The role of business model analysis in the supervision of insurers

By John Breckenridge of the Prudential Regulation Authority's Insurance Directorate and James Farquharson and Ruth Hendon of the Prudential Regulation Authority's Policy Division.[1]

- The Prudential Regulation Authority (PRA) supervises insurance companies since, in the absence of regulation, there could be adverse effects for policyholders and financial stability.
- Like all firms, insurers' business models — the ways they make profit — and the risks they face evolve over time. The PRA uses business model analysis (BMA) as part of its forward-looking supervisory approach, to help to ensure that these evolving risks are recognised.
- This article explains the use of BMA, using as case studies the rise of price comparison websites in the motor insurance market, and the growth of non-standard annuity products for life insurers.

Overview

Insurance plays an important role in the UK economy. It supports economic activity by helping businesses and households to manage the risks that they face — risks which in many cases would be severe if they were to fall on an individual person or business. It is important that insurers are prudentially sound so that threats to financial stability are minimised and so that policyholders can expect claims will be met as they fall due with a high degree of confidence. The Prudential Regulation Authority (PRA), which assumed responsibility for the prudential regulation of insurers in April 2013, needs to make judgements to ensure its resources are focused on the greatest risks. And it takes a forward-looking approach — so supervisors must ask the right questions about what could go wrong in future.

Business model analysis (BMA) helps the PRA to make forward-looking judgements by exploring how a firm plans to make money, and what risks it takes in so doing. After setting out the role of insurance in the economy and the insurer's business model, this article explains the potential use of BMA in the supervisory process by considering two case studies:

(i) **The rise of price comparison websites, or 'aggregators', in the motor insurance market**. Aggregators accounted for around 33% of all motor insurance sales in 2012, having only first appeared around a decade earlier. Consumers using aggregators are very price-sensitive, with only 7% choosing an insurance policy outside of the top five cheapest quotes. Such dramatic changes have improved competition and helped keep costs down for customers. But they have also introduced risks that the PRA must consider as part of its supervision.

(ii) **The growing market for 'non-standard' annuities that can offer improved retirement incomes for those in poor health**. These products accounted for around 30% of total annuity sales in 2012, compared to 12% in 2008. However, they present a number of risks for insurance companies. For instance, those selling non-standard annuities are particularly exposed to improvements in the lifespans of those in less than average health, meaning that insurers could incur large losses if they underestimate future medical advances, say, or the number of smokers who later go on to quit. Moreover, by drawing some of those in poorer health away from standard annuities, they have also changed the risks faced by insurers that do *not* offer non-standard annuities.

These market developments, then, introduce new sources of vulnerability that the PRA must assess. Where motor insurers sell through price comparison websites, for instance, the PRA can scrutinise the assumptions made about future policy renewals and the controls around the complex pricing algorithms that are used. Similarly, the amount and quality of the data that insurers use to price annuities can be examined, particularly for those that apply to specific health conditions. This type of BMA helps the PRA to consider whether a firm's profits are in line with the risks it is taking and, where necessary, to respond pre-emptively on the basis of what could go wrong in the future.

(1) The authors would like to thank Harvey Daniell for his help in producing this article.

Insurance companies allow businesses and individuals to transfer risk, by exchanging a future unknown outcome for a known premium upfront. In a world that is inherently uncertain, insurers play a key role in the economy by allowing households to smooth consumption and by boosting firms' confidence to spend and invest.

Life insurers offer protection from uncertainty over the timing of death. General insurers protect, among other things, against natural disaster, fire, theft and accidental damage, as well as against legal liability. Insurers take on a diverse range of risks and the effect on policyholders and on financial stability were an insurer to fail could be severe.

In April 2013, the Prudential Regulation Authority (PRA), a subsidiary of the Bank of England, assumed responsibility for the prudential regulation and supervision of insurers.(1) Conduct supervision of insurers — which focuses on the way customers are treated — passed to the newly created Financial Conduct Authority (FCA). This is in contrast to the previous system of financial regulation, where both prudential and conduct supervision were undertaken by the Financial Services Authority (FSA).

This article discusses some of the ways in which changes to an insurer's business model feed in to the PRA's approach to prudential supervision of insurers. It starts with an overview of the insurance industry, assuming no prior knowledge. The article then explains in more depth how the PRA uses business model analysis (BMA) as part of its supervisory approach. Two case studies are used to illustrate the application of BMA, focusing on (i) the impact of price comparison websites for the motor insurance industry, and (ii) the growth of the non-standard 'enhanced' annuity market.

