An Analysis of the Demand for House and Contents Insurance in Australia

A report for the Insurance Council of Australia

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Non-technical summary

The extent to which households are non-insured is an important issue for the Insurance Council, the insurance industry and policy makers. Earlier in 2007 the Insurance Council published a report[1] that looked closely into the issue of non-insurance in regard to house and contents insurance. The report found that there are a large number of households without insurance and found evidence that non-insurance was correlated with a number of factors including state taxes on insurance.

This study builds on this previous report by using econometric analysis to more closely examine the factors that affect demand for house and contents insurance. The focus of the report is three fold:

- First, it aims to assess the effect of a change in government policies toward state taxes on insurance; and
- Second, it aims to estimate a price elasticity of demand[2] for house and contents insurance;
- Third, it analyses other factors that may influence the demand for insurance

The study provides a significant advance in the understanding of the factors that drive insurance demand. Prior studies on the demand for insurance have largely focussed on non-property insurances and/or have been limited in the importance of price.

The Data and Approach Used

The analysis in this report makes use of the Australian Bureau of Statistics Household Expenditure Survey (HES) for the survey years 2003/04, 1998/99 and 1993/94. The HES surveys record detailed information on household characteristics and household expenditure on a range of items including house and contents insurance.

The HES data is supplemented with information on state based taxes on insurance premiums collected by the Insurance Council. These taxes are used as an effective proxy for the price of insurance and are used to calculate the pre-tax insurance premiums so that inter-state comparisons can be made.

Table S1 provides a summary of the estimate level of non-insurance based on the 2003/04 HES. It is estimated that there were 7.7 million Australian households all of which may potentially purchase contents insurance. Of these almost 2.2 million (or 28%) did not purchase contents insurance. It is estimated that almost 5 million were owner occupied homes not paying body corporate fees and thus potentially buyers of house insurance for their dwelling. Of these, 203 thousand households or 4% were estimated to be without house insurance.

[1] See Tooth and Barker (2007), "The non-insured: Who, why and trends", available at http://www.insurancecouncil.com.au

[2] The price elasticity of demand measures how responsive demand is to a change in the price. As discussed in this report, the elasticity estimated is that of the combined effect of supply and demand.

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Table S1: Levels of non-insurance 2003/04

	Contents	House
Potential market (000s of households)	7,736	4,996
Number uninsured (000s of households)	2,170	203
% uninsured	28%	4%

The rate of non-insurance varies significantly across different population segments. For example those without contents insurance are more likely to be young, renters, living in flats and living in a capital city. The rate of non-insurance in particular is related to tenure – only 10% of households who might purchase house insurance do not have contents insurance.

Overview of modelling results

Analysis was conducted on both contents insurance (which is applicable to all households) and house insurance (which is applicable to only those owner occupiers not in a body corporate). The data is used to analyse both the decision to purchase insurance and the level of expenditure on insurance.

A number of different models were tested. The basic approach involved analysing how demand (measured in terms of households covered or household expenditure on premiums) of insurance (house or contents) related to factors that might influence demand. In addition to state taxes these factors included measures of income and wealth, value of assets to insure, dwelling type (e.g. house or flat), tenure (e.g. own, mortgage, rent) and some demographic (e.g. age, country of birth) and geographical variables.

The results of the modelling were generally statistically significant and consistent with expectations. Of most interest the results indicated that there is a statistically significant and negative relationship between state premium based taxes and the take-up of both contents insurance and house insurance and the level of cover purchased on contents insurance.

The effect of state taxes on non-insurance

A key focus of this study has been to estimate the impact of state taxes on demand. Using the models of insurance demand, forecasts were made of what would occur if the state taxes were removed. It was found that the state taxes are a significant factor leading to non-insurance and that if these were removed there would be a significant increase in the take-up of house and contents insurance and increases in the level of cover for contents insurance.

The results of the modelling are summarised in Table S2 and Table S3 below. It is estimated that state premium based taxes are the cause of around 300 thousand households being without contents insurance and 69 thousand households being without house insurance. Although the effect on the house insurance is less in terms of the number uninsured it is very significant. The projected increase in the take-up of house insurance represents over 1/3 of the estimated number of households that are uninsured.

