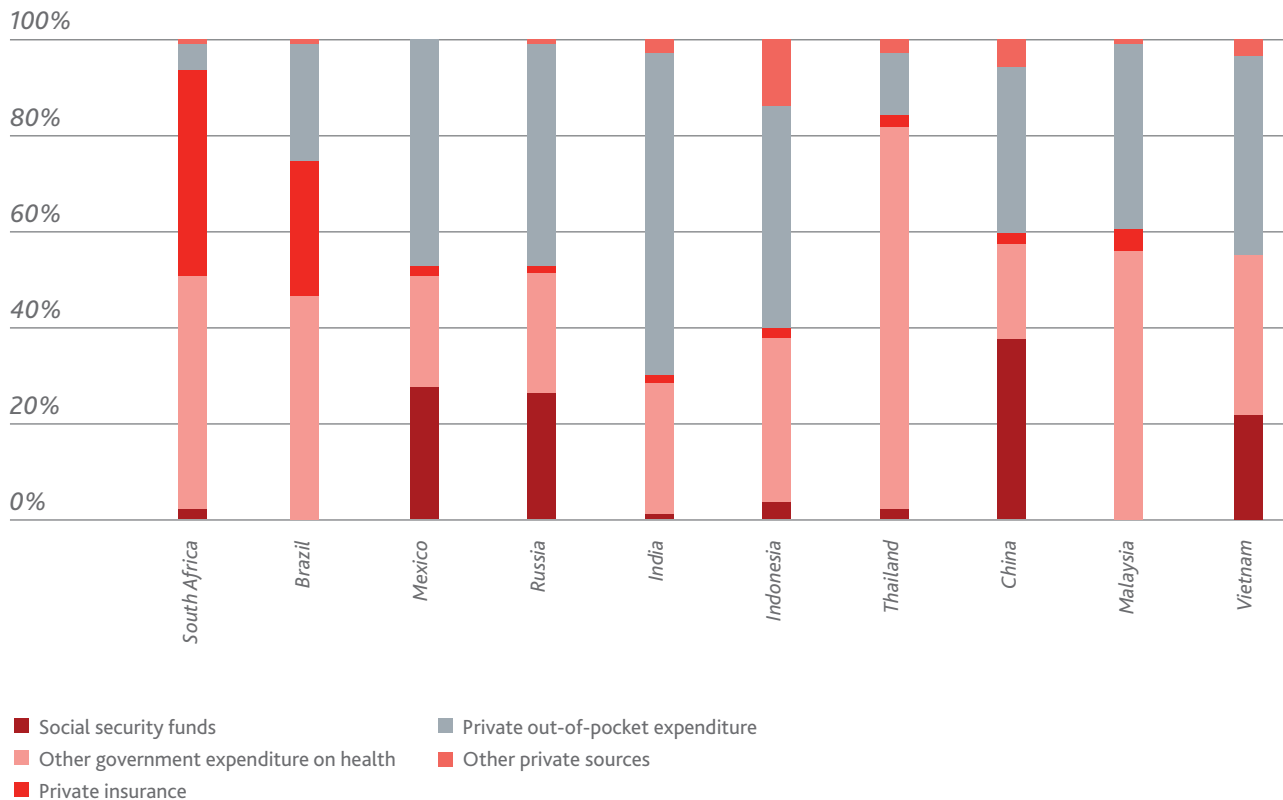
## Some root causes of underinsurance can be tackled through technology<sup>7</sup>

Some, but not all, root causes of underinsurance can be addressed through technology. First of all, there may be rational economic reasons for not fully insuring. In many countries, extensive social security and public insurance schemes reduce the need for individuals 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. Moreover, some degree of risk retention is crucial to the stability of insurance markets in order to manage the challenge of moral hazard and achieve an appropriate alignment of interests between insurers and insureds. As shown in the following section of this report, modern technologies can

significantly influence the economics of self-retention and, as such, the size of protection gaps, as the amount of insurance that is economically beneficial changes.

In developing and emerging markets in particular, on top of the obvious issue of affordability, protection gaps reflect the still-low levels of risk awareness and risk culture, as well as the existence of informal risk transfer mechanisms which are culturally accepted and do not lead to demand for formal financial schemes as known in Western economies. In emerging markets, many, if not most, potential customers have never before had formal insurance. This is particularly true of developing countries, where insurance schemes linked to mobile phone subscriptions are generally the first experience of the low-income population with formal and individual insurance. Innovative mobile

Figure 4: Breakdown of national health expenditure (2013)



Source: World Health Organisation (Global Health Expenditure Database), Swiss Re Economic Research & Consulting.

<sup>7</sup> Schanz and Wang (2014).

insurance, as described later in this study, therefore can go a long way in boosting awareness and narrowing protection gaps.

But in mature markets as well, there are major gaps in both awareness and appeal of insurance solutions beyond compulsory forms of cover, especially in the area of life and pension insurance. Perceived product complexity and a lack of customer centricity, in combination with behavioural factors, such as people's reluctance to even think about certain risks, are amongst the most frequently cited reasons. Against this backdrop, technology, ranging from (smart) mobile phones and the Internet of things, to advanced predictive analytics, can contribute a lot to making insurance solutions better understood, easier to access and to underwrite and, therefore, less expensive and more appealing.

Finally, certain risks are and will remain uninsurable unless modelling and prevention capabilities improve dramatically. When assessing risks, any insurer or reinsurer must carefully take into consideration the fundamental principles of 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.'<sup>8</sup> Big data and predictive analytics can help mitigate the issue of moral hazard and also facilitate the calculability of risk exposures, as explored later in this report.

## Illustrating the scope for technology-based efficiency gains in insurance: the U.S. and China as examples

Some structural features of today's insurance markets offer a first impression of the scope for making insurance less expensive and more appealing to customers. Starting with the U.S.: according to NAIC data for 2015, private motor insurance accounts for 34 per cent (or premiums of USD 199 billion) of the total U.S. property and casualty insurance market. Homeowners insurance contributes another USD 89 billion, or 15 per cent of the total market.<sup>9</sup> These two segments are expected to be particularly susceptible to digital enhancement, if not disruption.

## Forty per cent of P&C premiums in the U.S. are absorbed by transaction costs

A closer inspection of the industry's profit-and-loss statement reveals the significant amount of intermediation and operating cost inherent in today's U.S. insurance system. In 2015, less than 60 cents of each property and casualty premium dollar paid went into direct loss payments. This ratio highlights the amount of transaction costs and the potential for operating cost savings.<sup>10</sup>

A key determinant of the scope for digital enhancement and disruption is the insurance market's distribution mix, with exclusive company networks arguably being most exposed to digital competition. Exclusive agents dominate distribution in U.S. personal lines, with a share of about 50 per cent. Independent intermediaries account for 35 per cent. At less than 15 per cent, the share of direct sales is still small, pointing to a significant potential on the back of digital technology.<sup>11</sup>

8 Schanz and Wang (2014, p. 36).

9 See <http://www.iii.org/fact-statistic/commercial-lines>

10 See <http://www.iii.org/fact-statistic/industry-overview>

11 IIABA (2016).



## China: dominated by motor insurance

The potential for digital change appears similarly obvious for emerging environments such as China's non-life insurance market. According to CEIC Data and Swiss Re Economic Research, the motor segment dominates China's non-life sector, accounting for 74 per cent or USD 130 billion of the total in 2015. Accident and health and homeowners insurance are still marginal classes of insurance, with shares of 5 per cent and 0.5 per cent, respectively.

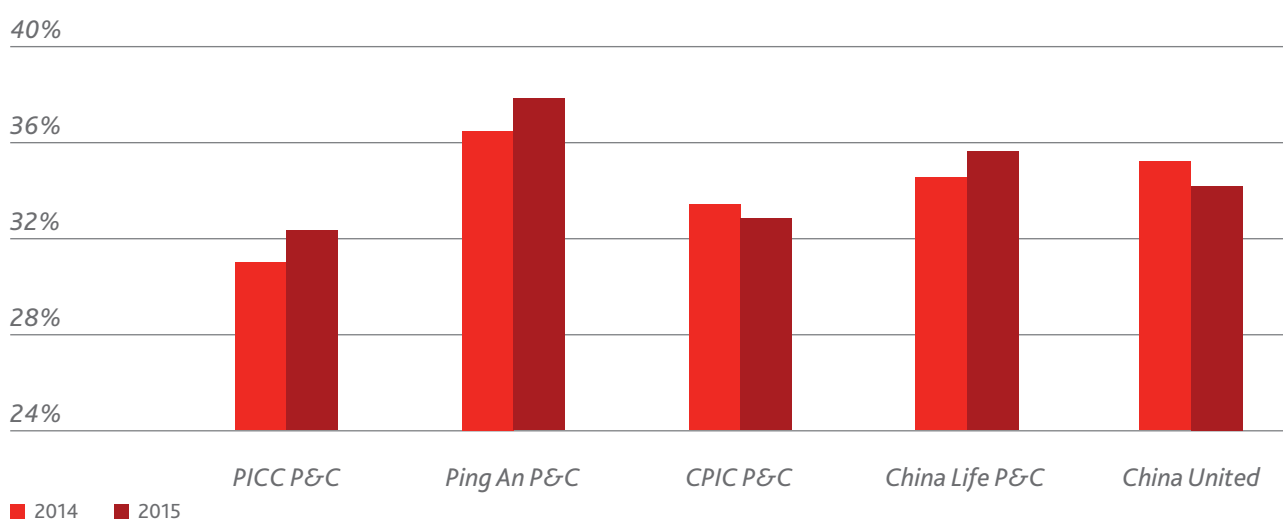
Based on data from the country's Top 5 non-life insurers (who account for about three-quarters of the market) the aggregate acquisition and administrative expense ratio came in at about 35 per cent in 2015 (see Figure 5).

Thirty-seven per cent of China's non-life premiums are transacted direct, primarily via branches but also through telemarketing and sales via the Internet. Twenty-five per cent of the business is distributed cross-sector, e.g. by banks, car dealers and travel agents. Twenty per cent of premiums are accounted for by exclusive agents; 12 per cent and 6 per cent by insurance agencies and (wholesale) brokers, respectively.

In 2015, non-life insurers in China collected USD 12 billion in premiums from online sales, representing an estimated 7

per cent of total premiums and an increase of 52 per cent over the previous year. Interestingly, 92 per cent of the online sales were made through non-life insurers' own websites. The remaining 8 per cent (i.e. less than 0.6 per cent of total non-life premiums) were generated through third-party online insurance sales platforms.<sup>12,13</sup> Motor insurance accounted for the lion's share (93 per cent) of total online non-life premiums. The relatively high online insurance penetration in China is characteristic of emerging markets where neither ingrained customer habits nor legacy distribution networks stand in the way of digital sales or transactions.

Figure 5: Acquisition and administrative expense ratios of China's Top 5 non-life insurers



Source: Annual Reports, Swiss Re Economic Research & Consulting.

<sup>12</sup> Asia Insurance Review (2016a).

<sup>13</sup> The market share of China's four standalone online insurers in the first quarter of 2016 came in at less than 0.3 per cent. See Asia Insurance Review (2016b).

