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Profit Margins in Regulated General Insurance Markets

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Abstract

Some insurance products in Australia are subject to price regulation by a government regulator, especially compulsory (or statutory) classes such as CTP or workers compensation.

In these circumstances there has frequently been debate about an appropriate margin for profit to include in price calculations. Substantial differences of opinion exist, from both a theoretical and a practical perspective.

At the request of the GIPC the working party has examined many aspects of the question of profit margins in regulated markets, with a view to establishing a framework that regulators, insurers and actuaries can use to discuss and compare relevant parameters. The paper does not aim to opine on what is an acceptable profit margin in any particular framework.

In particular, the Myers-Cohn approach has been one of the methods used to determine fair profit margins in a regulatory context for many years. Many actuaries have had difficulty reconciling this approach with the stated targets of insurers and (what one might call) the traditional actuarial approach. This approach is based on the field of financial economics, and relies on the primary assumption that insurance can be priced as a series of stochastic tradeable cashflows.

In this paper we describe elements of micro-economics and financial economics (the genesis of Myers-Cohn). We conclude that there is a framework for estimating the fair price of insurance using principles consistent with microeconomic theory. In the process we explain the limitations of Myers-Cohn and similar financial economics approaches for pricing insurance products.
If broadly accepted by the actuarial profession, the insurance premium regulators and their advisers (such as economists), the working party hopes that the profit margins debate can, in future, focus more on parameters and less on methodology.

Key Words: Profit margin, fair premium, pricing, capital, return, regulated, market, competition, appropriate, reasonable, required, rate of return

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Section 1 – Introduction

1.1 Regulated General Insurance Markets

General Insurance markets involve the distribution and sale of property and casualty insurance products. Some products, most commonly those that are mandated by statute (the compulsory or statutory classes), are subject to regulation by a government agency that may include regulation of prices.

Forms of price regulation vary widely from complete regulatory prescription to loose oversight and advisory prices. Actuaries are frequently involved with the price regulation systems and may, as in the NSW CTP scheme, have a role mandated in the legislation and regulations. Two of the more rigorous regimes for regulating pricing are Queensland CTP (where the government sets a range for prices) and the NSW CTP 'file and write' system.

While an appropriate profit margin is far from the largest component of premiums, it routinely gets an undue share of scrutiny, perhaps because of its discretionary nature or for other emotive reasons.

General insurance products are not the only price regulated goods or services in our economy, with various utilities being the most common example. Private health insurance is another example closer to home for the actuarial profession. The methods of establishing or assessing profit margins in insurance have largely been the domain of actuaries with little other professional interactions.

The focus of this paper is on insurance products (or markets) where government regulators influence prices or profitability. In particular, it examines how one should consider a reasonable profit margin within the context of "fair prices" for compulsory general insurance products.

1.2 Fair Prices

The typical criteria established by an insurance price regulator (if one leaves aside for now political criteria) will include the concept of a "fair" price. While there will be some legislative or other mandate for regulation it is not usually specific about this criterion, but the logical analysis of regulators and advisers routinely ends up back at this place.

A "fair" price is usually described as one that provides a *sufficient*, but not *excessive*, return to the producer, manufacturer, or capital provider. There is a well-known United States Supreme Court judgement (*Hope vs FPC 1944*) which set out the principles for a sufficient return for a regulated entity:

> the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.[1]

This description refers to consistency of returns with other entities "having corresponding risks", and sufficiency to attract capital. This principle encourages an estimate of the risks facing capital supplied by a provider,

and also a model of alternative returns. This paper turns mainly to the field of economics to establish a framework for fair returns on capital.

1.3 Competitive Prices

The concept of fair prices leads directly to that of competitive prices. We define competitive prices as those that would arise in a freely competitive market. According to economic principles, the sustainable price in a freely competitive market is equal to the opportunity cost of all inputs. Many authors, such as Taylor 2004, have defined fair premiums as equal to competitive premiums:

> A fair profit margin will be defined as that which would emerge in a freely competitive market[ii]

In Section 2 we explore the concepts of fair and competitive prices further, and discuss the mechanisms which determine their value. We will show that competitive prices are the lower bound of a range of prices that could be considered fair, in that they are sufficient for incumbent players, but not sufficient to attract new capital (for an industry with sunk costs).

1.4 Competitive Prices in General Insurance Markets

The inputs required for general insurance products (that is economic inputs such a labour, resources or capital) typically comprise:

- Acquisition costs (including commission)
- Claims handling expenses
- Administration and other corporate head office costs (legal, finance, actuarial, information technology, etc.)
- Expected claim payments
- Investment income expected on positive cash flow balances (an offset)
- Allocated financial capital
- Economic capital.

The first five items in the above list are well known to actuaries and are typically included in any pricing estimate of a general insurance portfolio. The last two items are typically not included in a direct fashion within a standard actuarial pricing exercise, although a profit margin is usually included instead. The profit margin for a portfolio is often converted into a return on capital. In section 2 we work through the economic theory, particularly in respect of capital.

Briefly we define 'allocated financial capital' as monetary assets held to support insurance risk. In the Australian insurance context, this would include risk margins on outstanding claims and premium liabilities, capital held to meet regulatory standards, as well as additional capital held to provide a target capital adequacy ratio or to maintain a target credit rating.

We define 'economic capital' as assets held to allow future sales of insurance policies. These assets are typically not monetary, but comprise items such as physical assets, staff and systems, intellectual property and the like.

The conclusion that we reach is that a fair profit margin would provide a return on both the allocated financial capital and the economic capital. In Section 3 we examine in detail these two elements of capital for an insurance company and outline a framework for estimating fair and competitive prices, with a particular focus on the valuation of intangible assets.

1.10 Brief History of Insurance Price Regulation in Australia

Prior to about 1970 there was little government provision of compulsory insurance products, other than the state government insurance offices (GIOs) that competed with private insurers. The private market was, however, largely governed by the 'tariff' which became illegal with the passage of Trade Practices legislation in 1974.

Many state governments did, however, set the price for CTP insurance which they saw as their right and duty having made it compulsory for all motorists.

In the 1950s there were more than 30 private insurers writing CTP insurance in most jurisdictions. As government price control became more pervasive and more aggressive the number dwindled away until, by the mid 1970s, only the GIOs remained. The State monopoly CTP schemes were thus a product of price regulation rather than government decision.

Queensland was an interesting exception. FAI only entered the market in the 1970s and quickly established a profitable niche. Over many years it just 'refused to go' and the then state GIO (now Suncorp) never did inherit a monopoly and various attempts by the government to eject FAI were unsuccessful. In contrast, Queensland was the only state to have a monopoly workers compensation system through its history.

With the CTP schemes, the various state governments were often left to rue their own pricing decisions because they were left with a GIO or CTP insurance fund in deep financial strife.

Workers compensation insurance was not dissimilar although price regulation was typically much looser than for CTP. In NSW in particular the WorkCover scheme was not planned, but was forced into existence when private insurers would no longer stay in the business at premium rates the government would permit.

From about the late 1980s the process of price regulation became gradually more sophisticated. With several of the privately underwritten schemes, WA workers compensation being a good example, regulation was 'soft', allowing a lot of discretion for insurers and aiming mainly to provide an orderly market.

During the 1990s the concept of 'file and write' became the favoured approach in the few cases where private insurers were underwriting in a state-regulated class. The notable exception remains Queensland CTP where the regulator fixes a maximum and minimum price.

Section 2 – Economic Theory of Prices and Capital

This section outlines the economic theory of prices and capital, and explores the concepts of fair and competitive prices. Most of this section is based on 'neo-classical economics', with the contribution of 'financial economics' referred to in Section 4.

2.1 Inputs to Goods and Services

In many markets production is undertaken by companies that use inputs to create goods or services that are then sold to consumers. The inputs for most goods and services are classified into the following broad categories:

- Manufactured supplies (goods and services used in the production process)
- Human labour
- Natural resources
- Economic capital.