What is insurance and what role does it play?

Insurance allows people to exchange the risk of a very uncertain (and possibly very bad) financial outcome for a predictable, known cost or premium. Demand for insurance arises because consumers would prefer to pay a small fee up front rather than take the risk of having to pay a large amount later if the insured event occurs. Most consumers prefer to do this even if the fee or 'premium' they pay amounts to more than the average or expected cost of the insured event. They are risk-averse, and so prepared to pay an extra margin for the certainty that insurance offers. For example, a homeowner with a house worth £100,000 with a one in a thousand annual probability of it burning down will typically be prepared to pay more than the expected loss (£100) to avoid the risk of a larger financial loss.

Insurance supports economic activity via a number of channels. The ability to smooth out what could otherwise be a very volatile pattern of costs gives consumers confidence to make large purchases such as houses, cars and holidays. Insurance helps businesses to expand and invest by protecting their premises, stock and employees. It allows innovation, by protecting claimants when liability results from new products or medicines. Professional indemnity cover allows doctors, solicitors and accountants to practice. And insurance markets such as Lloyd's of London allow insurers to come together to share larger risks such as those associated with large public infrastructure projects.

In protecting people and businesses from losses related to unpredictable events, insurance serves a social purpose by reducing reliance on the state. Pooling risks between large numbers of people, and protecting individuals from catastrophic outcomes that would otherwise leave them bankrupt, reduces the need for a government safety net. Pension savings vehicles and annuity products provided by insurers also provide a private supplement to the state pension.

Insurers are willing and able to supply insurance because, by taking on a large number of similar risks, they can reduce the uncertainty over the combined cost of the insured events; the risks are pooled. For example, while it is very hard to know if any one individual will crash their car in a given year, an insurer can assess with much greater confidence how many car drivers out of 100,000 will have an accident and what the total costs of this are likely to be.

Types of insurance product

While the concepts of transferring and pooling risk are central to all types of insurance, there is a wide variety of product types.(2) Typically these fit into three categories:

(i) **Life insurance**, which covers risks arising from uncertainty about the lifespan of an individual. It includes:

- annuities, which provide guaranteed income until death, and so protect an individual from the financial cost of living longer than expected;
- conventional life assurance, which pays out a lump sum to beneficiaries on the death of the policyholder; and
- savings products, which, for tax and legal reasons, have historically offered a limited death benefit alongside investment return.

(1) See Bailey, Breeden and Stephens (2012) for a description of the PRA's role and its approach to supervision. See also Debbage and Dickinson (2013) for the rationale for prudential regulation and supervision of insurers.

(2) Furthermore, some risks that can be transferred using insurance-like arrangements are not technically classified as insurance. For example, credit default swaps (CDS) are derivative contracts which essentially insure against the risk that a company or government will be unable to pay its debts. Because there is no requirement for the contract buyer to have an insurable interest in the insured event, CDS do not constitute insurance contracts in legal terms.

(ii) **Non-life or general insurance**, which includes:

- property cover, protecting physical property such as buildings, cars, ships or aeroplanes from losses which may arise from events such as natural disasters, thefts, fires or accidental damage;
- various liability policies, which protect individuals and companies against the costs arising from legal liability (for example negligence) claims against them; and
- miscellaneous financial loss cover, including business interruption policies that protect against loss of business as a result of events such as severe weather.

(iii) **Reinsurance**, which is a further layer of insurance taken out by insurance companies to transfer some of the risks they have taken on. Reinsurance is typically provided by specialist reinsurers.

Not all risks can be transferred using insurance. Although there are various possible definitions, a risk is generally considered to be insurable if: it is unpredictable and reasonably unlikely to occur; the policyholder has a genuine financial interest, usually called an insurable interest, in the risk (for example it is not possible to take out a life assurance policy on a stranger's life); the loss that might arise from the risk can be expressed in monetary terms, and is neither trivial for the policyholder nor catastrophically large for the insurer; and it will be definite whether or not a loss has occurred, and what is the monetary size of the loss.(1)

Why insurance differs from other business models

Insurance companies have a very different business model from most other types of company. This is discussed in more detail in the box on pages 52–53. One key aspect of insurers' business models is the inverted production cycle: insurers receive premiums up front and deliver a service later. This has two main implications:

- insurers can earn an investment return over the period between premiums being paid in and claims being paid out; and
- while most retailers can set prices based on a known cost of production, the price charged for insurance is set based on estimates of the future level of claims and expenses.