# The Impact of New Technologies on the Value Chain and Economics of Insurance

There is a broad consensus that the biggest sources of value creation through digitised insurance will be in reducing costs and developing new—and more customer centric—products and solutions. The key for insurers to unlock this potential and tap into the vast protection gap is to integrate (1) technology, (2) data and (3) analytics. As far as technology—the focus of this report—is concerned, insurers increasingly embrace their customers’ preference for mobile communications and transactions; respond to a much increased level of desired interaction, e.g. through digital advisors; and harness the ‘explosion’ of available sources and pools of data, e.g. through the Internet of things. They also explore longer-term opportunities from technological applications such as artificial intelligence (conferring the ability to recognise patterns in large and unstructured sets of data) and the blockchain (offering a secure use of common distributed data).<sup>14</sup>

Against this backdrop, the following section will examine the key links of the insurance value chain as they undergo a process of digital transformation. In addition, we will introduce some fundamental (Nobel prize winning)

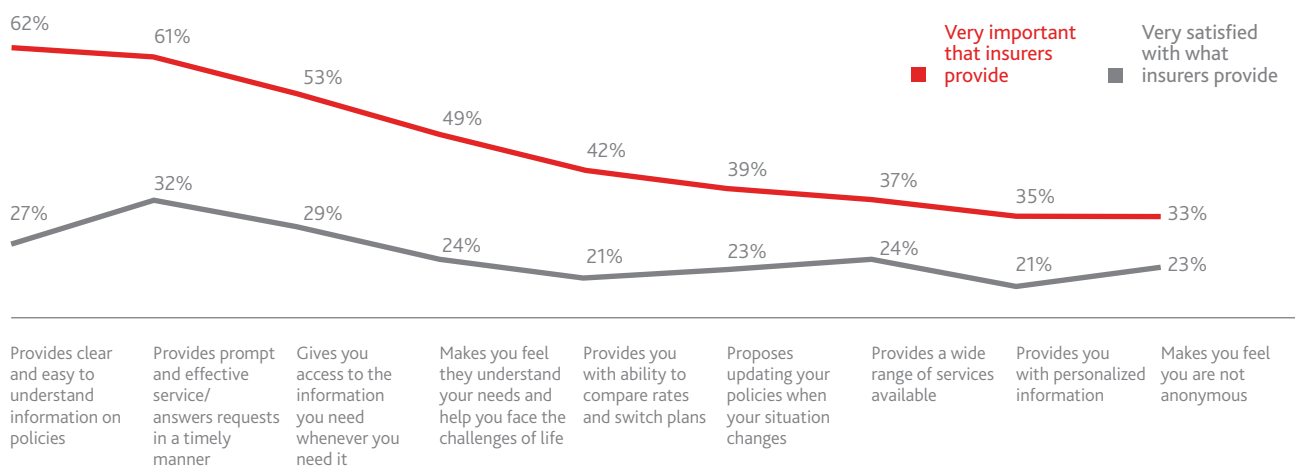
concepts of insurance economics such as moral hazard, adverse selection and transaction costs, which are vital to understanding the potential impact of digital technology on traditional business models in insurance. We will also formulate a few hypotheses as to how digitisation may impact some of these notions, with a particular focus on the protection gap.

## The digital paradigm of insurance in practice—towards the virtual value chain

New (digital) technologies are expected to profoundly impact all links of the insurance value chain in a way which offers the potential to radically lower transaction costs and mitigate traditional obstacles to insurance such as moral hazard and adverse selection.

One of the key forces at work is disintermediation, which connects carriers with their customers directly, enabling tremendous gains not just in terms of cost-efficiency but

Figure 6: The mismatch between what insurance customers want and what they get



Source: Accenture (2011).

14 PwC and Startupbootcamp InsurTech (2016) offer a broad overview from a technological angle.

also in anticipating and understanding customer needs. Both effects are set to boost insurance penetration.<sup>15</sup>

Figure 6 illustrates the current mismatch between customer expectations and service levels provided by insurers, as well as the enormous scope for technology to address most of these shortcomings. To some extent, it describes the insurance industry's legacy whilst it enters the digital future.

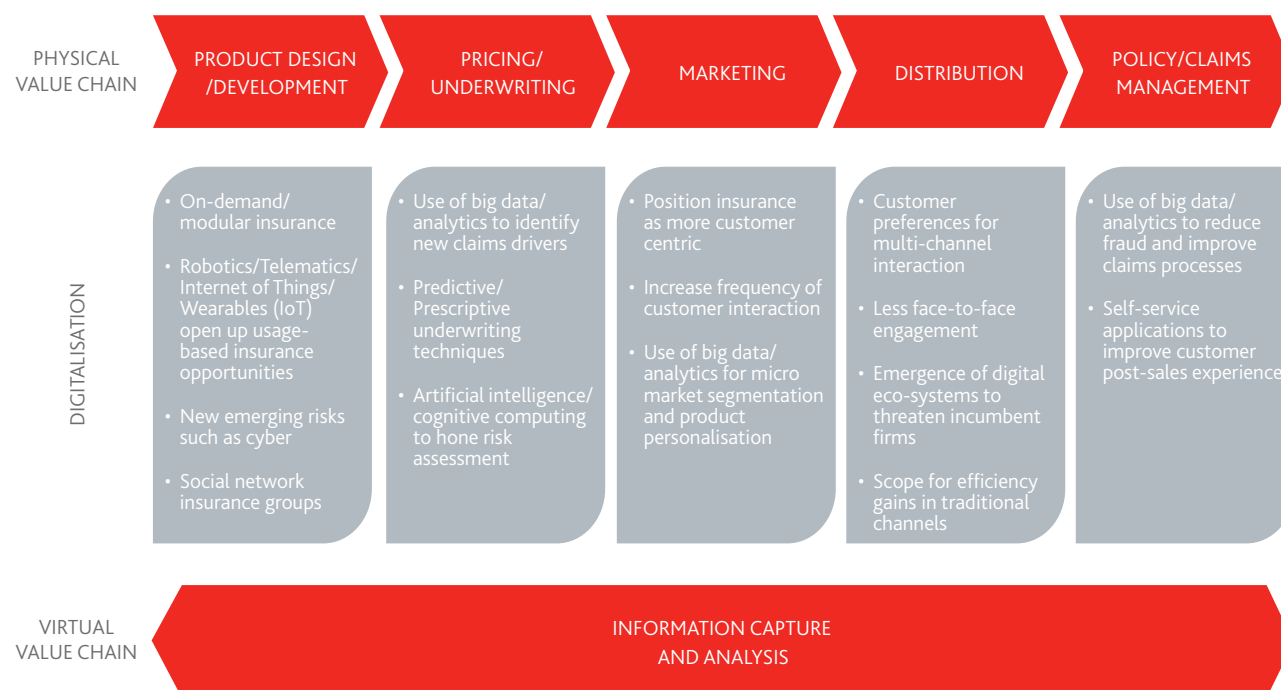
## Pervasive impact of digital across the entire value chain

The impact of digitisation across the value chain is pervasive and permeates across the areas of pre-purchase, sales and

operations. It reshapes the way customers discover and perceive insurance propositions pre-purchase. Sales are enhanced by dropping costs as a result of disintermediation and increased conversion of leads on the back of tailored solutions and 'digitally enhanced' physical distributions channels, which continue to play a major role as long as the majority of customers prefer 'hybrid' models of distribution. Finally, the adoption of straight-through processing can lead to a massive reduction in back-office costs. Coupled with big data and predictive analytics, it can also translate into significant improvement of the claims ratio.<sup>16</sup>

The product development role will increasingly reflect customers' preference for on-demand and modular propositions. In addition, the Internet of things will enable usage-based insurance, which is a challenge to most product development departments in the industry that

Figure 7: The virtualisation of the insurance value chain



Source: Swiss Re.

15 Because risk pools might actually shrink as digitisation progresses (see Morgan Stanley and BCG (2014)), the term 'insurance penetration' needs to be defined carefully. If defined as 'premiums as a share of GDP', digitisation may ultimately result in lower rates of penetration. If defined as the share of the population having adopted insurance, the effect is bound to be positive.

16 Krishnamurthy (2015) and Morgan Stanley and Boston Consulting Group (2014).

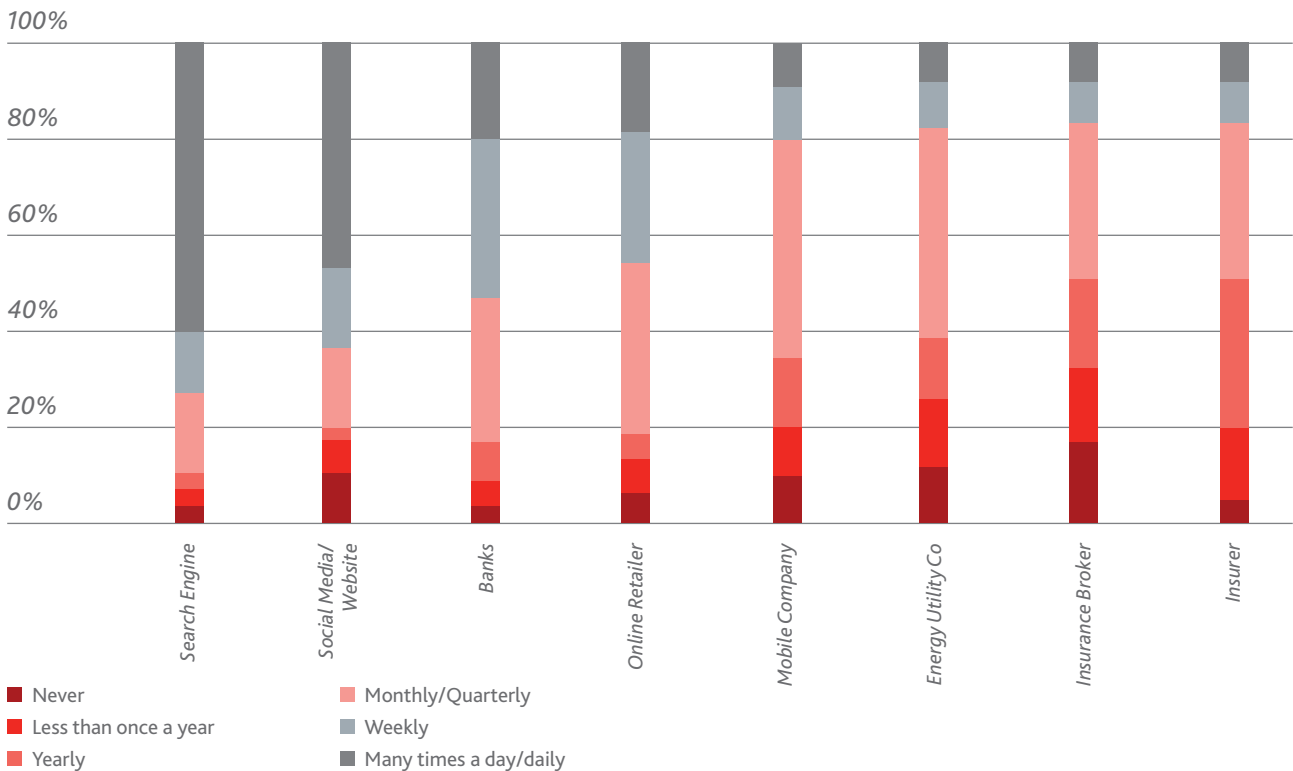
still rely on traditional underwriting data.<sup>17</sup> As part of this proposition, policyholders may also receive added-value information from their insurers, e.g. concerning their driving behaviour and health condition. Last but not least, social network insurance groups will come up with revolutionary new approaches to risk transfer and sharing. These developments are expected to address shortcomings of traditional insurance products such as a lack of transparency (e.g. on contracts features) and relevance. The pricing function will be reshaped by big data and predictive analytics. The 'law of large numbers'—which states that the larger the number of exposure units independently exposed to loss, the greater the probability that actual loss experience will equal expected loss experience—could arguably be replaced by the 'law of precise data'.<sup>18</sup> In addition, insurers could see organisational

changes as a result of big data.<sup>19</sup> Artificial intelligence and cognitive computing are expected to enable further breakthroughs in risk assessment and anticipation whilst raising new challenges as far as collective risk pooling and mutualisation are concerned.

Insurance marketing will become more effective, based on broader, deeper and more frequent client interactions, as well as a much increased scope for micro market segmentation and product personalisation.

A more client-centric behaviour as we know it from other industries is set to finally penetrate the world of insurance. As mentioned before, the customer's experience with insurance will also be greatly enhanced by offering him or her an improved understanding of the individual risk profile,

Figure 8: Frequency of customer and provider interaction



Source: Morgan Stanley and Boston Consulting Group (2014).