Having found that the neo-classical economic theory has much more to say about economic capital than financial capital, and noting that this is unfamiliar ground for many actuaries, this section deals at some length with economic capital and profit thereon. We return to financial capital in section 2.8.

2.2 Opportunity Cost of Inputs

The opportunity cost of using an input is the best alternative use for that input. The concept of opportunity cost assumes the existence of a decision-maker who is faced with choice amongst mutually exclusive options with finite resources. In the case of a company undertaking production, the finite resources could include existing assets and/or cash to buy additional inputs, and the choice includes both combinations of various inputs and alternative products and marketplaces.

For inputs purchased in open market transactions, the opportunity cost is usually measured as the monetary cost incurred, as this represents the amount of forgone consumption. For example, the opportunity cost of using manufactured supplies and human labour is usually straightforward to calculate, as these have a visible price and their monetary cost can be measured.

The most obvious natural resource is land, for which the opportunity cost is the forgone benefit from the best alternative use of that land. Other natural resources, such as clean air and water, are often used by companies without cost (or without direct internal cost). When external costs are incurred by others through the use of natural resources (such as pollution), indirect costs are sometimes brought to bear on the polluter through government penalties, brand damage, or even direct customer boycott. There may be opportunity costs of the use of natural resources even when direct prices or monetary costs are not observable.

Economic capital is the term used to describe any input that largely remains intact to be used again, rather than being consumed in the production

process. It refers to assets held that allow future sales of goods or services. Economic capital is typically considered in the following three categories:

- Physical assets
- Intangible assets
- Inventory.

The opportunity cost of economic capital is the best alternative use for that capital. When economic capital is first purchased or created, there is usually a monetary cost associated with its creation or purchase. In this case, the monetary cost represents the amount of forgone consumption or forgone alternative investment. For existing economic capital, the best alternative use depends on the extent that it can be diverted into alternative productive uses. In Section 2.4 below we discuss the potential for economic capital to be diverted into alternative uses.

When a company generates profit equal to the opportunity cost of economic capital, it is said to be generating "normal profit":

> Normal profit: the amount of profit required to meet the opportunity cost of economic capital

2.3 Market Structure

Micro-economics deals with various market structures based on the number of participants (buyers and sellers) and the degree of competition within the market. Four generally accepted market categories are:

- Monopoly
- Oligopoly
- Monopolistic competition[iii]
- Freely competitive market.

A freely competitive market has many buyers and sellers, with a single (largely undifferentiated) product. Producers in this market are price-takers, and the price will tend towards the average total cost of all inputs, including the opportunity cost of economic capital. Following from the above definition, companies within a freely competitive market will generate "normal profit".

Other market structures will not of themselves lead to an equilibrium that generates "normal profit" and that is one reason for having price regulation. Companies within other market structures have the potential to make "super-normal profits" over an extended period if not adequately regulated.

2.4 Mechanisms that Determine Price in Competitive Markets

A company undertaking production is faced with choices between various combinations of inputs, as well as the choice of whether to continue production or not. Producers in a competitive market are price-takers, meaning they cannot choose the price to sell their goods, but they can decide what quantity of units to produce. A profit-maximising company will use the most efficient combination of inputs available to produce the desired quantity of output.

We now consider the situation in which production of a particular product requires the following three types of economic capital:

- short-term economic capital
- long-term economic capital
- sunk capital.

Short-term capital can be switched quickly and easily to alternative productive uses. There is always an opportunity cost of using short term capital, as it could be diverted to other uses if they were more attractive. Long term capital is fixed in the short term, but can be switched to alternative uses in the long term.

Sunk capital refers to assets required by producers within a market but which have no alternative productive use. The opportunity cost of sunk capital is measured differently by a new entrant into a market compared with an existing producer.

A new entrant will need to compare the full cost of replicating all economic capital (including sunk costs) required to compete in the market against all other alternative uses for the capital. The new player will need to assess the time period over which the sunk costs can be recovered, which will have a significant impact on whether the venture is worthwhile.

Sunk costs are considered by new entrants to a market as part of their initial investment decision. But for incumbent players who have already invested in sunk capital, there is no alternative use for this capital, and therefore no opportunity cost.

2.4.1 Higher Than Normal Profit

If price in an industry is higher than the average cost of all inputs, including the replacement value of all economic capital (short term, long term and sunk capital), then producers will make super-normal profits. New entrants will be attracted to the industry. Over time, the new entrants will increase total output to such an extent that price will reduce, until the industry is no longer attractive to new entrants.

For incumbent players, their production decision may not include the cost of sunk capital, as there is no opportunity cost of using sunk capital. If price is greater than the average cost of all inputs excluding sunk capital, then producers may increase output to such an extent that price may reduce.

2.4.2 Lower Than Normal Profit

If price is lower than the opportunity cost of all inputs, but including only short-term economic capital, then companies will divert short-term capital into alternative uses, and their long-term capital and sunk capital will be under-utilised. Companies will reduce output through the re-allocation of short-term capital until price increases to cover the average cost including short-term economic capital.

If price is lower than the opportunity cost of all inputs, but including only short term and long term economic capital, then companies will make long term

decisions to divert long-term capital into alternative uses. Companies will eventually reduce output through the re-allocation of long-term capital until price increases to cover the average cost including both short-term and long-term economic capital.

2.4.3 Sustainable Competitive Price

The above discussion describes the mechanisms through which output and price are adjusted so that the sustainable price in a competitive market will equal the opportunity cost of all inputs. This includes normal profit on both short-term and long-term economic capital but not including any sunk capital as this has no opportunity cost for incumbent players.

The extent of sunk costs depends on whether there are alternative uses for the same assets, often through close substitutes for the product which would use the same assets in production, i.e. whether the assets can be switched to alternative means of production where there are higher (expected) returns. In practice, there will be considerable uncertainty about the value to place on specialised intangible assets (see Section 3.4).

2.5 Return on Economic Capital

The return on economic capital of a business refers to the profit derived by that business, divided by the total economic capital used by the business.

> Return on Economic Capital: Profit of an enterprise divided by the total economic capital of an enterprise.

The expected level of return on economic capital for an individual company is affected by the market structure of the industry or industries in which it operates. Companies within a freely competitive market generate normal profit, which by definition means the return on economic capital is equal to the opportunity cost of that capital.

2.6 Sufficient Return on Economic capital

Part of the definition of a sufficient price described in the US Supreme Court decision *Hope vs FPC* mentioned in Section 1.2 is that it "attracts capital". We find this definition to be higher than the sustainable price that would arise in a freely competitive market, to the extent that sunk costs exist for incumbent companies. The presence of sunk costs allows incumbent players to compete at a lower price than that at which new entrants would be attracted. This is because incumbent players will ignore the cost of sunk capital (as it has no opportunity cost to them), while new entrants will include the cost of sunk capital in their decision-making.

We define a "sufficient" return as the minimum return that is acceptable to a company, and this would arise in a freely competitive market. We therefore define a sufficient return as one which meets the opportunity cost of capital.

Based on the three types of economic capital identified earlier, we further define three levels of sufficient return:

- short term sufficient return is equal to the opportunity cost of short term economic capital only
- long term sufficient return is equal to the opportunity cost of both short-term and long-term capital
- sufficient return to attract new capital is equal to the opportunity cost of the replacement value of (short-term, long-term and sunk) economic capital.

2.7 Excessive Return on Economic Capital

Our definition of a fair price is one that is sufficient but not excessive. We have defined the sufficient price, and we now turn our attention to the excessive price.

In capitalist economies there is no upper limit to the potential profit of a company. However the super-normal profits of a monopolist are usually viewed by consumers and government regulators as excessive.

We define an excessive price as one that is higher than that needed to attract new capital into a freely competitive market. This means that the sufficient return to attract new capital is also the maximum return above which additional return is considered excessive.