Insurers seek to make profits primarily through good underwriting (carefully selecting and pricing the risks they take on) and investment income (investing premium income and making a return in excess of that needed to pay policyholder claims). Expense management and robust claims handling will also help to control costs. If premiums and investment income exceed the cost of claims and expenses, the remainder can be retained as profit or used to pay dividends to shareholders.

In seeking profits, however, insurers must take certain risks. Poor underwriting can lead to losses if the estimates of future claims and expenses that were used to price a policy turn out to be too optimistic. Meanwhile, if investments fall in value, or are difficult to turn into cash when needed, money might not be available to pay claims falling due.

How does the PRA use business model analysis to supervise insurers?

The failure of an insurance company is likely to have negative consequences for policyholders. For example, a policyholder with a flooded or burnt down home, or an annuitant relying on the regular monthly income from their policy, would clearly suffer if payments due to them are not made as expected. Given the important role that they play in the economy, insurers can also give rise to risks to the stability of the financial system. Moreover, a number of market failures are present in insurance markets. The prudential supervision of insurers can help to counteract these market failures, leading to a more stable financial system and ensuring that there is a reasonably high probability that insurers are able to meet obligations to policyholders as they fall due. Debbage and Dickinson (2013) explore these issues in more detail and set out the rationale for the prudential regulation and supervision of insurers.

The PRA's approach to supervision has been set out in a number of publications and speeches.(2) Importantly, the PRA has adopted a judgement-based, focused and forward-looking approach. This approach is intended to avoid a tick-box mentality among supervisors, to ensure resources are focused on the greatest risks, and to make sure the right questions are asked about what could go wrong in the future.

An important part of forward-looking supervision is an understanding of future as well as current risks that may threaten the ongoing viability of an insurer's operations. The PRA's capital requirements help to make insurers resilient against short-term shocks. But to be confident that insurers will remain viable over the longer term, the PRA needs to know whether an insurer's profits are sustainable. In other words, the PRA will need to analyse the risks of an insurer's particular business model.

BMA is now a central part of the PRA's supervisory approach, and receives more prominence than was the case under the FSA. This is partly in recognition that before the financial crisis, supervision did not focus sufficiently on some of the key questions regarding a firm's business model, such as how the

(1) Nevertheless, there are often disagreements between policyholders and insurers over the size of losses. For some types of claim, for instance liability claims, it may take many years for the full extent of an insured loss to be known.
(2) See Bailey, Breeden and Stevens (2012) for a summary.

The insurance company business model and balance sheet

Insurance companies have very different business models to most other types of company. This means insurers and their customers face a unique set of risks.

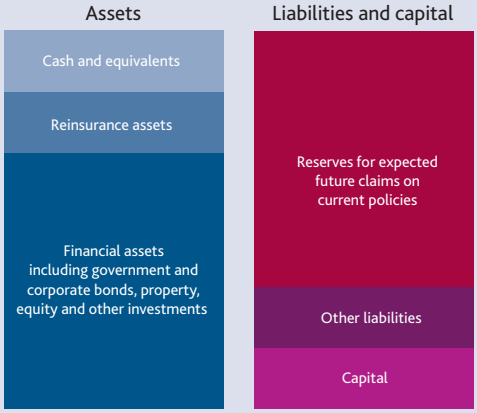
The key difference in an insurance company business model is the order of the production cycle; that is, the order in which the product is made, a customer pays for it, and the product is delivered by the company. In general, a company would have to invest time and money to build up the stock of a product before customers pay money to the company and then receive their goods. For an insurance company it is the other way round. The customer pays the premium for their policy up front, but only receives any benefit from the insurer later.(1) This is known as an inverted production cycle.

For example, in the case of an annuity, the policyholder will pay a lump sum to the insurer in return for the promise of a future stream of income payments. The annuity will only be of financial benefit to the policyholder once the income payments have exceeded those which could have been drawn down from the initial lump sum — and this may not happen until a number of years (or decades) after the product is bought. For general insurance contracts, the policyholder will only receive a payment at some point in the future if an insured event — such as a house fire or a car accident — occurs.

