



Institute of Actuaries of Australia

Pricing When Only The Customer Can See

*Prepared by:
Yusuf Cakan
Matthew Loh
Siddharth Parameswaran*

Presented to the Institute of Actuaries of Australia
17th General Insurance Seminar
7 - 10 November 2010
Gold Coast

This paper has been prepared for the Institute of Actuaries of Australia's (Institute) 17th General Insurance Seminar. The Institute Council wishes it to be understood that opinions put forward herein are not necessarily those of the Institute and the Council is not responsible for those opinions.

The authors also wish for it to be clear that the views presented here are their own and not necessarily the views of their respective employers.

@Yusuf Cakan, Matthew Loh and Siddharth Parameswaran

The Institute will ensure that all reproductions of the paper acknowledge the Author/s as the author/s, and include the above copyright statement:

The Institute of Actuaries of Australia
Level 7 Challis House 4 Martin Place
Sydney NSW Australia 2000
Telephone: +61 (0) 2 9233 3466 Facsimile: +61 (0) 2 9233 3446
Email: actuaries@actuaries.asn.au Website: www.actuaries.asn.au

Table of Contents

Table of Contents	2
Executive Summary	4
Distribution models changing everywhere	6
P&C insurance is only one of many industries facing threats	6
Changes in non general insurance financial services markets	14
P&C distribution models evolving	18
Technological changes affecting insurance distribution	18
Major changes are about to occur in commercial lines	18
Personal lines distribution is seeing the rise of the internet	26
Conclusion	37
Unique Challenge in Insurance	38
Unique features of Insurance vs. other industries	38
Winner's Curse Description	40
Winner's Curse in Insurance	41
Situations that increase winner's curse	44
Some general strategies to mitigate winner's curse	45
Variation in views important – not just mean of views	46
Summary	46
Why premium rates differ for a risk?	48
Portfolio level claims cost variation	48
Differences in the relative risk assessment of sub-segments	48
Premium algorithm differences	50
Corporate cost differences	50
Strategic differences	51
Policy coverage	51
Claims management	51
Summary	52
Stylised modeling of distribution changes	53
Description of what we are doing	53
Description of our model	53
Actual versus modeled price variability	54
Scenario 1: Consumers compare prices more frequently	56
Scenario 2: If a single insurer risk segments portfolio better than peers	58
Scenario 3: If everyone responds with more sophisticated rating	61
Scenario 4: An aggressive new entrant under-prices incumbent insurers	65
Scenario 5: A challenger insurer has a lower cost of distribution	67
Scenario 6: Do number of insurers in the market change behaviour	69
Implications for insurance strategy	72
Possible strategies for individual underwriters	72
Market led strategies for underwriters	78

Strategies for internet based aggregators	79
Strategies for Broker/Agent channels	80
Suggestions for Further Research.....	81
Acknowledgements.....	82
Appendix 1	83
Description of model.....	83
Appendix 2	90
Impact of sampling error on winners curse	90
Appendix 3	95
Some thoughts on the economics of distributing personal lines through the internet	95

Executive Summary

Keywords: *insurance distribution, winner's curse, aggregators, contestable platforms, commercial lines distribution, personal lines distribution*

Key points:

- **Insurance distribution is changing, with contestability in insurance quotes rising.**
- **Substantial price variation currently exists between insurers.**
- **“Winners curse” may become an increasing issue in quoting – unless the insurance industry responds to this in their pricing and approach**
- **Profitability may decline in the industry until adjustments can be made**
- **Several strategies can be employed by different parts of the insurance value chain to respond / profit from the change.**

We believe a significant emerging issue for the insurance industry to deal with is an increasing propensity for consumers to compare the prices for insurance coverage offered by different underwriters. We believe this is happening in both personal lines and commercial lines. In personal lines this is occurring through the rise in the usage of the internet for direct quoting (reducing the time spent to compare quotes) and perhaps eventually through the possible rise of internet aggregators. In commercial SME brokered business we believe similar behaviour is likely to occur in the near future as brokers are starting to offer technological solutions to directly compare prices from several insurers. The emergence of price aggregation services we believe has the potential to change the insurance landscape in Australia, which in the extreme case could have potentially similar adverse consequences to what was seen in the UK motor market.

In this paper we examine the following:

- (1) The key changes that are occurring in distribution in various industries that are:
 - a. reducing the cost of distribution for the manufacturer
 - b. reducing the time it takes for customers / agents to get quotes from the insurer.
- (2) Explaining changing distribution models in general insurance:
 - a. domestically (personal lines and commercial lines)
 - b. internationally
- (3) We show there is substantial variation in the prices on individual risks even among the largest insurers in Australia. We argue that such disparity in prices leaves insurers susceptible to “winners curse”, the importance of which is increasing as technology enables easier price comparability.
- (4) We examine reasons for these differences. Most stem from different approaches to projecting and segmenting the risk portfolio. Whilst for an individual insurer in isolation there is no doubt that increased sophistication can lead to more accurate selection and pricing of risks, a perhaps slightly counter-intuitive observation is that the quest by the entire market (an arms race) for increased sophistication can in some circumstances actually lead to greater variation in rates due to increased effect of sampling error and variation in the methods used to increase pricing sophistication (potentially increasing risk of winner's curse).
- (5) We show through an exercise in simulating a model market what the possible impacts from changes in distribution and market structure could be on the claims experience, risk mix, and ultimately the profitability of the company and the industry.
- (6) We explore strategies participants (both underwriters and distributors) may take to respond to these changes. We suggest actuaries need to be increasingly vigilant of the impacts these changes are having on their portfolio – and how pricing by looking at one's own data in isolation (without considering adequately what is going on in the market and peer's rates) is an increasingly risky proposition.

Distribution models changing everywhere

P&C insurance is only one of many industries facing threats

The impact of the internet / information revolution is affecting the distribution of many products by:

- reducing distribution costs
- allowing easier comparison of prices
- those industries that have substantial knowledge content in their product are susceptible to copying.

Changes can affect the evolution and viability of different business models.

The insurance industry is one of many that is / has faced pressure from technology driving change in distribution.

Broadly we categorise the change that is occurring as the following:

- Industries are seeing that the increased use of IT can bring down the cost of distributing products to customers (i.e. real efficiency gains in the cost of distribution)
- The technology is allowing easier comparison of prices and offerings between different suppliers for customers (i.e. increased visibility of prices and service – which can increase competition).
- Those industries that have substantial element of selling information /content as opposed to selling a physical product are likely to face more challenges from the technology as there is a real threat that the “product” itself can be easily copied and distributed through use of the technology.

We have chosen to examine a few industries other than insurance to see how technology has changed distribution there, and see what strategies did or didn't work. The markets we have focused on in detail are:

1. online retail
2. airline pricing and distribution

We have also provided high level comments on:

1. travel agencies,
2. the media industry and
3. betting agencies.
4. life insurance
5. health insurance
6. banking

The experience of these industries shows that **shifts in distribution models can have profound impacts on the value chains of various commercial operations, and can dramatically change the barriers to entry and returns in particular segments.**

Whilst we provide a description of our understanding of the impacts of technology on these segments, we do not profess to be experts on these industries. Instead, we have relied in our analysis on external analysis of the industries and have cross-checked the views with suggestions from the relevant JP Morgan Equity Analysts covering the appropriate sector.

The key lessons to take away from our analysis of other industries are:

1. **Customer is driving change:** if the customer is in favour of a change in distribution models and is in a position to drive this- it is almost inevitable that this will happen, unless there is strong entrenched market power that will limit this happening.
2. **Efficiency:** Having the lowest cost operations is one way to limit the adverse impacts of changes in market structure
3. **Technology can allow customer segmentation** – which can be used to try and maximize value from each customer for product providers.
4. **Raising your barriers to entry / competition may be necessary** to limit the substitutability of product – thereby limiting competition in a time poor world.
5. **Efficient markets can mean a “race to the bottom”.**
6. **Established “bricks and mortar” distribution models can face very significant from a change to these lower cost distribution models**

A more detailed analysis of each of the industries follows.

Online Retail

The retail industry is seeing a significant shift towards online sales of product. It could be as high as 10% currently in Australia.

How did / is technology changing the landscape?

- **Significant purchases volumes are now being made online:** A significant proportion of shopping is moving away from physical stores to the internet. We have seen estimates suggesting anywhere between \$20bn - \$27bn will be spent in 2010 by Australian consumers shopping online (reported in Business Spectator, August 2010, based on research by Forrester Group). This volume compares with total retail sales from the ABS annualizing about \$250bn (ABS) – i.e. roughly 10%. Statistics shown below from a Sensis / Telstra e-business report suggest that:
 - 64% of Australian now purchase some goods online
 - 59% of all businesses use their website to advertise or promote their business
 - 58% of businesses take orders of products and services from the internet¹

¹ These figures appear high to us – but may reflect a particular selection bias to more internet savvy businesses in the survey.

Figure 1: Internet Usage by Australians

Internet applications in the last 12 months Trends – All Australians			
	2009	2010	Change
Used a social networking site	41%	56%	+15%
Used the internet to make phone calls	21%	35%	+14%
Downloaded or streamed video content	36%	47%	+11%
Uploaded a video onto the internet	14%	19%	+5%
Looked for information on products or services	78%	82%	+4%
Undertaken banking	60%	64%	+4%
Ordered goods/services	61%	64%	+3%
Bought through an online auction site	29%	32%	+3%
Supplied personal information online	37%	40%	+3%
Paid for purchases or bills	62%	65%	+3%
Made bookings	60%	63%	+3%
Sold through an online auction site	14%	16%	+2%
Read a blog	41%	42%	+1%
Written a blog	16%	14%	-2%
Belonged to an online community	27%	25%	-2%

Q. In the last twelve months have you undertaken any of the following via the internet?

SOURCE: Sensis® e-Business Report
Sweeney Research - 2010

Source: Sensis e-Business Report 2010

Figure 2: All businesses – use of the internet

Trends in current uses of the internet – based on all businesses				
	2008	2009	2010	Change 2009 to 2010
To use a website to advertise or promote business	54%	55%	59%	+4%
To access directories such as the Yellow Pages® directories	76%	78%	82%	+4%
To use online auction sites	20%	18%	22%	+4%
To receive payments for products and services	63%	67%	70%	+3%
To take orders for your products and services	54%	56%	58%	+2%
To pay for products and services	71%	74%	76%	+2%
To streamline communications with customers and staff	60%	62%	64%	+2%
Internet banking	78%	81%	83%	+2%
To place orders for products and services	67%	74%	74%	-
To access and use online catalogues	67%	74%	74%	-
To communicate via email	92%	91%	92%	-1%
To monitor your markets or the competition	40%	41%	40%	-1%
To look for information about products and services	83%	87%	86%	-1%
To promote the business using email marketing	27%	31%	30%	-1%
To advertise your business on other websites	20%	23%	21%	-2%
To get reference information or research data	79%	86%	83%	-3%
To look for suppliers of products or services	N/A	N/A	83%	N/A

Base = All businesses

SOURCE: Sensis® e-Business Report
Sweeney Research - 2010

Source: Sensis e-Business Report 2010

- **A few online malls have grown significantly:** High-volume websites, such as Yahoo!, Amazon.com and eBay, offer hosting services for online stores to small retailers. These stores are similar to virtual shopping bazaars with a collection of retailers competing against each other.
- **Comparison websites have emerged:** Some websites e.g. shopping.com allow consumers to compare prices of products from different retailers. There are many comparison sites focusing on particular product niches e.g. cameras etc.
- **Manufacturers are responding with disintermediation:** Some manufacturers are going direct to consumers over the web, thereby bypassing intermediaries. E.g. Dell. This allows them to lower their cost of distribution.
- **The advantages of online stores:**

Advantages of online stores:

- + open 24 hours
- + link to supplemental product info
- + price comparison services
- + distribution costs reduce

- Online stores are usually available 24 hours a day, and many consumers have Internet access both at work and at home.
- Some online stores provide or link to supplemental product information, such as instructions, safety procedures, demonstrations, or manufacturer specifications. Some provide background information, advice, or how-to guides designed to help consumers decide which product to buy.
- Some stores even allow customers to comment or rate their items, providing useful feedback for other consumers.
- Price comparison services allow consumers to easily search for the cheapest retailer of the product.
- From the retailers' point of view – online stores reduce distribution costs, as the companies can save on rent and presentation costs. Landlords such as Westfield have suggested that specialty retailers across their business pay on average 18%² of their revenue as rent. The rates for Woolworths are much better at 3% of gross revenue across their company. These rates however compare with eBay which for a \$500 purchase charges in total around 4% for a completed sale³. The cost of a sale through a company's own website could be even cheaper.

- **The disadvantages of online stores:**

Disadvantages of online stores:

- no tactile experience
- worries about fraud
- pricing may become key sales attribute
- global competition

- Online stores must describe products for sale with text, photos, and multimedia files, whereas in a physical retail store, the actual product and the manufacturer's packaging will be available for direct inspection (which might involve a test drive, fitting, or other experimentation).
- Many consumers are worried about fraud when shopping over the internet.
- From the retailers' point of view, price becomes a key determinant in the likelihood of sales, due to the ease of comparing prices on the internet, hence potentially impacting profit margins.
- The internet is a global marketplace. This means that competition can be global, and Australian stores which have a significant advantage here vs. their competitors e.g. exclusive access to particular brands locally – may lose that advantage in a global market place. Another side issue is that exchange rate volatility and pricing differences can allow for pricing selection against the retailer.

² Westfield Conference Call to Investment Analysts - 2010

³ Calculated using http://ecal.atervista.org/en/fee_calculator/ebay.com.au/index.php

What did / are incumbents doing to avoid / benefit from the impacts?

- **Starting their own online offerings:** Many retailers, e.g. Coles, Woolworths, JB Hifi and Myer are distributing product through their own online stores. This issue in Australia is only just emerging. The problem with this is that in order to avoid channel conflict, they will usually have to charge similar prices on the internet as in the store. This will limit the distribution cost advantages that are there on the internet, and as such still expose themselves to competition from the internet. If they do not charge the same, they risk channel cannibalization (stores have fixed costs, and a move to online where prices are lower can hurt margins).
- **Limiting price based competition:** e.g. Loyalty reward programmes, carrying of premium brands in store etc for which price matters less.
- **Changing customer experience in store:** Many retailers are working on increasing “theater” in store and are spending heavily on refurbishments.

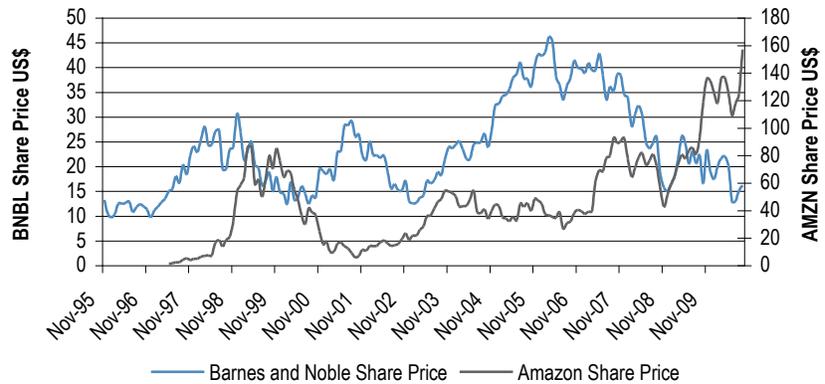
What are / were the likely winners and losers?

- **Established retailers are likely losers:** Given the significant costs of physical stores vs. online stores, one would expect online retailers to gain increasing market share.
- **Landlords are also likely losers:** There could well be downward pressure on rents as more stores become unviable.
- **Manufacturers willing to go direct may be winners:** Disintermediation may occur – when manufacturers go direct to the customer, distribution costs may be reduced and this also allows them to own the customer relationship e.g. Apple with their online stores.
- **Online retailers may be winners:** Established retailers with “bricks and mortar” stores that move online may have to charge the same price on line in order to avoid channel conflict as in the store. This will limit the distribution cost advantages that are there on the internet, benefiting pure online players.
- **Customers are likely to be winners:** Increased competition and lower distribution costs should lower prices and margins for customers

What are the economic lessons?

- **Established players will continue to face threats:** Online retailing is only just emerging as a significant trend – but it is clear that established stores do face threats from the combination of lower distribution costs and increased competition. We show below the share price fortunes of Barnes & Noble (originally a “bricks and mortar” book retailer) vs. Amazon.com (an online bookstore) over the last 15 years – as an example of the risks that existing players face. Note differences in scale; the Amazon share price has increased many multiples over the last 9 years, whilst the Barnes and Noble share price has been largely flat in that time.

Figure 3: Share Prices of Barnes & Noble vs. Amazon (note – different scales)



Source: Bloomberg

Airline pricing and distribution

How did technology change distribution in the airline industry?

A change in airline distribution in the 1980s allowed established players to:

(a) own the distribution infrastructure; and

(b) use the data from it run sophisticated yield management pricing systems that allowed them company's to price differentiate on customers and drive their competitors out of business.

- The US airline industry is in quite a parlous state – but things could have been worse for the incumbent players.
- In the 1980s, 2 changes were occurring that affected the US airline industry:
 1. **Incumbent airlines started facing significant competition** from new carriers who had much lower cost structures than them.
 2. **Distribution of airline tickets underwent changes.** Travel agencies started growing and became the source for unbiased information on airline schedules and prices. As a result travel agencies themselves demanded access to airline's computerised reservation systems (CRS). The large airlines actively marketed those services to travel agencies. In the face of stiff competition from new low cost carriers, the incumbent airlines used the data from these systems to produce "yield management programmes" to sell flights through travel agents that allowed for differentiated pricing.
- **Competitive Advantage:** The use of these yield management programmes bought the incumbents some time, and allowed them to run many of the low cost carriers out of business. As a result – we ended up with the variation we now see in airline fares.

Figure 4: The Growth of Electronic Reservation Systems – and their ownership by airlines

Year	No. of Agents	% with CRS	System	Vendor(s)	% of Locations	% of Agency generated revenues
1977	13454	5	Sabre	American	35	46
1979	16112	24	Apollo	United	24	28
1981	19203	59	Pars	TWA/Northwest	13	10
1983	23059	85	System One	Texas Air	17	10
1985	27193	90	Datas II	Dela	10	5
1987	29370	95				

Source: Alex Kons, "Understanding the chaos of airline pricing"

How did incumbents use technology changes in distribution to their advantage?

- **Regulations were very restrictive for airlines until 1978:** Air travel pricing was highly regulated in the US until 1978. In 1938, Congress passed the Civil Aeronautics Act, which gave regulatory power to the Civil Aeronautics Board (CAB) to oversee the airline industry. The CAB had the responsibility to regulate rate determination, market entry and antitrust behaviour (*Alex Kons*). As such, for many years, there were limits on which airlines could operate in which markets, and the prices they could charge.
- **Low cost regional airlines eventually started competing** with the established airlines but had much leaner cost structures e.g. Southwest Airlines based out of Texas. They were only initially allowed to fly within Texas, hence the limited impact they had on the marketplace. Eventually when the markets were completely de-regulated in 1978 through the Airline Deregulation Act, regional airlines were allowed to compete with the existing airlines who had higher cost structures. These difference in cost structures included:
 - **Lower staff costs:** low cost carriers had non-unionised workforces whilst existing carriers had strongly unionised staff.
 - **Fewer services** and their associated costs e.g. meals etc.
 - **Limited Schedules** on only a few targeted high volume routes
 - **Operations flying out of lesser airports**
- **The existing airlines turned to price segmentation as a defence-** counting on the fact that some customers would be keen to fly with less price discretion as long as they had the flexibility of flying at whatever time they could. They introduced different classes of fares to try and segment the market, with different price points and rules for each segment. The existing airlines brought in electronic reservation systems that were deployed across travel agencies e.g. SABRE was the American Airlines system, and Apollo was the United system. The advantage for them was that as it was their system deployed in particular travel agencies, they would allow them to collect data on sales across all airlines (not just theirs) and the fares they were charging. They could match the low fares of the lower cost airlines for customers who are willing to book ahead– thereby ensuring fuller flights. Customers who wanted flexibility would be charged higher fares – which would allow for the maximizing of profit.
- **Low cost carriers with simpler pricing structures suffered:** The strategy of differential pricing / yield management systems hurt most low cost airlines in 1986 – with almost every low cost carrier disappearing within a year after American Airlines brought in its yield management system (see chart below).

Figure 5: Low Cost Airlines that suffered from the introduction of yield management systems

Carrier	Year of Entry	Year of Exit	Reason for Exit
Former Intra-state Airlines			
Air California	1979	1987	Acquired by American
Air Florida	1979	1984	Bankruptcy
Pacific Southwest	1979	1987	Acquired by US Air
Southwest	1979		
Former Charter Airlines			
Capitol	1979	1984	Bankruptcy
World	1979	1985	Withdrew from scheduled services
Newly Formed Carriers			
Air Atlanta	1984	1987	Bankruptcy
Air One	1983	1984	Bankruptcy
American International	1982	1984	Bankruptcy
America West	1983		
Braniff	1984	1989	Bankruptcy
Florida Express	1984	1988	Acquired by Braniff
Hawaii Express	1982	1983	Bankruptcy
Jet America	1981	1987	Acquired by Alaska
MGM Grand	1987		
Midway	1979	1991	Bankruptcy
Midwest Express	1984		
Mise	1981	1985	Acquired by Southwest
Northeastern	1983	1985	Bankruptcy
Pacific East	1982	1984	Bankruptcy
Pacific Express	1982	1984	Bankruptcy
People Express	1981	1986	Acquired by Texas Air
Presidential	1985	1989	Bankruptcy
Regent Air	1985	1986	Bankruptcy

Source: Alex Kons, "Understanding the chaos of airline pricing"

What are the economic lessons?

- **Different customers can have significantly differing price elasticities** depending on their need for flexibility in flight times, flexibility in re-arranging schedules and range of flight schedules.
- **Airlines have costs that are significantly fixed**, both on an annual basis and for individual flights e.g. fixed aircraft capacity, staff costs and hedged fuel costs. As such, having aircrafts full is a significant advantage – a model that lends itself to some price segmentation and marginal costing to try and maximize revenue.
- **Sophisticated Yield Management Pricing Systems allowed higher cost carriers (who have more extensive schedules and routes) to compete** with low cost carriers by targeting low price elasticity customers. Customers who needed flexibility in their flight times paid much higher prices than those who were willing to commit to a particular time well in advance of the departure. Other factors such as more extensive routes and frequency of flights were also used to ensure customers that needed those services had to pay extra for them. As such, the incumbents could price cheaper for the highly price elastic customers as well – and ensure their flights were more full. The introduction of yield management pricing led to many low cost carriers suffering losses and bankruptcy in the US.
- **Frequent flyer Programmes:** – with tiered benefits have been used as another tool to create some customer loyalty for customers who are seen as high value.

Other Non Financial Services Industries:

We undertook a quick overview of various other consumer servicing industries and noticed a consistent theme that many established industries were facing threats from a combination of the following stemming from technological advances:

- **Distribution cost advantages** from lower costs of selling over the internet:
- **Aggregation threats:** Prices of different players can be compared more easily.
- **Threats to knowledge industries:** Certain knowledge industries face the issue that the products they produced can be reproduced in identical or derived form and redistributed very quickly. There is also proliferation of that content over several platforms – which for some of the knowledge industries that only indirectly charge for their services (e.g. through advertising) would mean pressure on margins.

Not surprisingly non consumer – related industries such as mining, property etc are not facing these threats.

Some of those industries at threat include:

- **Travel Agencies:** We have observed the emergence of online travel agencies such as webjet.com.au and jetabroad.com.au which allows consumers to search for flights across different carriers. We believe this has the potential to threaten the margins of physical travel agencies who are at a disadvantage having to pay rent and staff costs. We have also noted that the airlines have responded by allowing consumers to buy direct eliminating distribution and thereby reducing the prices offered to consumers.
- **Media:** Advertising has been a significant source of revenue for the mass media industry. The arrival of the internet has led to considerable proliferation of content, and the inevitable fragmentation of advertising spends. As such established players lost share to challenger providers.
- **The Betting Industry** The internet and legal challenges to regulation is threatening to reduce the entry barrier to the retail betting market and therefore reducing net revenue margins (after payouts on bets). Increased penetration of interstate bookmakers through the internet and other forms of technology will gradually remove the monopoly over cash betting for the wagering operator; margins may fall a little from the current 16% levels⁴, but these will be also be hurt by rising costs of distributions (i.e. payments to pubs and clubs) if cash exclusivity is removed. These kind of profit pressures we understand not just threatens the incumbents – but also many of the associated infrastructure e.g. the viability of racing events which derive a significant proportion of their funding from the betting industry.

Changes in non general insurance financial services markets

⁴ Based on comments of targeted profit margins from JP Morgan Gaming analysts of online vs. established Totalizer agencies

We briefly comment on changing distribution trends in other financial services products.

Life insurance is seeing direct and internet capabilities increasing.

A reasonable volume of sales are sold through internet aggregators.

High commission structures theoretically make it an attractive product for attacking through alternative distribution structures – if the customer would buy through those channels.

Life Insurance

- **Distribution currently:** Currently, life insurance risk products (yearly renewable term, disability income and trauma products) are distributed in 3 ways: (a) through financial planners / life insurance agents (b) direct methods including telephone sales and online (c) through group insurance policies associated with superannuation funds.
- **Cheapest channel is group:** Typically, the cheapest premium rates are available on group insurance policies due to lower distribution costs, limited flexibility in coverage, and tax advantages for life insurance business written in the superannuation environment.
- **Change towards direct:** In recent years we have seen the sales of direct life insurance policies rising. It now constitutes around 13.8% of overall risk insurance sales and 10% of in-force business (excluding loan and mortgage risk insurance).⁵ This is an increase in market share vs. 2008 of 0.8%. Direct life products are generally more expensive than obtaining cover through the personal section of an industry superannuation fund, being priced at between 150% and 400% for the equivalent cover purchased through an industry superannuation fund – but they can be cheaper than sales through an agent (85% – 125% of intermediated costs) products⁶.
- **Improving systems to meet real time quoting:** The capabilities for providing instantaneous quotes on life insurance risks have also increased substantially in recent times (e.g. through many companies rolling out automated insurance quoting engines, and shifting the underwriting process to be one where the verification is done upon the occurrence of the insured event). This lends itself to making it easier for customers to obtain quotations and policies from the internet.
- **Growth potential:** Prima facie- one would expect that the sales of online / direct policies should grow given the very high costs of distribution that currently exists for life insurance through financial planners. Commission rates through advisers are typically 120% of the initial year's premium, and trail commission rates can be between 10% and 40% of the ongoing premium.
- **Online sales:** We have seen some insurance companies sell directly over the web (or at least provide online quotes e.g. Allianz and GIO). Many are using their website as an avenue for internet based leads for their call centre. A substantial proportion of the sales over the web appear likely to come from internet aggregators e.g. iSelect.com.au, infochoice.com.au. We show below some of the life insurance companies on the iSelect approved product list of providers. The distribution costs through this channel do not appear any cheaper than through financial advisers however e.g. their PDS suggests an upfront commission of between 11 % and 130% of premium, and trails of up to 40% of the renewal premium.

⁵ Rice Warner Research 2010

⁶ Rice Warner Research 2010

Figure 6: iSelect approved product list providers
What Insurance Companies do you deal with?

- AXA / AC&L
- ING
- ASTERON
- AVIVA
- MLC
- Zurich
- COMMINSURE
- METLIFE
- TOWER
- AMP
- AIA
- MACQUARIE LIFE

Source: iSelect.com.au

- **Likelihood of change in distribution in life insurance:** Prima facie we suspect that the high cost structures of the intermediated channel suggest that there could be a shift to lower margin distribution channels (e.g. the internet) – although we note conventional wisdom in life insurance suggests that policies need to be “sold” rather than bought - i.e. customers need an adviser to convince them of the need for the insurance. Changes occurring in legislation on financial advice (Future of Financial Advice Reforms) may ultimately lead to fee based services for intermediaries being a requirement (including for the likes of iSelect) – which ultimately may substantially increase the use of the direct internet channel.