Table S2: Estimated effect of removing premium based taxes on the take-up of contents insurance

	Households (000s) without contents insurance				
	From 2003/04 survey	Forecast reduction today if			
		FSL were removed		FSL, stamp duties, and IPT were removed	
Jurisdiction	Estimate	Estimate	Std. Error	Estimate	Std. Error
New South Wales	795	98.6	(26.9)	130.6	(37.9)
Victoria	491	83.2	(22.7)	109.5	(31.7)
Queensland	441			24.3	(6.7)
South Australia	137			13.6	(3.8)
Western Australia	210			16.3	(4.6)
Tasmania	47			2.6	(0.7)
A.C.T and N.T.	49			3.0	(0.9)
Total	2,170	182	(49)	300	(86)

Estimates based on difference between forecast take-up of insurance with and without taxes. Refer to Table 13 for additional notes.

Table S3: Estimated effect of removing premium based taxes on the take-up of building insurance

	Households (000s) without building insurance (owner occupiers not in body corporate)				
	From 2003/04 survey	Forecast reduction today if			
		FSL were removed		FSL, stamp duties, and IPT were removed	
Jurisdiction	Estimate	Estimate	Std. Error	Estimate	Std. Error
New South Wales	70	22.8	(11.6)	26.1	(14.3)
Victoria	51	26.4	(13.1)	30.4	(16.0)
Queensland	34			4.8	(2.2)
South Australia	14			3.2	(1.5)
Western Australia	25			3.5	(1.6)
Tasmania	7			0.8	(0.4)
A.C.T and N.T.	3			0.4	(0.2)
Total	203	49	(25)	69	(36)

Estimates based on difference between forecast take-up of insurance with and without taxes. Refer to Table 14 for additional notes.

There is some evidence that a reduction in state taxes will have a larger impact for those in lower income quintiles.[3] This is perhaps not surpising given that lower income households are more likely to uninsured. Also as discussed below there is evidence that the lower income quintiles tend to be more price elastic in regards to the decision whether to take-out contents insurance.

Much of the benefit could be achieved if Victoria and NSW took the approach of other jurisdictions by removing the FSL and used alternative funding arrangements for fire services. Furthermore if the FSL were replaced these states would raise significantly more revenue from insurance stamp duties, particularly on contents insurance, due to the increased demand for insurance without any change to stamp duty rates. Given that more equitable alternatives have been found for funding fire services, it is concerning that NSW and Victoria persist with a policy that leaves many households uninsured.

It is important to note that these results show the total effects of changing state taxes incorporating the effects of alternative funding arrangements for fire services levy and other taxes. It has been argued that because households would (directly or indirectly) need to pay for any alternative funding scheme for the fire services their ability to afford insurance would largely stay unchanged. The results indicate this is not the case. In states were the FSL was removed and replaced with someother funding arrangement, households have chosen to purhcase more insurance. This is not surprising given that insurance premiums represent only 1% (see Table 16 in the Appendix) of average household expenditure and that, as found in this study, demand for insurance is largely unresponsive to changes in income. Any increase in household income is likely to be used across a range of household goods.

Estimates of elasticity

The models are also used to estimate the price elasticity of demand for insurance i.e. the responsiveness of demand in terms of % change in quantity demanded to a % change in price. It is important to note, that the approach used may lead to an underestimate of the price elasticity of demand if, as may be argued, there are increasing costs of industry supply. Since state taxes have been reasonably stable and the households surveys generally taken a few years after the more significant tax changes, these estimates are likely to measure elasticity over a medium term (i.e. a few years).

Price elasticity estimates were constructed from a number of different models for the take-up of and expenditure on contents and house insurance. A summary of the key elasticities is presented in Table S4. In terms of whether insurance is purhcased the elasticity of demand point estimates range from -0.45 to -0.6. The point estimates for the total elasticity of demand for contents insurance are greater in absolute value ranging between -0.74 and -0.94. These results imply that not only are households price sensitive in terms of the decision to purchase a contents insurance policy they also respond to higher prices by reducing their level of premium (by increasing their deductible and/or reducing the sum insured).