17 Roland Berger (2015).

18 See <http://www.economist.com/news/leaders/21646203-data-driven-underwriting-contains-great-promise-and-grave-perils-tricky-business>

19 Aiken and Gorman (2013).

e.g. through telematics or wearables. By integrating these elements, insurers can build a proposition which offers much more value to the customer than traditional insurance policies. Through innovative marketing techniques, insurers can also address a major weakness compared with other industries—the current relative paucity of client interaction (see Figure 8). In distribution, insurers will have to respond to customers’ desire for multiple channels, both digital and non-digital. Existing channels will have to be digitally empowered in order to boost agent or broker productivity as well as cost-effectiveness and cost-efficiency. Based on a powerful digital multi-channel proposition, insurers are well positioned to fight disintermediation and disruption from new competitors operating in digital ecosystems.

Last but not least, ‘digital’ will have an impact on insurers’ ‘moment of truth’, the settlement of claims. Self-service applications can go a long way in improving the customer experience, whilst reducing operating expenses at the insurer’s end. At the same time, digital technologies

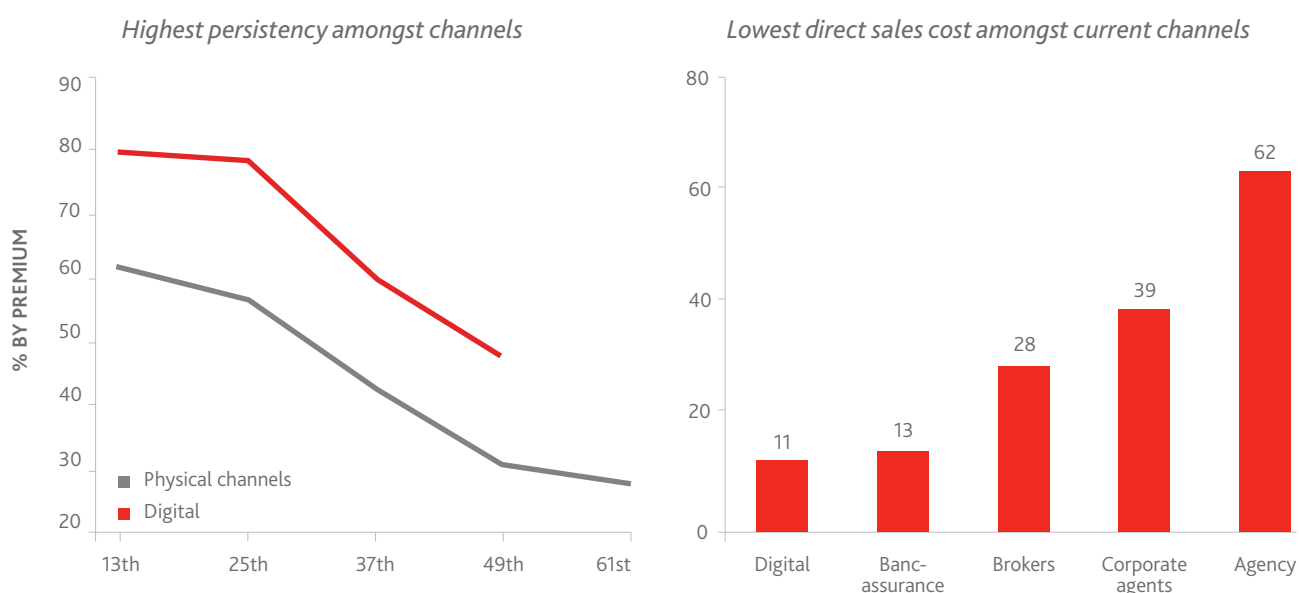
increase the scope for fighting insurance fraud, which, in non-life insurance, devours almost 10 per cent of the insurance premium pie.<sup>20</sup>

## Major potential for efficiency gains

Figure 9 demonstrates that, contrary to a widespread belief, there is not necessarily a trade-off between distribution cost and persistency levels. The example from India’s life insurance industry shows that digital distribution can achieve both drastically lower sales costs and more persistent client relationships (here measured in months).

Further to the data presented in *The Protection Gap: Size, Nature and Root Causes* (p. 10), Figure 10 illustrates an estimate of the large-scale cost efficiencies to be potentially captured from digitising the insurance value chain.

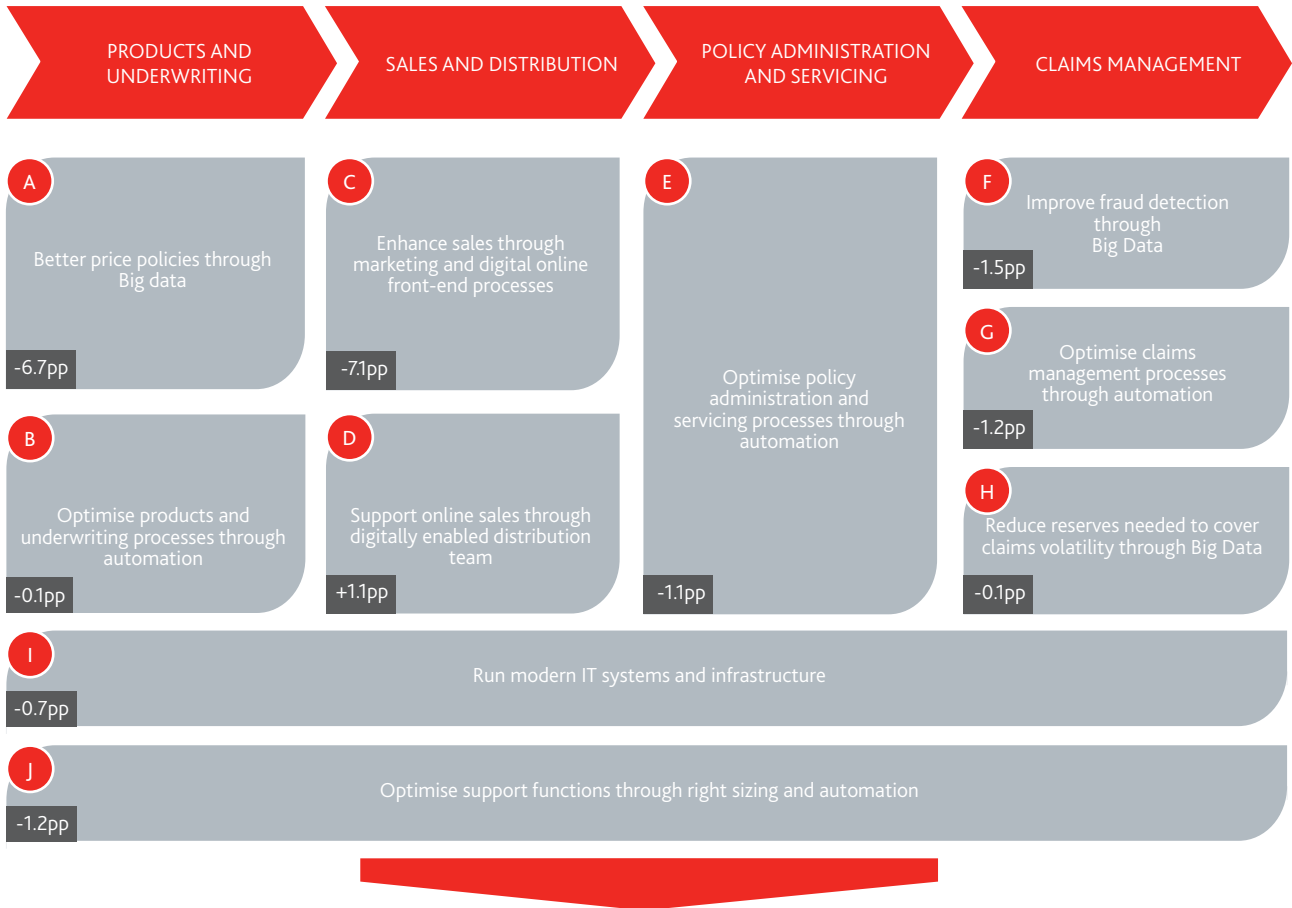
Figure 9: Persistency and cost of distribution in Indian life insurance



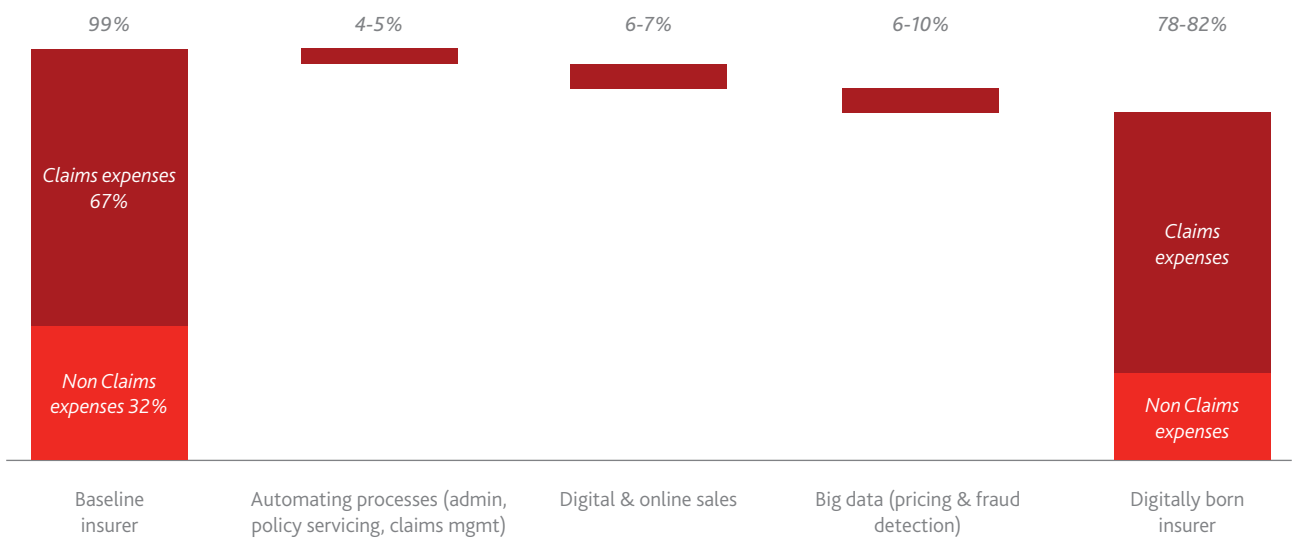
Source: Shah and Dadachanji (2014).

20 World Economic Forum (2015).

Figure 10: Potential impact of technology on the combined ratio in non-life insurance



Combined Ratio (%)



Source: Morgan Stanley and Boston Consulting Group (2014).

## Insurance economics as a guide to understanding the impact of digitisation in insurance

### WHY EFFICIENT INSURANCE MARKETS DO NOT EXIST: STARTING WITH MORAL HAZARD

In the words of Arrow and Debreu,<sup>21</sup> an essential condition for efficient markets under uncertainty is the existence of insurance markets covering every conceivable event. But Arrow acknowledged that risks were traded and transferred incompletely in real-world markets. One of the reasons he identified was moral hazard, i.e. the probability of a person assuming more risks because someone else carries the costs of those risks. This leads to an increase in the loss probability caused by the behaviour of the policyholder. Using medical care as an example, Arrow empirically illustrated the inefficiency of insurance markets for certain risks. On the one hand, as individuals are risk-averse and insurers know how to efficiently pool risks, full and complete insurance would result in a private and social welfare gain.<sup>22</sup> In reality though, significant protection gaps exist, especially, as Arrow found out, in the case of the unemployed and the elderly, where moral hazard appears to be one of the reasons. He concluded that governments should step in and address these gaps in order to maximise private and social welfare.<sup>23</sup>

### THE ROLE OF TRANSACTION COSTS

However, Arrow's proposition did not take into account the significant role played by transaction costs: 'In practice, insurance is not costless: sellers incur administrative, selling, and other expenses; buyers incur costs of time and trouble and expense for advice (...). Thus, an observed absence of policies in the presence of risk cannot be taken as a sufficient

condition of market failure and, by itself, provides no guide for public policy. (...) Specifically, the transactions cost to the individual of completing and filling applications and claims forms, paying premiums, keeping records, etc., as well as possible costs of obtaining information, may be of sufficient magnitude to make insurance policies against certain losses not worthwhile.'<sup>24</sup>

Based on Coase,<sup>25</sup> Lees and Rice even see an analogy between households and firms. Coase had argued that if market-based transactions proved too costly, they would be 'internalised' and take place within firms. Similarly, households would opt to partially self-insure if insurance markets are characterised by significant transaction costs.