The inverted production cycle has the potential to affect an insurer's incentives. Most businesses will only be paid when their customers have received a satisfactory product, creating an incentive to offer a high-quality product and good customer service. But an insurer receives payment in advance. This, combined with the relatively low barriers to entry to the insurance market, has led in the past to cases of fraudulent activity. There have also been cases of overoptimistic insurers distributing too much to their shareholders or members and not holding enough back to cover potential future claims. The vast majority of insurers will want to manage themselves safely and carefully for reputational reasons, and to attract new policyholders. But for the few exceptions, the inverted production cycle strengthens the case for having independent bodies to regulate insurers in terms of both their financial resources and the way they do business.(2)

To help understand how insurance companies work it is helpful to consider a stylised model of an insurer's balance sheet (**Figure A**). The balance sheet shows an insurer's assets and liabilities at a single point in time. Capital is the balancing item, and equates to the assets in excess of the liabilities.

Figure A Stylised insurance company balance sheet



The majority of an insurer's assets are financial investments, typically government bonds, corporate bonds, listed shares and commercial property. The assets generate investment income and are chosen carefully to reflect the nature and timing of the insurance liabilities that may need to be paid.

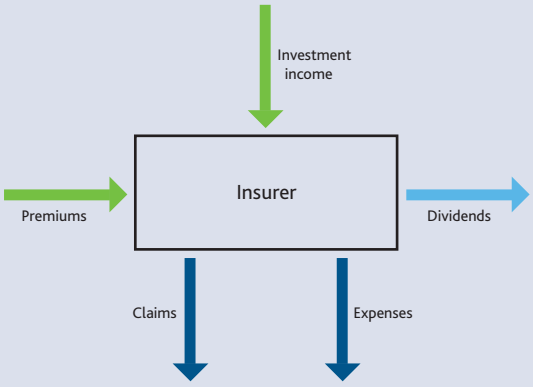
As discussed in the main body of the article, some insurers use reinsurance to share some of the risk they have taken on. In exchange for a premium, the reinsurer will promise to pay a certain portion of the insurer's future claims. The expected future payments from the reinsurer constitute a reinsurance asset to the original insurer.

Insurers must estimate how many policyholders will claim on their policies and how expensive these claims will be, holding the aggregate expected cost of future claims in the form of reserves. Typically, these reserves represent the majority of an insurance company's liabilities — its obligations to others. As time passes and more information becomes available, these estimates will be revised. If claims are higher than previously estimated, an insurer may have to increase its reserves, leading to a loss. If there are fewer claims than expected, part of the reserves can be released as profit.

The highly simplified cash-flow diagram in **Figure B** helps to demonstrate how such profits may arise: if premiums and investment income exceed claims and expenses, the resulting profit can be kept by the insurer as retained earnings on its balance sheet,(3) or distributed back to capital providers, for example as dividends.

The profitability of an insurance contract will not be known at the outset, as it will depend on future events. To have a good chance of selling profitable policies, an insurer must carefully choose which risks it takes on and how to price these risks. This process is known as underwriting. Underwriting income will be generated where claims are less than premiums. To

Figure B Simplified cash-flow diagram[a]



(a) At the end of each accounting period, 'retained earnings' are equal to the remainder of cash inflows (premiums plus investment income) net of outflows (claims and expenses; and dividends). Retained earnings feed back into the stock of capital — so in **Figure A**, would be represented by an increase in the size of the balance sheet that reflects higher cash on the asset side and higher capital on the liabilities side.

achieve this, the insurer must ask prospective policyholders for information which will help it to understand the risk and determine a suitable price. For instance, before offering life insurance cover, an insurer may want to know a policyholder's age, medical history, whether they smoke, their occupation, their postcode, and so on.

The inverted production cycle gives rise to another key source of profit for an insurance company — investment income. Because the insurer receives premiums up front, it can invest these in financial markets until claims or benefits are due to be paid. Any investment income in excess of that needed to pay policyholders and cover expenses can be retained by the insurer as profit.(4)

The costs involved in attracting new policyholders, administering policies and paying out claims are significant for an insurer. Expense management is important because the inverted production cycle means that the final cost of the policy is not known when the price is set. If expenses turn out to be higher than expected, the amount that was included in the price to cover expenses may prove to be inadequate.

Key risks to the insurance balance sheet

Over time the values of both assets and liabilities can change. On the asset side, the value of financial investments can rise and fall — and this volatility can be higher if an insurer tries to boost its investment income by investing in riskier assets. Reinsurer failure also represents a risk to the insurer, as it may prevent the recovery of reinsurance assets.