2.8 Financial Capital

Economic capital does not specifically include cash or equity ownership (often referred to as "financial capital"). In neo-classical economics, financial capital is regarded as easily acquired and transferred (it's "just money"). However we now spend some time discussing the return to equity ownership (commonly referred to as "return on capital") and the relationship between the return on financial capital and the return on economic capital.

It is important to distinguish between the return on economic capital for an entity versus the return to its equity owners. To clarify, we define:

> Total Shareholder Return: Total return to an equity shareholder (including changes in market value) divided by the market price of the equity.

Most companies have equity shares that are tradeable, whether on a formal exchange, clearing house or in the private capital market. This trading of *financial* capital is itself a form of market, and will have its own market structure and degree of competition. In the case of a large stock exchange in a modern economy, the degree of competition is usually quite high.

The market for financial capital assets traded on a stock exchange is usually thought to be competitive, in the general sense that the expected returns on assets with corresponding risks will be similar. This occurs despite the underlying companies having quite different rates of return on economic capital depending on their respective market structures. For example the total shareholder return for a company operating within a monopoly would be comparable to the total shareholder return for a company operating within a competitive market (adjusted for different risk), despite the return on economic capital of the entity being substantially different.

Another way of expressing this is that the expected total shareholder return is based on the market price of the equity in the company, which is distinct from (and often fundamentally different from) the return to the company itself from its production activities.

There are a number of models that hypothesise a competitive capital market, the most well-known being the Capital Asset Pricing Model (CAPM). Others include the Inter-temporal Capital Asset Pricing Model ("ICAPM") and the Fama-French 3-factor ("FF3F") model[iv]. These models are all fundamentally consistent in that they postulate a relationship between total shareholder return and risk (or volatility).

These models hypothesise a mechanism that adjusts the various (different) rates of return on economic capital experienced by companies with the same risk (but operating in different market structures) to result in consistent rates of total shareholder return within a competitive capital market. The mechanism identified to achieve this is through changes in the market price of the financial capital assets.

The fundamental prediction of these models is that companies experiencing higher rates of return on economic capital of the entity will have correspondingly higher market prices, and companies with lower rates of return on economic capital will have lower market prices. As a consequence, the expected total shareholder return is independent of the expected return on economic capital of the entity, due to the price mechanism of the financial capital market.

For the purpose of this paper, the fundamentals of the capital market models are actually quite unhelpful, being based around market price of equities as the metric that establishes equilibrium. The circularity of this argument with the expected profit of the company itself means that a different approach is needed to evaluate product profit margins.

2.9 Opportunity Cost of Capital

Total shareholder return can be separated into a risk-free component (which reflects the time value of money) and a level of compensation for the amount of risk (defined according to each of the asset pricing models).

For an investor considering the purchase of economic capital (eg. considering establishing a new company in a market), the best alternative use of their cash would be investment in the capital market. Therefore the opportunity cost of investing in economic capital (short-term, long-term and sunk capital) is determined based on total shareholder returns in the financial capital market.

For existing companies, economic capital that can be re-allocated to alternative productive uses can often also be sold. If sold, this would allow direct investment of the proceeds in the financial capital market, and so the opportunity cost of any economic capital that can be sold is also determined by total shareholder returns in the financial capital market.

Sunk capital cannot be sold or re-allocated to any alternative use, and so has no opportunity cost.

Section 3 – Inputs to General Insurance Products

In Section 2 we expressed price in a competitive market as the net opportunity cost of all inputs, and showed that the opportunity cost of economic capital can be observed from the total shareholder returns available in the financial capital market. This section applies the economic framework to general insurance companies and products. It considers the inputs to general insurance products, particularly economic capital, and describes a framework for quantifying their value.

3.1 General Insurance Products

These products indemnify property owners and individuals against losses that arise in connection with fortuitous events that have a negative financial impact. Common examples of insured risks covered by general insurance policies include damage to motor vehicles, homes, business premises, damage caused to others by motor vehicles, injuries to people that occur in the workplace or due to products or services provided by the insured.

General insurance policies are typically made between the insurer and the insured and are not transferrable. More complex policies occur in the form of reinsurance arrangements between direct insurers and reinsurers.

Insurance provides an intangible product in the form of a promise to pay in line with policy terms, provided that the incident occurred during the period of the policy. In certain cases the insurance claim may not be paid out or finalised for many years which makes it very important that the insurer endures. Consequently, the general insurance sector is heavily regulated, largely to protect the purchasers of insurance, the vast majority of whom are individuals and small businesses, and third party claimants.

3.2 Inputs to General Insurance Products

The inputs required for many general insurance products include:

- Acquisition expense (commission and internal sales costs)
- Claims handling expense
- Administration and company management expense
- Claim payments
- Investment income on positive cash flow balances (an offset)
- Allocated Financial Capital
- Economic Capital.

It is common for actuaries to estimate the amount of expenses required to manufacture an insurance policy, based on an allocation of actual or planned expenses by product, and it is common for actuaries to estimate the expected claim payments arising from an insurance policy. The investment income on assets held to provide for claims is accounted for by expressing future cash flows as a net present value.

It is also relatively common for actuaries to estimate the amount of financial capital allocated to support a portfolio or cohort of insurance policies already sold, or projected to be sold. In the Australian insurance context, this would include risk margins on outstanding claims and premium liabilities, capital

held to meet regulatory standards, as well as additional capital held to provide a target capital adequacy ratio or to maintain a target credit rating.

The opportunity cost of holding allocated financial capital can be determined by reference to shareholder returns in the financial capital market. However it is important to note that allocated financial capital is usually invested and can be expected to earn an investment return. That investment return contributes part of the opportunity cost, with the profits on insurance products needing to contribute the remainder.

It is not very common for actuaries to estimate the amount of economic capital required to sell a portfolio of insurance policies. Economic capital is typically categorised into the following three categories:

- Physical assets
- Intangible assets
- Inventory.

Physical assets can include plant, equipment, and buildings, are relatively easy to evaluate for insurance, and in fact are usually wrapped up in expenses by way of rent, lease payments, self-charged rent and depreciation.

In the next sub-sections we describe the possible approaches to dealing with intangible assets and inventory.

3.2 Intangible assets

An intangible asset in an economic context is an identifiable non-monetary asset without physical substance. Intangible assets have value because they allow a business to sell more product, sell product at a higher price and/or manufacture and distribute product at a lower price.

The development of these assets typically occur over time, and require some investment from the company (i.e tying up of assets that could have been used for other purposes, and therefore have an opportunity cost). For example, to build a brand a business may have advertised significantly over time and invested in building processes that improve quality and customer service. It would have foregone profits in the past in order to achieve this.

Alternatively, some intangible assets tend to depreciate over time if the legal or competitive barriers that cause them to exist in the first place diminish over time (e.g. patents expire, knowledge is more widely disseminated, or competition produces processes that supersede the value of the asset).

They can be categorised into either "legal intangibles" (which includes copyrights, patents and trademarks) or "competitive intangibles" (which reflects processes and knowledge that cannot be legally owned but that nevertheless lead to more productive outcomes). Examples of more familiar intangible assets include:

- Brand (a legal intangible) – may potentially allow a business to sell more product at a higher price than it could without this asset. From

the consumer's perspective, brand can provide greater satisfaction or assurance of quality

- Customer relationships (a competitive intangible) – the relationship with existing customers allows a business to sell more product at a lower cost than it could without this asset
- Distribution relationships (a competitive intangible) – the relationship with existing distributors allows a business to sell more product at a lower cost than it could without this asset
- Workforce (a competitive intangible) – a process to ensure a suitably qualified and experienced workforce allows a company to function more effectively than it would without this asset in place
- IT system (a competitive intangible) – allows a business to operate more effectively thereby potentially increasing sales and reducing costs than it could without this asset
- Research and Development (this can be either a legal intangible or a competitive intangible) – allows a business to operate more efficiently or effectively. For example in an insurance context this could allow better methods of injury management or vehicle repair methods.