Substantial sales are already achieved through the internet in health insurance, particularly through internet aggregators.

Health Insurance

- **Distribution is already direct largely:** Health insurance is to a large extent (similar to general insurance) already distributed direct. We have however seen a substantial increase in the sales of health insurance policies through internet intermediaries like iSelect, and an improvement in companies’ ability to sell through their websites. iSelect themselves have quoted to have over a million customers in health insurance – which is about 10% of policyholders in the industry. One would expect the trend of sales over the internet to continue – although we are seeing some backlash against the likes of iSelect from some insurers e.g. GMHBA based on their costs of distribution.

Aggregators operate in the home loan space. But the size of the transaction usually results in people preferring human contact.

Bank accounts can be opened over the internet.

Banking

- **Home Loans:** There are many aggregator websites that we could find on the internet trying to sell home loans (and other types of loans as well). We suspect that given the very large amounts borrowed for loans, the majority of distribution of these products would be done direct through banks, or brokers – rather than over the internet. The significant contraction of the securitization market has likely further reduced their penetration.
- **Savings:** There were also many websites e.g. ratecity.com.au that were seeking to provide comparison of interest rates on savings accounts and term deposits. It appeared to us that their revenue here came from advertising by some of the featured institutions.
- We found a few banks that allow for a full application process for savings products over the internet – although we suspect that the take up of this is still likely to be limited.

P&C distribution models evolving

We believe there are significant changes likely to emerge over the short to medium term in insurance distribution:

- In commercial lines, we are seeing the emergence of Contestable platforms (effectively price comparison / aggregator platforms) for Brokers.
- In personal lines, the use of the internet for distributing policies is rising very strongly - though from a small base.

We discuss what is occurring in the sections below.

Technological changes affecting insurance distribution

We suggest that the rise of the information technologies in the distribution segment of the value chain are posing challenges for insurers.

There are 4 factors driving the increasing use of IT as we see it:

1. **Price visibility:** From the customer's point of view, the new IT technology should provide more visibility of the prices of insurers reducing the cost of searching and increasing competition.
2. **Speed:** On a related point, from a broker's point of view, technology can increase the speed and reduce the cost of searching adding to the value proposition they provide to their clients.
3. **Cost:** From the insurer's point view, increasing use of IT can lower costs of distribution because human interaction is reduced through automation. For example, sales through the internet can reduce call centre staff costs.
4. **Sophistication in pricing:** The increasing use of technology for distribution requires more diligent, detailed and systematic collection of data. The collection and correct use of this data can provide the insurer opportunities to conduct more sophisticated pricing and customer analytics to identify mis-priced segments.

Major changes are about to occur in commercial lines

Distribution Models Currently Used in Commercial Lines in Australia

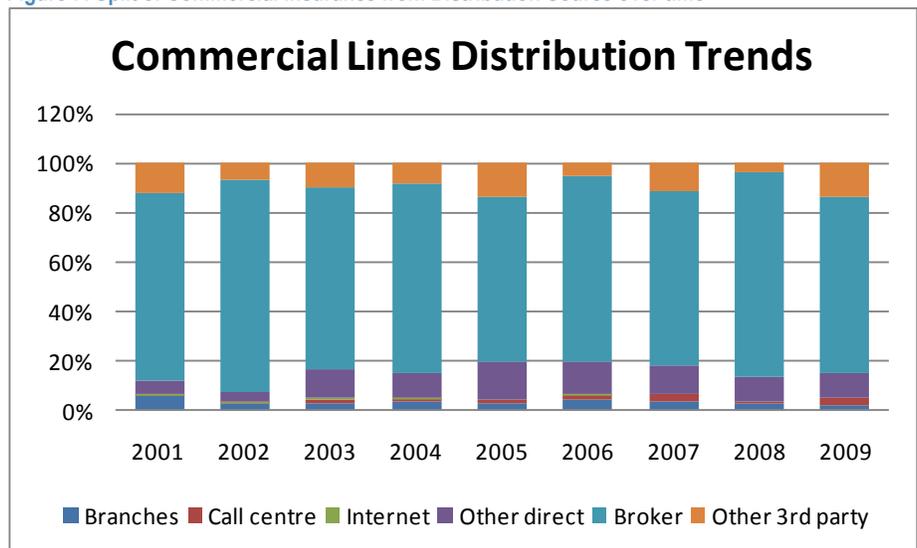
- **Dominant Channel is brokers:** Currently, most commercial business in Australia is distributed through insurance brokers. This has been the case for some time in Australia. We note that some insurance in Australia is also distributed through independent agents, who act on behalf of underwriters (although much of the business that is underwritten by independent agents can actually be sourced by brokers). There is some modest use of the direct channel – although at low levels, the proportion of business seen in 2009 in this channel is clearly higher than the levels in 2001.

Drivers of increased use of more technology in distribution are:

- price visibility
- speed
- cost reduction
- more data mining possible

Commercial insurance is largely distributed by brokers

Figure 7: Split of Commercial Insurance from Distribution Source over time

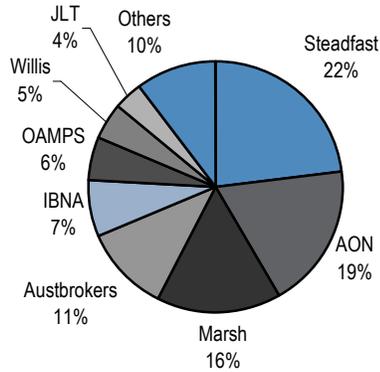


Source 2009 J.P. Morgan Deloitte General Insurance Survey. Some of the volatility in the trends is caused by different participants contributing to the survey each year.

- **Functions of a broker:** In the broker channel, the client goes to see an individual insurance broker who then recommends the appropriate product from their panel of insurers. The functions provided by the broker are:
 1. finding the customer (sale / sourcing of customer)
 2. acting as agent for the customer to (in principle) find the right product from an appropriate provider at the best value price
 3. setting up “Schemes” for groups. In certain cases- clients may seek to utilize the benefits of scale in their purchases from insurers and brokers through the setting up of Schemes. This is where a particular group e.g. Lawyers, or architects may seek to get a corporate rate on their insurance by pooling their data and experience.
 4. providing an insurer with an accurate history of the client’s claims history and risk characteristics so that they can form an adequate premium quote.
 5. acting as an agent of the client in the settlement of claims

We show in the table below our understanding of the broking landscape in Australia

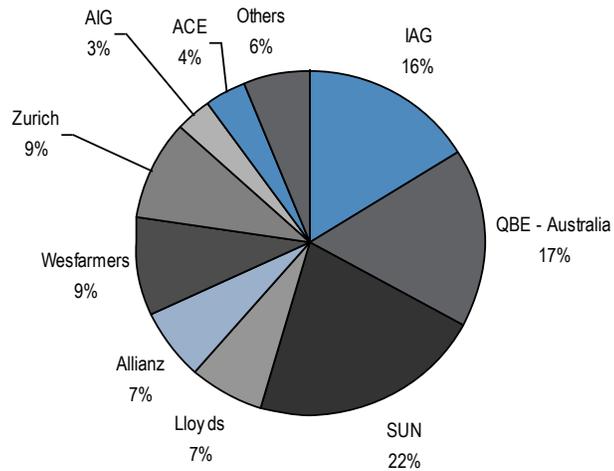
Figure 8: Split of GWP of Brokered Business between AON, Marsh, Steadfast, Ausbrokers / IBNA, OAMPS, Willis, JLT,



Source: JP Morgan Estimates

- Remuneration of brokers:** In exchange for the services they provide, brokers receive a commission from the insurer. In the case of larger clients, they may charge a fee for their services directly to the client instead of a commission. In order to service the brokers, insurers typically will have a reasonably large underwriting team who decide whether to deviate from the base rates that they are given for each type of risk, based on their delegated authority.

Figure 9: Charts of which companies write commercial business – include Lloyds



Source: JP Morgan Estimates

Detailing distribution in different commercial market segments

- Different market characteristics:** The commercial insurance market may be segmented into commercial SME, middle market and high end (corporate and global). The underwriters & brokers involved and the underwriting process itself varies greatly and it is important to make this distinction, as issues and changes in one section of the market are not immediately transferable to other segments of the market.

The high end commercial market underwriting process is requires human judgement and does not lend itself to contestable platforms

Commercial SME policies are typically algorithm rated and as such technology may be utilised to allow for timely price comparability

Price comparability is limited in commercial SME business due to the constraints of technology currently and as such this business exhibits high levels of stickiness

- **Top end of market requires individual underwriting:** The high end of the commercial market (corporate and global) is dominated by brokers as policies are heterogeneous in nature and claims experience rated. Underwriters may physically inspect the risks and may recommend risk management strategies prior to accepting the risk. There is significant human involvement and underwriting judgment involved in the management of these accounts and brokers often shop this business around prior to accepting a quote. The relationship between each of the parties (underwriter, policyholder and broker) is highly valued. As such there is little potential for technology to either automate processes or provide price comparisons.
- **Middle Market:** The middle segment of the commercial market also sees the shopping around of business with underwriters still exercising judgement on the pricing of policies. However, due to the smaller size of these risks there is less sophistication compared to the corporate and global market. We understand there are some brokers who have already or are seeking to launch platforms in the middle segment of the insurance market which can reduce the overhead for brokers in obtaining quotes.
- **SME:** The SME segment of the commercial insurance market is dominated by a small number of broker groups including Steadfast, OAMPS, AustBrokers (IBNA/AIMS) and AON. The nature of this business is that it is higher volume and lower value compared to middle market and corporate commercial business. There is also a material amount of business written through the Direct channel which includes general insurance agents and call centres. We understand that Direct business is skewed towards the micro end of the SME where the policyholder requires little underwriting advice.

SME Market Characteristics

- **Pricing methods in SME:** Commercial SME policies are typically algorithm rated, that is, there is little underwriter judgment required in the computation of the premium. As such this segment of the market may be open to the use of technology to automate processes.
- **Comparability of prices in the current SME market:** There is potential for price comparability today, albeit in a slow and cumbersome manner. Brokers already have the capacity to receive multiple quotes for a single risk; however, due to the constraints of IT systems we believe there is a poor time-reward trade-off. This is because a policyholder's risk details need to be re-entered for each quote. It is estimated that a single quote may take up to 40 minutes meaning to obtain three quotes a total of up to 120 minutes would need to be spent. This is a considerable amount of time spent when the commission obtained would be approximately \$500. As such, we understand the brokers do not actively shop SME business resulting in a higher degree of stickiness.
- **Simplified decision making process:** We do note that brokers often have a 'feel' for the market where it is understood certain insurers are relatively cheap or expensive in certain market segments. In this instance, brokers may switch business from insurer to insurer.
- **Product differentiation in SME:** Currently, there is no consistent policy wording between insurers with product differentiation often used as a marketing tool by insurers. Even within a single insurer, there are often differences in policy benefits and policy benefit limits between occupations as product offerings are designed specifically for a particular occupation. As such it is difficult to make a like-for-like comparison between the products of different insurers.

Timely and effortless price comparability in the SME commercial market will be facilitated by broker owned contestable platforms

- **Disclosures:** The commission disclosures from brokers in general insurance is sometimes considered weak and some have argued before that the product suite offered by brokers may be influenced by the commission rates offered. We highlight the Government has suggested introducing a ban on conflicted remuneration structures (i.e. commissions) on all insurance products as part of its Future of Financial Advice Reforms – which may completely change the method of remunerating brokers.

Major changes are coming in distribution – particularly SME end

- **Contestable platforms emerging:** Several broking groups are looking to utilise technology to launch contestable platforms which promotes greater and timely price comparability between underwriters. The proposed platforms will allow for a single risk to be quoted through multiple underwriters without the need to re-enter the policy information (as is currently required). One of these platforms is already ‘live’, with others supposed to be rolled out in the next 6-12 months.
- **Standardisation:** In some instances, brokers are also looking to control the policy wording rather than the current situation where the insurer prepares the policy wording. We understand some insurers have signed up to this paradigm which some have argued to us will make insurance a commoditised product.
- **Reach of the platforms:** We understand that the development of contestable platforms is primarily occurring in the SME commercial market whilst some other commercial classes of business such as Directors and Officers, Standalone Liability and middle market business will also be placed on these platforms. We understand some intermediated personal lines business, which is currently sold through brokers, will also be sold on these platforms.

We understand three broker groups have begun development of platforms for commercial SME insurance.

- **Steadfast launching a platform:** Steadfast is launching the *Steadfast Virtual Underwriter* (SVU) which allows direct comparability of the price of different insurers by brokers. The insurance contract offered to the policyholder is a single policy wording prepared by Steadfast that each of the insurers must offer and price benefits on. Steadfast also determines the underwriting questions asked of the policyholder which the insurers use for rating purposes. Once again where there is limited differentiation between product offerings, this might be seen as commoditisation. Some might argue however that in SME business this business in reality was commoditised to some degree already.
- **AON extends its EMBS platform:** AON has launched its own 'contestable environment' called *EMBS* by where insurers have adopted standard policy wordings and underwriting questions determined by AON (similar to the Steadfast model). Insurers have also signed to claims service agreements ensuring minimum levels of service for policyholders. This route will also change insurance products into a commodity.
- **AustBrokers launching iClose:** AustBrokers is rolling out a different ‘aggregator’ platform- *iClose* offering where multiple prices may be obtained with a single entry of policy details, but the products are not directly comparable. Insurers retain their own policy wordings maintaining the current environment where product offerings are distinct and brokers are often relied upon to provide advice on the best product. AustBrokers have stated that in their view variability in policy wordings provides customers with choice.

Table 1: Summary of SME Commercial Key Broker Offerings

Broker Group	Steadfast	AON	AustBrokers
Platform	Steadfast Virtual Underwriter (SVU)	EMBS	iClose
PDS	Standard Steadfast PDS with extendable benefits	Standard AON PDS with extendable benefits	Individual PDS written by insurers
Underwriting Questions	Pre-determined Steadfast question set	Pre-determined AON question set	Question set defined by insurers

Source: J.P. Morgan.

Most insurers are hesitant participants in contestable platforms

How have the insurers responded?

- Insurer Resignation:** Overall, we understand that most insurers are at best hesitant participants in these contestable platforms (it may be more accurate to describe them as reluctant participants). One industry contact suggested that insurers are no longer concerned about the impact of contestable platforms; they are “simply resigned to the fact contestable platforms are the way of the future”. Within this environment of acceptance of the change, some insurers are looking to see if with the dislocation that may result, whether they can put themselves in a better position in the market than they were in previously. We note that some of the smaller insurers see these platforms as an avenue to increase market share. One large insurer has publicly stated that it has been quite eager in adopting contestable platforms citing it as an opportunity for growth.
- Concerns raised by the insurers:** We understand some of the concerns of the hesitant insurers in joining contestable platforms include:

 - Establishing connectivity between insurers’ systems and the broker’s contestable platforms allowing policies to be quoted requires a material investment in IT infrastructure which inevitably diverts resources from other projects. Many of the platforms charge for the privilege of participating.
 - There is a suggestion the standardised wording of business sold through some of the platforms will increase the commoditisation of insurance products removing any marketing advantage insurers have through product differentiation.
 - Increased price transparency may see a situation where the insurer offering the lowest price wins the business as there are far fewer differentiating factors (as policy terms are consistent). There is also concern from some insurers that service related considerations (e.g. claims services, risk management advice) would be overlooked as price becomes the only consideration. To draw a loose parallels with the UK motor market where aggregators are abundant – business on aggregator platforms have loss ratio that is 10% higher.
- Reasons for joining:** Despite these concerns, we understand insurers have joined these platforms because:

 - The broker owns the relationship with the customer. The underwriter has to respond if that is how the broker says insurance is going to be distributed.
 - The commercial insurance market is fragmented on the underwriting side with no single insurer dominating market share. Therefore, the withdrawal / non-participation of a single insurer would not undermine the success of contestable platforms. It would only ensure the loss of market share of the non-participating insurer.
 - The non-participation of an insurer is likely to see this insurer sitting on the sidelines with the contestable platforms writing business through other insurers,

Key concerns of insurers regarding contestable platforms include:

- (1) IT expenditure in establishing connectivity with broker platforms**
- (2) Potential commoditisation of insurance products**
- (3) Increased price transparency**
- (4) Potential for other service offering to be overlooked**

underwriting agencies and even Lloyd's paper. This is in contrast to the more oligopolistic nature of the personal insurance market structure.

- Some insurers have suggested that the use of contestable platforms will reduce costs for insurers. We understand (a) the current system of having business quoted on SUNRISE Exchange is not an immaterial cost to insurers (b) more automated underwriting may reduce the need for manual underwriting (c) the commoditization of insurance markets will allow insurers to reduce the need for comprehensive servicing of brokers and clients (note, this is a source of differentiation the insurers may wish to retain).

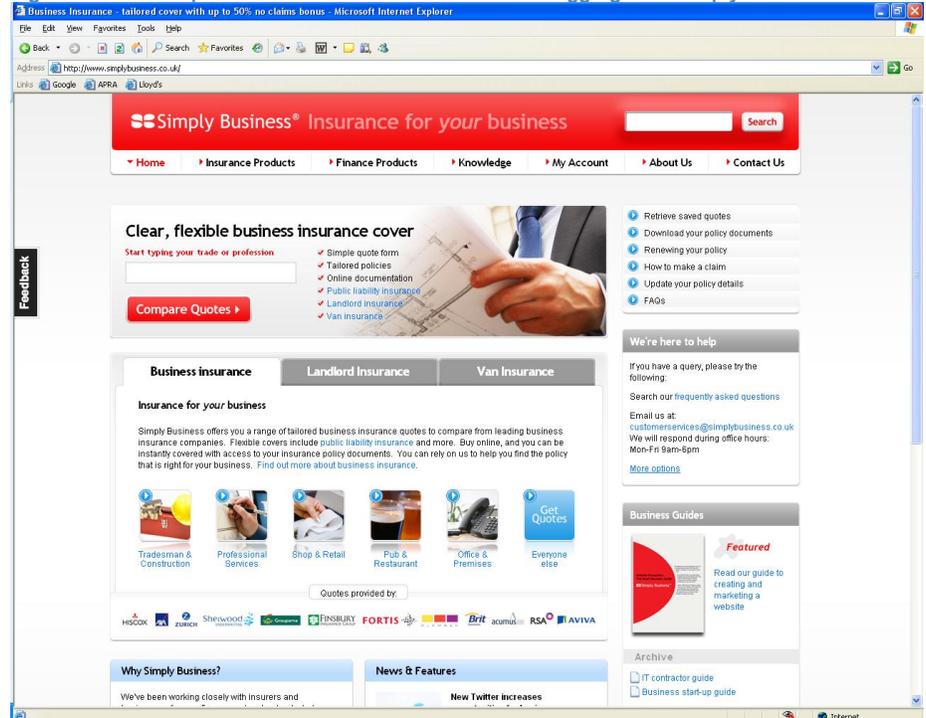
Experience Overseas in Commercial insurance

- **Commercial aggregator sites exist overseas:** Whilst personal insurance aggregators have been dominant overseas, commercial insurance aggregators are still in their infancy. However, there is some momentum gathering and we are now seeing some aggregator websites emerging in the UK.
- **Take up is slow:** Commercial aggregators have been slow to launch for a number of reasons:
 - (a) **Volume has not been large enough to justify investment:** The nature of developing aggregator sites is it is a high fixed cost business with significant IT investment but low marginal cost. Jeremy Moll, commercial director of Compare the Market one of the major UK aggregators suggests the volume of potential commercial SME business to go through commercial aggregators in the UK is estimated at 1m to 1.5m policies which is tiny compared to the 24.8m personal motor policies (2009)⁷ and as such the value for aggregator sites has always been in personal motor insurance.
 - (b) **Lack of standardization of question sets:** The questions asked of policyholders vary greatly from one underwriter to another. From an aggregator point of view, it is extremely difficult to know what questions to ask a potential policyholder and roll them into a single set of questions.
 - (c) **Insurers have been 'burnt'** by the experience of personal insurance aggregators and have been hesitant to enter another market in the aggregator space.
 - (d) **Some clients prefer a human broker:** Some clients would prefer advice for the insurance they are taking out for their small business.
- **However, the tide is beginning to turn** with aggregator sites looking at the untouched commercial market and have begun developing infrastructure to enter this untapped market.
 - Trends in Google searches have also indicated there is increasing demand for commercial aggregators with Google's Insights for Search statistics indicating that the search "compare business insurance" in the UK has increased approximately 25% in 2010 over 2009.
 - Three of the four major UK aggregators – Compare the Market, Confused and Go Compare now partner with a third party aggregation site and potential policyholders clicking through.

⁷ Source: Datamonitors- UK Private Motor Insurance 2010

- Simplybusiness.co.uk is an example of a third party site used by the major aggregators offering business insurance from some of the major insurers in the UK market including AXA, Fortis, Brit Insurance, RSA and Avivia. Interestingly, Brit Insurance bought a 38% stake in Xbridge, the owner of Simplybusiness.co.uk signally that insurers are realizing that commercial insurance is likely to go down the path of personal motor insurance.

Figure 10: An example of an overseas business insurance aggregator - Simplybusiness.co.uk



Source: Simply Business.

- We understand the **focus of the commercial aggregator sites emerging is in the micro-end of the SME commercial market**. The motivation for targeting this segment is, firstly, advice from brokers is limited so policyholders would not be losing much by not using brokers. Secondly, the micro-end of the SME commercial market is dominated with small business owners and there is an increased comfort amongst the broader population with transacting on the internet – many would have purchased personal car insurance online already.
- **“Bricks and Mortar” brokers could lose:** It has been flagged that in the UK brokers are the likely losers from the increased trend of SME commercial business going direct and now the emergence of the commercial aggregator platforms. The key for brokers is to demonstrate they still provide a value add to their clients through advice and service, but this is difficult at the small end of the market where brokers are struggling to make money servicing these clients where average premiums are only £500.
- Another concern from UK brokers is that whilst the internet is only impacting the micro end of the commercial market, as culture changes and people become more comfortable with the internet higher value policies are likely to be written on the internet.

- **Defensive web strategy from brokers:** One solution that we have seen suggested for brokers is that they need to increase their presence on internet search engines, where their offering will be a search result alongside that of insurers and aggregators. But search engine advertising and search optimization is not cheap and smaller brokers are unlikely to be able to compete.
- **Possible read-through to Australia?** As such we see the potential for these UK trends to continue in Australia in the longer term where at the micro end of the market where consumers are comfortable purchasing insurance without broker advice. We note that Australia, even in the SME commercial segment, remains skewed towards brokers and insurers have not established a large online presence yet (we are aware of one insurer that gives limited quotes online - but requires a call to a call centre for completion of the transaction). And, for the moment the trend towards contestable platforms sees the power remaining with the brokers.
- **Defensive strategies by underwriters:** However, we do flag that it is conceivable that an insurer with multiple brands (e.g. SUN or IAG) could launch its own aggregator site with the appearance of having quotes from many brands even if the brands are owned by a single company. The risk is that if an insurer launched its own aggregator site, it would be seen as alienating its existing distribution channels, which may impact other areas of its business – particularly the high end commercial lines segment where broker relationships are critical.

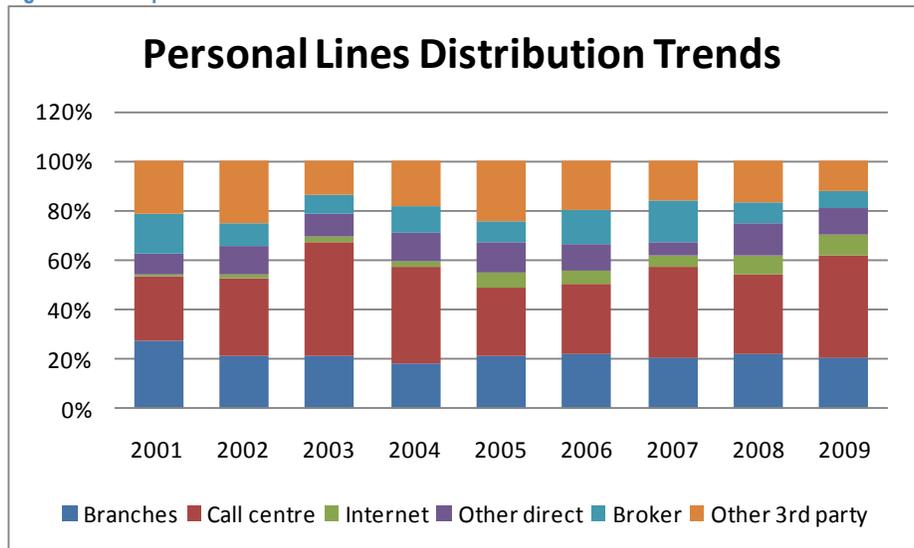
Personal lines distribution is seeing the rise of the internet

Distribution Currently in Personal Lines

Personal lines is largely distributed direct at the moment

- **Mix of Channels –direct dominates:** In recent history, personal lines has in the most part been distributed directly in Australia through advertising / direct mail / internet providing the leads, and with the majority of the final aspects of the sales servicing being completed by call centres or branches. To a limited extent there has been the use of other channels e.g. insurance brokers, agents (for example travel agents) and affinity groups.

Figure 11: % of personal lines insurance from distribution source



Source 2009 J.P. Morgan Deloitte General Insurance Survey

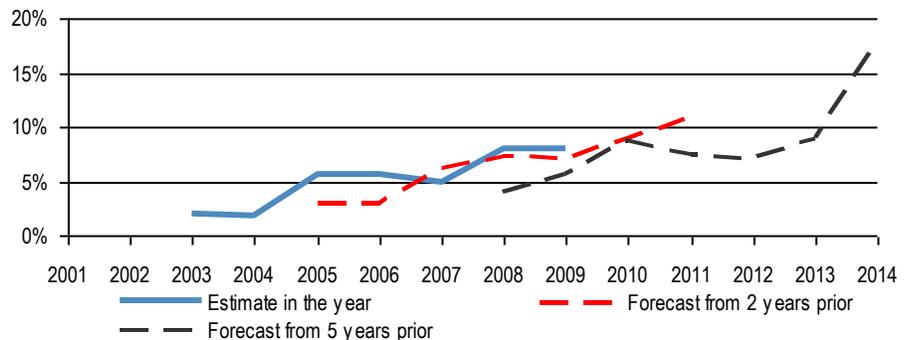
Within direct – the internet channel is rising very quickly in importance for sales – and is forecast to account for 17% of sales by 2014.

History suggests this could be conservative.

- **Rise of the internet:** The chart below shows the rise in sales over the internet, and forecasts for this channel into the future, according to the JP Morgan Deloitte General Insurance Survey:

1. It is clear that forward looking statements from the industry on internet based distributions have been surprisingly accurate in predicting the strong growth of sales via the internet. Typically the industry has actually tended to underestimate the amount of sales that will be done over the internet.
2. There has been a very sharp increase in the forward estimates of sales via the internet channel in 2014 – up to 17%. It appears that the industry is waking up to the likelihood that this channel could become a very important channel directly for sales by that stage (not just checking quotes). This of course exposes insurers to a channel where comparing quotes can be much easier

Figure 12: Internet channel expectations over time vs. actual.



Source: JP Morgan Deloitte Surveys of the insurance industry

- **Growth in affinity channel?:** We have heard recently many new distribution arrangements between underwriters and businesses that have large customer databases to sell policies, including:

- Auto & General with Australia Post
- Auto & General with Virgin Money
- QBE with Myer
- Wesfarmers Insurance with Coles (although they are part of the same group)
- Wesfarmers Insurance with Kmart Tyre and Auto (although they are part of the same group)

Direct appears much cheaper than intermediated

Costs of direct vs. brokered channels

- **Costs of direct are much lower than intermediated channels:** Business distributed direct has generally much better insurance profitability than intermediated personal lines business (*based on disclosures from IAG to investors*). We suspect that this is in part because there is pressure from the broker for the personal lines premium rates of the insurers to be competitive with their direct personal lines premiums in order to win the right to the commercial business of the client – whilst still requiring the insurer to pay reasonably high levels of commission on those products. The greater expense loadings would typically result in a lower profit margin for the same premium. We show below from IAG what the cost structures of their Direct business is compared to Intermediated. Whilst the comparison is not strictly like for like as the business mixes are quite different – IAG Direct is predominately personal insurance and IAG Intermediated is predominately commercial insurance, it is clear that expense loadings appear to be much higher in Intermediated channels than Direct.