On the liability side, there is always some uncertainty about how many people will actually need to make a claim, and what those claims will cost. The severe UK floods in 2007 and more recently are examples of unexpected events that have led to an unusually high number and cost of household insurance claims. This will have resulted in many insurers having to increase their reserves. This can also occur simply due to poor underwriting: if an insurer fails to understand the risk of flooding in an area, it may charge policyholders in that area an inadequate premium to cover the likely cost of their future home and contents insurance claims.

To be confident of remaining solvent despite uncertainty over both its asset and liability values, an insurer will need an extra buffer of assets above those covering expected payments to policyholders. The assets in excess of liabilities represent the capital of a firm. Because it can absorb losses, an insurer's capital buffer can reduce the risk of an insurer failing and so protects both policyholders and broader society from the costs of insurer insolvency.

(1) Some savings types of life insurance products do not exactly conform to this model.
(2) The conduct regulator, the Financial Conduct Authority, helps to ensure that consumers are treated fairly in their interactions with an insurer.
(3) Retained earnings form part of the capital base of the insurer and so are included under capital in **Figure A**.
(4) Note that for some types of contract with a profit participation element, for instance 'with-profits' contracts, some or all of the investment return will be credited to policyholders.

organisation makes money, and whether it can go on doing so for the foreseeable future.(1)

BMA helps the PRA to understand the sources of a firm's profits, and what might happen in the future to threaten these profits. To identify risks to a firm's profitability, the PRA needs to have an understanding of the company's overall strategy. This may be, for example, to increase volumes or to sell higher-margin products. Risks can also arise from competitors, so there is a need to be aware of prevailing conditions in the markets where a firm operates — including any barriers to entry to insurance markets. As risks can also emerge from changes to the social and broader macroeconomic environment, BMA helps to assess the impact of potential changes to consumer preferences or demand for certain products. Similarly BMA can be used to identify any legislative or regulatory changes that may impact an insurer's business.

To conduct BMA, the first requirement is an understanding of the fundamentals of the insurance business model. The box on pages 52–53 outlines how underwriting, investing, claims handling and expense management can be sources of profit.

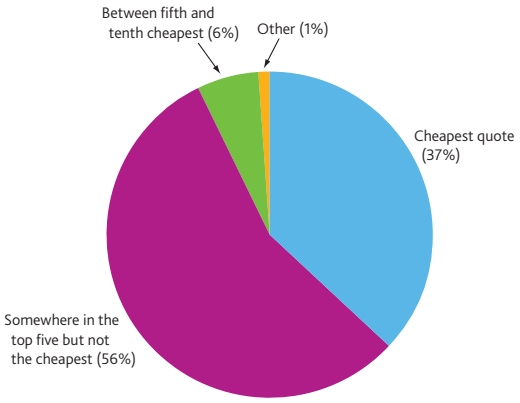
As with all industries, however, the business models of insurers are not static, and will respond to technological, social, cultural and regulatory changes. For general insurers, new technologies have fundamentally altered the distribution and marketing of retail products. Increasingly people are going online to buy motor, home and other everyday types of insurance. For life insurers consumer demand has changed not only the distribution of products but also the products themselves, for instance where products have become more tailored to individual circumstances.

To illustrate how BMA can be applied to specific subsectors of the insurance market, the remainder of this section considers two case studies. These help to show how the questions that BMA tries to answer can inform supervision.

General insurance case study: price comparison websites and the UK motor insurance market

The emergence of price comparison or 'aggregator' websites has fundamentally changed how motor insurance policies are sold. These websites allow customers to enter their details into a single online form and quickly receive a range of quotes from a large number of insurance companies. These quotes can then be sorted and filtered based on price or other features such as policy excess. Increased comparability of pricing has increased the importance of price as a factor when people purchase car insurance via aggregators; market data suggest that, when using price comparison sites, very few people opt for a policy that is outside of the cheapest five quotes (**Chart 1**).

Chart 1 Choice of quote by consumers using price comparison websites



Source: Datamonitor Financial (2012).