As outlined in more depth below, quality and behavioural uncertainties are a defining feature of today's insurance markets. As a result, there are significant costs of obtaining information, for both the insurer and the insured; the latter needs reliable and suitable information on prices, qualities, and terms of comparable products. The cost of acquiring and assessing this information creates scope for intermediaries like insurance agents and brokers in order to reduce transaction costs and information asymmetries.<sup>26</sup> In contrast to agents, insurance brokers are not tied to a single insurance company. They sell the products of different companies and are, therefore, expected to have a broader overview of the insurance market.

As such, they are likely to benefit from superior economies of scale and scope, enabling them to offer more relevant services than tied agents.<sup>27</sup>

An additional contributor to transaction costs in insurance is the principal-agent relationship between the insurance intermediary and customer. This relationship, too, is characterised by information asymmetries. The customer (the principal) needs to spend time and effort to assess the quality of the services provided by the intermediary (the agent), for example, in terms of the extent to which an

21 The Arrow-Debreu model suggests that, under certain economic assumptions (e.g. perfect competition), there is a set of prices which equalise aggregate supply and aggregate demand for any commodity.

22 Arrow (1963).

23 In practice, one way to avoid moral hazard is to introduce deductibles and coinsurance as part of the insurance contract. A sufficiently large deductible can act as an incentive for the insured to continue to behave carefully after purchasing coverage. With coinsurance, the insurer and the insured share the loss, encouraging the latter to behave safely.

24 Lees and Rice (1965, pp. 143f).

25 Coase (1937).

26 Eckardt (2002, p. 6).

27 Ibid., p. 7.

intermediary has actually acquired all relevant information and whether his or her recommendations are distorted by self-interest.<sup>28</sup>

### ASYMMETRIC INFORMATION LEADS TO ADVERSE SELECTION AND, POTENTIALLY, MARKET FAILURE

Imperfect information is a main feature of today's insurance markets.<sup>29</sup> As in other markets, insurers and policyholders operate in a space where the characteristics of the services exchanged are not fully known to at least one of the parties to the transaction. By definition, high-risk individuals cause an externality, as the low-risk customers are worse off than they would be in the absence of the high-risk segments of the market. As a result, real-world insurance markets, characterised by asymmetric information, are inefficient from the viewpoint of economics, as there is no price equilibrium and no Pareto optimal solution.<sup>30,31</sup>

One of the most influential academic works on the consequences of information asymmetry is Akerlof.<sup>32</sup> He showed how the quality of goods traded in a market can degrade in the presence of asymmetric information between buyers and sellers (or insureds and insurers), leading to a market place characterised by 'lemons' (which, in American slang, describes a used car that proves to be defective after it has been bought).

Akerlof demonstrated that, if buyers cannot distinguish between a high-quality car (a 'peach') and a 'lemon', they will only be willing to pay a price for a car that averages the value of a 'peach' and 'lemon'.

Of course, sellers know whether they offer a 'peach' or a 'lemon'. Given the fixed price buyers are willing to pay,

sellers will only enter the market if they hold 'lemons', whilst 'peaches' will no longer be offered. This form of adverse selection, with high-quality cars no longer on offer, ultimately leads to a market failure. The notion of 'lemons' and 'peaches' can be clearly applied to insurance markets consisting of 'poor' and 'good' risks.

Therefore, if the insurer sets a premium based on the average loss probability of the entire pool of insureds, those with the highest risk will be the most likely to purchase coverage. In extremis, the 'poor' risks will be the only purchasers of coverage, and the insurer will lose money on each policy sold. This outcome is called adverse selection and is caused by the fact that the insurer cannot distinguish between the loss probabilities for good and poor risks, whereas the insured can.

## Insurance economics in the digital age—a few hypotheses

### MITIGATING MORAL HAZARD

Digitisation may make it much less likely that an insured will be more careless and take greater risks, i.e. behave against the interest of other insureds simply because he is protected. Big data-enabled pricing based on risk sends a strong signal to insureds about their riskiness and is likely to encourage insureds to change their behaviour. Currently, most insurers still use traditional actuarial methods and proxies for risk that rely on generalisations, for example, premiums that depend on age and gender. Modern technology, however, enables insurers to gauge individual, behavioural and

28 Eckardt (2002, p. 7).

29 See the seminal work of Rothschild and Stiglitz (1976) on the economics of imperfect information in insurance.

30 Pareto optimality is a state of resource allocation in which it is impossible to make any one individual better off without making at least one individual worse off.

31 Rothschild and Stiglitz assume that there are no transaction costs in insurance markets and that customers are identical except for loss probability. Liu and Browne (2007) challenge this approach and incorporate transaction costs as well as customers who differ with respect to risk aversion or endowment, in addition to loss probability. As opposed to Rothschild and Stiglitz, where all customers prefer full coverage, they show that all buyers prefer partial coverage in the presence of transaction costs and risk heterogeneity.

32 Akerlof (1970).



real-time risk much more accurately, not only through monitoring devices but also through social media.<sup>33</sup> As such, big data can mitigate moral hazard for those risks that can be controlled by the policyholder and, hence, improve economic efficiency.<sup>34</sup> However, differential pricing in insurance markets can raise fundamental concerns about solidarity in society when major risk factors are outside an individual customer's control. Life and health insurance are obvious examples.<sup>35</sup>

Today, health insurers offer discounts to policyholders who are looking after themselves, for example, by wearing a device that monitors their fitness and hitting certain fitness targets. This trend calls into question insurers' traditional criteria for risk assessment such as age, gender and marital status. An increasing number of consumers no longer accept the assumption that all young, single, male drivers are reckless and that mid-aged, married, female drivers are good risks by default. As a result of the digital data revolution, the notion of cross-subsidisation within a collective pool of risks loses acceptance. Having said this, the main features of risk pooling remain intact as each beneficiary is charged a rate reflecting the risk they bring to the pool.

Another intriguing notion is that big data might be harnessed to kick-start new types of insurance that are currently not feasible due to informational constraints and create new markets for risks that are currently underinsured or uninsured. This latter aspect, of course, is most relevant in the context of this publication and will be elaborated on further.<sup>36</sup>

Shiller (2003) offers some ideas as to how to use big (or at least 'more') data to boost risk-spreading by allowing consumers to insure risks that they are currently forced to retain. Individualised insurance against certain risks cannot work because of moral hazard, as was shown before. Shiller's proposition<sup>37</sup> is that viable insurance solutions can be designed on

an aggregate level by eliminating moral hazard. For example, instead of an individual insuring against a fall in the value of his house, he would buy coverage against a drop in the value of all houses in his city or neighbourhood. The beauty of this approach is that it offers maximal insurance without any moral hazard: if an individual under-maintains his house, he has to bear the full loss in value relative to an average house. Insurance is offered only against drops in an aggregate (price index), which is beyond the control of any individual.

In order for this type of insurance to work, 'big' data on aggregates such as neighbourhood home values is needed, based on detailed data collected at an individual level. This information could then be used to determine premiums and payouts. Applying Shiller's logic to today's big data, there is a huge potential to create new markets for spreading risks that are currently uninsurable. This, however, requires mitigating basis risk, i.e. the risk that actual losses will deviate from payoffs received under the insurance contract.

## CUTTING TRANSACTION COSTS

By lowering first and foremost the cost of information gathering and processing, digitisation will enable insurers to administer, underwrite and price risk as well as settle claims more accurately and efficiently. In competitive markets, insurers will have to pass their cost savings on to policyholders in the form of lower insurance premiums. Overall, digitisation will, therefore, boost the efficiency of insurance markets and benefit consumers by lowering transaction and information costs. As insurance becomes more affordable, the digital revolution is set to allow for more insurance to be purchased. It will change the

33 See *The Regulatory Environment: Catalyst or Game Stopper?* (p. 26), which discusses some important regulatory aspects.

34 The White House (2015).

35 See Hott and Keller (2015) for a standard economic welfare analysis considering the implications of enhanced risk understanding versus banning the use of risk information in the underwriting process.

36 This section draws on Siegelman (2014, p. 318ff). He argues that the increasing use of big data by insurers will not result in forecasts of loss that are so accurate that they eliminate uncertainty and with it, the possibility of insurance. Siegelman shows that big data techniques might actually lead to a 'flip' in informational asymmetry, resulting in a situation in which insurers know more about their customers than the latter know about themselves. This outcome, he argues, would not harm the efficiency of insurance markets.

37 Shiller (2003).

economics of self-retention by reducing incentives to carry risks on individual, household or corporate balance sheets.

This is particularly relevant for low-income markets, where technology such as a robust mobile payment infrastructure can significantly facilitate the provision of many types of insurance by dramatically lowering transaction costs. Many insurance policies that are profitable when offered to middle-class consumers cannot be efficiently and effectively scaled down for 'base of the pyramid' customers. The transaction costs associated with acquiring these customers, issuing policies, maintaining records and settling claims could easily prove to be prohibitively high. In such markets, digital and mobile communication is a game changer.<sup>38</sup>

## REMOVING INFORMATION ASYMMETRIES

In the digital age, traditional information asymmetries in insurance are bound to disappear, with both insurers and policyholders benefiting from much improved information at much lower cost.

As we have shown, the traditional mechanism of insurance is inextricably linked with imperfect information: individuals and firms are very differently exposed to calamity. Those at the lowest risk are not always aware of their good risk characteristics and buy insurance, alongside those with a greater probability of filing a claim, be it because of recklessness or pre-existing conditions. Both groups are needed to fund traditional collective insurance pools which indemnify a few unfortunate (or careless) members through unused premium payments of the good risks. The exponentially growing amount of digitally sourced personal data enables both policyholders and their insurers to discern good and poor risks more clearly.

Therefore, big data enables quantum leaps in risk classification and makes insurance more attractive to good risks whose loss probability directly translates into more favourable individual pricing. Those risks no longer have to pay a premium which reflects the loss probability of the entire population and may have prompted them not to purchase insurance altogether. Stated differently: 'low risks (theoretically) may go without insurance rather than pay the premiums that reflect a mix of high and low risk insureds. Thus, risk classification can help alleviate some of the consequences of adverse selection by allowing insurers to price products to entice low risks to enter the insurance pool.'<sup>39</sup> As a result of refined, big data-based risk classification methods, insurance pools are likely to become more homogeneous. The demand for and supply of insurance could improve, as compared with an equilibrium situation under adverse selection where only high-risk individuals would buy insurance.<sup>40</sup>

## THE BOTTOM LINE: MAKING INSURANCE LESS EXPENSIVE, BETTER UNDERSTOOD AND MORE ATTRACTIVE

In summary, the radical changes to the insurance value chain brought about by digitisation are set to boost insurance demand via all three major levers, the so-called 'Triple A' of insurance demand: awareness, affordability and appeal.

Social media and mobile tools of communication enable massive improvements in public awareness of insurance and its cost and benefit characteristics, as well as the main product configurations. In combination with better affordability, increased levels of awareness are expected to be a powerful catalyst for higher insurance penetration, in emerging and developing markets in particular.

