

INSURANCE:

Challenges to the business model

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With technology changing the nature of risk and the way risk services are priced, this paper examines the key elements of a 'traditional' insurance business that are now open to challenge. It includes a stylised insurance value chain, which provides a framework for discussing how the disruptive forces in the industry are affecting incumbents. The paper also speculates on the form, or forms, which the insurance business model will take in the future. The paper was prepared for the Monash University and Australian Centre for Financial Studies' 22nd Melbourne Money and Finance Conference on 10–11 July 2017.¹

Innovation is not commonly associated with the insurance sector. After all, the basic insurance business model of charging a fee to assume someone else's risk has been around since Babylonian times.² However, insurance has entered a period of increasing change, with the World Economic Forum nominating it as the sector of financial services that is most vulnerable to disruption.³

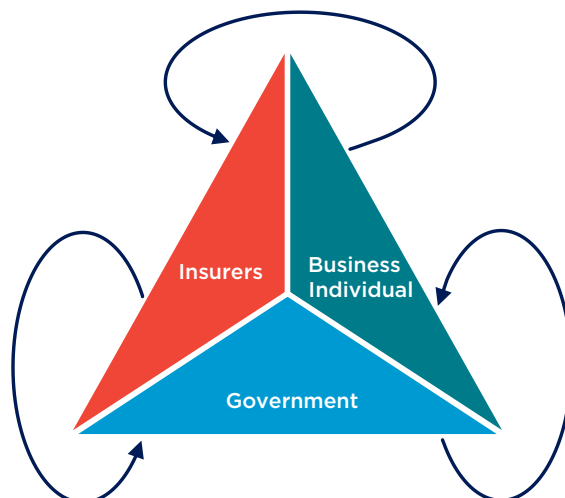
Change in insurance is being enabled by technology, which is altering the nature of risk and how risk services are priced, and spawning competition in parts of the insurance value chain where none previously existed. Insurers are being forced to innovate to meet these challenges to their business models.

Risk and risk allocation

There is an element of risk in everything that individuals and businesses do. Those at risk may choose to: self-insure; mitigate the risk by adopting preventative measures; or transfer it to a third party, e.g. to the insurance market. Governments may bear risk to meet social goals or in the event of market failure.

Disruption can be thought of as challenges to the insurance business model that cause a realignment of the prevailing balance between self-insurance, risk mitigation and risk transfer and, hence, changes to who bears the risk.

FIGURE 1: Principles for allocating risk



- Risk is allocated and pooled within the economy
- Risk is allocated towards those best placed to manage it
- The market provides price signals to encourage an efficient allocation of risk

Challenges to the traditional insurance business model may result in reallocation of risk, including through:

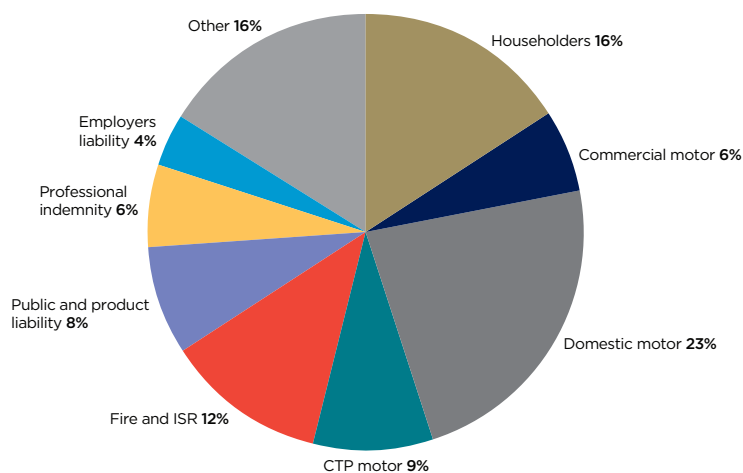
- > *reduced risk of a significant loss*, encouraging increased self-insurance
- > *emergence of new risks*, that may not be insurable (at least initially)
- > *more homogeneous and measurable risks*, potentially allowing capital markets to allocate them more efficiently than insurance markets
- > *sharper, personalised pricing*, causing the insurance pool to leak lower risks and increase adverse selection and, potentially, moral hazard
- > *market price signals incompatible with governments' equity objectives*, inviting intervention in the market
- > *increasing frequency of correlated, severe events*, which may not be economic for insurers to cover at an affordable price
- > *low investment income*, putting upward pressure on premiums.