Before price comparison websites became the dominant distribution channel, motor insurance policies were primarily sold through insurance brokers, or directly over the phone or internet. This had allowed insurers to compete both through branding and through developing broker relationships, the latter acting as a barrier to new entrants. But today, the increased consumer focus on price and the high number of insurers competing for market share have squeezed profit margins, encouraging insurers to try to offer the most competitive quote to each customer and to seek alternative sources of profit.

One way that insurers can offer cheaper quotes is by assessing each customer's risks — underwriting — at a more individualised level. A quotation will typically be based on factors such as the policyholder's age, the car make and model, past claims history, postcode, and a range of other socioeconomic factors.(2) To try to stay ahead of their rivals and price more accurately, firms have developed highly sophisticated pricing models, which use complex algorithms to offer instant quotes based on a wide range of risk factors. To successfully implement these more complex pricing models, insurers need sufficient market scale and robust IT systems.

Another way for insurers to offer more competitive quotes is to offer the main insurance product at a price that is lower than its true value, in the expectation of being able to make up the difference by cross-selling and up-selling more profitable related products. Indeed, there is some evidence that consumers tend to be less price conscious when making discretionary 'add-on' purchases compared to compulsory purchases.(3) Behavioural biases can also mean that add-ons appear relatively cheap when compared with the cost of a single large item, even if the customer would not regard them

(1) See HM Treasury (2011).
(2) Note that since the EU Gender Directive (December 2012) it has been illegal for insurers to charge a differentiated premium based on gender.
(3) Ahmetoglu *et al* (2010).

as cheap if they were considered in isolation.(1) Legal expense cover, personal accident cover and breakdown support can therefore be sold alongside the compulsory element of motor insurance, at high margins. For example, a recent market study found that for every pound of premium received for add-on personal accident insurance, insurers paid out only nine pence in claims.(2)

Expected sales of these profitable 'ancillary' products can lead insurers to sell the core product of motor insurance at a loss. When setting prices, the insurer will consider the lifetime profit they expect to arise from the initial sale of a policy to a new customer. This would include the expected profit on ancillary products as well as the profit on future renewals of the policy. Future renewals can be more profitable for the insurer than the original policy, because the fee originally paid to the aggregator website (typically £40–£50) would not be incurred again at renewal.

Risk implications for motor insurers

Price comparison websites help to drive down costs for consumers. But for motor insurers selling products this way, the combination of complex technology, rapidly evolving competitive market dynamics and highly aggressive pricing strategies has created a number of risks, some of which are outlined below.

First, the complex automated pricing models that are central to this business model are a point of vulnerability for the insurer as they increase the threat of mispricing. Since the cheapest quotes appear at the top of a price comparison website, they are both prominent and highly likely to be accepted. Mispriced quotes from a pricing algorithm, that accidentally undercharge for the real level of risk, can thus quickly translate into large potential losses for the insurer. To avoid selling a large number of policies at inappropriately low prices, an insurer will need to have systems and controls in place to quickly identify and address cases where the pricing algorithm is underpricing risks. Pricing and risk selection, and the controls around these, are thus likely to be an area of supervisory focus for such firms.

A second risk is that any strategy that offsets expected losses on the core insurance product with expected profits on ancillary products is highly vulnerable to market changes. To the extent that profits from ancillary products have already been accounted for in the pricing of the core motor insurance policy, the insurer could suffer future losses if profit streams from ancillary products do not emerge as expected. This could happen because of increased competition. For example, the high profit margins on add-on products such as legal expense cover have begun to attract competition from the aggregator websites themselves, who are keen to capture some of this value. Additionally, a hardening of consumer attitudes could reduce the capacity of insurers to sell ancillary products; for example, if high margin add-on products attract attention in the media, from the conduct regulator (the FCA) or from consumer groups. Recently the FCA released its market study of general insurance add-ons. It found significant failings in this market, resulting in poor consumer outcomes, and proposed a number of interventions to strengthen competition.(3) Changes in the external environment could therefore make these cross-subsidies unsustainable over the medium term and threaten the viability of the business model.

Finally, there is the risk that insurers taking into account the lifetime profit on a policy when setting the initial price may incorrectly predict the true future rate of policy renewals. Aggregator websites are incentivised to encourage customers to shop around rather than to renew with the same provider (as they earn a fee from each sale via their website), and are starting to actively target customers whose policies are due for renewal.