38 See Cole (2015) and Jack and Suri (2014).

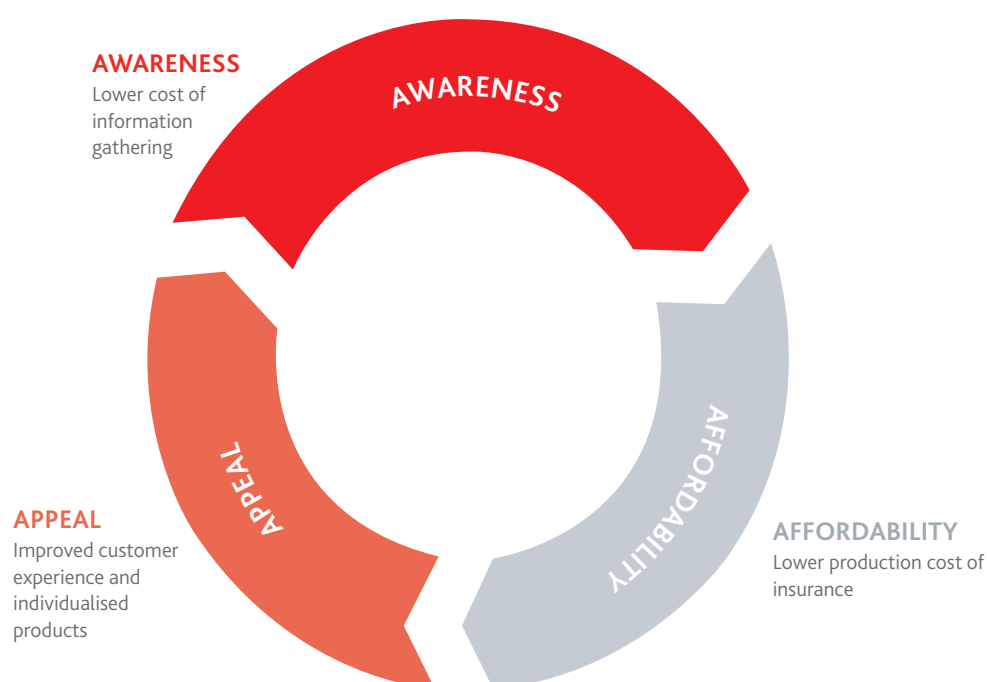
39 Swedloff (2014, p. 346). However, one could also argue that based on improved risk classification and transparency, good risks may continue to self-insure or even expand the spectrum of self-insured risks. At the same time, poor risks may have no alternative but to opt out of insurance markets as their individual rates rise. Especially if these individuals' poor risk characteristics are beyond their control (as, for example, in the case of special genetic conditions) big data-driven risk classification can lead to major societal challenges (see Cicero Group, 2016).

40 At least in mature markets, as a result of big data-based risk selection schemes, risk pools could become significantly smaller as claims are expected to reduce sharply. The contraction of risk pools in personal home and motor insurance could shrink global non-life premiums by up to 5 per cent or USD 100 billion. See Morgan Stanley and Boston Consulting Group (2014).

Affordability improves as the 'production cost' of insurance decreases significantly. Digitisation enables major cost savings in all key cost areas: acquisition, claims and claims settlement and administration. As a result, individuals, households and corporations will revisit their approach to self-retention and are likely to transfer more risk to professional carriers.

Finally, digitisation comes with greatly improved customer experience. Hassle-free and more regular communication combined with a more favourably perceived cost-benefit ratio of more tailored and individualised insurance products can significantly enhance the appeal of insurance which, in mature markets, too, should help address underinsurance (see Figure 11).

Figure 11: The 'Triple A of insurance demand' in the digital world



Source: The Geneva Association.

# The Regulatory Environment: Catalyst or Game Stopper?

## Innovation versus safety: a delicate trade-off for regulators

The regulatory approach to new technologies will be a key determinant of the latter's potential to narrow protection gaps. Designing and implementing an adequate way of regulating digital or mobile insurance services which benefit from the infrastructure of non-insurance companies (e.g. telecommunications or utility companies) presents regulators, incumbent insurers and new competitors with significant challenges. Against this backdrop, the following section offers an overview of current regulatory developments, including the treatment of non-traditional providers and distributors. It also addresses the key issue of data protection and usage regulation, which can make or break new business models.

Even more challenging than regulating digitally enabled incumbent insurers is the regulatory treatment of disruptive players from the insurtech space. Is the regulatory status quo fit for purpose or is a radically different regime required? Is there a level playing field for insurance companies and insurtechs? These questions matter greatly as the provision of financial services, including insurance, is inherently risky. A unique feature of the financial services sector is that it promises future payments, and there is a need to secure those future payments. Failures in this sector can cause huge societal and individual costs. Therefore, in this sector there is a broad public consensus that financial service providers should be regulated and supervised. This consensus has strengthened in the aftermath of the financial crisis.

Having said this, inadequate regulations can easily stifle innovation and prevent progress. For example, prohibitively difficult regulation can raise barriers to entry and protect existing players from competition. It may also render experimentation prohibitively difficult.

Regulators are, therefore, faced with a daunting challenge: how can one promote the development of financial technology and enhance traditional, or enable new business models in the sector without conjuring up the prospect of failures and a loss of public confidence? How can a balance be struck between innovation and safety? Some regulators

such as the U.K.'s Financial Conduct Authority (FCA) have responded by launching a 'regulatory sandbox' for firms to trial technology-based innovations, offering an end-to-end experience for new market entrants and an engagement with incumbent players. The sandbox is aimed at providing a 'safe space' for experimentation, without putting financial stability or client money at risk. For regulators, this is akin to venturing into uncharted territory in order to keep pace with innovation. One of the most difficult fundamental questions to be answered by regulators and governments in this context is whether individuals (i.e. customers) should be expected to take greater personal responsibility for losses and failures as traditional financial services firms are being disintermediated.<sup>41</sup>

## Reconciling data protection and usage

For insurers, data processing lies at the very heart of business. Data is collected and processed to underpin underwriting decisions and evaluate and settle policyholders' claims and benefits, as well as to detect and prevent fraud. Therefore, data protection and usage legislation is of utmost relevance to insurers. Given its importance, such legislation, if mis-designed, can have unintended consequences: any restrictions on insurers' ability to assess risk properly could possibly reduce the availability of insurance products and increase the cost of cover for policyholders.

This aspect is becoming more relevant in light of a heightened regulatory focus on how businesses collect and handle customer data. In the European Union, for example, a comprehensive legislative reform in the form of the General Data Protection Regulation is under way, partially driven by the widespread public perception that the legal status quo does not adequately address the significant personal data risks arising from online activity.<sup>42</sup> Big data is amongst the chief topics. The volume of data that can now be collected has ballooned, as have opportunities for 'enriched underwriting' and more accurate pricing based on data which allows to predict customers' behaviour and establish new correlations to risk. Given legislative trends and public sensitivities (especially in Europe), insurers need

<sup>41</sup> Cicero Group (2015).

<sup>42</sup> See <https://www.insuranceeurope.eu/sites/default/files/attachments/Comments%20on%20the%20General%20Data%20Protection%20regulation,%20in%20light%20of%20the%20trialogue%20discussions.pdf> for the position of Insurance Europe, the European (re)insurance federation.

to make data protection and transparent communication with policyholders an even higher priority. Various regulators are conducting studies into how insurance firms use big data and are contemplating specific consumer protection rules for its use in underwriting.

In addition, a minimum of international regulatory harmonisation is essential, given the fact that 'data about individuals may be physically collected in one jurisdiction, stored temporarily in another one and processed in yet a different one.'<sup>43</sup> Widely differing personal data protection and privacy laws clearly make it challenging to fully reap the potential benefits from big data.

## Defining insurers' scope for price differentiation

Policymakers and regulators are concerned that, in principle, new risk correlations derived from big data and self-learning algorithms relying on artificial intelligence may lead to price discrimination that 'disparately impacts some suspect or vulnerable groups of people'.<sup>44</sup> These groups of people may have no ability to control or influence big data-derived correlations in a way which reduces the probability of losses. 'If regulators want to protect [those groups], the regulatory regime will have to change from one based on prohibiting intentional discrimination to one based on prohibiting the disparate impact of business decisions'.<sup>45</sup> Ultimately, this boils down to the question whether insurance is about risk assessment or, and this is the traditional view, risk spreading and pooling.<sup>46</sup> Policymakers may only tolerate higher prices if big data contributes to mitigating moral hazard.<sup>47</sup> In order to do so, big data needs to yield correlations that make policyholders' risk behaviour transparent. In addition, this behaviour must be controllable and causally linked to the risk. Otherwise, price discrimination may not be deemed fair by regulators.

## Supervising non-insurers engaged in risk underwriting and distribution

Another regulatory challenge is how to oversee new competitors such as tech firms that lead the origination and analysis of big data. Most, if not all, regulators and politicians would probably agree that any organisation that carries insurance risks on its balance-sheet will have to be regulated and that regulatory arbitrage must be avoided.

In the context of this report, the regulatory treatment of microinsurance and its distributors is of particular relevance. It reflects specific issues associated with microinsurance such as the lack of financial literacy and trust in local institutions, in addition to administrative costs of distribution and claims settlement. In order to assist the development of microinsurance markets, regulators need to prevent regulatory arbitrage between conventional and microinsurance markets. There must be clear boundaries between the two areas so as to avoid undesired market distortions. Also, regulators should appreciate the differences between microinsurance and conventional insurance markets. More nuanced approaches to the microinsurance space, from capital requirements to innovative distribution channels such as mobile phones, tend to promote the market's development without compromising customer protection.<sup>48</sup>

Some jurisdictions have adopted laws and regulations which both encourage existing insurers to serve low-income segments and allow microinsurers to evolve and integrate with the formal insurance sector.<sup>49</sup>

More important in the context of this paper are regulations which govern the use of digital data in mobile microinsurance. In many markets, completely replacing paper documentation with digital data violates existing insurance regulations which usually require proof of coverage and policy signature in paper format. Having said this, most regulators do understand that modern

43 Sanz and Chow (2016, p. 9).

44 Swedloff (2014, p. 366).

45 Ibid., p. 373.

46 Baker (2003).

47 Karapiperis *et al.* (2015).

48 Biener *et al.* (2013).

49 IAIS and CGAP (2007).

regimes must be able to accommodate digital transactions whilst ensuring customer protection, e.g. through allowing digital signatures on mobile phones and electronic receipts as confirmations. Another highly relevant area in this context is mobile money. In many countries, regulation still stipulates that mobile money accounts be linked to bank accounts. In light of still low levels of bank account penetration, more and more countries are relaxing regulations to enable customers to use mobile money without having a bank account.

Regulatory reforms which enable the digitisation of client data and electronic payment systems as well as the creation of national databases which leverage individual biometrical data, for example, will be important for capturing the full potential of mobile microinsurance, i.e. allowing it to progress from loyalty-based products to voluntary options which target specific client segments and offer value-added services.<sup>50</sup>

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50 Prashad *et al.* (2013).

# Case Studies

This section presents a number of case studies which illustrate the impact of technology on the spread and reach of insurance cover. The (small) selection, presented in alphabetical order, is based on input received from the executive and expert interviewees who have contributed to this report. The underlying facts and figures were primarily taken from the respective companies' websites. In addition, we have endeavoured to apply the notions of the previous section to the examples presented.

The following table offers an overview of the six cases presented.

## A. AIRTEL GHANA—MINIMISING TRANSACTION COSTS WHILST BUILDING FUNDAMENTAL AWARENESS

Airtel Ghana, a subsidiary of the Indian telecommunications company Bharti Airtel, is a mobile network operator in Ghana. The company offers free microinsurance products to its customers in order to promote brand loyalty.

Airtel Insurance is an example of leveraging existing platforms such as mobile operations to introduce the basic concept of insurance to low-income segments of

ID	Geographical reach	Key issue(s) addressed	Technology	Line(s) of business	Distribution	Prospects
A. Airtel Ghana	Ghana	Lack of insurance awareness	Mobile phone	Disability and hospitalisation	Mobile only	Expansion to additional African countries and lines of business; higher penetration
B. BIMA	Developing countries	Lack of insurance awareness	Mobile phone	Life, personal accident, health	Mobile, call centre-based agents	Further geographical expansion in developing markets and higher penetration
C. Discovery	Global	Demand for behavioural insurance; mitigation of moral hazard and adverse selection	Health monitoring and tracking devices	Life and health	Online direct or via partner insurers	Further geographical expansion and higher penetration
D. Friend-surance	Germany	Demand for peer-to-peer insurance, mitigation for moral hazard and insurance fraud	Social technology	Multiline	Online only	Further geographical expansion (e.g. Australia) and higher penetration
E. Kilimo Salama and Acre	Eastern Africa	Lack of insurance awareness; demand for 'pay-as-you plant' insurance	Mobile and meteorological technology	Agriculture	Traditional and mobile	Higher penetration
F. Pacifica	France	Lack of pasture insurance cover	Satellite technology	Agriculture	Traditional	Higher penetration

the population. It helps build general awareness which, as income levels increase, will facilitate the take-up of conventional stand-alone insurance products.