If a business does not have a relevant intangible asset in place it would need to purchase relevant services or provide a substitute to maintain the same level of volume and/or profitability. For example, a business without a well-recognised brand would need to expend more on marketing, a business without distribution relationships would need to pay higher commissions or invest management time to build relationships, and a business without an effective IT system would need to utilise a third party solution.

3.3 Accounting Approach for Intangible Assets

We find the accounting approaches for intangible assets to be particularly unhelpful for the objectives of this paper. This arises because the accounting is based on historical cost and dominated by book entries arising from acquisition transactions. Nevertheless it is important to discuss the topic in order to demonstrate the point.

Accounting standards have particular approaches to recognising intangibles. AASB 138 defines an asset as a resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. The accounting standard defines an intangible asset as "an identifiable non-monetary asset without physical substance".

The value of any asset, whether tangible or intangible, is ultimately determined by the cashflows it can generate. For many assets a more immediate and reliable indication of value is market price. However, market prices are rarely available for intangibles because they are not typically traded and by their nature extremely difficult to separate from the underlying business.

In the absence of market indications of price, the accounting framework turns to considering the value of an intangible asset in terms of the additional cashflows that it brings to a business, that is, its "value in use". For example, a business with a well-recognised brand should be able to sell more of its product at a lower cost of sales and potentially a higher price than a business without a recognised brand.

In the accounting framework, intangible assets are usually only recognised when a business is acquired. At other times intangible assets are not recognised on the balance sheet, aside from specific assets like IT architecture where the development or purchase costs are capitalised and amortised. This is understandable because of the absence of any ability to make a reliable measurement of "value in use".

When a business is acquired accounting standards require that intangible assets be valued and included on the balance sheet of the entity post-acquisition, provided they meet certain criteria. An important part of this accounting is to 'make the numbers add up' in an historical cost framework. Accounting standards require the apportionment of the entire purchase price amongst tangible and intangible assets.

It is not relevant to go into more detail here on the specifics of the accounting approaches and the impairment testing. Suffice to say that the outcomes would generally be unsuitable for estimating the value of intangible assets for input to pricing.

3.4 Valuation of intangible assets

Valuation approaches that can be used for intangible assets, imperfect as they are, include:

- Market approach – use comparable transactions for similar assets.
- Cost approach – being historical cost of developing the asset
- Replacement approach – being the cost to replace the asset today
- Income approach – measure the marginal free cashflows arising from the particular intangible asset.

The market approach is usually not practical because there are no available comparables for intangible assets. Intangible assets such as brands, customer relationships and distribution relationships are rarely traded. When they are, the terms of the sale are usually confidential and the bespoke nature of these assets defies comparability.

We have seen premiums above net tangible assets paid for businesses that have some inbuilt intangible assets. One example of a public sale in the insurance context is Calliden, which sold its 50% stake in Claims Services Australia Pty Ltd for $10m, an $8.3m profit above its book value of $1.7m in 2011.

The cost approach is often not relevant because the historical cost may not reflect the future value now expected to be generated by the asset. The replacement approach can be more suitable, provided the nature of the intangible asset can be adequately defined. It becomes more relevant when considering the circumstances of new entrants.

The fourth method (income approach) is theoretically the most relevant. There are professionals that undertake valuations of this kind, more so as impairment testing of intangibles for accounting purposes increases in importance, with broad techniques such as:

- Relief from royalty (for valuing brand only)
- Incremental revenue
- Multi-period excess earnings.

3.5 Discussion of intangible assets for general insurers

Intangible assets can range from being very clear and separable to being unclear, difficult to identify and difficult to separate from the underlying business. In the section below we set out examples of intangibles that arise through the insurance value chain.

Distribution

- Brand
- Method of reaching policy holders to make them purchase insurance from your company
- Formal and informal relationships with distributors and affinity groups
- Scale for defraying marketing costs over a greater number of policies
- Scale for systems

Underwriting:

- Underwriting "skill" – body of procedures, processes, corporate experience and qualified staff that allows an insurer to make better underwriting decisions than a new entrant
- Scale benefits – data, experience

Claims Management:

- Knowledge on how best to provide services to customers to indemnify the loss at the least cost
- Approaches that minimise claims leakage
- Know-how to detect and deter fraud
- Scale for ensuring a better cost outcome through procurement benefits with suppliers
- Scale for systems

Financial Systems / Regulatory Compliance knowhow:

- The authorisation to undertake insurance business (the APRA licence)
- Processes, reputations, and history that are important in dealing with various regulators

Other

- IT systems – policy management, claims management, customer analytics & management
- Workforce
- Policy & procedures.

These intangibles can be competed away over time if a competitor comes up with a better way of doing things.

3.6 Inventory

In the context of microeconomics, inventory refers to a stock of goods or materials held by a business for future sale. A large inventory allows a company to make a large volume of sales.

The sale of a new insurance policy will often result in "new business strain", meaning the sale of the policy will lead to an increase in the amount of allocated financial capital, and a reduction in excess capital. Insurance companies experiencing significant business growth are often constrained by their amount of excess capital.

The inventory of an insurance company is commonly referred to as "excess capital", and is defined as any financial capital not included within allocated financial capital. An insurer holding excess capital is able to grow their volume of sales, and once the sales are made the excess capital is transferred to allocated financial capital.

In our view inventory is not a significant part of the business model for general insurance. One might think of inventory as available amounts of 'surplus capital' that can be used to write more business, but that is not important to this paper and not considered further.

Section 4 – Products and Securities, and approaches used to calculate insurance premiums or profit margins

4.1 Products and Securities

In the vast majority of cases the buyer of an insurance policy purchases it for risk protection in order to indemnify themselves against financial loss from fortuitous events. Certain insurance products are required by legislation. Insurance policies are generally not tradeable on secondary markets, except in a small number of cases.

We define:

> "Product" – a product is an item which can be sold once, with any attempt by the purchaser to then re-sell the same item expected to result in destruction of value.
>
> "Asset" – an item which can be sold multiple times, and at the point of sale the purchaser may have a reasonable expectation that they could re-sell the same item for a price that delivers the buyer an appropriate financial return on their ownership of the asset.
>
> "Hybrid" – an item which incorporates components of both a product and an asset. An example of this is a share bought through a stockbroker, where the stockbroker offers separate buy and sell prices. The price "spread" reflects the market-making service (product) offered by the stockbroker.

There are two alternative frameworks describing how insurance could be viewed when determining its fair price:

1. Insurance as a Security – which treats insurance as a security, or "asset" where the risk profiles/cashflows which result can be freely bought and sold in a deep, liquid and efficient market, with no (or relatively small) transaction and frictional costs. The amount of insurance which can be purchased is assumed not to be limited in any way, so the supply of insurance is unconstrained. In this paradigm, the price of insurance is equal to the cost of insurance.

2. Insurance as a Product – which treats insurance as a product that is produced by firms and sold to consumers within a competitive market. This assumes that there are processes involved in producing insurance which can only be taken on by a firm. In this paradigm, the price of insurance is equal to the opportunity cost of inputs to insurance including all relevant capital.

A fair premium is often defined as that which would emerge in a freely competitive market (Taylor 2004). The question is: Which market and does this make any difference to the fair premium?

4.2 Securities market paradigm and Myers-Cohn method

One framework used in estimating fair premiums for insurance is known as the Myers-Cohn (MC) method. In essence, it is based on the "Insurance as a Security" paradigm. The MC method has been used extensively in the US.