Life insurance case study: non-standard annuities

A traditional annuity pays a guaranteed income until death, in exchange for a single initial premium. In recent years, annuity providers have begun to offer non-standard annuities, which can benefit those who are in poorer than average health by offering them a higher income. The non-standard annuity market can be subdivided into three categories: lifestyle annuities, which are underwritten based on factors such as Body Mass Index, cholesterol level or smoker status; enhanced annuities, which are targeted at those with medical conditions that may reduce life expectancy; and impaired annuities for those with very serious or life-threatening medical conditions.

Non-standard annuities are a growing proportion of the annuity market, making up around 30% of total annuity sales in 2012 compared to 12% in 2008 (**Chart 2**). This growth has been driven by several factors, including:

- Increased consumer awareness of the 'open market option', whereby customers can shop around for an annuity rather than stay with the provider of their pension savings vehicle. This has heightened the visibility of enhanced annuities.

- The current low interest rate environment and the expectation that rates may remain low for some time. This will have pushed annuity rates down, meaning prospective customers are more likely to seek out ways of boosting their income.

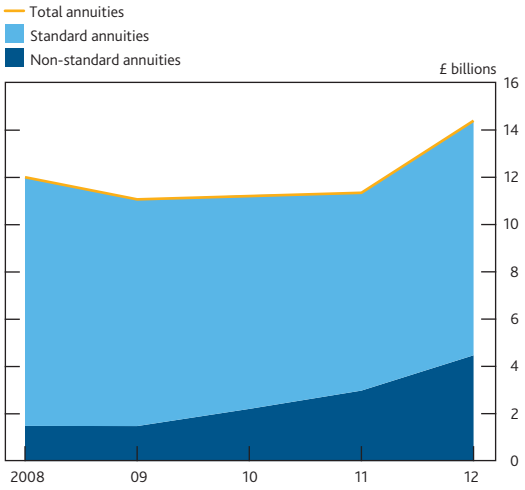
- Technological innovations, which have enabled better collection and storage of policyholder medical data, making

(1) An analogy would be 'extended warranty' insurance products, which typically have very high margins and are often sold alongside high-value one-off purchases such as white goods or mobile phones.
(2) Financial Conduct Authority (2014).
(3) *Ibid.*

the underwriting process smoother and allowing policyholders to submit their own medical information online.(1)

- The FSA's Retail Distribution Review, which has made the fees charged by independent financial advisers more transparent, increasing the incentives for advisers to demonstrate the value that they add by seeking out the best possible rates for their clients.(2)

Chart 2 Annuity market sales



Sources: Association of British Insurers and Bank calculations.

Risk implications for annuity writers

Enhanced annuities help to broaden the range of product choices offered at retirement, but they require careful management by insurers. All annuity providers are exposed to the risk that life expectancy improves faster than had been anticipated. But those selling enhanced annuities are particularly exposed to improvements in the lifespans of those in less than average health. If future medical developments happen at a faster pace than was expected when the product was priced, insurers could be left with significant losses. This could affect a large number of insurers simultaneously. To manage this risk, insurers need data that will help them to predict the life expectancy of the various subsets of policyholders with particular health conditions. The relative lack of good data also makes accurate prediction of longevity much more difficult. Moreover, this scarcity of data has created a competitive pricing advantage for those insurers that have been offering non-standard annuities (and collecting data) for longer time periods, and may have acted as a barrier to new entrants.

It may also be the case that policyholders have an incentive to overstate the extent of lifestyle factors such as smoking habits in order to benefit from a higher annuity rate. Furthermore, evidence suggests that those who stop smoking, even late in life, can benefit from increased life expectancy — and once an annuity is sold, the insurer cannot control the policyholder's subsequent behaviour. Mis-estimating the number of smokers who will go on to quit or who have exaggerated their consumption could also lead to future losses.

Insurers that have not entered the non-standard annuity market are still very much affected by it. This is because of a process known as anti-selection. If policyholders in poor health increasingly choose to purchase non-standard rather than traditional annuities, the average health of the remaining pool of lives will improve. If traditional annuity providers do not reflect this improved level of health by increasing their pricing, they will undercharge for the true future lifespan of the lives they insure. An insurer that is 'late' to update its rates and so offers higher rates than its peers could attract large volumes of new business, making the problem worse. So all annuity providers, whether offering non-standard annuities or not, need to carefully monitor developments in the market and make sure their underwriting and pricing are as reflective as possible of the pool of risks they are taking on.

To help them to do this, insurers may continue to seek out more individualised information about their policyholders, accelerating the trend towards individually underwritten annuities and causing the market for 'at retirement' products to further evolve.