Figure 13 Expenses of IAG - differences between Direct and Intermediated

	% of NEP	IAG Direct	IAG Intermediated
2010		15.6	31.5
2009		17.7	32.7
Average		16.65	32.1

Source: IAG 2010 investor report (excludes levies)

Personal lines market is seeing challenges on the underwriting side:

- **New players:** After a period of consolidation in the personal lines space (following the purchase of Promina by Suncorp; IAG's purchase of Swann, SGIO & SGIC; the sale of Zurich's personal lines business to QBE), we have seen some new competition emerge in the class of Motor insurance in particular. This includes the growth of Real insurance, along with the market entrance of YouI and Progressive. CBA have also started writing their own motor insurance under their own CommInsure license. We note however that APRA statistics suggest that the new competition is still nascent and had not taken substantial market share as at December 2009.

Aggregators are trying to enter the personal lines market – but with very limited success at the moment.

Aggregators are trying to get involved in distribution:

- **An influx of aggregators?:** As previously shown, most personal lines insurance in Australia is currently sold direct. This is typically a distribution channel with cheaper distribution costs than intermediated channels. Along with the trend of rising sales of insurance through the internet, we have seen aggregators seek to enter the personal lines space.
- **Large insurers are not signing up:** At the time of writing none of the large insurers (IAG, Suncorp, Allianz, QBE, Wesfarmers) had signed up to any of the aggregator sites. Statements by the companies suggest that they are typically concerned with 3 risks if they did:
 - (a) the risk of anti-selection

- (b) the risk of commoditization of their brand proposition
- (c) the rising of their cost of insurance as the aggregator would be “another mouth to feed” in the value chain.
- **2 of the newer insurers (Auto & General Holdings – i.e. Budget) and Real Insurance have signed up** to those sites, we suspect in part seeking to increase their premium volumes to help cover fixed costs. 2 of the other start up insurers, Progressive and YouI insurance at the date of writing of this paper had not signed up to the aggregator sites, presumably as they are worried about similar issues to the established brands.
- **No penetration at the moment:** To date it is clear that the sales of insurance through aggregators in Australia is modest at best, given that there were only 2 of the smaller underwriting licenses that we could find involved in providing quotes to them, and both those underwriting brands we understand sell most of their insurance through their direct channel. Nevertheless, there is a reasonable (arguably a disproportionate?) amount of publicity about these companies⁸.
- **Lack of brands a key problem:** The lack of known brands and choice on the platforms has created problems for the aggregator sites. Even in the health insurance space, where there are more underwriters than in motor insurance, one of the large aggregators found itself in trouble for providing a misleading view of the range of comparisons that it was making. In November 2007, iSelect Health Pty Ltd entered an enforceable undertaking with the ACCC, after the ACCC alleged it had:
 - misrepresented that it compared a significant proportion of health insurance policies available to consumers
 - misrepresented the number of health insurance policies which it compared for consumers, and
 - misrepresented that it compared for consumers all the health insurance covers available to them and could find the best suited policy for a consumer's needs at the lowest price.
- **Some solutions being tried:** To get around the limited list of underwriters in motor insurance, which of course limits the aggregation services that can be provided, it appears that some of the aggregators have had at least one of the underwriters launch multiple brands on the website to increase the appearance of choice, and increase the willingness of customers to seek insurance through those avenues.
- **Risk to all intermediaries from the FOFA reforms:** As an aside, we note that aggregators, along with many other intermediaries may have to adapt their revenue model. There could eventually be a banning of commissions for distribution of financial services products, if the intention of the Future of Financial Advice Reforms describe a desire by the Federal Government to consider exploring the removal of commissions for the distribution of all financial services products.

⁸ We note that 2 of these aggregators (iSelect and ratecity) are part owned by ninemsn.com.au– hence perhaps they have been able to achieve greater media attention with Channel 9 programmes than might otherwise have been the case.

- **All in all, at the moment, the growth in internet related sales appears to be concentrated through company websites rather than through aggregator channels.**
- We have undertaken some limited research into the economics of distributing business through company websites in Australia. We have included this in an appendix on the internet channel.

Experience Overseas in Personal Lines

In this section we examine the rate of take up and sophistication of usage of the internet as a distribution medium in overseas insurance markets.

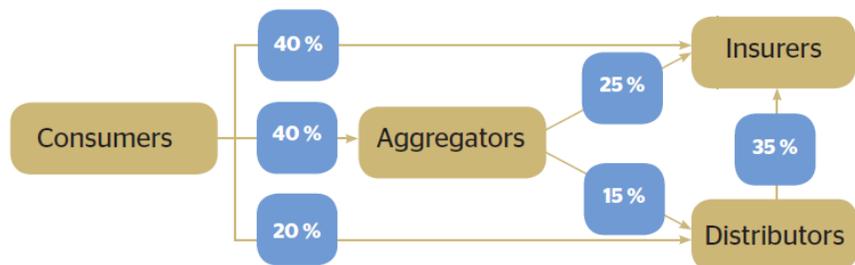
UK – very heavy use of internet by consumers for purchasing motor insurance.

Aggregators are now a dominant channel.

United Kingdom – the aggregator experience

- **Very heavy use of the internet:** The United Kingdom leads the way in the rate of take up and sophistication of usage of the internet as a distribution channel. The development of price comparison sites has been the single most important development in distribution patterns in the UK in the past decade. Confused.com, launched in 2002, was the first insurance price comparison website launched in this market. The website simplified and accelerated the purchase process for motor insurance customers who previously had to enter personal data at numerous company websites or visit multiple brokers in order to obtain the same number of quotes. Aggregators are arguably one reason to why the UK private motor retention rate is 55%⁹ which we understand is low compared to the Australian motor experience.
- **Many aggregators in the market:** In light of Confused.com’s significant successes, the number of UK insurance aggregators has expanded rapidly e.g. we now have Insurancesupermarket.com, GoCompare.com, Tescocompare.com, and Comparethemarket.com. New market entrants often offer faster, more efficient quotes, or expanded into other product lines like home insurance, (although motor insurance continues to be the primary focus for most of these sites). Typically, aggregators will return results from more than 20 insurers, and in turn, most providers have formed relationships with one or many aggregators.
- **Split by channel:** Research conducted by EMB estimates that the current distribution pattern for motor insurance in the UK is as shown in the graphic below (40% direct, 40% through aggregators, and 20% through other distribution channels including traditional brokers), relative to two-thirds direct and one third distributor prior to the emergence of aggregators. They also estimate that overall more than half of all direct sales are now done over the internet.

Figure 14: Distribution of Motor Insurance in the UK in 2008



Source: "Pricing perspectives on an aggregated future" - EMB

- **Most underwriters are participating:** Given the dominance of the aggregator market in motor distribution and their growing influence in home insurance, most

⁹ Datamonitor Private Motor Report 2010

UK insurers have elected to participate on these sites. However, there have been a few notable exceptions, for example, among the largest writers:

- The Royal Bank of Scotland (RBS) owns the aggregator Tescocompare.com, but its Direct Line brand is absent from this and other price comparison Web sites.
- Norwich Union has removed its products from price comparison Web sites and to develop its own independent aggregator system.
- **Characteristics of internet customer:** Research from DataMonitor suggests shows that the internet has become the most popular method of purchasing motor insurance, whilst telephone remains the most popular method for home cover.
 - The usage of the internet varies by age group. Generally the younger and more affluent segments of the market are more likely to use the internet as a purchase medium. Customers over 64 prefer to use the phone to arrange their insurance policies.
 - The degree of loyalty to a particular insurer is strongly correlated with internet usage. Generally wealthier and younger age groups are least likely to stay with their existing insurers. Customers cite price as being the most important reason for switching. While price remains the dominant attraction for all age groups, older consumers are more likely to consider other non-price factors.
- **Revenue model for aggregators:** Traditionally, aggregator revenue has been a function of new premiums generated and aggregators earned a commission for sales. The negotiated rate insurers pay depends on the insurers' contract with the aggregator. All the observations below on revenue models are taken from DataMonitor¹⁰.
 - Datamonitor suggests aggregators typically provide a cost-per-lead pricing structure to agents who pay for the service. Agents can select the types of leads they are interested in purchasing, allowing them to control the costs they take on. Lead quality is very important, and agents are willing to pay much more for more personal or more guaranteed leads. Agents expect to close approximately one out of every 10-20 leads.
 - More recently, aggregators have diversified revenue sources. Hybrid revenue models now consider other factors in addition to premiums generated, such as number of transfers to partners, charges for banner advertisement space, etc.
 - Aggregator themselves face a number of pressures as they are heavily reliant on television advertising to ensure brand awareness. Research in the UK shows that most of this advertising is dominated by the top four aggregator with those outside the top four only making up a negligible percentage of the overall advertising spend. Aggregator's focus more than three quarters of this advertising is spent on motor insurance cover.
- **Aggregator has customer relationships:** Typically, aggregators in the UK own the personal information and follow-up data they acquire from customers. Once a customer completes a transaction on the insurance company's website, however, the insurer also owns the customer. Aggregators can earn additional revenue by selling exclusive advertising rights to the insurer, meaning that only the insurer owns the customer data. These contracts often include re-solicitation restrictions

¹⁰ UK Personal Insurance Distribution 2010

that prohibit the aggregator from cross-selling or up-selling additional products to the customer.

UK Motor profitability has suffered. Until recently, premium rate increases were very hard to pass on.

- **The impact of aggregators has been felt on market loss ratios:** The graphic below shows the profitability of the UK Motor market. The industry loss ratio excluding prior year releases continues to go up. Part of this is due to the increase in the bodily frequency and severity. EMB estimates that frequency will increase by 5- 10% and severity with increase by 5-8% over 2009. Whilst insurers are aware of these trends, the increased selection power and willingness to shop around of consumers has stifled insurers' ability to pass price rises through.

Figure 15: Combined Operating Ratio: UK Motor Market

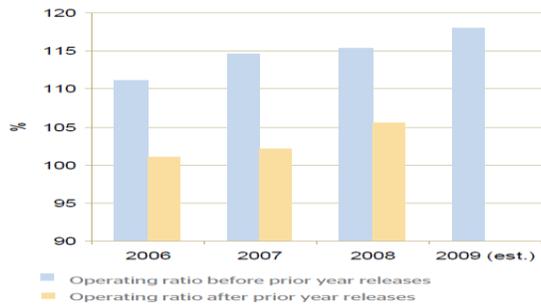


Figure 1 - UK motor insurer performance ratios: 2006-2009 (estimated)

Source: EMB : "Recipes for Future Success"

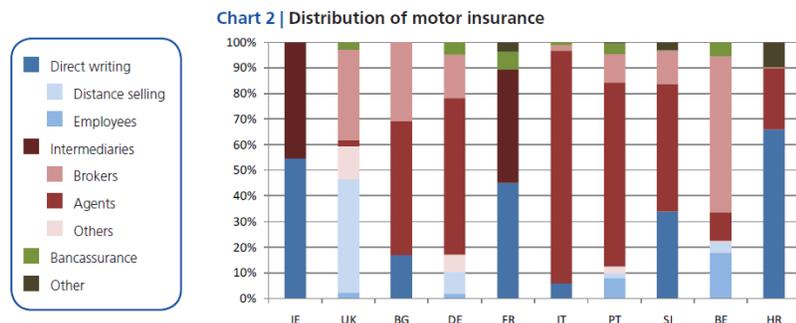
Continental Europe

- **Dominance of brokers in personal lines in Europe:** In much of continental Europe general insurance product distribution continues to be dominated by traditional intermediaries and in particular by agents.

Continental Europe mainly purchases personal lines through intermediaries - although this is increasingly under threat with direct sales rising.

Internet sales are still low.

Figure 16: Distribution of Motor Insurance in Europe



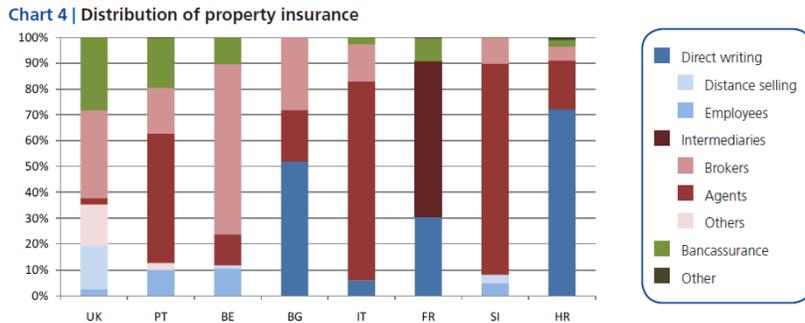
Source: CEA

- Excluding the UK, direct selling is significant in only Ireland (IE), France (FR), Slovenia (SI) and Croatia (HR) use direct distribution as a significant sales channel. Within the direct written category, the take up of internet as a distribution channel seems to be low even in countries with higher proportion of the direct distribution. We hypothesize that the low utilization may reflect, as in the

United States, that agency based systems have been in place for many decades and are to some extent entrenched in the psyche of the customer. Another factor may be a reluctance of insurers themselves in adopting such a model as it would commoditize and therefore erode much of the value of the agency distribution networks that the companies have built up over time.

- The chart below shows the distribution channels for property insurance. The conclusions not surprisingly mirror those for motor.

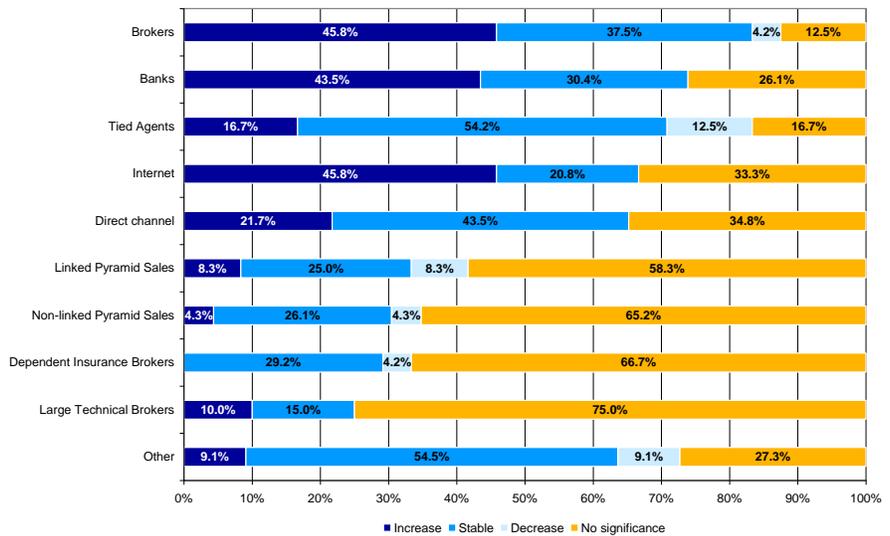
Figure 17: Distribution of Property Insurance in Europe



Source: CEA

- **Intermediaries are now facing threats in Europe:** Monitoring by the European insurance and reinsurance federation (CEA) shows a slight decreasing trend in traditional distribution methods in most countries in Europe. They suggest that the emergence of bancassurance and the internet based methods is eroding some of the market share of leading distribution channels and will continue to do so as insurers adopt a multi-channel distribution strategy. This is supported by a survey of German Insurers. The graphic below shows the expected importance of each distribution channel over the next five years.

Figure 18: Forecasts of changing distribution in motor market in Germany



Source: "German motor market, Market allocation, Distribution channels , Pricing trends" by Alexandra Mayr Towers Perrin Tillinghast

- Participants generally expect Internet, Banks and Brokers to gain in importance. Participant consider that Internet will become especially important in motor insurance (standardized product and increased price sensitivity)
- Few participants believe that Tied agents will increase in importance.
- Banks are expected to become more significant according to the study's participants, however this still has to appear in the data

The US Personal lines market has moved largely direct. The use of the internet for sales is lower than the UK.

There are no real aggregator sites in the US – just distribution portals

United States and Canada

- **Distribution of personal lines in the US:** In the personal lines market, direct writers wrote 69.6 percent of net premiums, agency writers 30.3 percent. Direct writers had 69.4 percent share of the homeowners and 69.7 percent of the auto insurance markets. Agency writers had 30.3 percent of the homeowners and the auto insurance markets. In the US, the traditional agent-based insurance distribution model has been in place for many years and has an important impact on the psyche of the customer (although their predominance has shrunk).
- **Internet sales are low but growing:** According to the New York State Auto Insurance Department¹¹, insurance sold over the web accounts for a very small - but growing percentage of sales over the internet. A 2010 survey by comScor¹² estimates that U.S. consumers submitted requests for 38.8 million online auto insurance quotes in 2009 and purchased a 2.8 million policies online during the year, each representing an increase of more than 20 percent versus the previous year. A 2009 Insurance Research Council survey found that more than half (52 percent) of those who had recently shopped for auto insurance had visited an insurance company Web site. Eighteen percent reported they had actually purchased insurance over the Internet.

Figure 19: Sale of Motor insurance over the internet

	Percent Change 2007 vs. 2006	Percent Change 2008 vs. 2007	Percent Change 2009 vs. 2008
Quotes Submitted	15%	-1%	21%
Policies Purchased	37%	8%	22%

Source: comScor

- **Aggregators are not prevalent in personal lines:** The JP Morgan P&C insurance analyst in the US has informed us that in the late 1990s and early 2000s business models that tried to be full aggregators set up in the US- but were not successful because there was (a) substantial variation in pricing algorithms between companies so the price and actual quote prices varied and (b) compensation for aggregators did not work because conversion rates were extremely low (c) there was a continued rise in direct sales.
- **Distribution portals:** Whilst full aggregators are not prevalent, there are services which provide an introduction service to several insurers where you can get a full quote (but you need to enter your details twice on different insurer's websites to get 2 quotes). Insurance.com for example claims to be the largest online auto insurance agency in the United States and lists price quotes from more than a dozen of the nation's major carriers, including Progressive, Travelers, MetLife, 21st Century... and even QBE. Other popular US aggregator websites include insure.com and Insweb.com. It is notable that even with this service some very

¹¹ "Consumer guide to Automobile Insurance" New York State Insurance Department

¹² 2010 US Online Auto Insurance Report, comScor

Canada and South Africa have only recently seen internet aggregators arrive in their markets.

large insurance underwriters do not participate on this platform e.g. Geico, AllState.

- **Canada:** The take up of the internet as a distribution channel has also been limited in Canada¹³. Commentators attribute this to two factors, population density and technological barriers. A (dated) table below shows that the use of direct is rising in Canadian personal lines – but is starting in a market structure where other forms of distribution have dominated.

Figure 20: Distribution of Insurance in Canada*

Distribution System	Personal Lines		Commercial Lines	
	1995	2003	1995	2003
Multiple Channel Writers	9.55%	6.65%	13.54%	9.80%
	(13)	(15)	(16)	(13)
Exclusive Writers	15.33%	16.64%	4.92%	6.79%
	(18)	(16)	(16)	(17)
Agency writers	67.30%	63.75%	77.44%	76.52%
	(88)	(77)	(98)	(93)
Commodity Writers	7.82%	12.95%	4.10%	6.89%
	(8)	(15)	(9)	(14)

1995 data are collected by AM Best WinTrac P/C. It consists of 194 firms that account for 85 percent of the private insurance market in Canada. 2003 data are collected by MSA Research. These 170 companies account for 90 percent of the private insurance market in Canada. The brackets below each percentage is the number of firms that report direct written premiums for each distribution method and lines of business.

Source: The Distribution of Property/Liability Insurance in Canada: Costs and Market Structure. * Multiple Channel Writers distribute through many channels, Exclusive Writers only sell through their own agency force, Agency writers sell through independent agents or brokers, Commodity writers distribute direct.

- A peculiarity of Canada is its low population density, Canadian consumers are much more loyal to their brokers than consumers in the United Kingdom because many brokers serve small, isolated communities and have strong relationships with their customers.
- In Canada, the technology needed to link aggregators to insurers lags behind the UK. Given that 70.2% of all business (including commercial lines) is still sold through independent brokers, many large Canadian insurers have paid little attention to aggregators particularly given the difficulties in being involved in both channels.
- Only a few aggregators, Kanetix.ca and InsuranceHotline.com, have been very successful in Canada. As of 2009, Kanetix.ca received approximately two million visitors per year – although we suspect usage is likely to be lower than that, and transactions in motor insurance are likely to be only a small proportion of the overall sales (given the websites sells very many financial services products).

South Africa

- The arrival of aggregators to South Africa is a very recent phenomenon. The nation's first aggregator launched in 2007 – hippo.co.za, which provides quotes for motor, home, and travel insurance. Other aggregators have since joined the

¹³ “Industry Outlook Report” – impact of aggregators – by Lauren MacGillivray August 17, 2009, Canadian insurance

market, most notably, CheapCarInsurance.co.za. Both aggregators have seen web traffic steadily increase. As of February 2008, 30% of nonlife insurance products were sold online or over the phone.¹⁴

Conclusion

It appears that we are set to see substantial changes in distribution in Australia in the commercial lines classes at least in the near term. These changes are arguably coming earlier than many other parts of the world and will make it easier for clients to have quotes between insurers compared. In the personal lines space, whilst the use of the internet for quoting and transacting insurance is growing, the use of aggregators at this stage does not appear widely prevalent in Australia.

The trends in Australia are “middle of the road” compared to most markets in the world (much less use of aggregators and the internet than in the UK, but more than Europe, arguably similar to the US).

The table below shows a summary by contrary of the current state of play in different markets, and the changes occurring.

Figure 21: Table on Distribution of Insurance

Country	Personal lines	Commercial Lines
Australia	Call centres and branch network distribution dominate for both home and motor insurance The use of internet via company web sites has experienced strong growth. Aggregators are present, but have no penetration at the moment.	Brokers and Independent agents dominate distribution. Larger Broker groups are developing their own aggregator Platforms Importance of direct channel increasing via call centres
United Kingdom	Heavy use of the internet as a distribution channel particular for motor. Aggregators make up approximately 40% of motor sales and are expected to grow. Call centre still dominant for home distribution, but Internet distribution growing.	Broker distribution dominates, although losing market share. Direct distribution growing, expected to rise to 11% in 2011.
Continental Europe	Distribution patterns vary by country, but heavily dominated by agency based distribution model. Direct distribution starting to experience growth. The importance of internet distribution expected to increase.	Dominated by agency and broker based distribution model.
United States	Direct distribution via call centres and branches dominate Internet sales on company web sites are low but growing Aggregators are not prevalent	Broker and tied agency distribution networks dominate.
Canada	Independent brokers dominate distribution. Internet take up has been low Aggregator have only recently emerged, but penetration is low	Independent brokers dominate distribution.

Source: Authors

¹⁴ <http://www.insuranceadvisor.co.za/insurance-news/280/South-Africas-first-insurance-aggregator-site-is-launched.htm>

Unique Challenge in Insurance

As we have shown in the previous two sections, many of the changes that are flowing from the internet/ IT revolution are not unique to insurance and are affecting many segments of the economy.

However, we believe insurance has some unique challenges for the product “manufacturers” to navigate through that need to be borne in mind in assessing the possible impacts on businesses from the distribution changes.

Unique features of Insurance vs. other industries

We describe below what are some of the unique features facing insurance underwriters’ business models which many other business models in the economy do not face.

The insurance industry faces a unique challenge compared to other industries – unknown cost of production, i.e. claims cost is unknown!

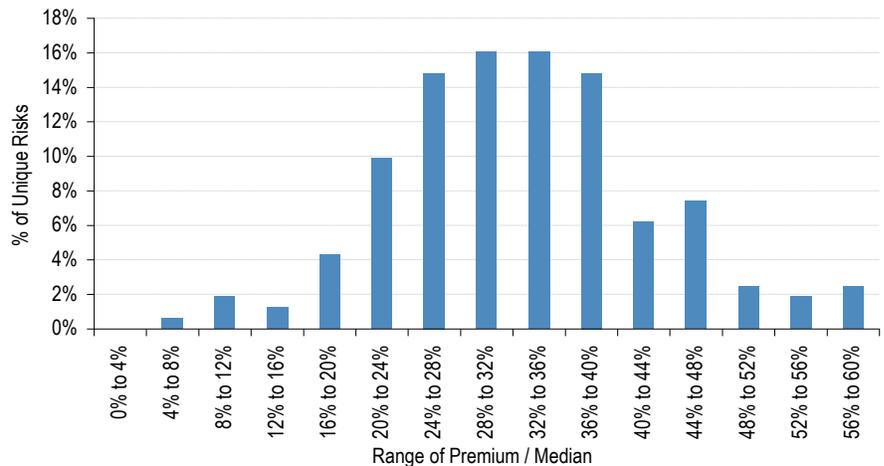
- **Insurance claims costs are highly uncertain:** The claims cost which is the largest component in the cost of production has significant volatility. This is particularly so on individual risks. However even at a portfolio level – there exists substantial uncertainty:
- **Natural peril costs and large claims are difficult to estimate:** Even in lines of business where the attritional claims cost is relatively easier to estimate there are often natural hazards, event claims and large claims which add significant volatility around the claims cost.
- **In long-tailed lines of business claims costs are even more uncertain,** as there is the additional complication having to “develop” claims costs to an ultimate claims cost – with assumptions needed on the rate of development of the claims due to inflation etc over many years.
- **Risks are not homogenous:** Another complicating matter is that the risks in a portfolio are not homogenous. i.e., there are different likely claims costs for each sub-segments of the market. This further increases the difficulty in the estimation of claims cost as some insurer may not have significant claims experience to base their prices on in each segment – or may not have the ability to use the appropriate data to accurately predict expected claims costs. This compares to other industries where the cost of production and inputs is largely known – consider industries which are manufacturing focused.
- **Actuaries and statistical departments do their best but uncertainty remains:** In light of the uncertainty in estimating claims costs, insurers have statistical and actuarial departments who spend significant time modeling the claims cost of a portfolio as well as the claims cost within detailed risk sub-segments of the portfolio (individual rating cells). However, even with the significant investment in statistical intellect, each insurer is likely to have different estimates of the claims cost, given different claims experience, different volumes of data and volatility in observed claims experience.
- **Large variation exists in premium rates on identical risks:** We explore the issue regarding claims cost uncertainty in greater detail in the Section Why premium rates differ for a risk?. It is clear however that substantial variation currently exists between different providers. This variation we believe increases

Insurance claims costs are estimated by actuaries and statistical departments but uncertainty and volatility remains

the risk of adverse-selection to insurers from any increase in transparency of prices for the consumer.

- To illustrate this point, we surveyed the new business prices of 4 major Australian motor insurers for 169 unique comprehensive personal motor risks in NSW (the risks were selected to represent a broad cross-section of the market). The chart below shows a histogram of the how prices for a single risk vary on average by about 30% between the maximum and the minimum quote. From Figure 22, on an average premium of approximately \$1000, this equates to a premium range of approximately \$300. Figure 23 below shows a histogram of the difference between the median quote and the minimum quote using the same data. **Once again the differences are still very large (about 16 – 20%) – well above the level of target insurance margins likely for the business. The risk of adverse-selection prima facie appears very high.**

Figure 22: Variance in range of NSW Comprehensive Personal Motor Premiums – December 2009

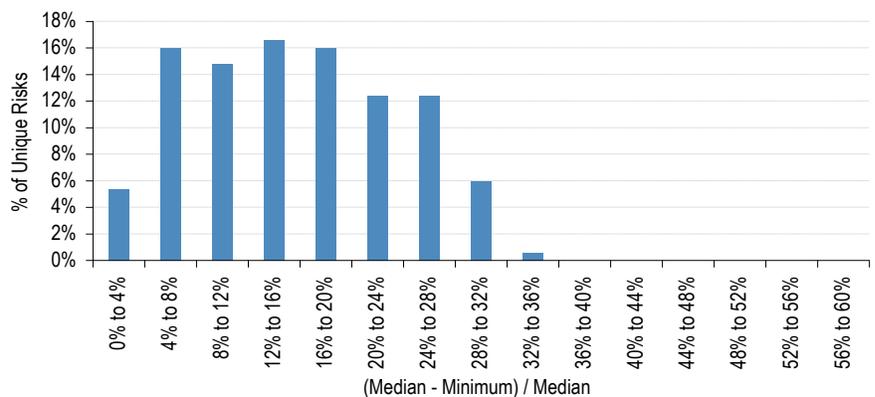


Source: JP Morgan Study

A survey of the insurance market would show there is a wide range of premiums for the same risk.