Myers and Cohn first presented their approach to the Massachusetts automobile rate hearings in 1982[v]. Under the MC method, the fair premium for a cohort of insurance policies expected to be written during a defined period is calculated using the formula:

Premium = {Present value of claim payments
+ Present value of expenses
+ Present value of taxes on underwriting profit and on investment earnings on assets backing technical provisions
+ Present value of taxes on investment earnings on assets backing capital allocated to the cohort of policies}

The discount rates used in calculating the present values are determined based on the characteristics of the cashflows concerned, and so differ between the components of the total fair premium. Consistent with financial economics principles, each component of the fair premium is estimated as the swap value of the contingent payments of that type arising under the cohort of insurance policies. The swap values are estimated treating the contingent payments as if they were tradeable in a deep and liquid market.

The MC method treats insurance as a security. A consumer purchases insurance from a capital provider in exchange for the provider agreeing to pay the stochastic claim payments arising from the insurance contract. The price of insurance is a function of the risk inherent in the claim and other payments and the cost of that risk. In this context, risk has its financial economic meaning of unhedgeable volatility of aggregate cashflows resulting from the cohort of insurance policies. It does not mean risk of an adverse fortuitous event from the (typically risk averse) perspective of an individual policyholder.

The Capital Asset Pricing Model (CAPM) is often used in applying the MC method. However, it should be noted that application of the MC method does not require use of the CAPM (or of a multi-period extension of the CAPM). If the CAPM (or muti-period extension of it) is used, the discount rate applied in calculating the present value of claim payments is derived using the familiar CAPM formula:

$\{R_f + \beta * (R_m - R_f\}$, where:
R_f is the risk-free return;
R_m is the expected average return on stock market equities (which, in applying CAPM, is commonly used as a proxy for the rate of growth in value of the economy), and
β is the correlation between claim payments and average stock market returns.

Thus, if the CAPM is used, and if claim payments are expected to be:

- Uncorrelated with average stock market returns, claim payments are discounted at the risk-free rate;
- Negatively correlated with average stock market returns, claim payments are discounted at a rate less than risk-free, resulting in a higher fair premium. There are classes of insurance for which it appears reasonable to expect negative correlation with average stock market returns, eg credit insurance, directors and officers, professional indemnity, or
- Positively correlated with average stock market returns, claim payments are discounted at a rate more than risk-free, resulting in a lower fair premium.

4.3 No explicit allowance for capital or profit margin in MC method

It can be seen from the MC method formula in Section 4.2 above that, subject to the point referred to below, the MC method does not allow explicitly for either:

- Capital supporting the cohort of insurance policies, or
- A target profit margin for the insurer.

Rather, implicitly the MC method allows for return on capital for the insurer's shareholders to consist only of:

- Investment return on the assets in which capital is invested, plus
- Compensation for double taxation of returns to shareholders which arises when investing in a company.

(It is not strictly correct to state that the MC method does not allow explicitly for capital. An assumed allocation of capital to the cohort of policies is needed to estimate the present value of taxes on investment earnings on that allocated capital, which is the last component of the formula in section 4.2).

Although the MC method does not allow explicitly for a target profit margin for the insurer, this does not mean that it necessarily implies a nil profit margin included in fair premiums. Rather:

- If there were no correlation of claim payments or expenses with general economic growth, no double taxation and no other frictional costs, the MC method would imply a nil profit margin for fair premiums. The fair premium would consist only of {Present value of claim payments + Present value of expenses};
- Allowing for double taxation but not for any other frictional costs, as per the formula in section 4.2, the fair premium would include a profit margin just sufficient to compensate the insurer's shareholders for double taxation, and
- Estimates of fair premium derived using the MC method can be adjusted to include an addition to the profit margin sufficient to compensate the insurer's shareholders for both double taxation and other frictional costs.

In the "insurance as a security" paradigm, the fair price of insurance is equivalent to the cost of insurance. The rationale is that the fair price is one where the insurance contract represents a transaction between policyholder

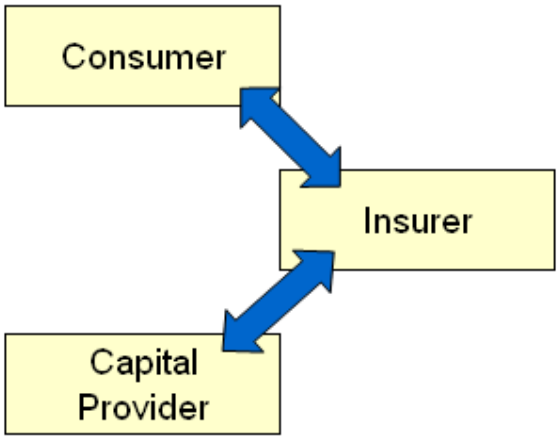
and shareholder with zero Net Present Value to either party (see Johnston (2004), Taylor (2004)). Applying this rationale, price should be equivalent to (risk-adjusted) input costs, with no allowance for additional profit. This implies that the cashflows associated with a cohort of insurance contacts are readily replicable and tradeable without the need for a firm, with perfect information and with zero (or relatively small) transaction costs, other than the acquisition, policy administration and claims management costs for the cohort of policies which are allowed for in the MC method formula.

Thus the absence of explicit allowance for a profit margin in the MC method formula in Section 4.2 is not an omission. Rather, it is a consequence of the "insurance as a security" paradigm that the risk-adjusted values of an insurance company's revenue and expenses in respect of a cohort of insurance policies are equal.

4.4 Product market paradigm

An alternative framework is to view insurance as a good or service manufactured within a "product" market. In this framework insurance is not an asset that can be traded freely, but rather it is a product made by a firm and sold to consumers. The relationships are more complicated and can be represented by the following diagram:

Figure 1 – Relationships in a Product Market



In this framework, the price of insurance is a function of the interaction of insurance companies and consumers within the insurance market. Furthermore, but in a separate market, the supply of insurance is affected by the interaction between providers of capital and insurers. In this paradigm it is recognised explicitly that capital providers provide initial capital to the insurance company.

A consumer purchases insurance from an insurer in exchange for the insurer agreeing to fund the stochastic claim payments arising from the insurance. The price of insurance is a function of the risks that are faced by the insurer, one of which is underwriting risk. There are many other general business risks faced by an insurer, such as sales volume, expense control and operational risks, which are only allowed for implicitly, rather than explicitly, in the securities framework. Arguably there is a service provided in packaging all

these risks to be managed through a firm – which may require some additional explicit recompense for the insurance market to be sustainable.

The insurance company is necessary for the provision of insurance products. This applies for both business reasons and regulatory reasons. Capital providers cannot offer retail insurance products directly to end customers. An insurance company requires substantial upfront investment. This includes property, staff, training, branding, policies and procedures, risk management, product intellectual property and pricing rate structure design, distribution network, branding, etc.

Within product markets (as opposed to security markets), companies that produce goods or services require economic capital (such as intangible assets) as one of the inputs to the manufacturing process. This economic capital has an opportunity cost (defined as "normal profit" in Section 2.2). The ultimate retail price in a competitive product market is equal to the opportunity cost of all inputs, which includes normal profit on economic capital.

We call this framework the "product" paradigm. This paradigm views insurance as a product that is produced by insurers operating as business entities. In this paradigm, financial economics alone is not a sufficient framework to determine the fair price of an insurance contract.

4.5 Internal Rate of Return (IRR) method

The IRR method is used in many industries, typically in the "product" paradigm. In the general insurance field, it can be used to estimate fair premiums for a cohort of insurance policies expected to be written during a defined period.

Under the IRR method projected cashflows between the insurer and its shareholders attributable to the cohort of policies are analysed. The IRR is the rate of return at which these cashflows have a nil discounted net present value.