All client-oriented links of the value chain, i.e. marketing, distribution and claims management, rely on mobile communication. This approach reduces transaction costs to an absolute minimum, with no additional intermediaries involved. Mobile insurance, therefore, helps promote all three elements of the 'Triple A of insurance demand' (see Section 4): it makes insurance cover more affordable and supports awareness building as well as product appeal by meeting customer expectations via its transactional ease which does not even require formal payment channels such as bank accounts.

At the beginning of 2014, Airtel Ghana teamed up with MicroEnsure, a U.K.-based microinsurance company founded by U.S.-based Opportunity International and Enterprise Life, an insurance company that is part of Ghana-based Enterprise Group, to launch Airtel Insurance.

Airtel Insurance provides free coverage to Airtel customers who use at least GHS 5 (USD 1.7) in airtime credit per month. The policy covers accidental permanent disability and hospitalisation. The amount of coverage ranges from GHS 525 (USD 187) to GHS 5,150 (USD 1,830). It depends on the amount of money recharged to customers' accounts each month. Claims can be made through customers' phones and should be settled within three business days. A lump sum credit is made to the customers' mobile money account. These funds are then able to be withdrawn as cash.

Airtel Insurance aims to widen its range of products to include life, accident, health and agriculture cover. These products are launched, marketed and promoted through Airtel's local brand, marketing and distribution infrastructure. MicroEnsure contributes product design and implementation, technology support, local and international underwriting assistance, policy administration and customer service. The partners also intend to expand their insurance services to other African markets.

Leading international health-care group Bupa has partnered with MicroEnsure to offer assistance through

a reinsurance arrangement and by providing health insurance expertise such as actuarial, pricing and claims management support.

Mobile insurance in Ghana is governed by the NIC (National Insurance Commission). Other regulatory bodies involved are the NCA (National Communication Authority) and the BoG (Bank of Ghana). The NCA regulates the communication services in Ghana, including the mobile network operators (MNOs). BoG supervises the national payment system in Ghana and has been very supportive of alternative payment methods in order to foster financial inclusion.

Mobile insurance is considered to be an insurance product and therefore falls under the rules that apply to microinsurance products. Only the NIC can grant approval to these contracts. In mobile insurance, MNOs are considered to be agents for the licensed insurer.<sup>51</sup>

## **B. BIMA—MINIMISING THE COST OF PAID COVER AND HARNESSING AGENTS FOR CUSTOMER EDUCATION**

BIMA, founded in 2013, is a leading provider of low-cost insurance in the segments of life, personal accident and health. Its mission is to promote financial inclusion in developing economies by using mobile technology. BIMA offers microinsurance protection to millions of low-income people via innovative partnerships with major mobile network operators and financial services businesses. Consumers usually pay for the cover via deduction of prepaid airtime credit. One particular aspect of BIMA's approach is the combination of mobile technology with the deployment of agents to promote consumer education and awareness building.

The BIMA experience shows that it is possible to reach consumers at the bottom of the pyramid at scale. Ninety-three per cent of its customers live on less than 10 USD per day and 80–95 per cent have never had access to other insurance. However, nearly every customer has access to a mobile phone, which is why BIMA links insurance premiums to bonus mobile talk time.

BIMA (Swahili for insurance) has already over 18 million registered customers, with local operations in 14 countries across 3 continents, namely in Ghana, Tanzania, Senegal,

<sup>51</sup> The regulatory information is based on NIC (2015).



Mauritius, Sri Lanka, Indonesia, Bangladesh, Cambodia, Philippines, Haiti, Papua New Guinea, Paraguay and Honduras.

In light of BIMA's and other providers' success, micro-insurance distribution through a telecommunications channel is now widely considered as the most successful alternative approach to distribution in developing economies. Transaction costs in mobile insurance are minimal, as marketing, distribution and claims and policy management are conducted through the mobile channel only. Also, BIMA's sales agents, who are crucial to building awareness and trust, primarily operate through cost-efficient call centres. Overall, the BIMA approach is another example of using mobile technology to make insurance more affordable, better understood and more appealing. Mobile operators are the ideal partners for microinsurance providers, as they can use existing distribution channels and payment methods in the form of prepaid airtime and through direct carrier billing. The mobile insurance model avoids the complexities surrounding enrolment in typical insurance policies and has proven its ability to offer lower premiums and simpler terms and conditions than competing products.

BIMA is funded by a partnership between specialist investors Kinnevik and LeapFrog Investments, and the international telecommunications and media firm Millicom. In July 2015, BIMA successfully raised another USD 38.4 million from its existing shareholders. With this transaction, the company is valued at more than USD 132 million. According to the company, the investment recognises BIMA's impressive growth trajectory and the vast potential of the mobile-delivered financial services market. Some of the 14 markets it serves have reached profitability in 2015, in addition to growth and impact.

### C. DISCOVERY—BEHAVIOURAL HEALTH INSURANCE

Discovery is a South African life and health insurer. Its innovative business model incentivises people to enhance their lifestyles. As a matter of fact, the company aims to transform the traditional insurance model into a behavioural life insurance model.

Discovery's customers share a significant volume of personal lifestyle and medical data. In return, they benefit

from discounts on insurance premiums and cashback rewards incentivising health-conscious behaviours, whereas the insurer profits from superior actuarial data. The data collection is operated through a loyalty programme called Vitality. It was first launched in South Africa in 1997 and employs evidence-based interventions and behavioural economics to improve health outcomes.

Through Vitality, Discovery can also enter markets characterised by high barriers to entry. Vitality offers the option to establish a partnership with established insurance companies in those markets by scaling the programme as needed. In the Asia-Pacific region, for example, Discovery is now rolling out its model across some of AIA's markets. It also has an equity stake in Ping An Health, working with one of China's largest insurers, Ping An. The insurers that Discovery partners with provide local market knowledge, strong brands, distribution networks and capital. In return, they benefit through lower claims costs and higher customer loyalty and retention. Discovery policyholders tend to go to hospital less and run up lower bills after joining its health-monitoring scheme. Their clinical outcomes improve, as do mortality and morbidity rates. Discovery's customer-centric Vitality programme greatly appeals to people committed to healthy living and allows Discovery to engage with customers more actively.

From the policyholder's point of view, Discovery's and similar competitive approaches go a long way towards enhancing trust, transparency, empowerment and results. Their digital customer engagement platforms and products deliver true value to the insured. Through incentive and reward platforms, customers benefit from better health and the insurer benefits from reduced costs and access to valuable customer data which customers are more than willing to share in exchange for value-added services like Discovery Vitality. From an insurance economics point of view, platforms such as Vitality contribute to mitigating long-standing issues such as moral hazard and adverse selection, as described at length in *The Impact of New Technologies on the Value Chain and Economics of Insurance* (p. 16). As a result, insurance markets are likely to become more efficient in terms of broader offerings at lower cost.

At the same time, Discovery's shareholders benefit from attractive returns. In 2015, the company's operating

profit came in at R 5,789 million, up 17 per cent from the previous year. Return on average equity amounted to 18 per cent.

#### **D. FRIENDSURANCE—BOOSTING COST-EFFICIENCY THROUGH SOCIAL NETWORK INSURANCE**

Friendsurance is an online insurance broker operating in Germany which was founded in 2010 and combines social technology with traditional insurance products in order to create networking effects that result in lower cost of insurance.

The company adopts a new approach towards insurance by implementing, for the first time, the concept of an online peer-to-peer insurance, backed by well-established insurance companies. Customers can connect to form individual insurance networks. This approach enables cost savings of up to 50 per cent compared with conventional insurance policies.

Based on a 'shareconomy' approach, customers with similar insurance needs form small groups. A part of their premiums flow into a cashback pool. If no claims are made, the members of the group receive some of their premium payments back at the end of the year. In case of claims, the cashback decreases for all group members. Thereby, insurance not only becomes less expensive for the consumer but also offers a financial benefit for careful and fair behaviour so that the perennial risks of moral hazard and insurance fraud are mitigated. As a result, Friendsurance records claims ratios below the market average. Smaller claims are paid from the pool's own funds, whereas larger losses are covered by a standard commercial market insurance policy.

Friendsurance is also beneficial to incumbent insurance companies. Its model reduces claims and claims processing costs. Additionally, the claims-free bonus is set to enhance customer satisfaction and strengthen customer loyalty. From a protection gap point of view, the platform holds the potential of more effectively reaching out to underinsured or even uninsured network members. It does so by lowering the cost of insurance and mitigating the lack of trust in established carriers that is characteristic of many markets.

After six years of operation, Friendsurance has failed to make a profit but, according to the company's CEO, this is part of its growth plan. In March 2016, Friendsurance announced the closing of its latest (and the first disclosed) funding round in which the company collected USD 15.3 million, the biggest investment in the peer-to-peer insurance segment ever. The financing round was led by Hong Kong-based Horizons Ventures, which had already invested in the company in 2014.

#### **E. KILIMO SALAMA/ACRE—AN INDEX-BASED MOBILE INSURANCE PRODUCT FOR FARMERS IN AFRICA**

Kilimo Salama ('Safe Agriculture') is a weather index-based insurance product originally designed and established in 2009 for maize and wheat farmers in Kenya. It covers farm inputs such as seeds and fertilisers against drought and excess rain. Initially, the product was launched under the Agricultural Index Insurance Initiative, a partnership between Kenyan insurer UAP and the Syngenta Foundation for Sustainable Agriculture (SFSA).

In 2015, Kilimo Salama evolved into the for-profit company Acre Africa, the brand name of Agriculture and Climate Risk Enterprise Ltd. (ACRE). Acre Africa is not an insurance company, but a service provider working with local insurers and other stakeholders in the agricultural insurance value chain. It is registered as an insurance surveyor in Kenya, and an insurance agent in Rwanda and Tanzania. Cumulatively, by 2015, over 800,000 farmers in Kenya, Tanzania and Rwanda were insured through its offerings.

Tailored to their cash flow, farmers can insure farm inputs as little as one kg of maize seed or fertiliser. This 'pay as you plant' type of insurance allows farmers to 'try out' insurance, a product they have never purchased before and which carries a negative reputation in Kenya and other African countries. Experience shows that, as farmers become more familiar with insurance, they expand their coverage. This enables them to invest more in their farm, raising their productivity and increasing their food security.

Kilimo Salama/Acre is usually distributed through local agro-dealers, of which there are an estimated 8,400 in Kenya alone. They register Kilimo Salama using a

scanner with tailor-made software that allows for paperless registration and immediate confirmation to the farmer of the policy. This approach minimises transaction costs. When data from a particular weather station indicates drought, excessive rains or other extreme conditions, all farmers registered with that station automatically receive payouts through their mobile phone via Safaricom's M-PESA money transfer service. This approach avoids the often lengthy claims process involving an agent visiting the farm to estimate losses.

Kilimo Salama/Acre offers farmers more than just insurance: insured farmers receive tailored extension messages using the local weather information from the nearby automated weather stations. This enables farmers to improve their productivity.

Overall, Kilimo Salama/Acre demonstrates how a combination of mobile and meteorological technology can effectively reach hitherto uninsured segments of African societies. Transaction costs are kept minimal across the value chain, from product design and distribution to claims settlement.

Developed by Airbus Defence and Space and Pacifica, this index uses 'fcover' technology. The correlation between this index and actual growth has been scientifically established following five years of research. From autumn 2015, the IPF index, covering each small fodder production region, has been made available to the agricultural world by Pacifica and Airbus Defence and Space.