What does the PRA do with the results of business model analysis?

A crucial question to ask when looking at the results of a BMA exercise is whether the firm's profits are in line with the risks it is taking. Innovation and business model change is generally good for competition (and hence for consumers). It is not the PRA's responsibility to manage a firm, nor to determine or approve its business model. However, it is a lesson from previous company failures that an inadequate risk-return trade-off is a leading indicator of vulnerability.(3) This can inform the PRA's activities in a number of ways.

First, it helps the PRA to carry out more focused reviews. Understanding a business model's risks helps the PRA to use its limited amount of resource more efficiently, ensuring that the areas which have the most potential to threaten the PRA's objectives are given priority.

Second, BMA allows the PRA to be forward looking and to respond pre-emptively on the basis of what could go wrong in future. Businesses which are viable and profitable today may not remain viable over the longer term if, for example, the social or economic environment changes. A deep understanding of the business model allows the PRA to identify how sensitive a firm's profits are to these sorts of changes.

(1) Comparison websites have also raised customer awareness of enhanced annuities.
(2) For more information, see www.fsa.gov.uk/rdr.
(3) See, for example, Financial Services Authority (2008).

Third, the results of a BMA exercise help to inform the PRA's expectations of a firm's financial and non-financial resources. For example, the PRA might raise capital requirements, or require a firm to improve its governance process, to address weaknesses identified by BMA.

The case studies in this article also show some of the specific vulnerabilities that have been created by changes in an insurer's operating environment. To address these vulnerabilities, the supervision of firms can be tailored accordingly. For example, where motor insurers sell through price comparison websites, the PRA can scrutinise the assumptions made about future policy renewals and about the external operating environment. The complex pricing and risk selection models can be studied, along with the controls in place around these. There are a large number of firms in the UK motor insurance market, many with very similar business models, so the vulnerabilities mentioned here are common to several firms.

Similarly the PRA can examine the amount and quality of the data that insurers are using to price annuities, particularly for those that apply to specific health conditions. Firms can be asked to justify the allowances they have made for anti-selection and the increased health of those buying traditional annuities. The amount of capital that is held as a buffer against unexpected improvements in longevity can be reviewed given the changes to the structure of the market. Using BMA in this way highlights the PRA's commitment to being forward looking: identifying potential problems before they materialise, and where necessary taking pre-emptive action.

Conclusion

Insurance plays an important role in the UK economy, supporting economic activity by helping businesses and households to manage the risks that they face. Given the importance of this role, insurers have the potential to affect UK financial stability, both through the way they carry out their business, and in the event that they fail.

Carrying out BMA is only one part of the PRA's approach to supervision, but it has several uses. Understanding the sustainability and specific vulnerabilities of insurers' business models allows the PRA to focus its supervisory activity, making the most effective use of its resources. It allows supervisors to have a forward-looking view of the threats to firms and to take pre-emptive action. It can also feed into the Financial Policy Committee's surveillance of risks to the financial system as a whole.

Meanwhile, technology, longevity, the financial markets and other aspects of the external environment will continue to evolve. In response, insurers will continue to develop and revise their business models, bringing both beneficial innovation and a new set of emerging insurance risks. BMA helps the prudential supervision of insurers to keep pace with these external developments.

References

Ahmetoglu, G, Fried, S, Dawes, J and Furnham, A (2010), *Pricing practices: their effects on consumer behaviour and welfare*, Office of Fair Trading.

Bailey, A, Breeden, S and Stevens, G (2012), 'The Prudential Regulation Authority', *Bank of England Quarterly Bulletin*, Vol. 52, No. 4, pages 354–62.

Datamonitor Financial (2012), *UK insurance aggregators*.

Debbage, S and Dickinson, S (2013), 'The rationale for the prudential regulation and supervision of insurers', *Bank of England Quarterly Bulletin*, Vol. 53, No. 3, pages 216–22.

Financial Conduct Authority (2014), 'General insurance add-ons: provisional findings of market study and proposed remedies', *Market Study 14/1*.

Financial Services Authority (2008), 'The supervision of Northern Rock: a lessons learned review', Internal Audit Department, available at www.fsa.gov.uk/pages/Library/Communication/PR/2008/028.shtml.

HM Treasury (2011), 'A new approach to financial regulation: the blueprint for reform', London: The Stationery Office.