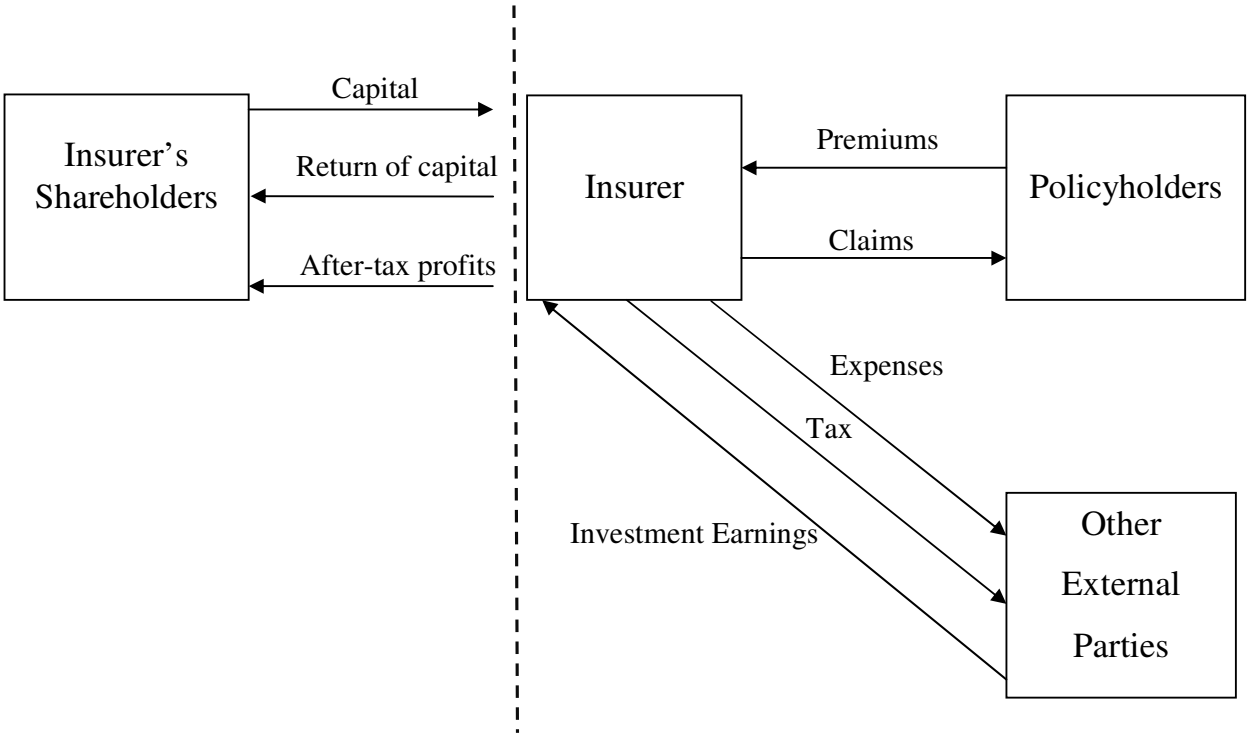
For a specified target IRR for shareholders, the target profit margin included in premiums which will produce that IRR can be derived by modelling all of the projected cashflows attributable to the cohort of policies, as explained in section 4.6 below. Alternatively, for a given target profit margin, the resulting projected IRR for shareholders can be derived.

4.6 Projected cashflows modelled by the MC and IRR methods

In analysing a cohort of policies, both methods consider projected cashflows attributable to that cohort of policies from policy inception until all claims arising under those policies have been paid.

The MC and IRR methods are illustrated by the following diagram, which has been copied and adapted from Taylor (1994)[vi].

Figure 2 – Myers-Cohn and IRR Methods



Under the MC method present values of the cashflows between insurer, policyholders and external parties (excluding the insurer's shareholders), ie all cashflows shown to the right of the dotted line in Figure 2, are estimated for the cohort of policies.

The IRR method analyses those cashflows, but also the cashflows between the insurer and its shareholders shown to the left of the dotted line in the diagram. The IRR is the rate of return at which the cashflows between the insurer and its shareholders have a nil discounted net present value. However, the cashflows from the insurer back to its shareholders attributable to the cohort of policies, ie return of capital plus after-tax profits, depend on the cashflows between insurer, policyholders and external parties. Thus all of the cashflows illustrated in Figure 2 are modelled explicitly under the IRR method.

4.7 Conditions under which the MC and IRR methods will produce the same estimates of fair premiums

Taylor (1994) described the conditions under which the MC and IRR methods will produce the same estimates of fair premiums. These conditions include:

- IRR for the insurer's shareholders being that implied by the asset pricing model used, given the insurer's adopted investment policy;
- Capital subscribed by the insurer's shareholders does not include any intangibles, and can be invested wholly in income-producing assets. (The methods can be adapted to allow for intangibles by assigning them a presumed "market" value and also adjusting the overall asset beta assumed for the insurer to allow for intangibles not producing

investment income. However, the adaptations are not straightforward);

- Provisions for outstanding claims liabilities are calculated as discounted present values using a discount rate(s) consistent with the asset pricing model;
- Any risk margins included in provisions for unexpired risk or outstanding claims are treated as part of the insurer's capital, but with explicit allowance for tax deductibility of risk margins;
- Rates of investment return and tax remain constant throughout the period from inception of the cohort of policies to payment of all claims arising under those policies, and
- The insurer's ratio of capital to insurance liabilities also remains constant throughout that period.

If these conditions are not all satisfied, the MC and IRR methods will not produce identical estimates of fair premiums.

4.8 Consideration in context of objective of regulation of insurance premiums

Section 1.2 explains that a typical objective (whether stated explicitly or not) of price regulation is to set prices which are sufficient to maintain the supply of capital necessary for the market concerned, but not materially more than sufficient.

In this context, the IRR method may appear more intuitively appealing than the MC method. The IRR method models explicitly cashflows from and to shareholders and resulting rate of return to shareholders for the cohort of policies. Thus it facilitates consideration of whether premiums and resulting rate of return for shareholders appear likely to meet the typical objective of price regulation referred to above.

4.9 Reconciliation of MC, IRR and microeconomics methods

4.9.1 Myers-Cohn method

Section 4.3 explains that the MC method does not allow explicitly for capital, and implicitly allows for return on capital for the insurer's shareholders to consist only of investment returns from the assets in which capital is invested. It follows that this implicit allowance is made only for tangible assets which can be invested in securities. As explained in Section 4.7, the method can be adapted to allow for inclusion of intangible assets in capital, but the adaptation is not straightforward.

Therefore, any additional return required to meet the net opportunity cost of capital in excess of the investment return from the assets in which that capital is invested is not allowed within the MC method.

4.8.2 IRR method

Under the IRR method, the amount of capital supporting a cohort of policies is typically assumed to include only allocated financial capital. Thus the sufficient return would not include the opportunity cost of economic capital. However, as the amount of capital supporting a cohort of policies is modelled explicitly, the method could be modified to include an allowance for the

amount of economic capital (intangible assets) determined to be appropriate.

Section 5 – Alternative Actuarial Approaches

5.1 Institute of Actuaries (United Kingdom)

Although there is very little regulation of insurance prices in the United Kingdom, the level of profit margins in insurance prices has still been of considerable interest to the actuarial profession. A (UK) Institute of Actuaries Working Party published a paper in 2006 which considered the issues of the required amount of capital for an insurer, the required target return on that capital, and how performance should be assessed in the light of those requirements.

The Working Party found that three different approaches to risk appetite were needed:

- regulatory capital plus a buffer;
- rating agency views; and
- shareholders' views.

The key findings of the UK Working Party included:

- The IRR method using a traditional CAPM model may underestimate the cost of capital for general insurers – noting that CAPM is a high level view, intended to be applied across the whole spectrum of industries
- The probability of default should influence the price of insurance, and therefore the target return for investors
- Target risk-based returns vary with line of business – this is not a reward for statistical variability, but rather is a consequence of frictional costs
- Frictional costs (especially double taxation) are very important to insurers. Considering these, the return which the insurance business has to provide over the whole insurance cycle is surprisingly high if insurers are not to destroy value.