## F. PACIFICA—INNOVATIVE INDEX-BASED PASTURE INSURANCE HARNESSING SATELLITE TECHNOLOGY

Pacifica, the non-life insurance subsidiary of Crédit Agricole Assurances, in partnership with Airbus Defence and Space, the European space and defence industry market leader, launched an innovative pasture insurance policy in June 2015. There were previously no insurance solutions in the market for weather risks and pastureland.

Since 2005, Pacifica has insured farmers against weather-related events affecting grains, industrial crops, market garden produce, and vine and tree produce. The new pasture policy has been successfully tested since 2013 with 300 farmers. It offers payouts to farmers whose fodder crops are hit by a drop in production, allowing them to buy feed.

The drop in pasture production is measured by satellite at district level thanks to a fodder production index (IPF).

# Conclusions and Recommendations

Digitisation is a unique lever for insurers to develop more affordable, efficient and customer-centric products and solutions, thereby enhancing the societal value of insurance. However, in order to achieve this—and preempt potentially disruptive new competitors—insurers need to step out of their comfort zone. The imperative of digitising the value chain is bound to present major challenges and even tribulations to incumbents, from managing channel conflicts to implementing headcount reductions in administrative functions.

Insurers who make a virtue out of the necessity to change will not only safeguard their current role in mature and developing economies. As we have shown, they also stand a much better chance of narrowing long-time protection gaps in a wide spectrum of areas, ranging from natural disasters to health care. Ultimately, modern technology, coming with an enhanced value proposition and improved customer experience, has the potential to completely reshape the perceived role and benefits of insurance in a way which could make the improved concept of risk transfer and management more relevant than ever before.

It is not only insurers but also the regulators who face the challenge of keeping up with the pace of technological change. They need to invest heavily in digital expertise

in order to understand new insurance business models. Generally speaking, regulators face a delicate balancing act in particular: on the one hand, their mission is to ensure that policyholders are properly protected in the world of digital insurance, too. By clamping down on security deficits, unfair competition and fraudulent behaviour, for example, regulators play a vital role in building and fostering customer trust in digital forms of producing and selling insurance cover. On the other hand, precipitous and interventionist regulatory measures risk stifling innovation in insurance, jeopardising the many benefits from technology.

Even though the insurance industry's digital (r)evolution has just begun, technology has already contributed to narrowing protection gaps. Examples, as presented in the case studies of this report, include climate insurance based on parametric covers, mobile distribution of microinsurance and web-based product design and sales in more mature markets.

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# Annex 1: Summary Findings from Executive and Expert Interviews

For illustrative purposes only, the following section presents some key findings from the 23 executive and expert interviews conducted in the context of this publication. The results need to be interpreted with caution given the small and non-representative panel of interviewees. Answers reflect the respective stakeholder group as well as the geographical (mature versus emerging markets) and customer segment focus (traditional commercial and retail insurance versus microinsurance) of the respondent.

## A. Shortcomings of traditional insurance business models (from a protection gap point of view)

The three most frequently mentioned shortcomings:

- Lack of client centricity and knowledge
- High cost of distribution
- Lack of product simplicity and transparency

## B. Areas of biggest potential for digital forms of insurance (from a protection gap point of view)

The three most frequently mentioned areas:

- Personal lines (lower cost, higher appeal, better customer experience)
- 'Pay-as-you-go' insurance in the sharing economy
- Better segmentation and targeting of underserved client groups

## C. Key drivers of digitisation in insurance

The three most frequently mentioned drivers:

- Advanced analytics (incl. machine learning and artificial intelligence)
- New sources of data
- Advanced software and cloud technology

## D. The insurance business model of the future

The three most frequently mentioned business models:

- Digitally enhanced insurance value chains
- New models disrupting and disintermediating incumbent insurers
- New partnerships and collaborations

## E. Elements of the insurance value chain facing the most severe impact from digitisation

The three most frequently mentioned areas:

- Distribution
- Underwriting
- Product design

## F. Recommendations to insurance regulators

The three most frequently mentioned recommendations:

- Focus efforts on data protection/security in order to foster trust in digital solutions
- Adopt an open-mind approach and invest in developing digital expertise
- Ensure customer protection (security of risk coverage, fair competition)

## Annex 2: Quotes from Executive and Expert Interviews

### ***Gustaf Agartson, CEO, BIMA***

'In order to succeed in developing markets, insurers need to target individuals. Whilst there is value in targeting corporate channels, most people are employed in the informal sector, which limits the extent to which initiatives like group health schemes can help address the insurance gap. In order to capture the enormous potential of uninsured or underinsured individuals in low-income countries, local regulators must carefully distinguish between traditional and microinsurance operators. This ranges from designing new capital requirements that are appropriate for microinsurance players to embracing innovations such as allowing electronic means of registration, i.e. sign up via a handset using a mobile phone number as identification, which is a particularly important catalyst to increasing insurance penetration within this consumer segment.'

'From a developing country and mass market point of view, excessive product complexity and a lack of flexibility in terms of payment channels are amongst the fundamental reasons for underinsurance and the still limited relevance of insurance. Mobile and digital technology can and will address both issues.'

'Short term, mobile and digital technology will have the biggest impact on how insurance is marketed and distributed. Longer term, as smart phone penetration increases in developing markets, too, the underwriting function of insurance will experience major changes. Risk selection will be based on individual behaviour and data collected through smart devices.'

### ***Christophe Angoulvant, Senior Partner & Global Head of Insurance, Roland Berger***

'One of the biggest shortcomings of the insurance industry in its current shape is a striking lack of client centricity. Traditional business models are based on a minimum number of direct client interactions. This leads to a comparatively low degree of client knowledge and intimacy. As a result, the industry operates below its potential in terms of client reach.'

'In today's VUCA (volatile, uncertain, complex and

ambiguous) environment, insurers face the strategic imperative of preparing for a fully digitised future in which they will have morphed into technology firms. To build and apply the required new (and disruptive) skills requires significant investments. At the same time, insurers need to systematically enhance their existing and proven value chains to ensure their continued relevance in the digital age.'

'Digitisation is putting particular pressure on distributors of insurance products. Their share in overall industry profit is set to decline. Policyholders will benefit from this trend. At the same time, insurers can improve their profitability based on digital capabilities and tools applied to underwriting expertise and innovative marketing approaches complemented by new sources of revenues, e.g. as service providers to distributors.'

### ***Andrea Camargo, Head of Regulatory Affairs and Consumer Protection for Central America, Micro insurance Catastrophe Risk Organisation (MiCRO)***

'For providers of parametric solutions against natural disasters, the key challenge is to minimise basis risk. Modern technologies open up completely new ways of doing so. Think, for example, of data gathered from satellites or drones which greatly enhances the effectiveness and appeal of parametric forms of cover, in particular, in developing countries.'

'Indeed, technology addresses some of the biggest problems in microinsurance, namely creating client value and establishing and maintaining contact with the customer. In respect of client value, technology is key to improve product design and to make sure that products effectively target client needs. Regarding consumer contact, electronic signatures and digital premium collection and claims settlement have been real breakthroughs and will boost not only the take-up of microinsurance, but they also are key to foster trust.'

'However, digital insurance regularly goes beyond the expertise of today's insurance regulators (and the regulatory framework). Therefore, regulators should seek advice from experts. Encouragingly, most regulators do understand the need for a regular dialogue with insurance



industry stakeholders. In in developing countries this process should also include interaction with fellow regulators from different sectors, particularly from the all-important telecommunications sector.'

***Kai Chen, Associate Professor, School of Economics, Peking University***

'Digitisation holds a major promise in China when it comes to addressing adverse selection. As insurers gather more information about insureds and their behaviours, traditional information asymmetries are reducing. This is particularly true for auto insurance, where the China Insurance Regulatory Commission has paved the way for risk-based pricing using telematics.'

'Traditional insurers in China are set to remain the dominant force in the market place. The potential for disruptors appears to be limited as insurance in China still "needs to be sold". It is not a product that people would buy proactively or spontaneously. Therefore, traditional distribution channels will continue to be a key competitive advantage to the benefit of incumbent insurers.'

'Digitisation in China's insurance markets presents the regulator with new challenges. It is quite difficult to clearly define what insurance in the digital space actually is. Think of high-frequency low-benefit covers such as shipment refund insurance in e-commerce. Regulators need to familiarise themselves with these new products and be prepared to widen the spectrum of permissible products.'

***Helmut Gründl, Professor of Insurance and Regulation, Goethe University***

'By breaking down information asymmetries digitisation significantly reduces the scope for adverse selection and moral hazard. One of the key implications for incumbent insurers is that they have to embrace the digital future. Otherwise they risk being left with the 'lemons' (i.e. poor risks) in the market and, ultimately, could go out of business.'

'Digitisation allows for an unprecedented customisation of insurance protection products. Think of 'on-demand' policies such as accident cover for skiers. This innovation may narrow protection gaps in specific situations.'

'Insurance regulators face a difficult balancing act in the digital age. On the one hand, they should not stand in the way of innovation and the expected benefits to policyholders. On the other hand, they need to make sure that insurers and their policyholders are adequately protected against new exposures, e.g. from data leaks or abuses which could cause severe reputational damage or even a serious risk of insolvency to insurers.'

***Robert Hartwig, Immediate Past President & Special Consultant, Insurance Information Institute***

'The phenomenon of underinsurance is not confined to developing and emerging markets. In the U.S., for example, 30–50 per cent of economic losses from natural disasters remain uninsured. Cyber risk is another area exhibiting a huge protection gap. Insurers can harness smart analytics to narrow these gaps.'

'The agency channel is certainly an expensive form of distribution. However, it adds significant value by educating customers and determining protection needs. Whilst there is a potential for technology-driven efficiency gains and cost savings, this channel is likely to continue to play an important role in the digital future.'

'It is hard to gauge the ultimate impact of digital technology on insurance penetration, defined as premiums as a share of GDP. On the one hand, improved affordability and customer experience could boost demand for insurance. On the other, telematics and other smart devices could shrink the personal lines insurance pot, and commercial insurance buyers might look at increasing their retentions on the back of breakthroughs in data availability and quality.'

**Augusto Hidalgo, President & CEO, National Reinsurance Corporation of the Philippines**

'In many developing countries, the cost of distributing simple insurance products for low-income segments of the population is way too high. Some intermediaries unduly benefit from the fact that their customers are unbanked and, as in the Philippines, for example, innovative approaches such as mobile distribution are slow in progressing.'

'Technology offers a great potential to sell simple products at lower distribution cost. Think of cloud solutions or electronic payments via a mobile device, for example. In addition, the blockchain could enable quantum leaps in administrative efficiency and the security of transactions, all potentially leading to more demand for insurance.'

'In developing countries, social media can go a long way in overcoming a key obstacle to buying insurance: a wide-spread distrust of public and non-public institutions. Recommendations from friends are generally more effective than insurers' marketing campaigns or government efforts at promoting insurance awareness.'

**Rolf Hüppi, Founder, Chairman & CEO, ParaLife**

'Mobile technology has the potential to be a genuine game changer, especially in developing and emerging markets, whereas Internet-based solutions are expected to make the biggest impact in more mature environments, and here, more so in compulsory lines such as car and health insurance. Generally speaking, new technologies will more directly benefit the middle-to-lower income segments of the market.'

'Some people argue that the concept of mutuality is at risk from the data revolution. Whilst this may be true for some segments such as "poor" risks, new sources of data can enable new systems of mutuality, based on better information and knowledge of homogenous risk pools.'

'I see four main areas where technology has already contributed to narrowing protection gaps: firstly, in climate insurance based on parametric covers, secondly through mobile distribution of microinsurance, thirdly through enabling points of sales such as retail networks and, fourthly, through Internet-driven product design and sales in more mature markets.'

**Dennis Just, Group CEO & Enforcer, Knip AG**

'The shortcomings of the traditional insurance business model are largely self-made. Insurers generally fail to understand their customers. The same is true of their approach to explaining their products and collecting and using underwriting data. This is an important reason for the significant insurance protection gaps we are witnessing across the globe.'

'Current efforts of incumbent insurance carriers to digitise their operations appear to be defensive. They lack speed and boldness. Therefore, most insurtech entrepreneurs do not lose sleep over these initiatives.'