As expected, contents insurance appears to significantly more price elastic than house insurance. For those who potentially need house insurance, the point estimates for the price elasticity of demand for house insurance premiums is less elastic than -0.15. Also, there is little evidence that households adjust their house insurance premium in response to state taxes. This is not surprising given that households have little choice as to the extent of rebuilding of a dwelling.

[3] Although, this was a consistent finding across different models, the results varied considerably and the difference between income quintiles was often not statistically significant,

Table S4: Estimated price elasticises of demand for insurance

	Whether insurance is purhcased	For $ premium net of taxes
Contents insurance	-0.45[a] to -0.6[b]	-0.74[b] to -0.94[b]
House insurance	-0.01[4] to -0.13[c]	-0.04[d] to -0.12[d]

For estimates and standard errors refer to: a. Table 7, b. Table 8, c. Table 10 d. Table 11

The price elasticities shown are estimated for a household with the mean set of attributes. The estimated elasticities vary by household type. For example, there is some evidence that the price elasticity of demand for contents insurance is greater for renters. The results by segment for contents insurance are also consistent with those with higher incomes being more likely to reduce their premium by reducing their cover.

The results should be considered in context with price elasticities of other goods. The price elasticity for many broad commodity groups (e.g. beer) tends to be around -0.5.[4] Thus contents insurance tends to be more elastic and house insurance less elastic than other broad commodity groups.

Other demand factors

The modelling was used to analyse other factors of demand. The effect of income has been an area of considerable interest in prior empirical studies. Income affects insurance demand in a number of ways. Those with higher incomes tend to have more assets to insure, greater wealth which may be used in an emergency and greater disposable income with which to purchase insurance. The analysis provides some light on the relative importance of these factors. For contents insurance, income elasticity is found to be positive and statistically significant when assets values are not controlled for (point estimates ranging from 0.12 to 0.42) but much smaller (<0.1) once the value of contents and wealth are included in the models.[5] The results for house insurance are similar but smaller than for contents insurance.

Other demand factors were also analysed particularly in regard to contents insurance. After controlling for factors including the value of assets and income evidence was found that the insurance demand for contents insurance is:

- less for those born in non-Western countries
- slightly related to age (less for age<25 and more for age>55)
- less for those without need for house insurance
- lower for those without access to financial institutions for emergency money

The take-up of insurance was also related to other measures of financial exclusion. Of note, there are a large number of households who have purchased a home insurance policy but report having no other financial asset. A summary of the results is shown in table S5. This suggests that for many, home insurance has an important wealth protection role for otherwise financially excluded households.

[4] See Clements (2006) for a summary of price elasticities for broad commodity groups.
[5] Some care is required in interpreting these results since value of contents and wealth may also be indicators of permanent income.

Table S5: Households (millions) with financial accounts and insurance (2003/04)

Category	Number of households (millions) by whether has house or contents insurance		
	None	Some	Total
All households	1.80	5.93	7.74
With some non-super financial asset*	1.21	4.98	6.19
Without a non-super financial asset	0.59	0.95	1.54
Without super or any other financial asset	0.28	0.26	0.54

* Non-super wealth management financial asset defined as a non-zero asset value in accounts held with financial institutions, shares, debentures and bonds, own incorporated business or other financial investments. This definition does not consider asset values of dwelling contents, children's assets, other property, unincorporated business and vehicles.

Discussion and conclusion

The modelling results provide evidence that state premium based taxes have a significant effect on the take-up of house and contents insurance and the expenditure on contents insurance.

The study is not without limitations. The analysis of the effect of taxes relies on variation between states and over time in tax rates. A potential challenge to the results in regard to taxation is that there are other state based factors that influence the results. If this were the case the models may over or under estimate the effect of the taxes. The estimates of the price elasticity of demand assume in effect that supply is very elastic.

Overall the results are consistent with expectations and robust to different tests. The results support the view that state premium based taxes have a significant negative affect on the take-up of insurance and are directly responsible for many households being without insurance.

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A number of different models were tested. The basic approach involved analysing how demand (measured in terms of households covered or household expenditure on premiums) of insurance (house or contents) related to factors that might influence demand. In addition to state taxes these factors included measures of income and wealth, value of assets to insure, dwelling type (e.g. house or flat), tenure (e.g. own, mortgage, rent) and some demographic (e.g. age, country of birth) and geographical variables.