The average difference between insurers is greater than reasonable insurance margin targets

Figure 23: Diff. in Median quote to minimum quote NSW Comprehensive Motor – December 2009



Source: JP Morgan Study

Insurance is a variable cost industry – so choosing to lose volume to get better risks is an option

Price is an easy visible differentiating point. Other factors may be less critical in customers' decision processes because they are harder to assess.

- **Insurance is primarily a variable cost industry:** Another notable feature of the insurance industry is that it is primarily a variable cost industry. Fixed costs do exist, covering expenses such as IT expenses, management overhead, etc, but the largest costs are primarily variable – namely, claims costs and commission. This contrasts to, for example, the aviation industry where the cost of the scheduling and running a flight is largely fixed and there is little marginal cost in increasing passenger loads.
- This is an important difference as the marginal pricing of business as a cause of differences in prices is less of an issue in insurance than some other industries.
- Another implication of this is that the insurance underwriter has greater flexibility than many industries to optimise their portfolio to higher margin customers if necessary. This is particularly useful in the context of a market with poor profitability by where limiting sales volumes would result in a superior profitability outcome compared to writing loss making business. This may be a less palatable option in a high fixed cost business.
- **Price is arguably the most visible differentiating point for customers:** Unlike services in other industries that may be purchased by a customer, the tangible benefits of insurance are felt by the customer rather infrequently. The chance of a claim would generally have a low frequency in most classes - typically 10 -20% p.a. The low claims frequency means claims service and product design (e.g. benefit limits and extra policy benefits) are not at the forefront of a customer's insurance purchasing decision (except perhaps through brokers who give advice) which means that price can arguably be the most easy to use differentiating factor between insurers.

Winner's Curse Description

We believe that the large variability seen in premium rates, along with changes in distribution that make it easier for customers to compare premium rates exposes the insurance industry to the risks from a phenomenon called "Winner's curse". Arguably the winner's curse already exists in insurance today, but changes in distribution have the potential to significantly accelerate the effects of the winner's curse.

Investopedia:

Winner's Curse: "A tendency for the winning bid in an auction to exceed the intrinsic value of the item purchased. Because of incomplete information... bidders can have a difficult time determining the item's intrinsic value. As a result, the largest overestimation of an item's value ends up winning the auction"

- **Explaining winner's curse:** As described in the quote above, in a competitive bidding process, the highest bid wins. If the average of the bids or views reflects the best estimate of the true value¹⁵ of the item being bid for, some of the bidders are likely to have over-estimated the value of the item, whilst others are likely to have under-estimated its value. However, the winning bid is the highest bidder and hence is likely to be from someone who over-estimated the value of the assets. To sum up, there are two key criteria which defines the winner's curse situation, namely:

¹⁵ So called *Wisdom of Crowds* argument

- **Uncertainty:** The benefits of winning the project / asset is unknown and the bidder must estimate the value of the project / asset;
- **Auction situation:** The auction is structured such that the bidder with the highest price wins the auction.
- **An Example of Winner's Curse:** *Wikipedia* suggests that the term winner's curse was first coined during the 1950's when oil companies were bidding for offshore drilling rights in the Gulf of Mexico. In this example, each company made their own independent assessment of the value of the oil rights based on the available information. The manner in which each oil company used this information would vary resulting in each company having a different view of the value of the oil rights. If the true intrinsic value of the oil rights was \$10m, in the event of the auction oil companies may bid between \$5m to \$20m. The winner of the oil rights would be the bidder who bid \$20m and would then later realise the oil rights were purchased at a loss.

Winner's Curse in Insurance

Insurance is subject to the winner's curse as it has

(1) Uncertainty in its cost of production – primarily in the claims cost – with insurers taking different views on the appropriate price

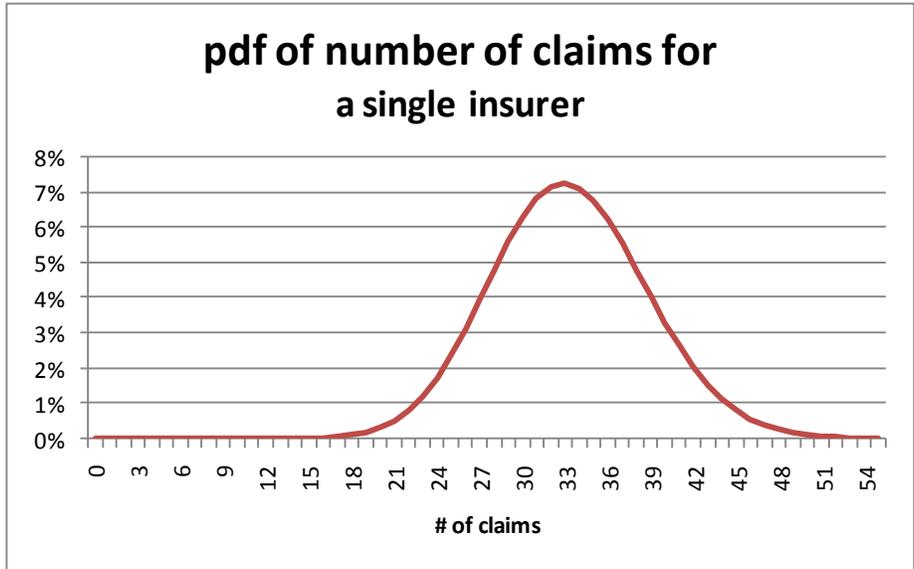
(2) Operates in an auction environment where price is likely to be a key differentiator

- **We believe that the process undertaken by a customer in choosing an insurance policy can be represented as meeting the previously stated conditions and hence being susceptible to the problem of winner's curse**
 - Auction process: Insurers tender their bid as a premium quote, with a lower price being a better outcome for the customer (i.e. the price paradigm is reversed as the insurers are providing a quote for a liability).
 - Uncertainty: In the bidding process for taking on the customer's uncertain liability profile, insurers may have differing views on what to charge particularly due to uncertainty in the claims cost (see *Why premium rates differ for a risk?* for a detailed exploration of the full suite of reasons for differences).

Example of Winner's curse in insurance:

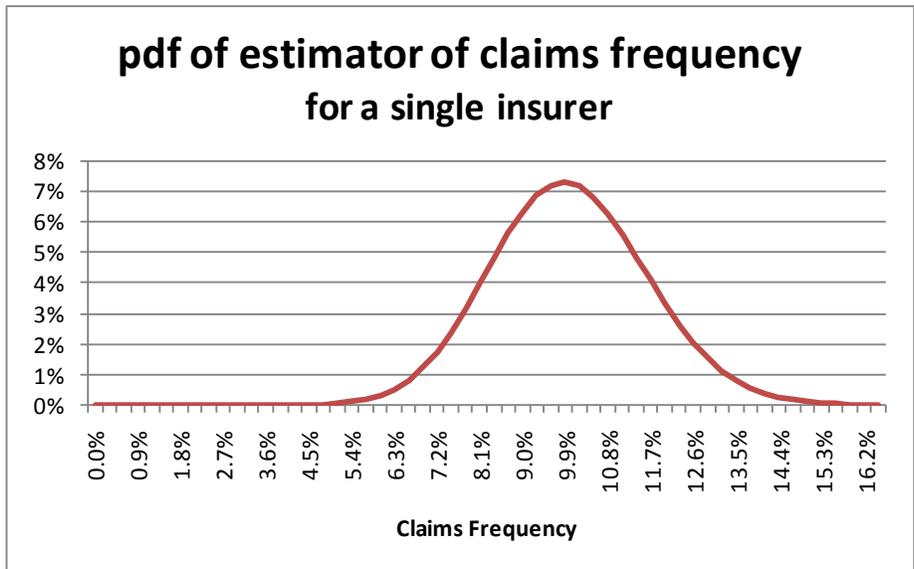
- **Simple illustration:** of how sampling error alone can lead to situation of exposure to winner's curse:
 - Consider a population of 999 policies, where each policy has a claims frequency distribution that is independent and identically distributed as a Poisson distribution with a probability of a loss of 10%. For simplicity, assume the claim size is a fixed cost of \$1.
 - Assume that the policies are split evenly between 3 insurers (333 policies each), and each insurer estimates the frequency of claim using the mean estimator of the number of claims they receive / number of policies they have.
 - It can be shown easily that the probability of a single insurer having n claims is a binomial distribution with $10\% * 333 = 33$, where n is the number of successes and the population size is 333. The distribution is shown in Figure 24. The distribution of the estimator of the mean frequency is similar to the one below, except that in the x axis, instead of the number of claims, it has the estimate of the frequency (see Figure 25)

Figure 24: Probability Density Function for Number of Claims for Single Insurer 333 policies, Prob. Of Claim of 10%.



Source: Authors

Figure 25: Probability Density Function for frequency estimator for Single Insurer 333 policies, Prob. Of Claim of 10%.



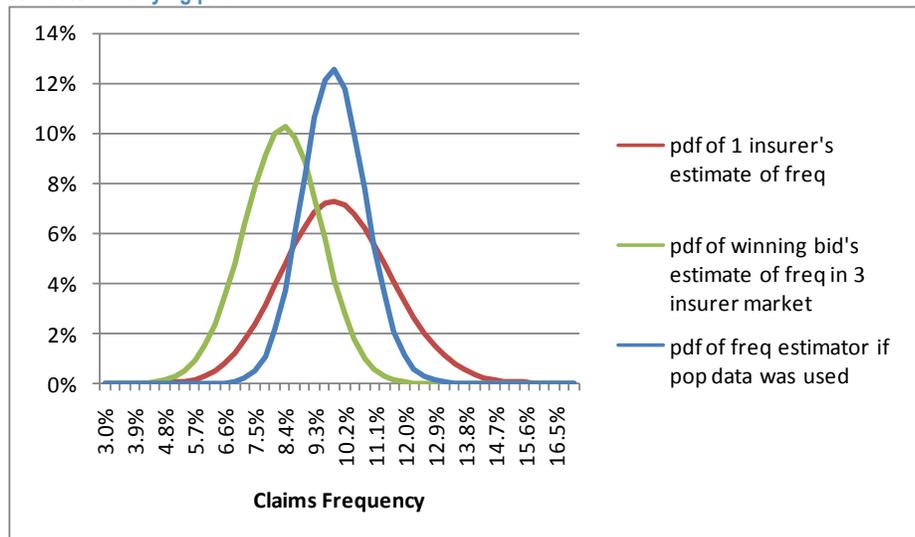
Source: Authors

- If we move to a stylized competitive auction process for bidding for the right to insure risks, where insurers use their own claims experience to come up with quotes for the risk in question, the winning bid will likely come from the insurer with the lowest estimate of the frequency. This is because the insurer with the lowest parameter, all other things being equal, will offer the lower premium.
- The distribution for the “winning” bid in the market can be easily calculated: The cumulative distribution function for a winning estimate of x% or less for the mean in a 3 insurer market = $(1 - \text{probability that none of the 3 insurers had an estimate} \leq x)^3$

estimate of x% or less) = [1- (1-cumulative_distribution_function(x% or less for a single insurer))^3].

- The probability distribution function (pdf) of the winning bid with lowest estimate of the underlying frequency of the population is shown below along with the pdf of the a single insurer's estimate of the underlying frequency, and the pdf if a single insurer had the entire population's data to estimate the underlying frequency.

Figure 26: Probability Density Function of underlying frequency estimate for Winning bid in 3 insurer market, single insurer's pdf of underlying frequency, pdf if total population was used to estimate underlying pdf.



Source: Authors

- **The potential for winner's curse is clearly shown in the graph above, with the mean of the distribution of the winning bid's estimate of frequency being 8.32%, well below the true mean of 10%, and lower than the mean of the distribution for single insurers. This means, if the insurers do not alter their bidding strategies, the assumptions they use for the claims frequency are likely to be inadequate compared to the true population frequency. This is "the winner's curse!"**

Increasing price comparability to force change:

- **Winner's curse already exists today:** To some extent, the winner's curse problem already exists in the profit results of companies today. As a general rule, one would expect that the business that was newly won would have poorer loss ratios than in force books (as you generally win business when you are cheaper than your peers). This matches conventional wisdom. Also, if an insurer just targeted a certain RoE using their own data as a base, they would likely achieve less than that target to the extent that the winner's curse affects them. Given that lapse rates in Australian insurance are not very high, it is likely that to a large degree the impacts of winner's curse have been limited.
- **Price comparability to accelerate winner's curse in insurance:** We believe with the emergence of increased price comparability through contestable platforms in commercial insurance and the rising use of the internet / emergence of aggregators in personal lines, insurance in our view would likely become more

price elastic. Whilst there may be policy wording differences and each insurer may have different service offerings, these “unquantifiable” benefits are not immediately observed and the issue of price as previously discussed may dominate.

Is the winner’s curse here today?

We suggest that the winner’s curse does affect the premium setting process of insurers today— although by and large lapse rates in Australia are low enough to suggest that the impact is contained.

We do note however that new business loss ratios are generally known to be substantially worse than loss ratios on the renewal portfolio- which could in part at least be explained by the winner’s curse. We note that there could be other factors behind this phenomenon as well – including a deliberate strategy of initially under-pricing new business.

Situations that increase winner's curse

We discuss below circumstances where the potential risks from winner’s curse can increase.

- **Problem of Winner's curse is greater in the following situations¹⁶:**

The insurance industry is conducive to conditions where winner's curse gets worse due to:

- (1) Information asymmetry between participants
- (2) Uncertainty in the claims cost
- (3) There are a large number of underwriters in some markets
- (4) There is subjectivity in how risks are assessed

- **There is information asymmetry between bidders in the markets.** It can be shown that the problems of winner’s curse are exacerbated by irrational competitors. The profitability of the market can in part only be as strong as the weakest link and a misinformed offer by one bidder may result in irrational behaviour by other bidders. *Insurance context: Insurers have different quantity and quality of claims data which results in information asymmetry and premium variation.*
- **There is significant uncertainty / subjectivity surrounding the true value (or benefit) of the item being auctioned.** This would result in greater variability in the bids made by each bidder resulting in the winning bid being further away from the true value of the item being auctioned. *Insurance context: The section “Why premium rates differ for a risk?” discusses in detail that the estimation of claims cost would vary greatly from insurer to insurer for a number of reasons, and that strategic decisions and differences in business models could also cause differences in prices in particular segments.*
- **There are a large number of bidders for the item auctioned.** It follows that with more bidders, the expected range of bids would increase resulting in a lower winning price. *Insurance context: With the onset of some contestable platforms and aggregators there is an increase in the number of underwriter prices that may be compared in a short period of time which effectively increases the number of bidders in an auction. In the commercial space, some platforms are seeking to limit the number of insurers whereas others are not.*

¹⁶ Hahn, W & Seaman S, *The Winner's Curse and Optimal Auction Bidding Strategies*

Some general strategies to mitigate winner's curse

Insurers can take steps to mitigate the winner's curse, namely:

(1) Increasing profit margins to reflect uncertainty

(2) Monitoring the market and your competitiveness

- **There can be many strategies to mitigate the impacts of winner's curse:** Winner's curse will also exist in a marketplace with cost (or benefit) uncertainty but bidders may consider a number of methods to mitigate winner's curse or at least reduce the losses expected to emerge from winner's curse. Whilst we discuss a broad range of strategies for different stakeholders in the insurance industry in the Section "*Implications for insurance strategy*," some general strategies to mitigate the winner's curse are discussed below:
 - **Increasing the profit margin target** allowed for in your bid price, with greater allowances when there is more certainty around the estimate or a greater number of bidders. By explicitly having a greater target margin, you are acknowledging that the winning bid is likely to be affected by the winner's curse - so the value outcome will likely end up being worse than you expect (i.e. achieving a lower actual margin than you price for in your target assumptions). This strategy really only works if all market participants increase their profit margin target; otherwise it would result in the participants who have increased their profit margin winning very few bids. *Insurance Context: Insurers may consider increasing their profit margin to allow for the winner's curse with greater increases where the insurer is more uncertain about its claims cost estimates.*
 - **Assessing what the competition / opposition may consider doing,** *Insurance Context: At a sub-segment level, insurers should monitor their premium rates in the market as well as the performance of their own rates through analysis of strike rates and lapses. A strong understanding of competitor and marketplace behaviour is very important for both volumes and profits. This includes understanding changes in market lapse rates (i.e. is business being shopped around more?), are there many new entrants coming in? is the market highly fragmented? how different are your premium rates relative to peers? If any of these factors are leading to more competitive markets, insurers may have to adopt strategies that take competitor actions into account. In addition to assessing its relative position, the insurer also needs to form its best possible view on the appropriate price to charge a particular risk. An insurer must be disciplined to walk away from what could either be irrational pricing by competitors, or a situation where competition simply do not know the correct price. However, it cannot be stubborn-minded in believing that actions of competitors should not influence its own rating strategies. It needs to bear in mind that some of its competitors may have had different claims experience for those risk segments and perhaps there may be some rationale for them charging their rates. As such some view has to be taken on the confidence in the insurer's own rates bearing in mind the problem of winner's curse.*
 - **Placing a joint bid (for part ownership of an asset) with a competitor / changing bidding process.** This would potentially allow the pooling of different views on the price of the risk perhaps reducing the uncertainty surrounding the item for auction (and also the competition around the views of the cost of the risk). *This is done sometimes in insurance through co-insurance e.g. through a subscription market with "best-terms." This changes the auction process to one where the lowest price no longer sets the price – but instead it may be the 3rd cheapest price if 3 insurers are required to provide the capacity to write the risk.*

For insurers getting the correct technical price using their own data is important to meet profitability. BUT your price relative to the market is just as important

Variation in views important – not just mean of views.

- The fallout of what we have highlighted above is that the issue of winner’s curse exists as a result of variation in bids (or prices) in the market place and the fact the best offer wins. Therefore, it follows that not only is the absolute price offered relative to the expected cost of the risk - but the price relative to your competitors is an important dynamic to consider in understanding the total profit implications of your prices. This is important for both volumes and realized profit margins.
- Translating this to the real world - we use the previously shown data on premium rate variation for 4 insurers in the NSW comprehensive motor insurance market (169 unique risks) to show the potential risk to the industry premium pool from the problem of the *winner’s curse*. We understand this does not represent the broader market, and there are factors other than price that matter – but it does provide insights to what the impact of price variation / adverse selection may be.
- Individually, each insurer may believe they have accurately estimated the premium for each risk, but it is their price relative to their competitors that determines where they win the business.
- The table below shows that the total premium pool in the case where customers are completely price elastic is 16% lower than the pool if the median price on each risk was charged.

Figure 27: Impact of the winner’s curse on premium volumes on a sample portfolio

Insurer	# of Risks Won	Winner's Curse Premium Pool	Median Market Premium Pool	Variation from Market Median
Insurer 1	60	61,763	72,514	-15%
Insurer 2	28	24,980	27,893	-10%
Insurer 3	15	18,033	22,005	-18%
Insurer 4	66	52,351	65,353	-20%
Total	169	157,127	187,765	-16%

Source: JP Morgan Study

Insurance is subject to the winner’s curse as it has

(1) Uncertainty in its cost of production – primarily in the claims cost

(2) Operates in an auction environment where price is likely to be a key differentiator

There are many reasons to why premium rates different between insurer - for statistical and strategic reasons

Summary

- Insurance has many features that are different for “manufacturers” of insurance products to those in other industries, that exposes them to quick changes in distribution models:
 - There is substantial uncertainty on what is the appropriate premium to charge particular risks.
 - Substantial variation exists between insurer’s assessments of what the appropriate charge on individual policies should be.
 - Consumers find it easier to differentiate on price than most other factors in insurance.
- Winner’s curse is a tendency for the winning bid in an auction to exceed the intrinsic value of the item purchased (unless appropriately adjusted for). We remind the winner’s curse requires two key attributes, both of which insurance displays:
 - Firstly, uncertainty in the benefits or costs of the project - an attribute that is prevalent in insurance given the significant uncertainty in claims costs. Even

with the statistical modeling conducted by insurers there would always be uncertainty surrounding the estimated claims cost.

- Secondly, the product is sold in an auction situation. Increasingly, insurance would increasingly be sold in an auction situation through either consumers comparing prices of each insurer or through contestable platforms, aggregators or insurer websites.
- Arguably, the winner's curse is already here in the insurance market, but with the onset of contestable platforms and aggregators emerging in Australia, one would expect the effects of the winner's curse to increase with potentially adverse impacts on underwriter profitability.
- There are strategies that can be employed to counter-act these effects, including incorporating a bias loading in targeted profit margins, monitoring competitor rates and actions very closely and reacting bearing their actions in mind or changing the auctioning approach to risks.

Why premium rates differ for a risk?

The premium for a single risk may be different between insurers due to differences in:

- (1) Estimate of claims costs:
 - (a) Portfolio cost
 - (b) Sub-segment costs
- (2) Premium algorithm
- (3) Corporate costs
- (4) Insurer strategy
- (5) Other issues such as policy coverage and claims management

The overall portfolio base rate between insurers may be different due to differences in:

- (1) Estimate of natural hazard loadings
- (2) Assessment of long-tail portfolio base rate due to claims development assumptions
- (3) Future inflation assumptions

Insurers may have different granularity of risk segmentation and different prices in risk segments.

These are driven use of different statistical techniques, data and the statistical error generated by the modeling

In the previous section, we explained how sampling error alone could lead to differences in perceptions of risk between insurers.

We explore below in greater detail a more comprehensive set of reasons why premium rates may differ between insurers.

Portfolio level claims cost variation

An implicit assumption in a lot of premium rating exercises is that the past is a good starting point to estimate the future. Some of the points we highlight below show key reasons that may drive differences between insurers' forecasts of the future based on differing analysis of the past. These can drive varying choices of portfolio level cost assumptions.

- **Natural hazard costs:** In property classes of insurance, natural hazard costs can be a large and volatile component of the estimated claims cost. As these costs are highly volatile, insurers are unlikely to solely rely on their historical claims data to price this component of cost. Reinsurers, catastrophe modeling agencies and external data sources are often utilized, in addition to internal data, to determine the appropriate natural hazard loading. Nevertheless some differing views would likely remain. As such, one could expect this to be a source of variation in the estimated claims cost and premium.
- **Long tail portfolio base rate:** When determining the appropriate base rate for a portfolio, a pricing actuary often considers the claims experience from recent years with consideration to inflation, changing risk mix and other factors. However, in a long tail portfolio the ultimate claims cost is unknown for some years and the assumptions used to develop the incurred cost to ultimate will impact the overall portfolio base rate used in pricing. These assumptions involve in part a subjective assessment of drivers in the past, which can lead to a range of possible conclusions on appropriate base rate assumptions, leading to differences between insurers.
- **Inflation assumptions:** Different assumptions regarding future economic inflation and superimposed inflation would result in variation in premiums.

Differences in the relative risk assessment of sub-segments

- Insurance pricing is conducted for individual risk segments where statistical techniques are used to determine the appropriate (1) splits of data (e.g. large claims models, individual claim peril models) (2) structure of the model (3) clustering of risk segments and (4) relativity estimation. Differences can arise between insurers at each stage of this process based on the techniques used, the volume and quality of data available, risk mix of the insurer both along known and unknown dimensions, and the predictive factors used by each insurer.
- **Data quality and volume varies between insurers:** In practice data volumes, data quality and the risk mix of insurers vary across the industry. The actual data quantity and quality of an insurer's data is a constraint to the type of statistical analysis an insurer would conduct in light of statistical and systemic error.
- **Sampling error is an issue:** Inevitably sampling error in statistical processes, in an industry where the data quality and volume of each insurer varies, adds to

estimated claims cost differences. We believe sampling error alone can be a significant contributor to price variation, particularly when for small insurers with little data and in risk segments where there is little exposure. The importance of sampling error (and other statistical errors) would be expected to rise with increasing pricing sophistication leading to greater variation in market premiums. We explore this issue further in Scenario 3 and Appendix 2.

- **Risk clustering results in different assessments of risk:** For rating factors with many levels such as geographical location for property insurance, vehicles in motor insurance and occupations in commercial insurance insurers conduct clustering exercises to place individual risk levels (such as postcode, vehicle or occupation) in a number of risk buckets. This modeling exercise is significant and the methods employed by insurers would vary depending on their data quality and quantity. As such, insurers are likely to have different clustered groups and ultimately different prices for individual risks. Sampling error and other forms of statistical error is likely to emerge through risk clustering given, in the example of vehicle clustering, there are approximately 60,000 unique vehicle types and an insurer is not likely adequate exposure for each of these vehicle combinations.
- **External data:** In addition to internal data, insurers may use other sources of qualitative data and external data to conduct risk clustering. Examples include vehicle databases in motor pricing and qualitative occupation risk scores in occupation clustering. As such, different sources of data – not to mention the quality of data provided by external data vendors can cause variation in premium rates.
- **The environment in which the modeling is carried out is in a continuous state of flux.** Considering motor insurance as an example, the following are just a few of the environment factors influencing claims costs: Changes in driver training, the introduction new safety features in vehicles, changes in speed limits, the impact of exchange rates on cost of parts, impact of petrol prices on kilometers driven, changes in availability of public transport. Insurers will differ in their exposure to these factors and in the speed with which they will recognize and incorporate these in their pricing.
- **Use of proxy variables:** In insurance, underwriters are constrained in being able to come up with a rating structure that captures the best possible assessment of the risk posed by a policy. They are limited to only asking a few questions of policyholders that can be easily observed and verified – rather than factors that may be more reflective of the underlying risk that the underwriter would really like to ask. Insurers, therefore often resort to using proxy variables for rating. The table below shows the proxy variables and the underlying drivers in motor insurance. The use of proxy variables adds “noise” to the prediction process as the underlying explanatory rating factors that the insurer may like to use may be distributed quite differently between insurers. This can contribute to the variability of prices between insurers.

What we want to know about the risk (Arguably best predictor)	Proxy rating variables
How much do you drive	Postcode, age, sum insured, Vehicle NVIC
Where do you drive, park etc	Postcode
How do you drive (aggressive, passive, reflexes,	Age, Gender
What do you drive	Vehicle NVIC

Insurers have different premium algorithms driven by:

- (1) Use of different rating factors
- (2) Different rating level granularity
- (3) Different premium algorithm structures

Insurers have different return of capital targets and expense structures driving premium differences

Premium algorithm differences

- **Rating factors used:** Insurers ask different questions in the underwriting process to be used for premium rating purposes. To the extent different rating factors are used, different premiums would be calculated.
- **Rating levels used:** Whilst insurers may use consistent rating factors, there may be variation in the level of granularity requested of policyholders and used in premium rate. As such, differences in the level of granularity in rating levels may cause variation in the premium. Geography is a good example in property classes of business - some insurers only rate at a postcode level whilst other insurers rate at an individual address level. All other things being equal, the average premium at a postcode level between the insurers would be similar, but there would be variations at an individual address level.
- **Premium algorithm form:** The actual form of the premium algorithm may vary between insurers. Typically, premiums are calculated using a base rate with multiplicative adjustments to price for variations from the base rate. However, we understand there is now greater complexity being used by insurers with premiums being calculated for individual claim perils before being aggregated to calculate the final premium. For example, in a comprehensive motor policy, a separate premium may be calculated for at-fault collisions, single car collisions, theft and malicious damage, etc and is then aggregated with allowances for expenses and a target profit margin to provide the final premium.