5.2 Casualty Actuarial Society (United States of America)

In the United States there is a considerable history of regulation of insurance pricing or profitability across much of the country. Prior to the 1970s insurance filings typically included a "traditional" 5% profit loading (and ignored investment returns)[vii]. In the New Jersey Remand Case of 1972[viii], Clifford set a target operating return from underwriting and investment income of 3.5% on capital (assuming capital at 100% of premium).

In 1975 the Massachusetts Workers Compensation decision by James M Stone[ix] used a similar approach of combining the underwriting result with investment income, but used new models from financial economics (eg. CAPM) to set the target rate of return on capital. These pricing models were based on a single-period financial year return, rather than a prospective cohort approach.

In 1982 Myers and Cohn introduced their multi-period discounted cash flow approach (discussed in detail in Section 4.2). This was the first prospective cohort model, and has been widely used in the decades since its introduction.

At a similar time, the Internal Rate of Return (IRR) method was developed and used by the New York Compensation Board and the National Council on Compensation Insurance (NCCI). This method involves setting a target rate of return on capital using the CAPM or similar, and then setting the premium such that the internal rate of return for a cohort of policies is equal to the benchmark return.

Both the Myers-Cohn and IRR method have been used extensively in insurance regulation since their introduction, but debate about their validity has remained. The Casualty Actuarial Society funded the Risk Premium Project to determine discount rates for claims and expenses that appropriately allow for risk.

The Risk Premium Project published between 2000 and 2011, and has produced the following findings:

- There is ongoing consolidation between financial and actuarial literature with regard to pricing of insurance contracts. Both fields acknowledge the role of systematic and non-systematic risk in the pricing of insurance contracts
- The price of insurance should be a function of the (1) expected cash flow with adjustments (via the discount rate) for systematic risk, (2) production costs (i.e. expenses), (3) default risk, and (4) frictional capital costs
- The single beta CAPM cannot adequately price financial contracts
- Default risk is recognised in pricing risk transfer to the policyholder
- Practitioners are increasingly using market consistent valuation techniques, for example in the context of regulation and public disclosure.

The Risk Premium Project has also pointed the way to possible future research, for example:

- Further research into models for the cost of capital – they pose the question: how should we allow for liquidity risk, credit risk, operational risk, or behavioural aspects such as time varying risk aversion
- Possible empirical research into various capital allocation methods.

Section 6 – Other Regulated Industries in Australia

In industries where there are significant barriers to entry, such as energy and water, price regulation is intended to prevent producers from exercising market power to obtain excessive profits. Price regulation in Australia falls under state jurisdiction, and so tends to differ by state. Prices are generally set so that retailers are able to recover their costs, and earn a profit margin that is reasonable for the given level of risk.

6.1 Energy

Energy prices are regulated in most states of Australia. In Victoria, price regulation does not occur as there is deemed to be sufficient competition. However, in other states, where there may be as few as one provider (such as Tasmania), price regulation is seen as necessary to prevent monopolies from exploiting their monopolistic positions. NSW performs the deepest analysis in an appropriate profit margin.

IPART (NSW's price regulator) aim to set maximum retail energy prices as the sum of the cost of providing the service (purchasing electricity, complying with green schemes, dealing with customers, etc.) plus an acceptable retail margin. They engage an external group, Strategic Finance Group (SFG), to determine what the acceptable retail margin should be. SFG uses three approaches to estimate a reasonable margin. Quoting directly from SFG's May 2010 report[x]:

"The expected returns approach provides estimates of expected cash flows that an electricity retailer will earn, and determines a retail margin that ensures these expected cash flows compensate investors for the systematic risk of those cash flows. Under this approach, the value of the business and the required cash flows are estimated simultaneously in a way that ensures consistency with the estimate of systematic risk.

A benchmarking analysis is performed with reference to the reported margins of the broader class of listed retailers and retail segment data of energy utilities where this is available.

The bottom-up approach relies upon an assumed investment base and cost estimates, and provides estimates of earnings and revenue which allow the retailer to earn an expected return equal to its estimated cost of capital. This is analogous to the price-setting approach used in the regulation of network businesses, but with an assumption about the value of intangible assets for the retailer."

In summary, the cost of capital approach to determining retail margin aims at an expected return equal to the cost of capital.

The capital base is determined by considering acquisitions of energy companies in Australia to determine "multiples". These multiples are applied to determine the appropriate asset base. The overall aim is to include intangible assets in the asset base. In determining the WACC, it is assumed that companies are financed by 30% debt and 70% equity. It is assumed that (CAPM) beta is 1. Cost of debt is assumed to be the risk free rate (5.5%) plus a debt margin (2.5%).

Other states in Australia typically rely on benchmarking their retail margins against IPART. For example, Tasmania's regulator, OTTER, benchmarks their decision against NSW's decision before making an adjustment based on Tasmania's specific circumstances.

South Australia's regulator (ESCOSA) also performs a bottom-up analysis by performing an analysis of a retailer's asset base. A rate of return is applied to that asset base while allowing for depreciation and amortisation to estimate EBITDA.

6.2 Water

Full and independent regulation in water only occurs in three jurisdictions: Victoria, New South Wales and Australian Capital Territory.

In NSW, IPART makes an allowance for return on assets in determining an appropriate water price. An appropriate WACC is determined by:

"1. Estimating the possible range for the WACC, by calculating values for each of the parameters that influence the cost of debt and the cost of equity in the regulated business.

2. Making a judgement on the appropriate point estimate for the regulated business' WACC within this range. "[xi]

In Victoria, an appropriate WACC is determined using a CAPM approach. A beta is determined by estimating the amount of non-diversifiable risk experienced by water businesses. This in conjunction with a risk-free rate, market risk premium, debt premium and financing ratio is used to determine an appropriate margin.[xii]

6.3 Gas

Retail gas prices are not as highly regulated as in other industries. Retail gas prices are not regulated in Queenland, Victoria, Tasmania, Australian Capital Territory or the Northern Territory. Western Australia, New South Wales and South Australia regulate gas prices.

IPART in NSW performs a similar analysis as they do in the electricity industry.[xiii] WA benchmarks their decision against other states gas decisions. They note that the margin they set is consistent with electricity margins.[xiv]

The South Australian regulator ESCOSA sets default prices for the host retailer by considering the costs that a prudent retailer would incur in delivering the services.

Section 7 – Regulatory Perspective

There are a number of practical considerations that a regulator needs to address in the context of setting an appropriate profit margin (and implicitly an appropriate return on capital) for a compulsory insurance product. These include the following which are discussed in turn in the next few subsections:

- The definition of capital included for the purposes of calculating an allowable return on that capital
- Ensuring that the process of setting the allowable range encourages the "right" behaviours, or alternatively does not promote behaviours inconsistent with scheme objectives
- The degree of supervision and the required competencies for the regulator
- Achieving an appropriate balance between technically soundness, commerciality and consistency
- Use of entity specific or industry average input cost.

7.1 Definition of capital

We have discussed in section 2 of this paper how a regulator should consider all components of capital and therefore it is intuitive for a regulator to standardise a definition of capital over which an appropriate return can be made if insurers are going to continue to translate the required return on capital into a pricing profit margin.

The inconsistency between various measures of capital generally boils down to the treatment of intangibles including brand, a major component of the "franchise value" as referred to in "Economic Profit Margins in Compulsory Third Party Premiums, Motor Accidents Authority of NSW (2004)". This paper defines "franchise value" as the difference between the market price and the net asset value and poses the following considerations for the regulator:

- Does a franchise value exist?;
- If so, whether it derives from the regulated insurance product or from another insurance product offered by the insurer;
- If so, the extent to which the regulator will allow the market to earn a return on the franchise value

We believe that the regulator of a compulsory insurance product should not include any allowance for future profit to be generated on oligopoly value. They should determine a reasonable rate of return on the sum of a defined list of tangible and intangible assets. The minimum and maximum return of an appropriate range would then be based on either excluding or including (respectively) the sunk costs associated with the investment of capital as discussed in sections 2 and 3 above.