'We are now entering the third wave of digitisation in insurance, the adoption of different forms of risk-taking and transfer. This trend is a real threat to incumbent insurance companies and builds on the two initial waves, comparison and brokerage.'

**Cornelle Karekezi, Group Managing Director & CEO, Africa Re**

'The power of Internet and mobile communication will reshape Africa's insurance markets. The message of insurance can now spread to the most remote areas of the continent. It will not only become much less expensive for insurers to reach current and prospective policyholders. Similarly important, the information conveyed will be more coherent, because it comes from one source, and effective—because it is received in any place and time—in prompting buying decisions, as compared with traditional agent distribution channels, which are biased by the human factor in [the] communication chain.'

'Insurance regulators will have to invest massively in IT in order to cope with the challenges of digitisation. Ultimately, the ubiquity of information, e.g. through blockchain technology could make regulators' job not only easier but also more effective, as they will see the whole process as if they were in a desk inspection.'

'At the end of the day, digital insurance platforms will only prosper and survive if they enjoy policyholders' trust. This may not be a problem as more and more people are comfortable to trade on electronic platforms. The likes of Amazon and other online vehicles have demonstrated that one can pay with a minimum of trust to an invisible provider before he has received the product or service. To this end, regulators should step in and establish adequate solvency and other supervisory rules.'

**Mohamed Khalifa, Vice Chairman, Misr**

'The take-up of microinsurance in Egypt is still very low. This is not primarily because of the cost of insurance for low-income segments of the population. The more important reasons include a general lack of awareness and, even if there is interest in buying cover, the need to go via physical distribution channels.'

'Talking about Egypt, the regulatory preconditions for online sales are in place. Electronic sales and signatures have been approved recently. The potential for digital distribution is huge, as most people are keen to avoid the hassle of using physical distribution platforms (traffic jams, waiting times, etc.). Insurance penetration in Egypt could increase by up to 30 per cent if the digital channel is more widely used.'

'From a frontier market point of view, premium collection and claims management are two particularly important links of the value chain that would benefit from digitisation. It would help address major challenges such as the misuse of funds and insurance fraud.'

**Nikos Kotalakidis, Industry Leader Financial Services (Germany, Austria, Switzerland), Google**

'What we observe in insurance against the benchmark of other industries is not only a "protection gap" but an equally significant "digitalisation" gap. Despite the data intensity of insurance, the sector is still at a very early stage of achieving digital preparedness.'

'By 2025, I personally expect to see a large-scale innovation within the B2C insurance market, driven by insurers who increasingly put the topic of "digitalisation" on top of their executive agenda as well as by new players, including insurtech start-ups and technology players, who introduce or facilitate radically new approaches to core elements of today's insurance value chain such as product design, distribution and claims management.'

**Stewart Langdon, Partner, LeapFrog**

'One of the biggest impediments to a greater insurance penetration in developing markets is the reliance by traditional financial services operations on "bricks and mortar" infrastructure. Digitally-enabled models based on mobile technology overcome these obstacles by bringing down the cost of distribution and by reaching the hitherto unreachable. Bangladesh and Ghana are just two examples of

markets where we already have seen the benefits. BIMA, the mobile insurer, has doubled per capita insurance penetration rates in both of these countries in the space of a couple of years.'

'In emerging markets, underwriting is often a challenge because of the absence of formal credit histories, for example. This means we must often call on non-traditional data: so data derived from using mobile phones and social networks can effectively address this issue and help improve insurability.'

'Digitisation in insurance impacts all elements of the value chain. We should be developing genuinely comprehensive digital strategies, with the overarching goal of improving customer centricity and meeting the expectations of increasingly savvy and sophisticated policyholders.'

**Richard Leftley, CEO, MicroEnsure**

'Traditional insurers tend to try and impose their existing complex products on consumers in low-income markets. They usually fail in doing so, ignoring the need to provide frictionless enrolment, educational services and swift claims settlement.'

'In low-income countries, non-insurers are the biggest contributors to higher levels of insurance penetration. Take mobile operators as an example. Some of them simply attach insurance services to their selling proposition in order to foster client loyalty. By doing so, millions of people learn about and experience the concept of insurance for the very first time.'

'Regulators should refrain from adopting a prescriptive approach. Markets are more effective and efficient when it comes to innovating. Having said this, regulators have an important role to play in ensuring clarity, fairness and transparency which matter greatly in microinsurance, too, as opposed to solvency, which tends to be a marginal issue.'

**Henrik Naujoks, Partner & Director Financial Services EMEA, Bain & Company**

'Digitisation goes hand in hand with unprecedented levels of connectivity amongst people. For insurers, this presents both challenges and opportunities. On the one hand, the emergence of new players with superior access to customers conjures up the risk of disintermediation. On the other, today's extent of connectivity allows insurers to offer more than simple protection products. Based on their existing customer relationships and pools of data, insurers can capture the opportunities offered by entirely new ecosystems, for example

in health care, helping policyholders develop healthy lifestyles.’

‘The relevance of digital technology goes far beyond existing protection gaps such as in property, health and term life insurance. It also has to be seen in the context of genuinely new exposures such as cyber risk and liability risk associated with autonomous cars. In these areas, digital is both the source of and a potential answer to emerging protection gaps.’

‘Insurtechs will disrupt incumbent insurers, but not in their entirety. The business of insurance is both capital-intensive and highly regulated. Therefore, insurtech players may see more promise in capturing specific attractive parts of the insurance value chain and offer specialised services to insurers. The most significant impact of these new players may lie in “turbo-charging” digital change in the insurance industry which, traditionally, is risk-averse and slow to adopt innovation.’

**Alain Peddle, Deputy General Manager, Ping An Health**

‘Digital enables us to think about insurance in much broader terms. Traditionally perceived as “a money swapping” vehicle, insurance is now increasingly seen as an important element of a more comprehensive service proposition which ultimately improves people’s lives and offers a much more compelling case for protection products as well. Think of health care, for example.’

‘Insurance regulators face significant challenges in keeping up with the pace of change in the markets. One example is data privacy, the perception of which is very much dependent on age. Ultimately, regulators will have to find ways of introducing more flexibility for customers in making their own choices about data.’

‘Incumbent insurers are challenged by new players who are starting to use non-traditional data to inform underwriting decisions. They may discover totally unexpected correlations which do not only improve the quality of their underwriting decisions but also provide the customer with better value for money.’

**Nadeem Shaikh, Founder & CEO, Anthemis**

‘There is a huge potential for innovative mutual insurance structures, leveraging massive social media with blockchain technology. Such structures could make a significant contribution to broadening and deepening the reach of insurance well beyond what today is considered possible.’

‘In order to survive the onslaught of the digital challenge insurers need to step out of their comfort zone and embrace genuinely new business models. What we have seen so far from many insurers are incremental changes to the status quo. These are unlikely to suffice.’

‘Financial services regulators are adopting an increasingly open approach to fintech- and insurtech-based innovation. They begin to understand that safeguarding consumer protection and encouraging new business models with the potential of better serving uninsured or underinsured segments of the society can actually go hand in hand.’

**Michael Sherris, Professor of Actuarial Studies, Australian School of Business, University of New South Wales**

‘With more information and finer risk characteristics, digitisation is poised to make insurance markets more efficient, improving the overall availability of protection products.’

‘New technologies facilitate the systematic targeting of underinsured or underserved segments of the market, which, ultimately, should translate into higher levels of insurance penetration.’

‘Regulators should adapt risk-based solvency requirements to the changing nature of data used in the underwriting process. As insurers collect better and more relevant data, capital standards should be revisited and reflect changes to insurers’ underwriting risk.’

**David Shrier, Managing Director, MIT Connection Science**

‘Existing business models in insurance present major barriers to those underinsured or uninsured individuals who lack the wealth and privileges of established insurance customers. This situation is partially attributable to the use of antiquated analytics such as past driving records or credit history.’

‘Unless insurers move and change fast, they risk sharing the fate of the large parts of the newspaper industry that proved to be too slow to embrace digital change and ultimately disappeared from the market place.’

‘By using behavioural indicators as a more meaningful way of assessing riskiness, insurers could safely and responsibly extend coverage to significantly more people, without assuming disproportionate risk, and narrow the insurance protection gap.’

**John Tan, Founder and Former CEO, ACR Capital Holdings**

'A very high level of distribution cost in individual consumer products is the biggest shortcoming of traditional business models in insurance from a protection gap point of view. It discourages most lower-income people from even looking at insurance.'

'Digital disruptors will not take the global insurance market by storm. They still grapple with customer concerns about trustworthiness and security. In order to make real breakthroughs, they probably need to employ nascent technologies such as blockchain and artificial intelligence.'

'B2C online products need to be simple. The biggest scope for digitisation is offered by mono-covers for defined periods. In this area, even the underwriting function can be automated. Such products with big data enabled pricing based on individual risk are also likely to encourage insureds to change their behaviour, allowing for an effective mitigation of moral hazard.'

**Frédéric Tardy, Chief Marketing, Digital, Data & Customer Officer, AXA**

'Mobile technology is a game changer for microinsurance. It will help the concept to make a real impact and live up to its promise.'

'I very much believe in [arm's length forms of] collaboration between traditional insurers and insurtech innovators. The former bring to the table established and large customer bases as well as in-depth regulatory and product expertise. The latter contribute technological competencies and mental agility.'

'Going forward, insurance could be less of a stand-alone service but rather an integral part of a bigger service proposition. Take the sharing economy, for example. [In the sharing economy] insurance will be an important lubricant as it provides an adequate level of trust which is indispensable for the sharing economy to function.'

**Felix Tenniglo, Co-Founder & Managing Partner, InShared**

'Traditional insurers will have to address their enormous legacy IT challenges. Otherwise, at least in the area of simple risk products, they risk losing out to new players which offer both lower rates and higher levels of customer satisfaction.'

'From our experience, there are three key success factors in digital insurance: first, adopt a "puristic" approach to customer centricity. Do exactly what the customer expects you to do. Second, treat IT as a facilitator, not as the foundation of your business model. And third, accept the crucial role of risk management and pricing in any fledgling digital operation.'

'In areas such as product development, underwriting and claims settlement traditional insurers will not lose their competitive edge any time soon. They are more at risk of disruption in distribution and marketing where we are witnessing the fastest pace of change. Incumbent players need to adapt quickly in order to defend the all-important customer interface.'

**Chris Wei, Executive Chairman of Aviva Asia and Global Chairman of Aviva UK Digital, Aviva**


'In Asia, there are significant cultural barriers to buying protection products. Digitisation will not be the "magic bullet" which makes these obstacles simply disappear. However, it will help increase insurance penetration through enhanced transparency and ease of purchase, for example.'

'When it comes to narrowing the protection gap, technology is primarily an enabler. It does not change the fundamentals and insurers should not rely on technology as a panacea which spares them the heavy lifting required to become more customer-centric and design more attractive and relevant products.'

'Nobody knows how the digital future will play out. I believe that digital will come first, without, however, monopolising the way of transacting insurance business. Advisory services, for example, will remain a hallmark of insurance, be it F2F or virtually.'





The background of the entire page features a hand holding a globe. Overlaid on the globe and the hand is a network of white lines connecting various points, representing a global or digital network. The top half of the page has a dark blue background with a grid pattern and several white circles connected by lines. The middle section is a solid red bar containing text. The bottom half of the page shows the hand holding the globe, with a network overlay and a list of services.

The global insurance protection gap is one of the most pressing issues facing our society. It leads to a severe lack of societal resilience in many developing and emerging countries, where insurance today hardly plays any role when it comes to mitigating the impacts of, for example, natural disasters or pandemics.

In this report The Geneva Association has analysed how digital technologies can be a lever for the insurance industry to narrow protection gaps in both mature and developing markets through risk mitigation and protection products and solutions. The findings of the report were complemented and validated through 23 executive and expert interviews.

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**Business Strategy**  
Innovation  
Branding  
Solution  
Marketing  
Analysis  
Ideas  
Success  
Management

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