Corporate cost differences

- **Cost of capital:** Return on capital objectives would vary from insurer to insurer and this would result in different target profit margin requirements.
- **Expense Structures:**
 - **Fixed expenses:** For an insurer, fixed expenses include items such as IT expenses, management overhead and other corporate costs. Whilst fixed expenses do not dominate the cost base for an insurer, an insurer with greater scale would be at a relative advantage to an insurer with less scale.
 - **Variable expenses:** These costs are generally driven by the distribution channel used to sell a policy. Commission paid to distribution intermediaries such as brokers, outside claims costs, is the most significant cost in many commercial insurance businesses. Commission rates often vary between insurers and brokers within a narrow range.
- **Investment strategy:** This issue is more relevant in the pricing of long-tailed classes of business where technical reserves and capital backing the policy must

be held for a long duration. The more investment income earned on technical reserves and capital backing the policy, the less needs to be charged to the policyholder, all other things being equal.

Strategic differences

Insurers have different strategies with respect to:

- (1) Marketing campaigns
- (2) Capping and cupping strategies on renewal premiums
- (3) Optimizing customer demand
- (4) New business / renewal cross-subsidies
- (5) Multi-policy discounts

- **Marketing adjustments:** An insurer may have marketing adjustments as it targets specific portfolio segments. Similarly, insurers may be variation in premiums owing to short-term marketing campaigns such as 12 months coverage for 11 months premium.
- **Capping / cupping:** Typically insurers limit the changes in policyholder's renewing premium. This practice is known as capping (limiting increases) and cupping (limited decreases). The levels of capping and cupping applied by an insurer may be dependent on the characteristics of the risk and/or the technical price changes required. Capping and cupping is likely to vary between insurers resulting in premium variation. This is one of a number of reasons why there may be differences in the renewal price and new business price offered to the same risk.
- **Demand optimization:** We understand that many insurers conduct demand optimization modeling to assess the price elasticity of different segments of the portfolio. This information can be used to potentially increase profitability, by targeting higher margins on certain customers with the view that the customer's decision to lapse or renew will not change materially. This adds another layer of modeling and pricing complexity to the premium rating process which inevitably would result in premium variation in the market.
- **Customer lifetime value paradigm:** Insurers often charge lower premium rates for new business policies on the basis that this discount would be re-paid by the customer over its future tenure (where higher rates would apply). This is effectively a cross-subsidy between the renewal and new business portfolio.
- **Multi-policy discounts:** A strategy employed by some insurers is to offer discounts on multiple policies held by an insured to encourage customers to consolidate their insurance policies. As such the headline premium price between insurers may not be directly comparable as a customer would be entitled to a discount with an insurer he/she already has a financial relationship with.

Subtle differences exist between each insurer's PDS which need to be reflected in the premium quoted

Policy coverage

- There are often subtle differences in policy coverage between insurers, the most obvious example being the standard excess levels. Differences in policy coverage is often used as a differentiating factor by insurers and this results in premium differences.

Claims management

Any cost advantage (or disadvantage) in claims management may be reflected in premiums.

- The claims process varies from insurer to insurer. The manner in which an insurer manages its claims from claims procurement to claimant injury management in bodily injury portfolios may act as a cost efficiency for an insurer. To the extent that insurers are able to keep their claims cost low, this acts as a competitive advantage which may result in premium variation on a like-for-like risk.
- It is also worth noting that some insurers are very stringent on claims and often reject the claims of policyholders resulting in lower claims costs. Equally, some insurers pay ex-gratia claims, particularly in natural disasters, which may result in

higher claims costs (and premiums). This would ultimately flow through the differences in the portfolio base cost.

Summary

The table below shows a summary of the issues highlighted above

Table 2: Summary of reasons for premium differences

Issue	Sub issue	Description
Portfolio level claims cost variation	In estimation of natural hazard costs	Natural hazard costs are volatile costs and there is significant judgement required in modelling these costs
	In estimation long tail ultimate costs	Establishing the base rate for long-tailed portfolio is large contingent on reserving assumptions which vary from insurer to insurer
	In inflation assumptions	Different future inflation assumptions (both economic and superimposed) result in different premiums
Differences in the relative risk assessment of sub-segments	Statistical issues	Parameter error due to lack of data and risk mix differences
		Sampling error Structure of rating algorithm Break up of data Rating factors used
Premium algorithm differences	Rating factors used	There may be variation in the questions asked of policyholders resulting in different rating factors being used
	Rating level used Premium algorithm form	Insurers may rate on different levels of granularity. Geography is a good example where some insurers rate at a postcode level whilst others may rate at an address level Additive / multiplicative, peril based premiums
Corporate cost differences	Cost of Capital	Influences target profit margin
	Expense Structures	Fixed costs are dependent on scale Variable expense loadings are often determined by the distribution channel utilized
	Investment Strategy	
Strategic differences	Marketing adjustments	Marketing discounts to target specific portfolio segments, 12 months for 11 months marketing offers
	Cupping / capping	Insurers often have different strategies to mitigate price movements for its renewal portfolio
	Demand optimization Customer lifetime value	Insurers may consider the price elasticity of its customers and adjust its premium to "not leave money on the table" or retain a customer
	Multi policy discounts	
Other issues	Policy coverage	
	Claims management	

Source: J.P. Morgan.

Stylised modeling of distribution changes

Description of what we are doing

Technology has the potential to:

(1) Improve price comparability and result in increased consumer propensity to switch insurers

(2) Lower the cost of distribution

(3) Increase the sophistication in premium rating

We have developed a simple marketplace model to examine the possible impacts from some of these changes

As described before, substantial changes are occurring to both distribution (increased ability to compare price / lower distribution costs) and market structures in personal lines and commercial lines (new entrant threats).

We have set up an insurance model to simulate the insurance market on a highly stylised scale to assess the possible impact to individual insurers and the industry as a whole from some of these changes.

We must stress that this model is a gross simplification of a real life insurance market. As our purpose is only to assess the possible importance and direction of particular changes, rather than to precisely quantify the financial impact of these changes, our model does not seek to capture the full complexity of the pricing process or market participants, only a stylized version of one.

More specifically we seek to explore the following:

- (a) If technology promotes greater price comparability and consumers increase their propensity to switch insurers – what would the implications be for industry profitability and insurer lapse experience?
- (b) If technology allows for a lower cost of distribution and insurers reduce premiums to reflect this lower cost – will customers gravitate to insurers with lower prices?, and if so what does it mean for the profitability of the incumbent insurers and the overall industry?
- (c) What is the impact of an aggressive new entrant?
- (d) Does the number of rating variables used in the market determine the likely pathway for profitability?
- (e) Is having a refined rating structure a real advantage for an insurer relative to its competitors?
- (f) Does the number of insurers in a market change the competitive tension and possible pathways for profitability?
- (g) What strategies may insurers consider to defend its portfolio and what strategies would a new insurer consider to build a portfolio?

Description of our model

Our insurance market model simulates claims experience, insurer premiums and policyholder movements between insurers over ten years allowing observations to be made on the short, medium and longer term impact to the industry.

We briefly discuss how we have modeled the marketplace, however full detail of the model is discussed in the Appendix.

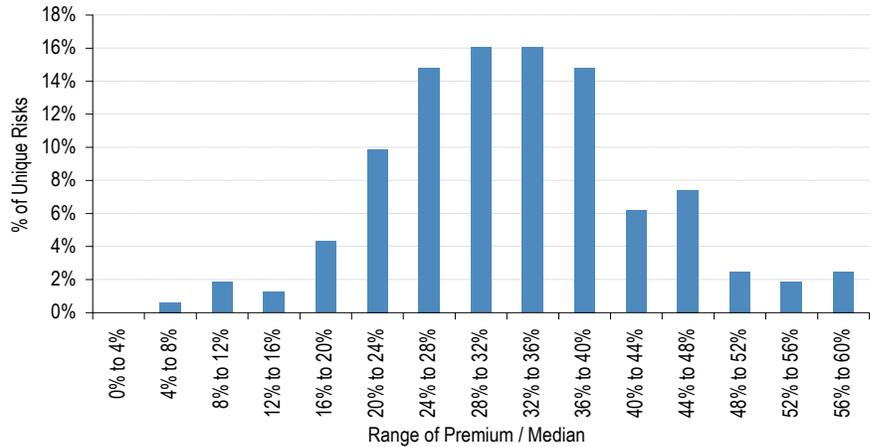
In our simplified insurance marketplace, we have assumed:

- There are three insurers and 50,000 policyholders in total and a single product for sale. We have assumed the size of the industry does not change over time nor does the industry risk mix change (i.e. constant population). The limitation to 50,000 policies was driven by our choice of modeling software (Excel). To compensate (in order to ensure that variation in parameter estimates between insurers is not too high) we have chosen a reasonably high expected number of claims per policy (2.29) across the population and a low coefficient of variation of average claim size (20% CoV around a mean estimate of \$2000, identical for all policies).
- Initially, the risk profile of each insurer is equivalent; however this changes over time as policyholders move from one insurer to another.
- Insurers re-price their premiums annually based on their emerging claims experience.
- Based on their propensity to ‘shop’ policyholders may wish to change insurers annually. Policyholders always get offered three premiums – from their existing insurer and the two other insurers in the market.
- Underlying claims cost is determined by five rating factors: Age of policyholder, postcode group, vehicle group, distribution channel and gender of policyholder. We have assumed the number of claims follow a Poisson distribution and the claim size follow a log-normal distribution.
- Annual claims inflation of 4% per annum is allowed for.
- Insurers use up to five rating factors to determine their technical premiums. The five rating factors include: Age of policyholder, postcode group, vehicle group, distribution channel and gender of policyholder.
- An insurer re-prices its portfolio annually based on consideration of its claims experience observed into the last three years with (1) the base rate determined by the most recent year’s experience and (2) rating factor relativities determined using a multi-linear regression on the last three years of claims experience.
- Insurers limit the movement of its technical premium between -5% and 15% compared to the previous year.
- The renewal price offered by a policyholder’s incumbent insurer is the technical price subject to cupping & capping against the policyholder’s current premium paid.
- A policyholder’s propensity to “shop around” is based on the five rating factors described previously, the premium offered by its current insurer relative to its current premium as well as its shopping behaviour in the last three years.
- A policyholder’s decision to switch insurers is based on a “switching score.” This score is based on the price offered by each insurer in the market place relative to its current price paid as well as the insurer’s market share which is used as a proxy for the insurer’s reputation.

Actual versus modeled price variability

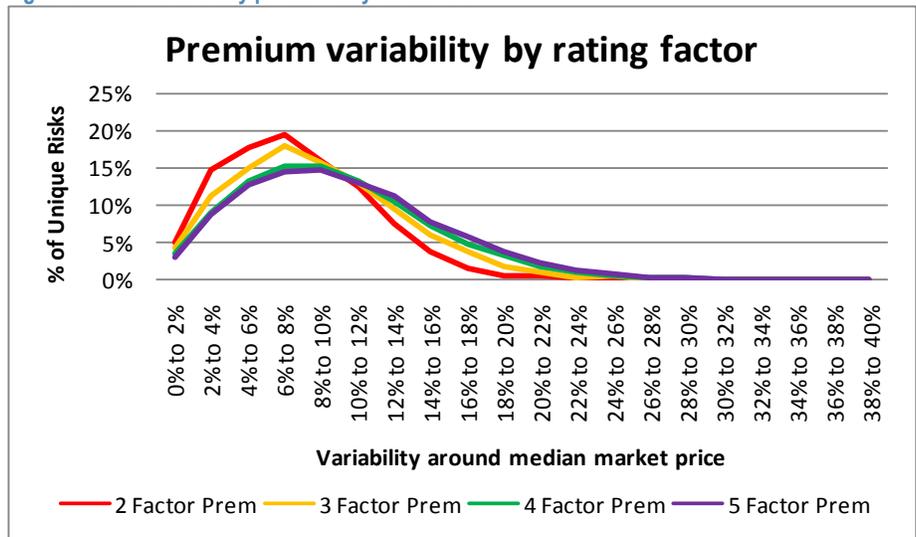
The graphs below show the actual observed inter-insurer price variability of a sample of NSW comprehensive motor insurance policies versus the price variability produced by our model.

Figure 28: Price variability observed in the NSW comprehensive motor market



Source: JP Morgan study

Figure 29: Price variability produced by the model



Source: Authors

The price variability produced by the model is less than that observed in the market. This result is as expected, since the price-variation produced by the model is due to estimation errors alone, and does not include the impact of other factors such as strategic, product, price algorithm, claims management which would be reflected in the observed premium rates.

Whilst the parameterization of the model was largely subjective, this comparison gives us some comfort that the price variation modeled is not significantly higher than the price variation seen in the actual market.

Increased price comparability will result in the deterioration of industry profitability.

The greater the consumer's propensity to shop, the faster the deterioration in profitability.

Scenario 1: Consumers compare prices more frequently

In a marketplace where consumers have complete visibility of the universe of prices, it is expected that there would be increased lapsing of policies as consumers seek the price that is the cheapest. In some markets, consumers will consider factors such as the insurer's reputation, product features and claims servicing, but in other markets the products may be completely commoditised such that an insurer's reputation is irrelevant. A scenario of consumers comparing prices more frequently may occur for example in commercial insurance where brokers are standardizing policy wordings and moving the technology of getting premium quotes onto contestable platforms. In personal lines, the increased use of the internet or the arrival of aggregator platforms may lead to a similar situation.

***Hypothesis:** Industry profitability will deteriorate as a result of greater price comparability with increases in the propensity to shop by consumers accelerating the deterioration.*

How did the model marketplace test this hypothesis?

- To test our hypothesis, we simulated the marketplace using three insurers with equal market share and target loss ratios at the beginning of the simulation period.
- We have considered a range of scenarios with the consumer's likelihood of shopping for a new insurer (propensities to shop) ranging from 10% to 50%. Note: each consumer has a different propensity to shop depending on its rating characteristics.
- The scenario run in our model is where the product is completely commoditised and the insurer's reputation is irrelevant. As such, in our model, we have adjusted the consumer's decision to be solely based on the prices offered in the marketplace, i.e. the insurer's market share (reputation) does not matter.
- The key metrics we wish to observe are (1) the underlying industry profit margin¹⁷ and (2) the industry lapse rate over time.

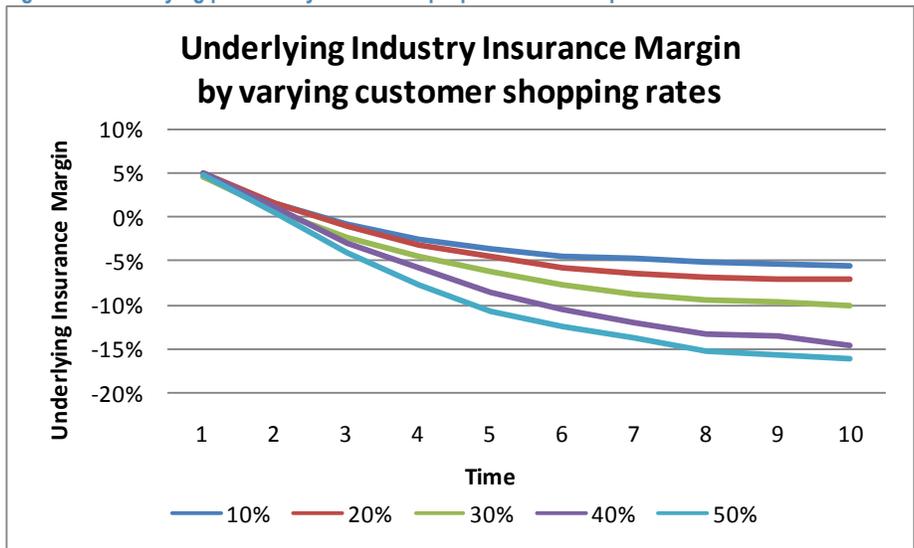
The results from the model marketplace

The key conclusions from our model marketplace on this scenario are as follows:

1. As the consumer's propensity to shop increases, the deterioration in industry profitability accelerates. This is because the rate at which consumers switch to an insurer with a lower premium when the underlying claims cost is constant increases. The figure below shows the underlying industry insurance margin, starting at the target level of 5%, falling over time. Note: The insurance margin for the industry starts in all circumstances at close to the targeted 5% level, but starts to deteriorate due to winner's curse starting to take effect. The industry profitability does not return to target levels as in our stylized model, the premium movements are capped.

¹⁷ The underlying profit margin is based on the expected claims cost using the underlying claim cost modelling assumptions subtracted from the premiums charged by the insurer. We consider the underlying profit margin rather than reported profit margin as it removes the volatility in the claims cost from random variation in claims (which would otherwise make the graph more volatile).

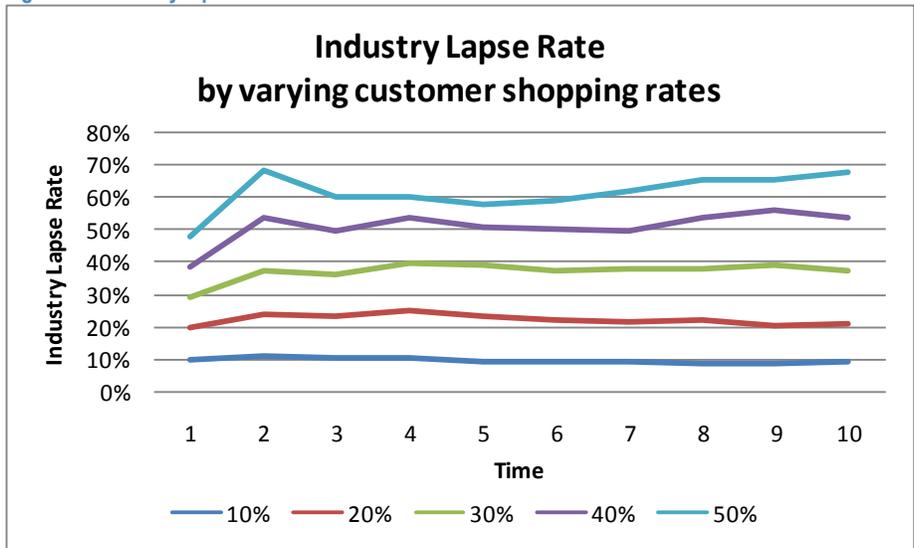
Figure 30: Underlying profitability at different propensities to shop



Source: Authors

- Industry lapse rates increase as the consumer’s propensity to shop increases and do not fall over time. This means the consumer continues to ‘cherry pick’ the cheapest rates and the market’s profitability continues to suffer.

Figure 31: Industry lapse rates over time



Source: Authors

Conclusion: *Hypothesis confirmed:* Industry profitability will deteriorate as a result of greater price comparability with increases in the propensity to shop by consumers accelerating the deterioration. Lapses rates will not fall over time as consumers will continue to cherry pick insurers.

An insurer with superior risk rating compared to its peers should have a better underlying loss ratio, all other things being equal.

Insurers with an inferior rating structure will continually attract poor risk causing further deterioration in its profitability

Scenario 2: If a single insurer risk segments portfolio better than peers

The Australian personal motor market has seen a number of new entrants in the last three years. Youi, one of the new motor insurance entrants, cites the greater number of underwriting questions as one of the reasons for its cheaper premiums. Real Insurance also targets the use of a “new” rating variable (driving distance) through its pay as you drive product. Intuitively one would think that an increase in the number of rating factors relative to competitors provides an advantage as risk selection is improved, but does better profitability really emerge?

***Hypothesis:** The underlying loss ratio of the insurer with superior rating stays constant whilst the underlying loss ratio of the insurers with inferior rating deteriorates. This is because poor risks are attracted to the insurers with inferior rating.*

How did the model marketplace test this hypothesis?

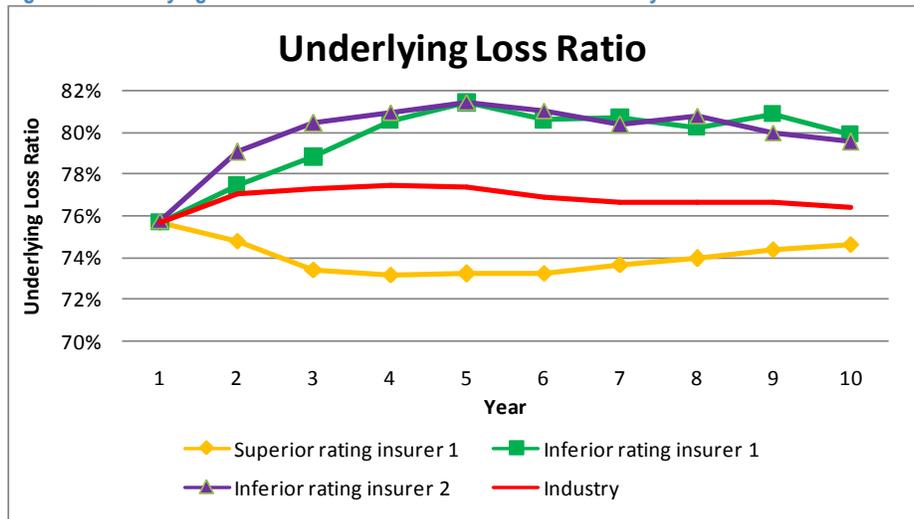
- To test our hypothesis, we simulated the marketplace using three insurers with equal market share and target loss ratios at the beginning of the simulation period. The model marketplace has been set up such that two insurers use only two rating factors to premium rate and a third insurer uses five rating factors. The true underlying claims cost is determined by the same five rating factors that the third insurer uses to premium rate.
- The scenario run in our model is where the product is completely commoditised and the insurer’s reputation is irrelevant. As such, in our model, we have adjusted the consumer’s decision to be solely based on the prices offered in the marketplace, i.e. the insurer’s market share (reputation) does not matter.
- The key metrics we wish to observe are (1) the underlying loss ratio; (2) the risk mix; and (3) market share of each insurer over time.

The results from the model marketplace

The key conclusions from our model marketplace on this scenario are as follows:

1. Anti-selection results in a deterioration in the underlying loss ratios of the insurers with inferior rating structures, whilst the underlying loss ratio of the insurer with superior rating remains broadly the same.

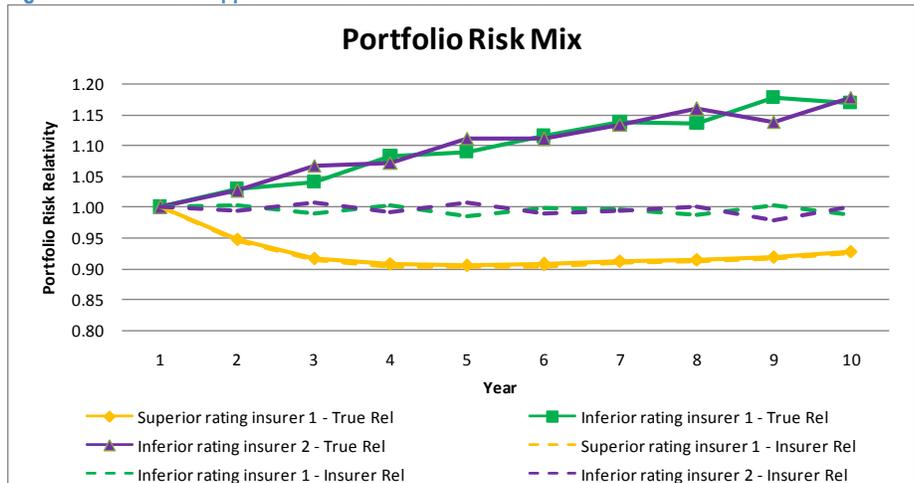
Figure 32: Underlying loss ratio of individual insurers and the industry



Source: Authors

2. The risk mix of the insurers with inferior rating deteriorates over time without the insurers adequately pricing for this. Figure 33 shows the true portfolio risk mix of insurers (solid line) and the risk mix perceived by the insurers (broken lines). It is clear that the two insurers with inferior rating structure would gradually attract more risky business (as shown by their solid lines increasing). This occurs because their pricing structure does not identify the business as risky (as shown by their flat broken lines) and they only notice increases in average costs due to their worsening risk mix. This results in a deterioration of the loss ratio of the insurers as shown in the previous chart. In contrast the risk mix of the insurer with the correct pricing structure has its true portfolio risk mix moving in unison with its perceived risk mix.

Figure 33: Actual and apparent risk mix of individual insurers

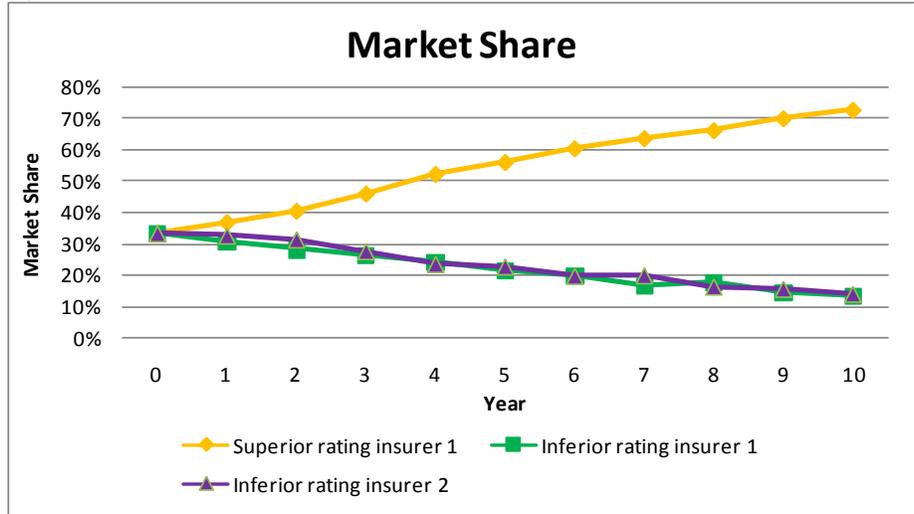


Source: Authors

3. In this example of extreme anti-selection, the insurer with the superior rating structure actually gains market share over time. This conclusion is initially counter-intuitive as one would expect the insurer with superior rating to

win/maintain market share only in segments inferior insurers over-price. But in this example of mispricing, insurers with inferior rating enters a vicious cycle where it attempts to improve its profitability by increasing the premium of the entire portfolio rather than the under-priced risky segments. This results in more segments becoming mispriced leading to further loss of market share. We also highlight, although it is not observable in Figure 34, that the inferior insurers often win business, but only where it is under-pricing relative to the market.

Figure 34: Individual insurer market share over time



Source: Authors

Conclusion: *Hypothesis confirmed:* The underlying loss ratio of the insurer with superior rating stays constant whilst the underlying loss ratio of the insurers with inferior rating deteriorates. This is because poor risks are attracted to the insurers with inferior rating due to their under-pricing. However, in addition, insurers with inferior rating structures enter a vicious cycle where it continually increases prices to improve profitability but only further misprices its portfolio.

The addition of new rating factors can improve industry profitability if it is predictive and all insurers can price it with reasonably accuracy

BUT

An additional rating factor will increase sampling error which may increase the variability in premiums between insurers in the market place, ultimately leading to greater impacts from the winner's curse.

Scenario 3: If everyone responds with more sophisticated rating

With technological improvements in data collection and capacity for analysis combined with the insurer's desire for a risk rating structure that minimizes anti-selection, we wish to explore the impact of a simultaneous increase in risk rating sophistication across the industry.

Hypothesis: A simultaneous increase in the sophistication of rating structures of insurers in the market place will reduce the variation between premium rates in the market and hence reduce the potential impact of "winner's curse".

How did the model marketplace test this hypothesis?

- Based on simulated claims cost, we have calculated the premium for each insurer varying the number of rating factors from 2 to 5. This shows the premiums charged by each insurer if they had varied their rating structure based on the same claims experience.
- We have tested our hypothesis considering two scenarios:
 - There is no risk mix bias in the insurer's market share, i.e. all insurers have a similar risk profile and market share. This means all three insurers have the same data resources for pricing purposes.
 - There is risk mix bias in the insurer's market share, i.e. insurers have different volumes of claims data and claims data in different segments of the market. In this situation one insurer may understand one segment of the market particularly well given its exposure and data but may not understand another market segment at all.
- The key metrics we wish to observe include (a) how the range of premiums for same risk changes as the number of rating factors increase; (b) what is the industry premium if, as an extreme case, every customer selected the insurer with the lowest price and how does this industry premium pool change as the number of rating factors increase.