These *challenges* to the model are likely to push the allocation of risk in different directions. Importantly, technology has also lowered entry barriers to *challengers* at points along the insurance value chain.

Challenges to the traditional model

Many of the challenges to insurers are well documented. Motor vehicle insurance and home insurance in their various guises are relatively simple personal insurance lines that face being disrupted extensively (see below). Given that these lines account for around half of premiums collected by general insurers in Australia, business models appear to be entering a period of fundamental change. In time, it is likely that more complex commercial products will be affected too.

FIGURE 2: Australian general insurance market by class of business (\$m)



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Reduced risk of a significant loss

Where ongoing technological innovation significantly reduces risk, self-insurance becomes more attractive and demand for some traditional lines of insurance will decline. Examples of this are as follows:

- > The introduction of anti-lock braking and collision avoidance systems has improved motor vehicle safety and reduced the incidence of claims. Industry analysts predict that income from motor vehicle insurance premiums will fall by 30 per cent in the next 10 years.⁴ The remnant business is threatened by driverless cars, given that driver error contributes to 75 per cent of crashes.⁵

- > The internet of things (IOT) promises to deliver a smart home in which white goods, thermostats, carbon monoxide levels, water leaks, fire alarms and movement sensors are interconnected. Around the clock, data from the devices will be collected, stored and analysed, to assess the risks to the home and home owner. Diagnostic tools could turn off a faulty electrical device, awake the residents or alert the fire brigade in time to prevent a loss occurring.
- > In the workplace, robotic processes, automation and driverless cars will eliminate many riskier jobs, potentially leading to a shrinking market for workers compensation insurance.

Technology may not be able to eliminate risk completely, for example, there will still be natural disasters. But it doesn't need to. It only needs to reduce risk to a level where individuals and businesses are increasingly willing to self-insure.

Emergence of new risks

Technology has also given rise to new risks.

Cloud risk and cyber threats are new additions to the insurance spectrum. Ransomware is the latest form of cyber attack, disrupting business and government on a global scale. These new risks are correlated to the increasing interconnectedness of modern society.

Moreover, some personal indemnity lines are likely to be transformed into commercial product liability insurance. By 2030, the combination of driverless cars and the sharing economy could result in the majority of all road trips being undertaken as transport services.

The challenge for insurers is to develop suitable products to be able to cover these new risks.

More homogeneous and measurable risks

Homogenisation has always been part of the insurance market; insurance contracts exclude many things. As technology reduces risks for individuals, so too the variability among their risk profiles is likely to decline. The increased use of P2P models and sharing economy platforms, with rules for using assets, has a tendency to homogenise the customer base and their risks. At the extreme, driverless cars will make all drivers good drivers.

Large homogenous data pools may support more disintermediation of insurance markets, by making insurance risks increasingly suitable for securitisation. It remains to be seen how insurance and banking regulation will need to evolve to accommodate such changes.

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Sharper, personalised pricing

Technology, especially improved data analytics, is revolutionising the pricing of risk. There are ethical concerns about the collection and use of individuals' data by insurance companies. At the same time, in an increasingly connected world, more consumers are accepting loss of privacy in return for lower prices.

Telematics can be used to assess risk more accurately, i.e. risk premiums can be personalised to the driver, rather than a cohort in the pool, and incorporate contextual and behavioural information. For example, by 2020, half of US motor vehicles will have inbuilt telematics that measure performance, driver behaviour and likely monitor road conditions too.⁶

Telematics also has the potential to encourage safer driving; it addresses information asymmetry and moral hazard by incentivising drivers to improve their driving habits to reduce their premiums.

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Technology may also result in insurance being broken down by usage and type of peril. In a world of driverless cars and a sharing economy, the user of the asset may not be the owner. In this case, the customer will have no need for an annual, comprehensive motor vehicle insurance policy that covers accidents, theft and damage from nature.

However, more individualised pricing could lead to unpooling of risk across customers, raising the prospect of affordability issues for higher risks and increased underinsurance, as has happened in Northern Queensland for insurance against cyclone damage. Moreover, episodic coverage and unbundling will necessitate higher base unit prices because, essentially, customers will be only buying insurance for when their risks are high.

There also is a risk that too-accurate pricing would discourage risk taking to the detriment of economic growth. For example, episodic pricing may discourage people from driving in the rain, whereas annual premiums would not.