There may be some intangible assets that a regulator would consider not eligible to generate profit within the regulated pricing environment.

Consider the brand value imbedded in an insurer's distribution function. One could argue that a compulsory insurance product does not need to utilize any brand value in order to attract customers. However, this argument ignores the fact that in the general insurance market, insurers very rarely

conduct marketing to encourage consumers to purchase insurance that they otherwise would not purchase.

Most marketing activities of general insurers are focused on attracting an insurance-purchaser away from a competitor, rather than encouraging a non-purchaser to take up insurance for the first time. This is a noticeable difference to say for example the life insurance industry, which invests in maintaining a distribution franchise that seeks to persuade people who have limited (or no) life insurance cover to purchase a life insurance product.

Therefore, we can argue that brand and distribution capital are relevant to compulsory products, just as they are for other general insurance products, as long as insurers are competing to attract customers away from competitors, rather than persuading them to purchase a product for the first time.

We may qualify the above justification if insurers in a compulsory market did not wish to compete against each other to attract customers and consequently competition was deemed to be low. Given the price sensitivity of consumers in some compulsory insurance markets, low levels of competition would only occur when expected returns on the product are lower than required (i.e. when they are lower than the minimum sufficient return).

7.2 Encouraging the "right" behaviours

The regulator of a compulsory insurance market should consider the types of behaviours it would like to encourage and the degree of influence achievable through the setting of an appropriate range for profit margins.
First and foremost, the profit margin needs to be high enough to attract enough insurers to balance scale against healthy competition. The profit margin also needs to be reasonable to maintain affordability within the scheme.

However, there are also less clear and more specific types of behaviours that need to be addressed in terms of working towards the overall objectives of the scheme. This can include various methods of "gaming" observed in the scheme.

To give a simple example, let us consider the existence of intentional cross-subsidies within Australian CTP schemes. Pricing regulation generally dictates allowable relativities within the market in an effort to promote affordability and limit underinsurance. This in turn results in a degree of disjointed competition where insurers compete aggressively for good risks (which act to subsidise the poor risks) whilst trying to limit their intake of poor risks (which receive subsidies from good risks). The overall competition of the scheme is obscured by this disjointed competition.

These types of behaviours may not be in line with scheme objectives and hence the regulator should consider what incentives the prescribed regulation is likely to encourage and ensure that it drives the desired outcomes for the scheme.

7.3 Supervision, competency and consistency

The implementation of a standardised approach to the setting of a profit margin for a compulsory scheme necessitates a level of supervision. Note that in this instance we are assuming that each insurer operating within the compulsory insurance scheme sets their own profit margin based on guidance from the regulator regarding the framework by which the margin can be set.

In addition to the general requirements for supervision being time and resources, this type of supervision requires a strong technical competency with a commercial overlay. The regulator is likely to encounter challenges in attracting and retaining resources with a balance of technical capability and commercial acumen as they would compete with corporates and consultancies for this talent, generally recruited into business and management roles. The salary and career progression requirements to attract and retain such resources are likely to be a significant hurdle for the regulator.

More generally, as the cost of such supervision is most likely to be borne by consumers, there is an obligation for the regulator to justify and manage this cost.

To best manage the costs of supervision the regulator should enforce a level of consistency in both the reporting and calculation approach adopted by insurers for the setting of the profit margin. As implied in section 7.1 above, this would include standardising the definition of capital allowable for the purpose of deriving a profit margin.

7.4 Technical soundness vs practical implementation

A significant consideration for the regulator is achieving a sufficient balance between the technical sophistication of the adopted approach and the practicality of its implementation by insurers. The technical sophistication needs to satisfy a proven and industry-accepted methodology.

The practicality required reflects an ability to successfully communicate the approach, achieve buy-in from insurers and make the approach as simplistic, replicable and consistent as possible.

In section 6 above, we discussed a number of industries where price regulation restricts the level of profit margins that can be extracted from the scheme. Implicit in this regulation is a commercial overlay which does not necessarily adopt a sophisticated and well-documented approach to deriving a commercially acceptable outcome, but nonetheless provides an enforceable target for the industry to follow.

Whilst in an insurance context there is likely to be more technical substantiation for the method of deriving an acceptable range for profit margins, the implemented approach cannot completely ignore the commercial environment which supports its existence.

7.5 Use of entity specific or industry average input costs

The discussion in earlier sections of this paper has considered input costs for insurers as costs specific to the entity concerned. However, in a market with competing insurers offering a (largely) undifferentiated insurance product such as CTP, it may not be practical or preferable for a regulator to seek to determine fair premiums for each insurer based on input costs specific to that insurer.

Consider the NSW CTP market as an example. Section 27(8) of the Motor Accidents Compensation Act 1999 specifies that a premium will fully fund a liability if the premium is sufficient to:

- pay all acquisition and policy administration expenses of the insurer concerned;
- pay (allowing for investment income) estimated claims costs and related expenses;
- provide a profit margin which represents an adequate return on capital invested and compensation for the risk taken, and
- provide for such other matters as a prudent insurer should make provision for.

The above wording implies each NSW CTP insurer's premiums should be determined based on estimated expenses and claims costs specific to that insurer's own portfolio. However, in practice insurers' NSW CTP market shares are affected significantly by price relative to other insurers. Different cost structures and portfolio composition result in competitive advantages for some insurers and disadvantages for others. If the regulator were to enforce objectively, rigorously and narrowly the requirement for premiums to be determined based on estimated input costs specific to each insurer's own portfolio, then:

- An insurer with a cost inputs advantage would be obliged to file premiums which allowed fully for that competitive advantage, and hence to offer significantly lower overall premiums than other insurers. This would result in an influx of new business, but no increase in the profit margin despite the lower input costs;
- Conversely, an insurer with a costs input disadvantage would be obliged to file premiums which allowed fully for that competitive disadvantage, and hence to offer significantly higher overall premiums than other insurers. Consequences would be uncompetitive premiums, loss of market share, and possible withdrawal from the market and lessening of future competition.

This issue has not come to a head in these stark terms. In practice, given the inherent uncertainty in assumptions regarding future claims costs in any CTP rate filing, it may be that:

- Insurers with overall cost inputs advantages have tended to adopt relatively conservative / pessimistic rate filing assumptions regarding future expenses and/or claims experience for their own portfolios, and
- Conversely, insurers with overall cost inputs disadvantages have tended to adopt relatively aggressive/optimistic rate filing assumptions

regarding future expenses and/or claims experience for their own portfolios.

Such circumstances can be expected to result in above and below market average profitability for the former and latter insurers respectively.

An alternative approach, which might achieve a similar outcome in a more transparent manner, would be for the governing legislation to provide for each insurer's premiums to be based on market average and/or benchmark expenses, claims costs and capitalisation level. Under such an alternative approach, it would remain the case that insurers with overall cost input advantages or disadvantages could be expected to achieve above and below market average profitability respectively.

There would arguably be an increased incentive for individual insurers to reduce their input costs because by doing so they could retain more of the financial benefit of doing so, as a reduction in a particular insurer's input costs would not be required to be "given" wholly to its policyholders as a reduction in future premiums. This alternative regulatory approach would be crucially dependent on the reliability and objectivity of the market average and/or benchmark parameters.

Endnotes

[i] FPC v. Hope Nat. Gas Co. - 320 U.S. 591 (1944)
[ii] Taylor, Economic profit margins in Compulsory Third Party premiums, 2004
[iii] Monopolistic competition describes a market with many buyers and sellers, where product differentiation allows producers to develop niche markets that may operate like a monopoly for a period of time. High profitability within any one niche will encourage other players to replicate the product, leading to increased competition. Monopolistic competition will lead to varying levels of profitability over time based on continual product differentiation followed by replication by competitors.
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[vii] Richard Derrig, The Development Of Property-Liability Insurance Pricing Models In The United States (1st AFIR International Colloquium, 4/90), 1990
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