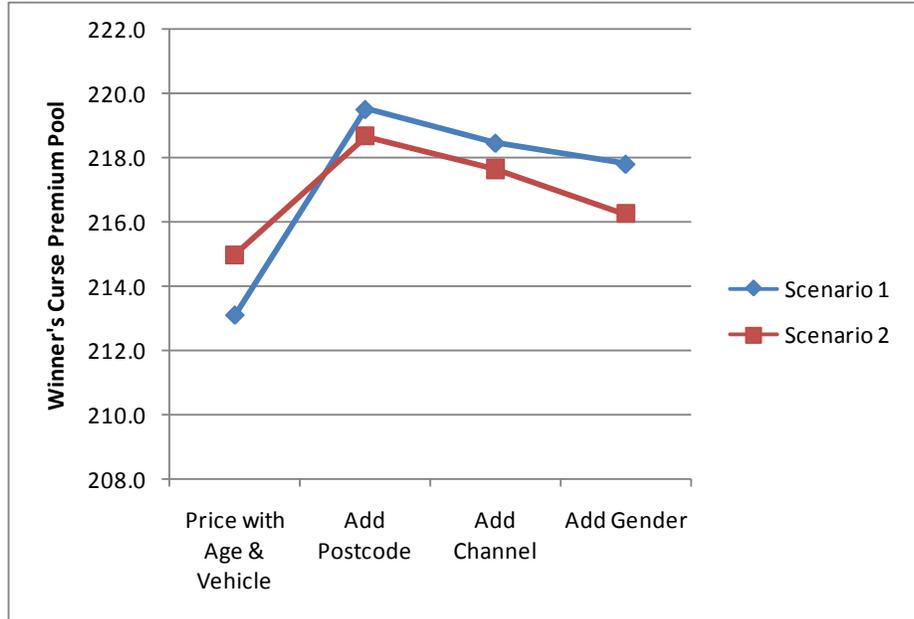
The results from the model marketplace

The key conclusions from our model marketplace on this scenario are as follows:

1. When insurers have different volumes of claims data and/or risk mix bias in their data, the mix difference from hidden rating variables will mean the introduction of the previously hidden rating variables into the rating structure used in the market can in many circumstances reduce the variation between premiums. The effect of adding additional factors is best understood by way of an example. Consider the scenario where there are two insurers A and B, who both use the same two rating factors to calculate prices. There is an additional hidden rating factor along which their mix of business differs such that insurer A has a bias towards the lower risk segments and Insurer B has a bias towards the higher risk segments of the hidden rating factor. With no knowledge of the hidden rating factor, Insurer A would systematically under price their new business and attracts the higher risk segments of Insurer B. Insurer B on the other hand systematically overprice its new business and lose market share. Insurer A would struggle with profitability issues, whilst insurer B would be unable to maintain or increase market share. In this example it will be better for the industry to introduce the hidden factor into the rating algorithm if it increased harmonization of rates

between insurers. We simulated this concept in our model by skewing the risk mix of insurers along the postcode rating factor. As Figure 35 shows where the addition of the previously hidden postcode rating factor actually improves the industry premium pool. However, the addition of the previously hidden channel and gender rating factors which were not responsible for any bias in the insurer's premium only served to increase sampling error and thereby reduced the industry premium pool.

Figure 35: Increase in winner's curse premium pool as the rating factors are added



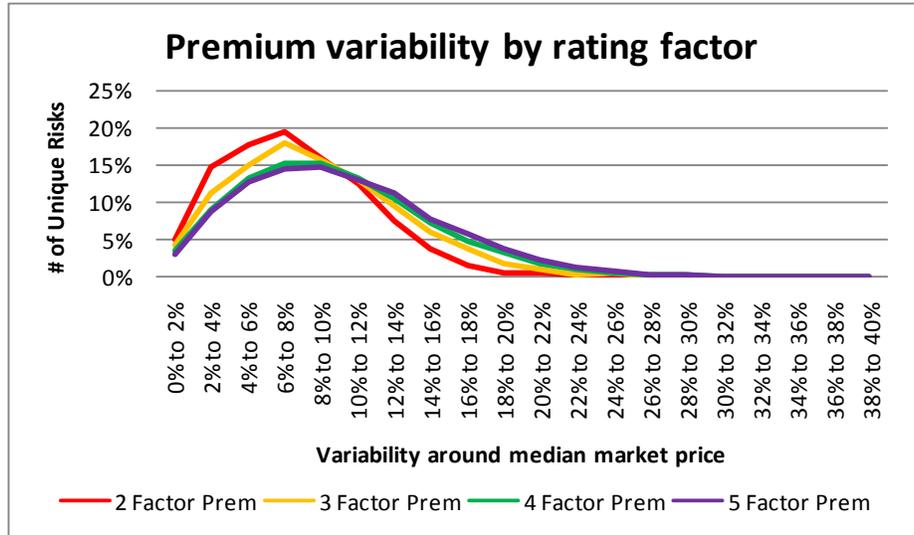
Relative Risk Mix	Postcode Risk Mix	Channel Risk Mix	Gender Risk Mix
Insurer 1	Low Risk	Equal	Equal
Insurer 2	Mid Risk	Equal	Equal
Insurer 3	High Risk	Equal	Equal

Source: Authors

2. We also consider the hypothetical scenario where there is *no risk mix bias* and the variability of the premiums in the market place actually increases as insurers increase in the number of rating factors used. The figure below shows the variability of premiums¹⁸ in the market place increasing as the number of rating factors used in rate making increases. For example, when there are only 2 rating factors used, most rating combinations only have less than 10% variability around the median market price. However, when the number of rating factors increases to 5, there are more rating combinations with greater variability.

¹⁸ In this instance, variability of premiums has been measured as the range of market premiums divided by the median premium in the market.

Figure 36: Variability of premiums as the number of rating factors change when there is no risk mix bias



Source: Authors

3. *When there is no risk mix bias*, the impact of additional rating factors combined with full consumer visibility of the market prices *and* consumers always accepting the cheapest price is a reduction in the industry premium pool. This is because as the number of rating factors is increased, the claims data volume in each unique rating cell decreases, resulting in increased uncertainty in the model parameters. This is likely to result in greater variability in premiums. When there is increased variability in prices (around the same mean) the lowest price offered for a risk falls. Therefore, in a perfectly transparent pricing market, each insurer is only as strong as the weakest & cheapest insurer. This reflects the impact of the winner's curse! In our marketplace the premium pool gradually fell as additional rating factors were added to the rating structure. We highlight the limitations of our model marketplace and we believe if the number of insurers and/or the underlying variability in claims cost was increased, one would expect the premium pool to decrease by more. We explore this issue further in a simulation model as discussed in Appendix 2.

Figure 37: Increase in winner's curse premium pool as the rating factors are added

\$m	2 Factor Prem	3 Factor Prem	4 Factor Prem	5 Factor Prem
Premium Pool	224.1	224.1	223.4	222.7

Source: Authors

Conclusion: *Hypothesis – circumstantial:* The introduction of new rating factors can result in a number of outcomes.

- *When the mix of business is different between insurers, part of the variation in prices is due to the effect of the hidden rating variables distorting the relativities of the rating variables used in pricing. In these circumstances, the introduction of the distorting hidden rating factor was generally beneficial to industry premium pool. The explicit modeling of these hidden effects led more consistency of pricing between insurer, provided all insurers had sufficient data to arrive at reasonable parameter estimates.*

- *There were instances when the addition of a rating factor caused the industry premium pool to reduce. This occurred when the factor added was not significantly responsible for price variation between insurers, and its introduction further increased the variance of prices in a cell due to increase in estimation error. The artificial scenario where each insurer has no risk mix or size bias, adding rating factors always resulted in greater premium variation due to increase in sampling error.*

It should be noted that the overall importance of sampling error is dependent on the volume of data versus the variability of the claims experience being modeled. Therefore the impact of sampling error is likely to vary by insurer, portfolio and by rating factor. We suggest it is likely to be greatest in rating factors with many levels such as industry, vehicle and geographic classification systems which break up the total policy pool into many smaller categories.

A full analysis of the contribution of the various statistical errors (including sampling error) to pricing differences between insurers is beyond the scope of this paper. We have only considered the potential impact of sample error in a relatively controlled environment. In reality differences can arise in every step of the modeling process, perhaps further work will be carried out by others to clarify the contribution of each type of error.

Insurers need to be aware of the unintended consequences of increased sophistication in pricing and strategise accordingly. Whilst individual insurers will always seek increased sophistication in pricing to maintain or gain a competitive advantage, if there is an 'arms race' in pricing sophistication across the whole industry, the resulting increase in parameter error may be counter-productive as the estimation errors involved may create potential for greater price differences between insurers and hence exposure to winners curse.

The key implication is that insurers should regard their own estimates with some degree of skepticism / humility and focus equally on the identifying and understanding differences with competitor prices. Changes in rating sophistication in the market can affect the characteristics /risk mix of the business they win. Understanding these differences could highlight errors in the insurer's own pricing and it is this difference in views that will be exploited in a market with increased visibility of prices.

In a market where there is full price visibility and high levels of customer mobility, an insurer which under-prices has the potential to win market share but at risk of poor profitability..

Scenario 4: An aggressive new entrant under-prices incumbent insurers

We explore the scenario where incumbent insurers are challenged by a new entrant in the marketplace who has lower pricing than its competitors because it deliberately under-prices the market to build market share and runs its business with a lower profit margin target.

This scenario is worth exploring in relation to the existing Australian insurance industry with the emergence of new entrants and some aggregator websites in personal motor insurance and the development of contestable platforms in commercial insurance. These methods of distribution remove one barrier to entry (lack of market visibility) for the new entrants. *Note, we do not know if the new entrants in the Australian market are targeting a lower profit margin, we are simply exploring the impact of this possibility on the industry.*

Hypothesis: *In a marketplace where there is full price visibility the barriers to entry are reduced. If an insurer chooses to significantly undercut the market it may increase its market share as consumers gravitate to the insurer with the lowest price.*

How did the model marketplace test this hypothesis?

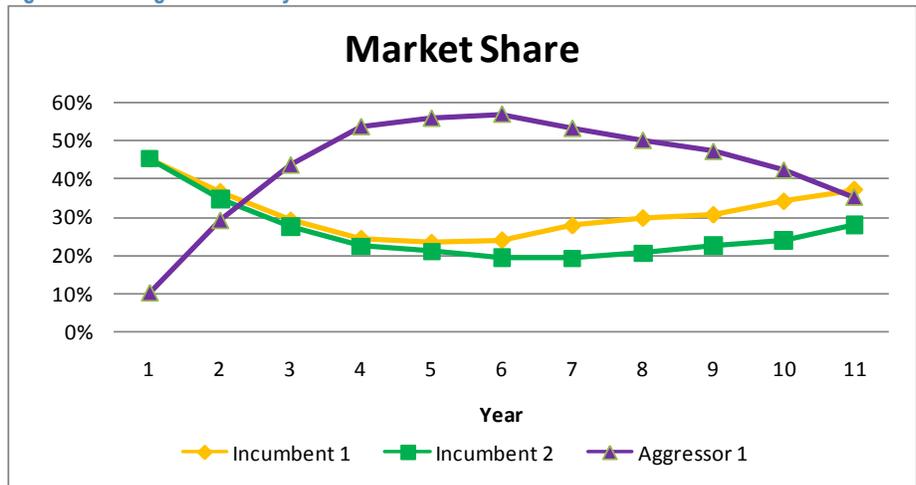
- To investigate our hypothesis, we simulated the market place using two incumbent insurers with 45% market share each and a new entrant insurer with 10% market share. The risk mix of each insurer is equivalent and there is no differentiation between the two incumbent insurers. We have considered the scenario where the new entrant insurer deliberately prices for a 0% profit margin (compared to 5% for the incumbents) for three years in an attempt to win market share before reverting back to a 'normal' 5% profit margin.
- The key metrics we wish to observe are (1) the market share; and (2) underlying profitability of each insurer and the industry over time.

The results from the model marketplace

The key conclusions from our model marketplace on this scenario are as follows:

1. The new entrant to the market is able to quickly build market share in the years it under-prices the market. However, when it reverts back to a 'normal' profit margin its growth slows and ultimately starts reverting back to an equal market share.

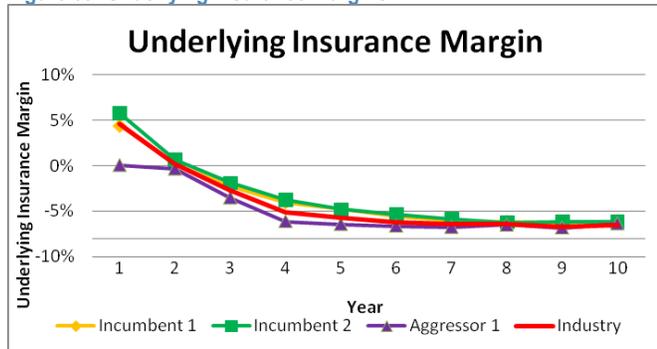
Figure 38: Changes in industry market share



Source: Authors

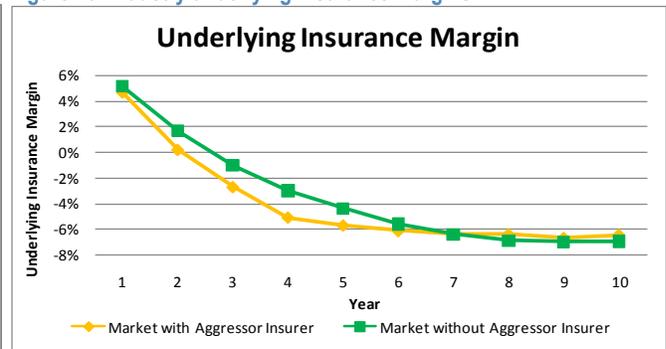
- The profitability of the industry deteriorates faster than if the new entrant was not present. The issue discussed in Scenario 1 is exacerbated with the new entrant immediately dragging down margins – the incumbents can only win business where they are *extremely* cheap as the new entrant is sacrificing profit margins to win business. It is interesting to note, it is only 3 or 4 years after the new entrant has reverted its profit margin to normal levels that the industry profitability returns to a level under a scenario where there was no aggressive new entrant. We remind the reader that the industry profitability would also deteriorate due to greater price comparability as discussed in Scenario 1 – the greater the consumer’s propensity to shop the faster the deterioration in profitability.

Figure 39: Underlying insurance margins



Source: Authors

Figure 40: Industry underlying insurance margins



Source: Authors

Conclusion: Hypothesis confirmed: If an insurer undercuts the market where there is full price visibility, consumers will respond by gravitating towards the cheapest insurer damaging the profitability of the entire industry. The greater the propensity for a consumer to shop, the faster the aggressive insurer will build market share and the greater the impact to industry profitability. In practice, the growth in market share would not be as quick as our model market place suggests as there are many more insurers and incumbent insurers would use a number of strategies to defend its market share.

If an insurer lower costs of distribution and reflects this in a cheaper premium, all other things being equal, the insurer will have significant advantage in the price transparent market place.

Scenario 5: A challenger insurer has a lower cost of distribution

We explore the scenario where a new entrant utilizes a lower cost of distribution channel giving it a pricing advantage in the market. If an established player suddenly explores using a lower cost distribution channel –it can be problematic as they risk alienating their own current distribution channel.

Hypothesis: *If a new entrant has a competitive advantage in expenses which is filtered through to policyholders in lower pricing and there is no response from competitors – the new entrant would rapidly gain market share and become the dominant insurer.*

How did the model marketplace test this hypothesis?

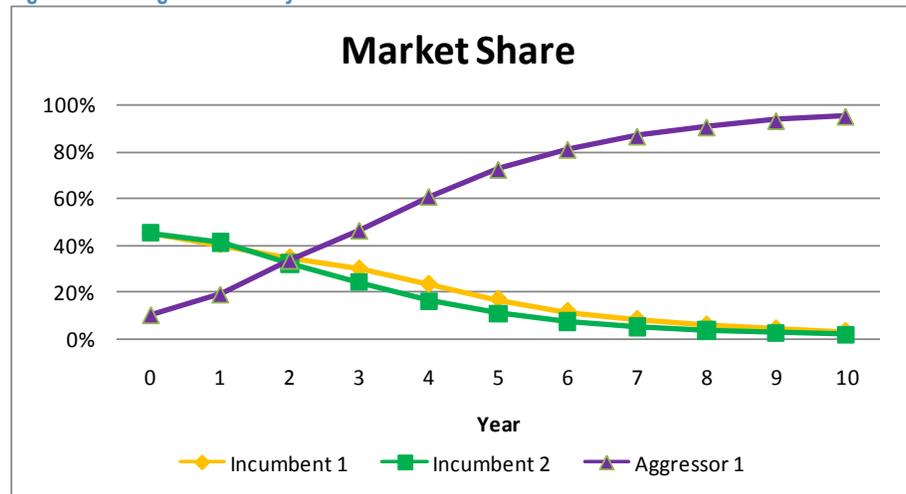
- To investigate our hypothesis, we simulated the marketplace using two incumbent insurers with 45% equal market share and a new entrant insurer with 10% market share. The expense rate for the new entrant is 5% lower than the incumbent’s expense rate of 20%. The profit margin of the three insurers is consistent.
- The key metrics we wish to observe are (1) the market share and (2) the lapse rates of each insurer and the industry over time.

The results from the model marketplace

The key conclusions from our model marketplace on this scenario are as follows:

1. As observed in the previous scenario, the new entrant to the market is quickly able to build market share. In fact, if this competitive advantage persists without response from the incumbent insurers, there is a real threat that the new entrant will become the dominant insurer.

Figure 41: Changes in industry market share

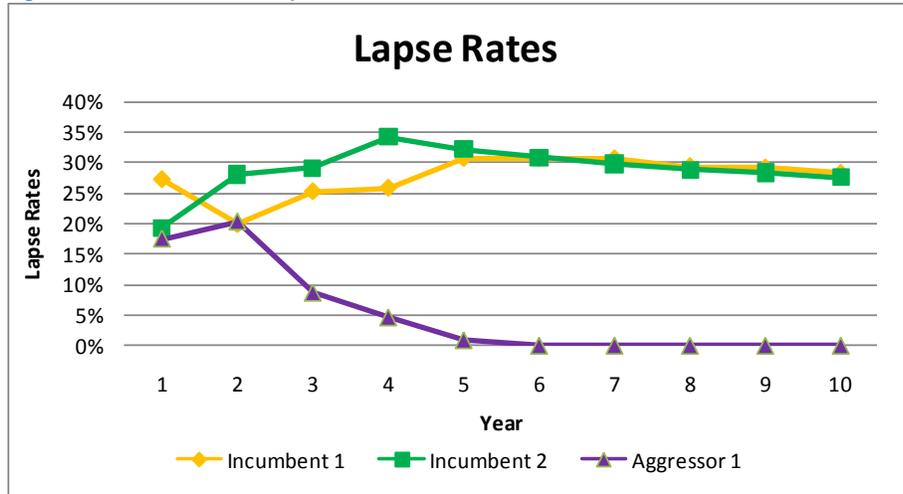


Source: Authors

2. If we assume the base consumer’s propensity to shop is 20%, the lapse rates of the incumbent insurers remain at approximately 30%-35% as their policyholders switch to the new entrant. In contrast, the lapse rates of the new entrants starts at a similar level to the incumbents as some policyholders switch away from the

new entrant as it is uncompetitive in some segment, but ultimately the new entrant's lapses rates fall as it cheaper in nearly all segments of the market.

Figure 42: Individual insurer lapse rates



Source: Authors

Conclusion: *Hypothesis confirmed:* Unsurprisingly, the market share of the new entrant rises rapidly with the incumbent players losing out. This scenario demonstrates how pricing advantages through lower expenses in a transparent marketplace will result in real impacts on market share. As with the previous scenario, we highlight our model market place has only limited insurers and in practice the incumbent insurers would have a wide array of response strategies (including sacrificing profit margin) to defend market place. The full discussion of such strategies is in the next section.

The more insurers in the market the greater the impact of the winner's curse - and deterioration in industry profitability

Scenario 6: Do number of insurers in the market change behaviour

What happens to market behavior when the number of insurers increases? With increased price visibility through contestable platforms and/or aggregators there is effectively one less (or reduced) barrier to entry as the insurer does not need to market its brand as actively as it otherwise would. This may see an increase in direct underwriters and/or underwriting agencies. We flag that at least one of the contestable platforms being launched by one of the broker groups at this stage will not have a cap on the number of underwriters on the platform.

We explore the scenario where the number of insurers in the marketplace increases and assess the impact of industry premiums under a winner's curse scenario as well as the variation in premium rates

***Hypothesis:** If the number of insurers in the market place increase, there is likely to be greater sampling error in each insurer's rates, and differences on view of what the right premium to charge on a risk is. As such, we expect the greater variability in the rates between insurers resulting in a more detrimental impact from the winner's curse.*

How did the model marketplace test this hypothesis?

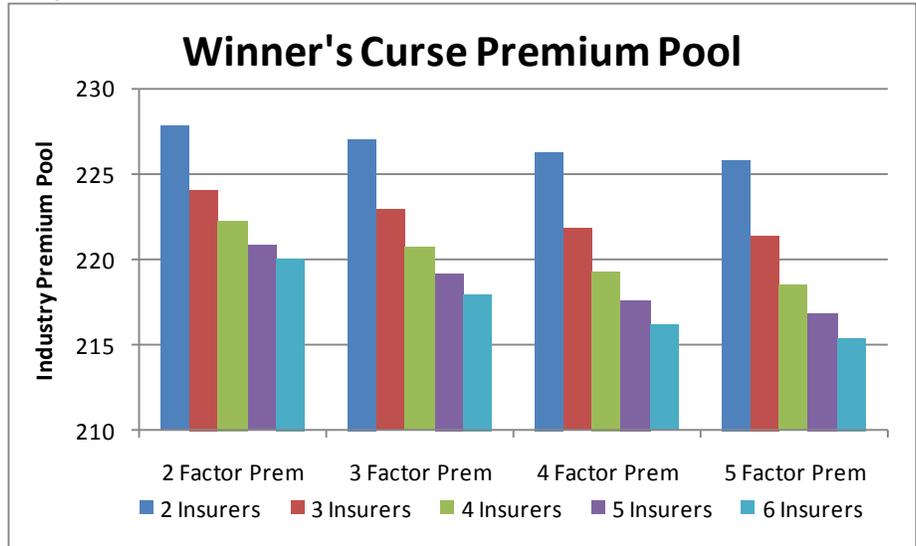
- Based on three years of simulated claims cost, we have calculated the premium for each insurer based on the data for those three years varying (a) the number of rating factors from 2 to 5 as well as (b) varying the number of insurers in the market place. This assessment is conducted for a single year, i.e. unlike the other scenarios we have modeled – we are only looking at the financials for one year, not a projection of the financials over time.
- In each scenario we have assumed there is no risk bias in the insurer's share, i.e., all insurers have a similar risk profile and market place. This means all insurers have the same data resources for pricing purposes.
- The key metrics we wish to observe include:
 - (a) how is the industry premium pool impacted if, as an extreme case, every customer selected the insurer with the lowest price as the number of insurers in the market place increases;
 - (b) how the range of premiums for the same risk change as the number of rating factors increase; and;
 - (c) how does this industry premium pool change as the number of rating factors increase.

The results from the model marketplace

The key conclusions from our model marketplace on this scenario are as follows:

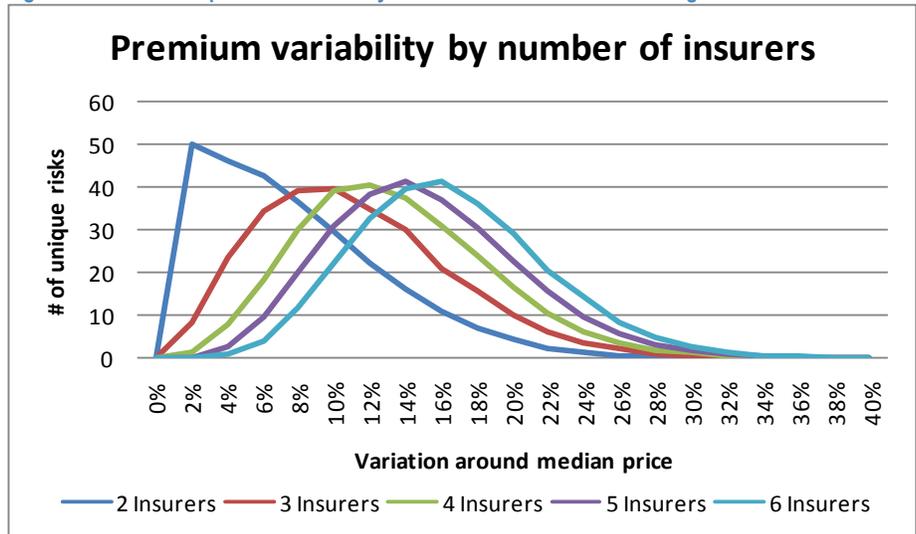
1. If we assume the winner's curse scenario where the consumer always selects the insurer with the lowest premium, the chart below shows, irrespective of how many rating factors are used (but all insurers use the same number of rating factors), the industry premium pool decreases as the number of insurers increase. This occurs because the size of the market place is limited and as the number of insurers increase each insurer would experience greater sampling error leading to an increase in the variation in premiums between insurers. The increase in the variability around the median price by number of insurers is shown in Figure 44.

Figure 43: Changes in the industry premium pool as the number of insurers and rating factors change.



Source: Authors

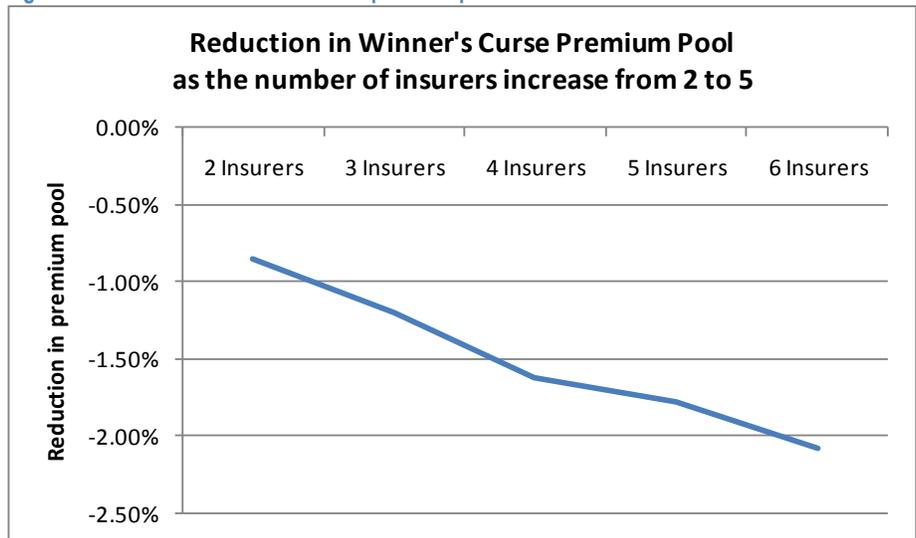
Figure 44: Five factor premium variability as the number of insurers change



Source: Authors

- Scenario 3 showed that in some circumstances as the number of rating factors is increased the industry premium pool falls. The rate at which the premium pool falls actually increases as the number of insurers increase. The chart below shows the number change in premium as the number of rating factors used increases from 2 to 5. For example, if there were 2 insurers used 5 rating factors instead of 2 then industry premium pool would decrease by 0.85%, but if there were 6 insurers, the industry premium pool would decrease by 2.09%.

Figure 45: Reduction in winner's curse premium pool as the number of insurers increase



Source: Authors

Conclusion: Hypothesis confirmed. Increases in the number of insurers will increase variability in premium rates and exacerbate the impact of winner's curse.