For insurers, individualised pricing may allow them to move towards a willingness-to-pay model, with surge pricing akin to how airfares are priced. However, providing episodic cover would potentially expose them to less predictable cash flows and, hence, higher risk capital requirements.

Compatibility with governments' social objectives

Increased segmentation due to more accurate pricing of an individual's risks should reduce the average price of insurance, although it may be that only lower-risk individuals will see their premiums fall. However, this may also be accompanied by an increase in premiums for high-risk individuals. Governments may choose to intervene in the market to counteract adverse social impacts of reduced affordability and access.

It remains to be seen how the impact of new technology on the insurance market will be affected by the pace of change of regulation.

Increasing frequency of correlated events

Correlated events are more difficult for insurers to underwrite because of the relatively high probability of many policy holders claiming at the same time. Climate change is increasing the frequency of extreme weather events. The internet of things is increasing interconnectedness and, with it, the risk of systemic technology failures. It is conceivable that some of these risks could become uninsurable.

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Low investment returns

In a competitive market, insurers typically rely more on investment earnings and less on profit from underwriting. However, with low rates of return on investments, they need to innovate in terms of their capital mix and use of reinsurance, and seek an underwriting profit even on long-tailed business.

Insurers have been living with low interest rates for a decade. Low interest rates enter into calculations of the present value of unexpired risk and unreported claims that determine the level of capital reserves insurers must hold.

While interest rates seem likely to remain relatively low, according to the Reserve Bank of Australia, life insurers appear to have adapted to this new world.⁷ The adjustment may be proving more challenging for general insurers.

The challengers

Traditionally, insurers have filled all the roles in the insurance value chain, except parts of distribution and reinsurance. Now they are facing new challengers at all points along the chain, i.e. in research and development, sales and distribution, pricing and underwriting, claims and service, and risk capital and investment.

FIGURE 3: Insurance value chain



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Research and development

New products are being made possible by data analytics and other advances.

In the sharing economy, consumers will only want to pay for the period they want to use the asset, for example, pay-per-mile car insurance.⁸ Moreover, by switching cover from the individual to the asset, new commercial lines have appeared, such as host protection insurance underwritten by Lloyds for Airbnb hosts.

Despite the hype around so-called insurtechs disrupting the insurance industry, to date most are providing back office solutions or distribution platforms. As P2P insurance is essentially a refresh of traditional mutual insurance, it remains to be seen whether it has longevity. To date, with a few notable exceptions, most P2P insurers distribute traditional insurers' products.

Sales and distribution

Sales and distribution are where rivals have made the most obvious impact. Customers deal with their insurer infrequently, which leaves them open to non-traditional rivals entering the market at the point of sale.

Price comparison websites allow customers to compare prices across carriers; value comparison sites allow customers to choose their cover based on other factors, such as perils covered. These sites do not compete directly with insurers because they are not carriers, but they do increase competition between carriers.

Trust is important for customers of insurers, due to the delay between paying for insurance and receiving money for a claim. The trust that insurers have built up over decades can be acquired almost instantly by new entrants via peer-review ratings, social networks and affinity groups.

This is the model employed by P2P insurers and it has the added advantage that members effectively do the marketing and, hence, lower the cost of acquiring customers. At the same time, the growth of exclusive P2P networks may increase adverse selection in traditional markets.

Pricing and underwriting

Insurers price risks as accurately as the available information allows; they need access to other sources to get a complete picture of their customer. The spread of data analytics has allowed other organisations with a wealth of customer data to compete in this space.

Competition will come from non-insurers estimating their own risks and self-insuring, possibly when facing new risks that are not addressed by existing products. For example, IKEA has a large insurance underwriting business in Europe and the US, which started selling child and pregnancy insurance, and house insurance to its loyalty club members.⁹ Another example is that Volvo has said it will assume the liability for accidents caused by its self-driving cars.¹⁰ This is all occurring before the regulatory framework is in place.

Data is the tail that wags the dog. Consequently, the Government's response to the recommendations of the Productivity Commission Inquiry into Data Availability and Use will have a bearing on the challenges to incumbents in Australia.

Claims and service

Some of the most interesting challengers are seeking to change the customer experience in claims and service. The claims process is an ongoing source of friction. Insurers are criticised for delaying payment on claims to earn investment income; insureds are criticised for overstating their losses. The challenge here is to speed up the process and give both insurers and insureds more certain outcomes.