Any tool that increases price comparability for customers or brokers (e.g. such as commercial SME contestable platforms and aggregators) increases the industry's exposure to the winner's curse. Further, the greater the number of prices that can be compared by customers on such tools, the greater the threat of the winner's curse. We highlight that one of the contestable platforms being launched in the commercial SME market has no cap on the number of underwriters which may detrimental to the profitability of underwriters on the platform.

We also highlight that winner's curse implies that the you are only as strong as your least informed competitor, as such platforms composed of many smaller insurers with weak premium algorithms or aggressive growth-led insurers are more dangerous than platforms with well informed large profit-led competitors.

Finally in a more transparent environment, where consumers shop their premiums more frequently, new entrants to the market will have relatively worse profitability due to the effects of anti-selection.

Implications for insurance strategy

We discuss in the section below some strategies that we think may be considered by industry participants (underwriters and distribution agents) to adapt to some of the previously described changes coming to the Australian insurance market place (contestable platforms emerging in commercial insurance, personal insurance seeing the emergence of new insurance entrants and relatively immature internet aggregators).

Arguably, insurers in the UK initially committed to the aggregator model without fully appreciating the implications of their decision on customer retention rates, the value of their existing distribution channels and the impact of the winner's curse on profitability. We are not necessarily suggesting that the Australian insurance industry will follow the same path, however, we note that individual insurers and the insurance industry as a whole need to consider different strategies they may wish to pursue as once market structures evolve (e.g. distribution norms and customer psyche adjust to particular aggregator platforms) they can become very difficult to change.

Possible strategies for individual underwriters

Firstly, we consider strategies that an individual underwriter may wish to consider employing in a marketplace where there is greater price transparency and the threat of new distribution channels such as the internet and aggregator platforms.

1. Distribution related strategies

Opt out of distributing through an aggregator platform

Recognised insurers may consider opting out of aggregators but spend more on marketing to gain brand name visibility

- **Some UK brands remain strong sitting outside of aggregators:** In the UK, brands that aren't on aggregator sites continue to hold their own. Despite the appeal of aggregators, Direct Line, Aviva/Norwich Union who have opted out of the aggregator platforms held their place in the top four recognised insurance brands¹⁹. This would protect the insurer from timely price comparability and mitigate the winner's curse as it is not in an auction scenario. We highlight, this is a strategy currently employed by all of the larger Australian personal lines underwriters when it comes to their willingness to use aggregators. The absence of well known brands on the aggregator websites is likely to stymie the adoption of these platforms. In commercial insurance in Australia, we note differing strategies from different underwriters. All the underwriters of SME business we have spoken to are resigned to having to participate in some of the platforms. Some are however being much more careful about which platforms they sign up for, and the restrictions being placed on them.
- **Increased marketing spend when sitting outside aggregators:** If the aggregator distribution model is established, one consequence of an insurer choosing not to participate is the need for increased marketing spends to gain consumer attention over the effective marketing pitch by aggregators. We suggest that perhaps currently established brands with sufficient scale to market their products are in a better position to adopt an "opt-out" strategy.

¹⁹ EMB, *Counting the pennies*, December 2009

Adopting a multi-channel strategy which includes aggregators needs to be carefully considered to avoid the destruction of distribution value

One possibility is to segment our customers such that distribution channels don't overlap

Combine aggregator model with traditional distribution channels

- **The challenge is to not destroy existing distribution channel value:** Conflicts often arises from having multiple competing distribution channels. Without adequate planning and appropriate systems, the various channels can easily compete against each other destroying the value of the business and the value of the distribution channel to the insurer. There are a number ways an insurer can minimise this:
- **Insurer needs to clearly understand the value and costs** associated with each distribution channel, including the impact of different lapse rates, multi product take up rates, ownership of customer relationship etc.
- **Different risk segments for different channels:** Insurers should consider whether their channels compete for the same customers or focus on distinct customer segments. Further to this the insurer may need to provide each channel with appropriate differentiated product and pricing if significant differences exist between costs for each channel /customer behaviour in each channel and if significant cannibalization risk exists between the channels.
- **Systems need to support the strategy:** Insurers need to have pricing systems that can deliver pricing to all channels under a consistent framework. This may involve significant investment in new pricing systems capable of supporting multi-channel, multi-product features.
- **Using data from aggregators from unsuccessful quotes:** Insurers that participate in aggregators platforms may use aggregator services to improve their understanding of rating structures and volumes in segments of the market they are not strong in. They can be used as lead generators for sales as well through other channels.

Influencing the design of any aggregators that start in the industry.

- As mentioned earlier, in the Australian Commercial Lines space some underwriters are reluctant to sign up to the form of contestable platforms that some brokers are considering. Some of the ways the structure models can be improved from an underwriter's perspective include:
 - Restricting the number of insurers on the platform either explicitly or implicitly (thereby limiting winner's curse risk)
 - Trying to ensure that the relationship with the client at least in part is retained by the underwriters (easier to do in personal lines than bricks-and-mortar brokered commercial lines).
 - Restricting how frequently an aggregator can re-shop the business.
 - Requiring the aggregator to allow tailoring of policy conditions / coverage.
 - Putting downward pressure on fees / commissions for using the aggregator / broker.
 - Influencing summary of comparisons offered to customers to include non price selling points of the insurer.
 - Some platforms may consider providing aggregated data on claims performance by risk portfolio for all policies on the platform to limit the risk in winner's curse from sampling error.

Insurers may consider starting/acquiring an aggregator.

Valuation information on demographic, consumer behaviour and market prices may be sourced from analyzing aggregator trends.

Start or acquire your own aggregator

- Another strategy is for insurers is to start or acquire their own aggregator if they believe the market is going to head that way. An example of this in the UK is the Admiral Group which created Confused.Com and Brit Insurance which acquired a stake in the commercial insurance aggregator SimplyBusiness.co.uk. This allowed Admiral to sell Admiral aligned brands on their aggregator as well as a large number of their competitor's products.
- **Cost and customer information benefits arise from owning aggregators:** An aggregator also allows the owner to access the profits of the aggregator and hence reduce its own expense rates. Another benefit is that by owning an aggregator the owner has access to extremely valuable sales and market information. Information around demographic and consumer behaviour will allow for further consumer analytics modeling which may be advantageous to an insurer.

Develop an effective internet strategy

- Insurers who opt out of the aggregator model, but who need to compete with an internet based aggregator need to develop an effective internet and wider marketing strategy. The same issue may apply to existing insurers worried about the cost of distribution for peer insurers being lower due to them distributing exclusively through the internet. The graphic below summarises a number of the elements to an internet based strategy.

Figure 46: Strategies for internet sales



Source: J.P. Morgan.

Internet strategy is not just about having a website. Consideration must be given to:

(1) Improving a customer's online experience

(2) Attracting traffic to your website

(3) Using the internet to influence brand perception

- **An effective internet strategy involves more than having a presence on the net.**
- **Improving a customer's online experience:** Insurers must make it easier for customer to make purchases on their website ("conversion optimisation"). This involves consideration of layout and information flow on their web page, statistical analysis of points at which quotes drop out, time taken to finish a quote, number of questions asked, it may also involve creating decision support assistance on their sites, such as "click to talk" features.
- **Search engine optimisation:** Insurers need to optimise their websites to boost their ranking in search engine results. Insurers must also consider how to approach paid advertising on search engines.
- **Creating a website advertising strategy:** Insurers need to be make effective use of banner and advertising purchases on third party sites. For example, placing ads on sites covering life events associated with insurance purchase decisions.
- **Use the internet to influence brand perceptions:** Advertising on the internet should extend to influence perceptions of your company and that of your product.

Insurers can use the web in innovative ways with little costs to get information back to the customer or try and convince them of their brand proposition e.g. using social media to try and influence or address sentiment.

2. Better Risk Rating Strategies than Peers

Ensuring an adequate risk rating process

Weak pricing algorithms will be anti-selected against. Historical cross subsidy paradigms may not hold going forward if price elasticity increases.

- **Must try to remove all cross –subsidization:** With increasing visibility of pricing errors, the costs of anti-selection will be greater than ever before. Insurers with naive or incorrect pricing will be at a severe disadvantage relative to those with superior rating models. The degree of maturity and the scope for future improvement in rating varies with product. Any cross subsidies that are then in an insurer’s structure are particularly susceptible to being exploited.
- **First Mover Advantage** Insurers may increase the sophistication of their rating algorithm which may be an advantage to the insurer concerned; however, the advantage may be short lived as other insurers would be forced to follow suit in order to maintain profitability. In the interim, it would be reasonable to assume the insurer with a most sophisticated algorithm would be able to differentiate risks and price accordingly.
- **Arms race issues?** However, in an environment where there is greater price visibility, we caution that an arms-race in creating sophisticated rating algorithms may be counter productive due to increased sampling error (although this may also help allow isolate differences in experience caused by different risk mixes). There is a risk that in the search of new rating factors and rating sophistication, insurers may simply increase the divergence of pricing in a cell due to the number of parameter which must be estimated. As such there needs to be careful consideration to whether additional rating factors are actually adding true value to the premium rating process.
- **Introduction of a paradigm shifting rating approach:** One method of improving the sophistication of rating is to move from proxy variables to variables with much greater explanatory power on claims causes. An example of how this can be done for motor is shown below :

Pricing sophistication is valuable intellectual property which may be worth trying very hard to protect.

What we want to know (True predictor)	Proxy rating variables	Better predictor
How much do you drive	Postcode, age, sum insured, Vehicle NVIC	GPS measure of actual KM driven
Where do you drive	Postcode	GPS identification of actual roads used
How do you drive	Age, Gender	GPS monitor of Speed, sudden breaking etc
What do you drive	Vehicle NVIC	Vehicle NVIC

There are a number hurdles which must be overcome to introduce such a paradigm shift.

- Acceptance of the new rating factor by customers may be a hurdle. For example GPS based rating is more intrusive than the current methods of rating.

- The introduction of a new factor will increase prices for some segments of the market; the insurer would have to evaluate the loss of business from such a move.
- There are often considerable IT expenses in introducing a new paradigm in rating.

Protect your rating algorithm

- Incumbent insurers with sophisticated rating algorithms should arguably try very hard to protect their rating algorithms as it is a source of competitive advantage – it reflects their understanding of the market and research built-up over a number of years. As such, challengers have an incentive to deconstruct their competitor's algorithms through use of web-bots.

3. Monitoring Strategies (the market and own experience)

Closely monitor both internal and competitor data – and respond swiftly

Monitoring should be a critical part of your strategy. It should cover:

(1) Internal claims and profitability performance

(2) How your premiums compare to the broader market place

Pricing systems support responses to emerging experience - with speed and agility.

- **Understand how your premiums compare relative to the market:** In a world where the customer or the broker can easily compare prices and pick the cheapest insurer, it makes sense that insurers also develop a sophisticated understanding of the position of their prices relative to the rest of the market. The quantity of information available on competitor rates varies by line of business. But in nearly all lines of business, careful monitoring of lapse, strike and retention rates can often give insightful information regarding the competitive position of a particular insurer's position relative to competitors. This level of monitoring needs to occur at a risk segment level as the competitiveness of premium rate may be strong in one segment but weak in another.
- **Be wary of what new business you attract and have the appropriate monitoring systems:** Insurers need to be particularly careful in segments of the market where their technical work produces a price that is below the rest of the market. Our modeling suggests that part of the difference in pricing between insurers may be due to the mix of business being subtly different along hidden rating dimensions or sampling error. As the business won in each period is in part a function of the insurer's own rates versus their competitors', the source of new business attracted can change from period to period as the relative pricing of each insurer changes. The previous two statements suggest that companies should monitor, for each channel, new and renewal business separately. Combining new and renewal may delay the recognition of the deterioration in new business performance as the greater volume of renewal business swamps any emerging trend. This approach would also allow the insurer to detect circumstances where, due to the impact of hidden rating factors, the insurers own pricing algorithm is unsuitable for the profile of the new business being attracted.
- **Monitor at a distribution channel level:** In addition to monitoring at different risk segments it is important to monitor the performance of different distribution channels. This is because customer behaviour and insurer pricing may vary by distribution channel – particularly when distribution channels such as aggregators will attract more price elastic consumers and be more exposed to the winner's curse.
- **Ensure your pricing systems can respond – quickly:** In a world where pricing deviations are more visible, insurers will need to become hyper-vigilant and nimble in their response to emerging experience. Pricing systems need to be able to support quick and agile responses to emerging experience.

Understand the price elasticity of your new business and assess new business/renewal subsidy strategies

Focus on non-price factors to avoid auction scenarios

Customer loyalty is a valuable characteristic as it provides:

(1) Greater flexibility in pricing due to lower price elasticity

(2) Lower new business volume targets and hence less exposure to the winner's curse

(3) Renewals are cheaper than new business

(4) More insight in your portfolio as customer history builds up

Strategies to promote loyalty:

(1) Multi-policy discounts

(2) Discounts and/or benefits for longer customer tenure

(3) Incentives only available on renewal

- **Understand how the propensity to shop / elasticity is changing:** Insurers need to beware of price optimization/growth strategies which skew the portfolio to segments of the market which are price elastic at the expense of loyal price inelastic customers. A highly price elastic portfolio is worth significantly less in an environment of increased price comparability. Insurers need to be wary of this particularly in light of the strategy that discounts new business with the view that this will be recouped over the lifetime of the portfolio.

4. Product Design / Customer Proposition Strategies

Differentiate on non-price factors

- Emphasis on price as a distinguishing feature tends to commoditize the product and allows aggregators to simplify the purchase decision to price alone. There is a danger that this become a permanent feature of customer psyche.
- Insurers need to emphasise non-price factors such as service, simple claims process, financial stability and product features to encourage customers to think widely when making their purchase decisions. Such features are harder for aggregators to commoditize.
- Research by EMB in the UK shows that non-price factors do influence customers purchasing behaviour. Strongly branded insurers can outperform ones with a similar rank by a factor of four for the same price.

Create and reward loyalty in your customer base

- Customer loyalty is a desirable characteristic in an insurer's customer base as it allows:
 1. **Greater flexibility in future pricing:** Customers with a longer tenure at an insurer are generally less price elastic than customers with a shorter tenure. As such, the insurer is able to increase prices with reduced impact on volumes and a greater likelihood of achieving the targeted increase.
 2. **Less exposure to winner's curse:** Higher retention means that less new business needs to be sourced to maintain overall premium volumes, and hence there is less exposure to winners curse.
 3. **Less expense pressure:** Higher retention means the company has less acquisition expense pressure relative to an organisation that is dependent on continued high volumes of new business to maintain volume.
 4. **Learning about your portfolio takes time:** With increased retention the company is often able to weed out the poor risks or impose underwriting loadings over time as more information is learned about the existing portfolio, and therefore improve the profitability of the retained business.
 5. **Loyalty acts as a barrier to entry for new insurers.**
- Insurers may use a number of strategies to maintain the loyalty of its customer base:
 1. **Multi-policy discounts** - If a customer has a number of policies with a single insurer, it is less likely to move a single policy away from the insurer as it would lose its multi-policy discount. Equally, moving all policies would be more troublesome for the policyholder increasing the likelihood of retention.

2. **Rewarding customers' tenure:** Another strategy would be to vary rates by the customer's tenure such that loyalty customers get a discount or increased policy benefits.
3. **Incentives only available on renewal:** Insurers may structure products such that certain discounts or incentives are only available on renewal. As an example, in the commercial middle market, "claims experience discount" policies provide policyholders with favourable claims experience a refund of some of the previous year's premium contingent on renewal.

A lower cost of production can be the most effective way to avoid pressures from changing distribution

5. Cost Reduction Strategies

- **Insurer with a lower cost of production, whether this be through superior claims management, lower management expense or lower cost of capital (including reinsurance) have a significant advantage.** An insurer with lower cost of production is able to charge a similar rate to a competitor, but have a buffer to absorb the cost of any anti-selection and winners curse impact that may occur. It also has the flexibility to channel the cost advantage to growth.

6. General comments:

Do not pursue growth at all costs

- A volume led strategy can increase the risk of losses in an environment where price visibility is increasing. Insurers may need to have discipline in shedding business if competitor rates become irrational. We understand in some markets it is not easy to exit and enter the markets when an insurer pleases, hence addressing problems early before significant losses are made makes considerable sense.

Market led strategies for underwriters

We have previously highlighted in a winner's curse environment, the insurance industry would be only as strong as the weakest insurer. As such, it is in the industry's interests to consider some strategies that would collectively reduce the effects of the winner's curse.

1. Charge higher profit margins for uncertainty – address winner's curse

- **Acknowledgement of winner's curse issues:** Provided that there is industry wide consensus around the high risk of anti-selection on aggregator/internet originated business, a higher profit margin target can be charged to compensate for this, with increases in the target if lapse rates are rising across the industry. At an individual insurer level, if the insurer believes it is subject to anti-selection in a particular rating segment, the insurer should further increase its profit margin.
- We note that if the higher profit margin is charged to the premium (rather than through cost savings), there is a risk with this strategy is that the insurer that moves first would be uncompetitive and would remain so unless the industry moves to its level. This strategy is only viable if there is uniform recognition of this risk by the industry.

Uncertainty should be cushioned by higher profit margins

2. Standardise risk classification systems / underwriting questions

- Greater consistency in the risk classification systems and underwriting questions would help reduce the ability of customers to arbitrage between insurers through anti-selection. Commercial insurance would be an area where such standardisation would be beneficial. Surprisingly, this may be an outcome of developments in the commercial insurance space, with one of the owners of a

Standardised risk classification systems would promote consistency between insurers reducing anti-selection risks

Use of industry wide data can help reduce uncertainty for all insurers

contestable platform, Steadfast, promoting an industry standard for occupation classification.

3. Sharing of data

- Insurers can also benefit from reducing the uncertainty in segments of the market where the claims data of any individual insurers is unlikely to be sufficient. Specific examples we would highlight include large claims and natural hazard experience. Sharing this data via an industry body such as the ISA or APRA would allow pricing for these segments to be more accurate and consistent between insurers. Note, we understand that data quality and volume is a source of competitive advantage for insurers and as such there is likely to be pushback from some insurers.

Role for regulator

- APRA may want to consider taking a look at insurer's ability to adapt and protect their returns in a world where price comparison get's easier.

Strategies for internet based aggregators

Whilst many of the threats discussed for underwriters have emerged from increased price comparability through technology and aggregator platforms, we highlight that the aggregators themselves have challenges of their own including:

1. Building the case of the worth of their offering to customers (including navigating through compliance related issues on what type of advice they are providing)
 2. Ensuring high volumes of web traffic to the aggregator site;
 3. Maintaining customer loyalty to the aggregator;
 4. Attracting a sizable number of underwriters on the aggregator.
- Aggregator sites may consider responding to some of the challenges in their model by:
 - **Increasing the advertising of their sites.** An EMB study has suggested that three-quarters²⁰ of people who use aggregator sites in the UK say they tend to use more than one. As such the aggregator market itself is highly competitive so it is important for aggregators to have awareness around their brand to entice web traffic. This in turn will influence the number of underwriters on their platform. The challenge is to make their sites at top of customer's mind and EMB has suggested that UK aggregators have heavily invested in television advertising.
 - **Encouraging loyalty** and higher return rates to the site by providing value added services such as sending a letter with cheapest four insurers at time of renewal – this strategy puts the aggregators brand name into the policyholder's mind at a time when insurance is most relevant. Further, loyalty scheme such as frequent user points system could be introduced.
 - **Respond to criticisms and provide other features:** Addressing the criticism that they reduce everything down to a price, by incorporating non-price feature comparisons in results and providing a human touch by providing a “click to talk” service on their sites

Aggregators have their own challenges to remain relevant. Some strategies they may consider:

(1) Encourage loyalty amongst the existing customer base

(2) Advertising their aggregator site

(3) Provide other value-add features such as product advice

²⁰ EMB, *Counting the pennies*, December 2009

- **Diversifying their revenue base** by selling advertising space and also quote leads to brokers and agents of insurers.
- Extending their offering both in terms of number of providers covered and also the range of products offered.

Strategies for Broker/Agent channels

The internet and direct distribution are emerging as a threat for brokers and agents

Finally, we suggest some strategies for the 'traditional' form of distribution - broker/agent channels. With increased use of the internet, emergence of aggregator platforms and other forms of direct distribution, the “bricks and mortar” broker and agent channel servicing may not be competitive in some product lines. We have flagged previously personal insurance is primarily distributed through the direct channel and volume losses so brokers would only be small. The concern for brokers is the SME commercial space where there is potential for these products to be simplified and standardised and sold through the internet and aggregators. We highlight some strategies for broker/agent channel in light of these threats.

Brokers with contestable platforms in SME commercial have an advantage over brokers with them.

- **Get on the front foot- advantage to brokers with contestable platforms:** Just as starting an aggregator is a strategy for an insurer, it is also a strategy for brokers. That is the strategy being taken by many broker firms in Australia, with them launching their own contestable platforms e.g. Steadfast, Aon and AustBrokers. These brokers will have first mover advantage and brokers without such (time-efficient) price comparison offering, all other things being equal, may have a weaker value proposition.

Brokers and agents need to highlight value in their existing value-add services which act as a differentiating factor

- **Value-add services are important for brokers/agents to maintain their relevance:** This is the key question for this distribution channel is light of the increased threat from the internet and direct distribution. One method is to highlight the value in the services currently offered including:
 - acting as an agent of the client in the settlement of claims;
 - providing risk management advice;
 - specializing in niche areas which require advice based distribution models;
 - providing product advice and sourcing the best value price for the customer.
- For these reasons, it is unlikely that internet and direct distribution would ever be the right distribution channel for complex commercial products.
- **Customer relationship.** Currently arguably it is the insurance broker that has the main relationship with the customer, more so than the underwriter even in SME markets. From the broker’s perspective it is important to maintain this advantage even if aggregator platforms take hold.

Suggestions for Further Research

- Our efforts in this paper to explain the possible impacts from the changes in the distribution on the insurance market are by no means a comprehensive exploration of all the important issues on the topic. Some issues that we believe are worthy of further research include:
 - A more thorough (and perhaps quantitative?) assessment of the various sources of difference between premium rates for insurers in personal lines
 - An investigation of the extent of variation that exists in premium rates in SME commercial lines, and causes of that variation.
 - An investigation on the extent to which winner's curse is impacting profit margins today
 - A more thorough examination of the "arms race" effect i.e. whether increased sophistication in premium rating approaches actually exposes the market as a whole to greater risk from winner's curse, or whether the increased sophistication allows adjustments for differences in risk mixes.

Acknowledgements

The authors would like to thank the following people for their invaluable help and assistance with the research of this paper:

- Richard Brookes for his peer review and insightful comments throughout the process
- Stephen Wilson for his assistance particularly on the direction of commercial insurance in Australia and abroad
- Greg Taylor for sharing his thoughts on premium rating and the winner's curse
- Charlie Pollack for his views on premium rate variation
- Kitty Leung for reviewing our simulation model
- Dante Botha for his thoughts on online media
- Aravind Krishnan for his thoughts on the internet channel in insurance
- General insurance brokers and intermediaries
- Underwriters in the general insurance community
- JP Morgan retail and gaming analysts

Appendix 1

Description of model

We have set up an insurance model to simulate the insurance market on a highly stylised scale to assess the possible impact to individual insurers and the industry as a whole from some of the changes occurring in distribution and market structure. .

Our insurance market model simulates claims experience, insurer premiums and policyholder movements between insurers over ten years allowing observations to be made on the short, medium and longer term impact to the industry.

We must stress that this model has limitations due to limited policy size, limited parameter complexity, only limited calibration to actual market characteristics, and stylised adaptive decision making processes. Nevertheless our purpose is to assess the possible importance and direction of particular changes, rather than trying to precisely predict the financial impact of changes. As such, we recognise that our model does not reflect actual pricing process or an actual insurance market, only a stylized version of one.

The nature of the market place

- There are three insurers and 50,000 policyholders in total and a single product for sale. We have assumed the size of the industry does not change over time nor does the industry risk mix change (i.e. constant population). The limitation to 50,000 policies was driven by our choice of modeling software (Excel). To compensate (in order to ensure that variation in parameter estimates between insurers is not too high) we have chosen a reasonably high expected number of claims per policy (2.29) across the population and a low coefficient of variation of average claim size (20% CoV around a mean estimate of \$2000, identical for all policies).
- Initially, the risk profile of each insurer is equivalent; however this changes over time as policyholders move from one insurer to another.
- Insurers re-price their premiums annually based on their emerging claims experience.
- Based on their propensity to ‘shop’ policyholders may wish to change insurers annually. Policyholders always get offered three premiums – from their existing insurer and the two other insurers in the market.
- We have assumed there are five factors that determine underlying claims cost and insurers use up to five factors for premium rating purposes.
- The risk segments and their respective exposure are shown below:

Figure 47: Risk segments and industry exposure

Factor	Label	Exposure
Age	Young	15%
Age	Young-Mid	25%
Age	Mid	25%
Age	Mid-Older	25%
Age	Older	10%
Vehicle	Mid Risk	50%
Vehicle	High Risk	30%
Vehicle	Low Risk	20%
Gender	Male	50%
Gender	Female	50%
Postcode	Low Risk	40%
Postcode	Mid Risk	35%
Postcode	High Risk	25%
Channel	Channel A	33%
Channel	Channel B	33%
Channel	Channel C	33%

Source: Authors

- The exposure of a specific risk segments may be calculated based on the product of the one-way exposures shown in Figure 47.

Claims cost

- We have assumed that the *underlying claims cost* of this insurance product is determined by five rating factors for both frequency and claim size: Age of policyholder, postcode group, vehicle group, distribution channel and gender of policyholder. There are no other rating factors, known or unknown, that influence claims cost for this product.
- The annual claims cost in the model is simulated on an annual basis.
- We have assumed the claims frequency of the insurance product follows a Poisson distribution and frequency varies by the aforementioned rating factors. The expected frequency for the base risk is 200%, whilst for the population as a whole based on the risk mix the base frequency is 229%. The table below shows the claim frequency relativities by rating factor assumed for the claim number modeling.
- The expected claim size of the insurance product is assumed to be \$2,000 in the first year and increases with 4% inflation each year. We have assumed the claim process follows a log-normal distribution with a co-efficient of variation of 20%.
- As a simplification to the claims process, we have maintained a single claims size for all risk segments, i.e., the claims size relativity is 1 across all segments.

Figure 48: Claims relativities

Factor	Label	Exposure	Frequency Relativities	Size Relativities	Risk Relativities
Age	Young	15%	1.40	1.00	1.40
Age	Young-Mid	25%	1.00	1.00	1.00
Age	Mid	25%	0.85	1.00	0.85
Age	Mid-Older	25%	0.75	1.00	0.75
Age	Older	10%	0.70	1.00	0.70
Vehicle	Mid Risk	50%	1.00	1.00	1.00
Vehicle	High Risk	30%	1.20	1.00	1.20
Vehicle	Low Risk	20%	0.80	1.00	0.80
Gender	Male	50%	1.00	1.00	1.00
Gender	Female	50%	0.90	1.00	0.90
Postcode	Low Risk	40%	1.00	1.00	1.00
Postcode	Mid Risk	35%	1.20	1.00	1.20
Postcode	High Risk	25%	1.44	1.00	1.44
Channel	Channel A	33%	1.00	1.00	1.00
Channel	Channel B	33%	1.20	1.00	1.20
Channel	Channel C	33%	1.10	1.00	1.10

Source: Authors

Premium rating

- We have assumed each insurer in the industry re-rate premiums annually based on its own claims experience.
- Insurers may use up to five rating factors to determine their technical premiums. The five rating factors include: Age of policyholder, postcode group, vehicle group, distribution channel and gender of policyholder.
- Insurers offer different premiums on new business and renewal policies.

Technical Premiums

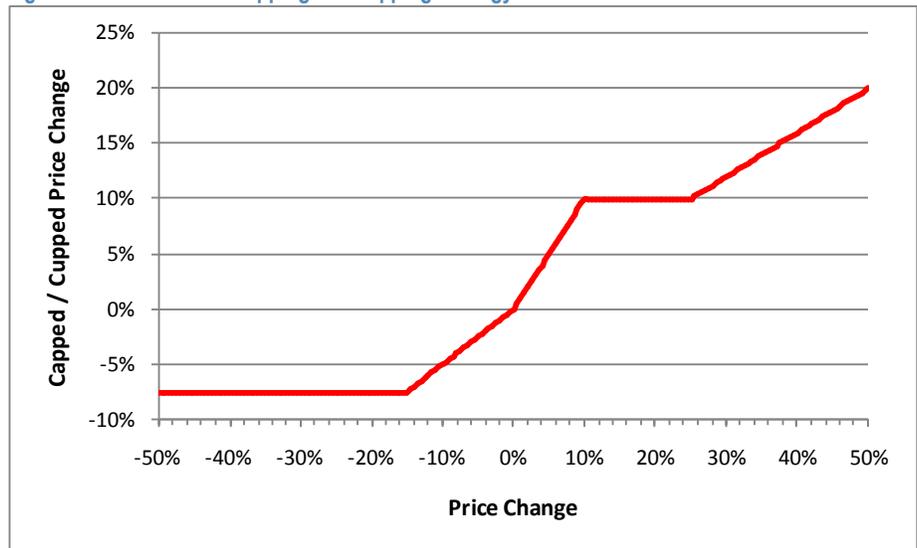
- We define the *technical premium* as the premium charged to new business customers prior to any marketing overlay (e.g. multi-policy discount, loyalty discount, etc). It is also the premium offered to renewal customers prior to any capping or capping relative to the existing premium.
- In our model, insurers calculate their technical premium based on its own claims experience over the last three years.
 - The insurer will use the most recent year's experience to determine the base rate for a portfolio. We considered using a number of years of experience adjusted for a trend, but we believed this would not materially change the model. In even the first year we model profits, we actually have modeled claims experience for the industry for 3 years prior. As such, we can get an initial base premium (with respect to profit modeling) for the insurer on a basis consistent with this definition.
 - The insurer only calculates total risk relativities as opposed to splitting total risk into frequency and size. We appreciate, in practice, the latter methodology is used, however, the key purpose of our model is to illustrate market impacts from changes in other factors and we do not believe segregating frequency and size relativities would materially impact our conclusions.

- The total risk relativities are calculated based on the insurer's claims experience in the last three years using a multi-linear regression. Again, we acknowledge that a multi-linear regression is not the technique of choice for most industry practitioners; however, for the purposes of our model we believe this process would not likely lead to different conclusions given the stylized nature of our modeling..
- Using the observed base rate for the portfolio and the total risk relativities estimated, we then add allowances for the insurers expenses and profit margins to determine what we call the "*initial premium*." We see this as the premium based on recent claims experience, but it does not consider movements in the price relative to the previous year's premium.
- In order to maintain stability in premiums as well as give credit to claims experience in previous years, we have blended the previous year's premium with the *initial premium* and limited the movement relative to the previous year's premium to within a certain range. This is called the "*technical premium*." We believe this practice is conducted where an insurer is cautious about changing its premium excessively. Our base assumption is that insurers will not let its technical premium fall by more than 5% or increase by more than 15%.

Renewal Premiums

- Premium rate reviews can often result in erratic outcomes resulting in significant price increases or decreases as a result of claims volatility, statistical error, changes to rating methodology, etc. We understand capping and cupping is one strategy employed by insurers to mitigate premium movements. It serves to protect the renewal portfolio from large technical price movements and, in part, aids the retention of existing customers when prices are on the increase.
- We have imposed a single capping and cupping structure on renewal premiums (i.e. capping and cupping rules do not vary by risk segment) which effectively limits premium reductions and dampens premium increases. The intuition is as follows:
 - If a customer was willing to pay a premium the previous year, in absence of competitors significantly lowering their premiums, the customer is likely to be willing to pay a similar price. Further, if premium increases are to be lost via capping, they must be recouped by cupping.
 - Conversely, capping is designed to prevent excessive movements on the upside which may result in the customer lapsing.
- The following chart shows the capping and cupping strategy employed by each insurer in the model. For example, if the technical price was 30% higher than the previously charged price, the movement would be limited to 12%.

Figure 49: Illustration of capping and cupping strategy



Source: Authors

Policyholder behaviour

- In our model, a policyholder's decision to change insurers is made on an annual basis.
- The policyholder's propensity to shop is based on:
 - The five rating factors described previously;
 - The change in premium offered by the existing insurer; and;
 - The policyholder's shopping behaviour in the last three years. This highlights that the behaviour of policyholders who changed insurers recently (whether it be a price decision or otherwise) are more likely to consider other insurers in the future.
- The table below shows the propensity to shop relativities for each risk segment:

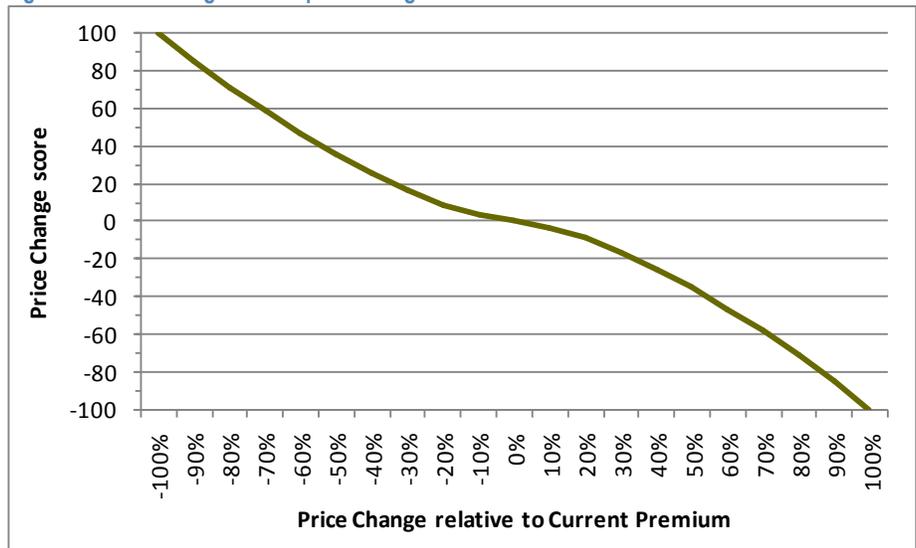
Figure 50: Propensity to shop relativities

Factor	Label	Exposure	Propensity to Shop Relativities
Age	Young	15%	1.50
Age	Young-Mid	25%	1.20
Age	Mid	25%	1.15
Age	Mid-Older	25%	1.00
Age	Older	10%	1.00
Vehicle	Mid Risk	50%	1.00
Vehicle	High Risk	30%	1.00
Vehicle	Low Risk	20%	1.00
Gender	Male	50%	1.00
Gender	Female	50%	1.10
Postcode	Low Risk	40%	1.00
Postcode	Mid Risk	35%	1.00
Postcode	High Risk	25%	1.00
Channel	Channel A	33%	1.00
Channel	Channel B	33%	1.50
Channel	Channel C	33%	1.00
Price Change	<0%		1.00
Price Change	0% to 10%		1.05
Price Change	10% to 20%		1.10
Price Change	20% to 30%		1.16
Price Change	30% to 40%		1.22
Price Change	40% to 50%		1.28
Price Change	50% to 60%		1.34
Price Change	>60%		1.41

Source: Authors

- If a policyholder decides to “shop” then the three insurers including the current insurer will be judged on a “switching score.” The switching score is based on the sum of a price change score and a market share score. The latter is used as a proxy for the insurer’s reputation. We believe these are the two main determinants in a consumer’s decision to select an insurer – the price and the insurer’s reputation.
- The price change score is calculated based on the price offered to the consumer relative to the current year’s premium. Figure 51 shows the relationship between the price change and price change score. The relationship we have attempted to demonstrate is that small price changes do not make a significant difference – consumers may overlook this, but the greater the price differential, the greater the bearing on the consumer’s decision.

Figure 51: Price change score v price change



Source: Authors

- The insurer reputation cost is based on the market share of the proposed insurer and the current insurer. The market share score is calculated as:
- Market share score = $[\text{LN}(\text{Proposed insurer market share} + 25) - \text{LN}(\text{Current insurer market share} + 25)] \times 100$
- NOTE: In some scenarios considered, the market share score is forced to zero as we believe the insurer's reputation is not a consideration for the policyholder.
- The following table compares to relative impact of the market share score against the price change score, i.e. how much cheaper would a less reputable insurer need to be, to be on level footing with a more reputable insurer. For example, if insurer A has 10% lower market share than insurer B, it must have premiums 2.5% lower than insurer B to compensate for its relatively lower reputation.

Figure 52: Relative impact of market share and price change

Mkt Change	-35%	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%	35%	40%
Mkt Score	-1.4	-1.2	-1.0	-0.8	-0.6	-0.4	-0.2	0.0	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6
Equivalent Price Chng	-6.00%	-5.25%	-4.75%	-4.00%	-3.50%	-2.50%	-1.75%	0.00%	1.50%	2.50%	3.25%	3.75%	4.50%	5.00%	5.50%	6.25%

Source: Authors

Appendix 2

Impact of sampling error on winners curse

In order to examine the impact of sampling error on price variation and hence winners curse we have set up a simplified simulation. The model also allowed us to test sensitivity of our results a number of modeling assumptions. A more realistic simulation is examined in the main modeling section of this paper.

Model set up

- The marketplace consists of two insurers, who both have the same mix of business.
- Both insurers have two cells in their rating structure, and they both estimate premiums as the expected claims costs in that cell.
- The claims experience for cell 1 is given by $N(\mu, \sigma^2 + K_1\mu^2)$
- The claims experience for cell 2 is given by $N(K_2\mu, K_3(\sigma^2 + K_1\mu^2))$
- For a given K_2 , the μ is back-solved set such that the average cost per policy across both cells is 250.
- There are 20000 policies in the market place and the number of policies in cell 2 is K_4 times the number of policies in cell 1. For a given K_4 the number of policies in cell 1 back-solved such that the total policies across both cells is always 20000.
- σ is set to 200.
- Consumers always select the cheapest insurer.

We examine the cost of anti-selection for different values of K_1, K_2, K_3, K_4 as well as σ and the number of policies

Impact of increasing the cost relativity between cells (K_2)

- The cost of anti-selection is always higher when the cells are priced separately than when they are combined.
- The cost of anti-selection is invariant to changes the relativity of expected claims costs between the cells.

Figure 53: Impact of increasing the cost relativity between cells

Cost of antiselection (% of claims cost)				
Ratio of mean costs between cells	Cells combined	Cells		Difference
		combined	Separate	
1	0.51%	0.73%	0.22%	
2	0.52%	0.74%	0.22%	
3	0.53%	0.76%	0.23%	
4	0.57%	0.76%	0.19%	
5	0.63%	0.76%	0.13%	
6	0.59%	0.74%	0.15%	
7	0.60%	0.76%	0.16%	
8	0.59%	0.79%	0.19%	
9	0.61%	0.75%	0.14%	
10	0.62%	0.77%	0.15%	
15	0.60%	0.81%	0.21%	
20	0.64%	0.81%	0.17%	
25	0.62%	0.82%	0.20%	

$$K_1 = 1, K_2 = \text{varies}, K_3 = 1, K_4 = 1$$

Source: Authors

Impact of increasing the variance relativity between cells (K_3)

- The cost of anti-selection is always higher when cells are priced separately.
- The gap between pricing the combined cell versus pricing individual cells increases slightly as K_3 increases.
- As K_3 increases, the higher variance in the second cell leads to increasing sampling error when the cell is priced separately

Figure 54: Impact of increasing the variance relativity between cells

Cost of antiselection (% of claims cost)				
Ratio of variance between cells	Cells combined	Cells		Difference
		combined	Separate	
1	0.53%	0.72%	0.19%	
2	0.62%	0.91%	0.29%	
3	0.73%	1.02%	0.29%	
4	0.79%	1.06%	0.27%	
5	0.89%	1.15%	0.26%	
6	0.97%	1.21%	0.24%	
7	1.03%	1.33%	0.29%	
8	1.06%	1.37%	0.31%	
9	1.11%	1.46%	0.35%	
10	1.22%	1.57%	0.35%	
15	1.40%	1.79%	0.39%	
20	1.61%	2.02%	0.42%	
25	1.80%	2.16%	0.36%	

$$K_1 = 1, K_2 = 1, K_3 = \text{varies}, K_4 = 1$$

Source: Authors

Impact of changing the distribution of policies between the cells (K_4)

- The cost of anti-selection is always higher when cells are priced separately.
- As the concentration of exposure in a single cell increases (higher K_4 factor), the cost of anti-selection decreases.

Figure 55: Impact of changing the distribution of policies between the cells

Cost of antiselection (% of claims cost)				
Ratio of policies between cells	Cells		Difference	
	combined	Separate		
1	0.51%	0.72%	0.21%	
2	0.52%	0.71%	0.19%	
3	0.49%	0.70%	0.21%	
4	0.52%	0.71%	0.19%	
5	0.52%	0.66%	0.15%	
6	0.50%	0.66%	0.16%	
7	0.51%	0.68%	0.17%	
8	0.52%	0.65%	0.13%	
9	0.51%	0.62%	0.10%	
10	0.49%	0.64%	0.15%	
15	0.50%	0.62%	0.12%	
20	0.51%	0.63%	0.12%	
25	0.48%	0.60%	0.12%	

$$K_1 = 1, K_2 = 1, K_3 = 1, K_4 = \text{varies}$$

Source: Authors

Impact of changing the relationship between mean and variance of cells (K_1)

- The cost of anti-selection is always higher when cells are priced separately.
- The gap between pricing the combined cell versus pricing individual increases with higher K_1 factors, as this factor increases the variation in both cells and hence increases sampling error when priced separately.

Figure 56: Impact of changing the relationship between mean and variance of cells

Cost of antiselection (% of claims cost)				
Relationship between mean and variance	Cells		Difference	
	combined	Separate		
1	0.5%	0.7%	0.2%	
2	0.7%	0.9%	0.2%	
3	0.7%	1.0%	0.3%	
4	0.8%	1.2%	0.4%	
5	1.0%	1.3%	0.3%	
6	1.0%	1.4%	0.4%	
7	1.1%	1.5%	0.4%	
8	1.2%	1.7%	0.5%	
9	1.3%	1.7%	0.4%	
10	1.4%	1.8%	0.4%	
15	1.5%	2.2%	0.7%	
20	1.8%	2.5%	0.7%	
25	1.9%	2.9%	1.0%	

$$K_1 = \text{varies}, K_2 = 1, K_3 = 1, K_4 = 1$$

Source: Authors

Impact of changing the number of policies and standard deviation in a cell

- The cost of anti-selection is always higher when cells are priced separately.
- The actual magnitude of the impact of sampling error is dependent on the ratio of volatility of claims experience to the number of policies. Sampling error decreases as the population increases, and increases as the volatility of claims experience increases.

Figure 57: Impact of changing the number of policies and standard deviation in a cell

Additional cost of antiselection when cells are priced separately versus combined (% of claims cost)

	Standard deviation of claims experience								
	100	200	300	400	500	600	700	800	900
5,000	0.36%	0.40%	0.48%	0.78%	0.64%	0.80%	0.92%	1.14%	1.26%
7,500	0.29%	0.25%	0.38%	0.54%	0.56%	0.62%	0.65%	0.93%	0.96%
10,000	0.25%	0.32%	0.34%	0.58%	0.58%	0.77%	0.64%	0.66%	0.79%
12,500	0.25%	0.31%	0.31%	0.40%	0.46%	0.67%	0.68%	0.78%	0.80%
15,000	0.22%	0.22%	0.30%	0.36%	0.45%	0.52%	0.52%	0.66%	0.76%
17,500	0.17%	0.20%	0.29%	0.33%	0.37%	0.43%	0.52%	0.56%	0.74%
20,000	0.21%	0.20%	0.24%	0.28%	0.35%	0.41%	0.45%	0.61%	0.67%
22,500	0.15%	0.20%	0.26%	0.34%	0.34%	0.43%	0.57%	0.53%	0.62%
25,000	0.14%	0.22%	0.23%	0.32%	0.36%	0.41%	0.40%	0.53%	0.64%
27,500	0.15%	0.21%	0.21%	0.23%	0.35%	0.35%	0.43%	0.54%	0.55%
30,000	0.16%	0.19%	0.24%	0.25%	0.32%	0.33%	0.34%	0.47%	0.50%
32,500	0.14%	0.20%	0.23%	0.23%	0.33%	0.36%	0.43%	0.42%	0.41%
35,000	0.13%	0.18%	0.23%	0.22%	0.29%	0.36%	0.32%	0.37%	0.48%

Source: Authors

Implications for pricing sophistication and the winner’s curse

- Whilst our simulation represents a very simple model, it suggests that sampling error would increase as the pricing sophistication increases under a range of different scenarios. Note, the impact of sampling error is relative to the size of the data pool used and with extremely large insurers sampling error may not be significant. However, in smaller insurers with little data volume as pricing sophistication increases, the increase in sampling error may be large.

- Nonetheless, sampling error presents insurers with a dilemma as often increased sophistication in pricing is required to maintain or gain a competitive advantage and yet as the sophistication of the entire industry increases, the impact of sampling errors could contribute to the effects of the winner's curse.
- The key implication of this for strategy is that insurers should regard their own estimates with a degree of skepticism and focus equally on the identifying and understanding differences with competitor prices. These differences could highlight errors in their own pricing and it is this difference in views that will be exploited in a market with increased visibility of prices.
- A full analysis of the contribution of the various statistical errors to pricing differences between insurers is beyond the scope of this paper. We have only considered the potential impact of sample error in this section. In reality differences can arise in every step of the modeling process, perhaps further work will be carried out by others to clarify the exact contribution of each type of error. What is clear is that significant differences in pricing exist between insurers.

Appendix 3

Some thoughts on the economics of distributing personal lines through the internet

The ways to distribute insurance over the internet is the subject for a conference by itself. The following is a brief overview of some of the issue to consider of the economics of selling through the internet, based on discussions we have had with some marketing managers in both general and life insurance.

- In order to sell insurance over the internet, what is clear is that some investment is needed in building a brand through non internet channels (e.g. through television, radio and print advertising) in order to ensure a reasonable uptake of the insurance.
- Many sales on the internet happen through search engines. There are two methods of obtaining leads from the likes of Google, although we outline many of the other methods that we are aware of below.

Figure 58: Strategies for internet sales



Source: J.P. Morgan.

- The first (and more expensive method) is having sellers pay for advertising associated with key words (AdWords). Here, when a user goes to Google to search a topic, Google then displays not only the search results, but also short ads from companies. These ads are placed above the search results or to the right of the search results.

Figure 59: Google motor insurance search

The screenshot shows a Google search for "motor insurance". The search bar contains "motor insurance" and the search button is labeled "Search". Below the search bar, it says "About 42,200,000 results (0.06 seconds)". The search results are displayed in a grid format. On the left, there are navigation options: "Everything", "Images", "Videos", "News", and "More". Below these are "The web", "Pages from Australia", "Any time", "Latest", "Standard view", "Wonder wheel", "Timeline", and "More search tools". The search results include several sponsored links and organic search results. The sponsored links are: "GIO Motor Insurance" (Purchase GIO Comprehensive Car Insurance Online & Receive 15% Off), "Budget Direct Insurance" (10% Online Discount + Check Out Our Pay Less or Get \$50 Offer), "Allianz Motor Insurance" (Get a 2 Min Quote & Save Up to 10% With Allianz Motor Insurance Online), "Just Car Insurance" (Get a Quote from the Specialist for Younger Drivers & Modified Cars!), and "NRMA Insurance". The organic search results include: "Motor Vehicle Insurance" (Realinsurance.com.au/Motor-Vehicle), "Motor Insurance" (PayAsYouDrive.com.au/Motor), "Motor Insurance Quotes" (www.thebuzzinsurance.com.au), "Car Insurance Overview | ING Insurance" (www.ing.com.au), "Car Insurance Australia - AAMI Car Insurance Quotes - CTP..." (www.aami.com.au), and "Allianz Insurance - Car Insurance, Life Insurance, Travel..." (www.allianz.com.au).

Source: Google

- Companies purchase these keywords and decide how many clicks they want to pay for. Some key words can cost as much as \$5 or more per click, while other keywords will only cost as little as 5 or 10 cents. The amount you pay depends on:
 - The popularity of the search term that is being bid upon
 - The position that you want to maintain in the paid results (e.g. listing 1st vs. 10th)
 - The more competition for a keyword and the higher your listing the more you pay.
 - We understand that the cost of a click on an advertised spot for “car insurance” in Google can cost between \$7-\$10 per click. A spot at the bottom of page1 (e.g. 8th spot) will typically sell for \$3 - \$4. We understand that click conversion rates into sales are typically around 3- 4% in the industry. This implies a cost of sale per new policy of about \$242 ($\$8.50 / 3.5\%$).
 - Prima facie – this appears to us to be a quite reasonable cost for a sale assuming the customer stays for a while. It is likely however in our view that lapse rates for customers that buy policies over the internet are likely to be higher than normal business.
- The second method of obtaining quotes from Google is to optimize one’s search engine results to have a high ranking. Based on discussions with practitioners in the industry - we understand that up to 50%+ of online sales can come from this source. The key for the insurers is to ensure that your website features in the top 3 to top 5 listings in a search as sales from this source drop away as your ranking slips - particularly if your website does not feature on the first page of searches.
- A third online avenue that is becoming increasingly popular tool for acquisition is Online Display Adverts. Previously this medium was used more for branding, but advertisers increasingly want to use this medium for direct acquisition. Many major publishers (eg Ninemsn, Fairfax Digital, Yahoo! 7 etc) are striking “Cost per sale” deals with advertisers. Publishers will run your ads on unsold spaces on their sites, on the basis that they will be paid only if a sale (or some other event agreed with the advertiser, eg a quote) eventuates from a click on that ad. Both publisher and advertiser will agree on a set rate per sale. This is a cost effective method for advertisers to minimise downside cost and, equally, allows the publisher to make money out of unsold ad inventory.
- Note, we highlight that all these strategies reflect the optimization of search engines and creating an online brand presence. A cost that has not been considered is that cost of creating brand recognition through the internet and other mediums. This is important as even if the insurer's name is first on a search engine, this may not result in a 'click through' if the brand is not recognized and the other insurers listed in the top 5 searches are recognizable.

References

1. Australian Bureau of Statistics, Retail Sales Statistics 2009
2. Business Spectator – August 2010- “Online Shoppers Elude Data Crunchers”
3. Telstra, September 2010 – “Sensis Online E-Business Report 2010”
4. Bloomberg (Share prices of Amazon and Barnes and Noble)
5. Alex Kons, The Park Place Economist “*Understanding the chaos of airline pricing*”
6. Rice Warner “Direct Life Products Report”2010
7. Ali, Lee, (2010), Recipes for future success, EMB Briefings, http://www.emb.com/EMBDOTCOM/UK/UK/Resources/EMB%20Briefings_motor.pdf
8. Beardsworth, Lee (2009), Pricing Perspectives on an aggregated future, EMB Briefings [http://www.emb.com/EMBDOTCOM/UK/UK/News/EMB%20briefings_aggregator%20research_web%20version\(1\).pdf](http://www.emb.com/EMBDOTCOM/UK/UK/News/EMB%20briefings_aggregator%20research_web%20version(1).pdf)
9. Booz Allen & Hamilton (1998), How insurance companies can change the distribution paradigm, Insights, Vol 3, Issue 3
10. DataMonitor (2010), UK Personal Lines Distribution 2010, http://www.datamonitor.com/store/Product/uk_personal_insurance_distribution_2010?productid=DMFS2486
11. Dumm, Hoyt (2002), Insurance Distribution Channels: Markets in Transition, 38th Annual Seminar of the International Insurance Society, Singapore.
12. Endowed, Garven, Wright (1998), Electronic Commerce in the insurance industry: Business Perspectives, Center for Risk Management and Insurance Research, Georgia State University. http://rmictr.gsu.edu/papers/wp98_3.pdf
13. Hippo (2007), South Africa’s, First Insurance aggregator site is launched. <http://www.insuranceadvisor.co.za/insurance-news/280/South-Africas-first-insurance-aggregator-site-is-launched.htm>
14. Insurers of Europe CEA (2010), Insurance distribution Channels in Europe, CEA statistics No 39.
15. http://www.cea.eu/uploads/DocumentsLibrary/documents/1270043839_cea-statistics-nr-39-distribution.pdf
16. Jones, Liddicoat (2010), Convergence in Customer Value Management, EMB Briefings. http://www.emb.com/EMBDOTCOM/UK/UK/Resources/EMB%20Briefings_convergence_in_customer_value_management.pdf
17. Kelly, Kleffner (2005), The Distribution of Property/Liability Insurance in Canada: Costs and Market Structure. <http://haskayne.ucalgary.ca/haskaynefaculty/files/haskaynefaculty/05-19.pdf>
18. Lee, Liddicoat (2009), Counting the Pennies, EMB Briefings.
19. http://www.emb.com/EMBDOTCOM/UK/UK/Resources/EMB%20Briefings_counting%20the%20pennies.pdf

20. Liddicoat (2009), The customer view of insurance purchase, EMB Briefings.
http://www.emb.com/EMBDOTCOM/UK/UK/Marketing%20Analytics/EMB%20Briefings_Marketing%20Sciences%20research.pdf
21. MacGillivray (2009), Industry Outlook Report – impact of aggregators Canadian insurance.
http://www.cdnins.com/industryoutlookreport2009/industryoutlookreport_170809_04.html
22. Mayr (2007), German Motor Market, Market Allocation, Distribution Channels, Pricing Trends, Casualty Actuaries of Europe Winter 2007 Meeting. www.casact.org/affiliates/cae/1207/Mayr.ppt
23. Rakovska (2001), E-Commerce Business Models for Insurance, Application to U.S. and European Markets, Georgia State University.
http://rmictr.gsu.edu/Papers/EC_GR_Final.pdf Dunkley, D 2010, Commercial insurance on aggregator radar, Post Online, viewed 1 October 2010, <<http://www.postonline.co.uk/post/news/1648841/commercial-insurance-aggregator-radar>>.
24. May, J 2010, Broking focus - SME: Survival of the fittest, Post Online, viewed 10 October 2010, <<http://www.postonline.co.uk/post/analysis/1740767/broking-focus-sme-survival-fittest>>.
25. Post Online 2010, BIS 2010 - News: SME sector set to be next big thing for aggregator sites, Post Online, viewed 10 October 2010, <<http://www.postonline.co.uk/post/news/1736084/bis-2010-news-sme-sector-set-aggregator-sites>>.
26. Jackson, L 2010, BIS 2010: Aggregator hints at SME commercial move, Post Online, viewed 1 October 2010, <<http://www.postonline.co.uk/post/news/1734782/bis-2010-beat-that-quote-hints-sme>>.
27. Hanh, W & Seaman S, The Winner's Curse and Optimal Auction Bidding Strategies, < <http://gbr.pepperdine.edu/092/biddingstrategies.html>>.
28. J.P. Morgan & Deloitte 2009 General Insurance Industry Survey: Direct Underwriters, Reinsurers and Broker
29. J.P. Morgan & Deloitte 2008 General Insurance Industry Survey: Direct Underwriters, Reinsurers and Broker
30. J.P. Morgan & Deloitte 2007 General Insurance Industry Survey: Direct Underwriters, Reinsurers and Broker
31. J.P. Morgan & Deloitte 2006 General Insurance Industry Survey: Direct Underwriters, Reinsurers and Broker
32. J.P. Morgan & Deloitte 2005 General Insurance Industry Survey: Direct Underwriters, Reinsurers and Broker
33. GIRO Working Part, 2009, Winner's Curse: The Unmodelled Impact of Competition
http://www.library.uq.edu.au/training/citation/harvard_6.pdf
35. Simpson, L 1997, 'Tasmania's railway goes private', Australian Financial Review, 13 October, p. 10.
36. Albanese, A 2009, Fairer compensation for air travellers, media release, 29 January, Minister for Infrastructure, Transport, Regional Development and Local Government, viewed 30 January 2009, <http://www.minister.infrastructure.gov.au/aa/releases/2009/January/AA007_2009.htm>.