Under traditional insurance, the insured is covered for the amount of loss incurred less any excess. One alternative is parametric insurance where payment is pre-set and automatically triggered by an objective, third-party parameter. For example, in the event of a cyclone of Force 5, insured properties within a 100 km radius of a given latitude and longitude would receive payment based on Bureau of Meteorology data. The losses are known with certainty beforehand, greatly reducing the underwriting task. There would be no need to adjust claims as payouts are pre-determined and, hence, payment would be prompt. Of course there is basis risk for the insured, because the actual loss may exceed the parametric loss.

The social aspect of P2P is designed to influence claims as a way to address fraud. Around 10 per cent of general insurance claims in Australia are believed to be fraudulent, adding around \$75 to the cost of each policy.¹¹

And some platforms have gone further down the behavioural economics path; US P2P insurer Lemonade, which aims to provide 'insurance that doesn't suck',¹² has designed its online forms to reduce the likelihood of dishonest claims.

Capital and investment

It is not surprising that new entrants have tended to avoid the regulatory and capital intensive part of the value chain. For example, P2P insurers' members settle small claims among themselves, but use traditional insurers for large claims. However, increasingly, technological advances may allow large commercial customers to bypass insurers to go directly to the capital markets.

Competition from capital markets has increased, in part due to low interest rates. Alternative risk transfer (ART) is risk protection that takes place outside of the traditional models of insurance, for example, hedge funds package insurance risks and issue insurance-linked securities (ILS) to investors. Funds are invested to increase the amount available to cover losses, while investors receive interest. Hedge funds believe they can generate higher returns on the float than insurance carriers who have their investment options limited by regulation.

ILS are appealing to investors for their diversification benefits and returns. Catastrophe (Cat) bonds are the largest stock of outstanding ILS, but there are also securities based on mortality rates, longevity, mortgage insurance risks and medical costs. The market for ILS has around \$29 billion outstanding, of which the vast majority are Cat bonds.¹³

Broader capital markets have greater risk bearing capacity than insurance and reinsurance markets. The potential for expanding the ILS market has been recognised by government. HM Treasury has been working to develop a legal, tax and regulatory framework for the UK market. In Australia, APRA has been monitoring developments in ARTs for some time with respect to issues such as: how effective they are in providing the cover needed; and what is the impact of new supplies of capital from institutional investors into the reinsurance market.¹⁴

What will the insurance business of the future look like?

With so much innovation happening in insurance, you could be forgiven for asking why hasn't there been more disruption to incumbents?

High capital and regulatory barriers that persist in parts of the value chain are obvious sources of restraint. So, perhaps the insurance model will become an amalgam of the old and the new, with challengers being absorbed into the traditional model to reduce costs at specific points of the value chain. That said, the prospect of a shrinking market for traditional insurance products means insurers will need to find new ways of generating revenue.

Some insurers may decide to build new business models that focus on risk mitigation, managing risk on behalf of their customers, i.e. providing assurance rather than insurance.

Some personal insurance will evolve and be subsumed into commercial lines. Some lines of insurance may be commoditised or parameterised, but complex commercial insurance will still be negotiated by lawyers across a table. Non-traditional players, armed with extensive proprietary data sets, could also provide an alternative. Just as supermarkets have used their distribution networks to enter insurance, so to could other masters of consumer interactions such as Google, Apple or Facebook.

In order to maintain the integrity of insurance pools and combat adverse selection, government will be called upon to intercede or regulate insurance markets. Ultimately, preventing adverse selection is a decision for society and may be best delivered in partnership with government and regulators.

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It is feasible that a larger proportion of investment risks will be transferred outside of an insurance company as more alternative providers of capital offer cost-effective options. This may refresh the bancassurance model.

Regulation will also have a bearing on which insurance business model, or models, thrive.

Notes

1. I would like to acknowledge the generosity of Ian Harper, Marcus Ng, Sharanjit Paddam, Jonathan Davies, Alex Sanchez and Rick Shaw in commenting on earlier versions of this paper. All errors in the final version are my own.
2. Mills and Tubiana (2013).
3. WEF (2015).
4. WTW (2016).
5. Salmon et al. (2005).
6. WTW (2016).
7. RBA (2015).
8. See <https://www.metromile.com/>
9. WSJ (2014).
10. Bauman and Galaski (2016).
11. See <http://understandinsurance.com.au/insurance-fraud>
12. See <https://www.lemonade.com/>
13. See <http://www.artemis.bm/>
14. Laughlin (2014).

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