The results of the modelling were generally statistically significant and consistent with expectations. Of most interest the results indicated that there is a statistically significant and negative relationship between state premium based taxes and the take-up of both contents insurance and house insurance and the level of cover purchased on contents insurance.

The effect of state taxes on non-insurance

A key focus of this study has been to estimate the impact of state taxes on demand. Using the models of insurance demand, forecasts were made of what would occur if the state taxes were removed. It was found that the state taxes are a significant factor leading to non-insurance and that if these were removed there would be a significant increase in the take-up of house and contents insurance and increases in the level of cover for contents insurance.

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Table S2: Estimated effect of removing premium based taxes on the take-up of contents insurance

	Households (000s) without contents insurance				
	From 2003/04 survey	Forecast reduction today if			
		FSL were removed		FSL, stamp duties, and IPT were removed	
Jurisdiction	Estimate	Estimate	Std. Error	Estimate	Std. Error
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Victoria	491	83.2	(22.7)	109.5	(31.7)
Queensland	441			24.3	(6.7)
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Total	2,170	182	(49)	300	(86)

Estimates based on difference between forecast take-up of insurance with and without taxes. Refer to Table 13 for additional notes.

Table S3: Estimated effect of removing premium based taxes on the take-up of building insurance

	Households (000s) without building insurance (owner occupiers not in body corporate)				
	From 2003/04 survey	Forecast reduction today if			
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Jurisdiction	Estimate	Estimate	Std. Error	Estimate	Std. Error
New South Wales	70	22.8	(11.6)	26.1	(14.3)
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Much of the benefit could be achieved if Victoria and NSW took the approach of other jurisdictions by removing the FSL and used alternative funding arrangements for fire services. Furthermore if the FSL were replaced these states would raise significantly more revenue from insurance stamp duties, particularly on contents insurance, due to the increased demand for insurance without any change to stamp duty rates. Given that more equitable alternatives have been found for funding fire services, it is concerning that NSW and Victoria persist with a policy that leaves many households uninsured.

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With some non-super financial asset*	1.21	4.98	6.19
Without a non-super financial asset	0.59	0.95	1.54
Without super or any other financial asset	0.28	0.26	0.54

* Non-super wealth management financial asset defined as a non-zero asset value in accounts held with financial institutions, shares, debentures and bonds, own incorporated business or other financial investments. This definition does not consider asset values of dwelling contents, children's assets, other property, unincorporated business and vehicles.

Discussion and conclusion

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The study is not without limitations. The analysis of the effect of taxes relies on variation between states and over time in tax rates. A potential challenge to the results in regard to taxation is that there are other state based factors that influence the results. If this were the case the models may over or under estimate the effect of the taxes. The estimates of the price elasticity of demand assume in effect that supply is very elastic.

Overall the results are consistent with expectations and robust to different tests. The results support the view that state premium based taxes have a significant negative affect on the take-up of insurance and are directly responsible for many households being without insurance.

1 Introduction

The Insurance Council of Australia is the peak body for general insurance companies. Its mission is to influence, ethically and expertly, the political, social, business and economic environment in order to promote members' roles in providing insurance protection and security to the community.

A key issue for the Insurance Council of Australia (ICA) is the incidence of non-insurance for general insurance products in particular in regards to household insurances (i.e. building and contents insurance). Earlier in 2007 the Insurance Council published a report[6] that looked closely into the issue of non-insurance in regard to house and contents insurance. The report found that there are a large number of households without insurance and found evidence that non-insurance was correlated with a number of factors including state taxes on insurance.

This study builds on this previous report by using econometric analysis to more closely examine the factors that affect demand for house and contents insurance. The focus of the report is three fold:

- First, it aims to assess the effect of a change in government policies toward state taxes on insurance; and
- Second, it aims to estimate a price elasticity of demand[7] for house and contents insurance;
- Third, it analyses other factors that may influence the demand for insurance

This document is a technical document presenting an econometric analysis of data from the Australian Bureau of Statistics (ABS) Household Expenditure Survey (HES) to analyse the demand for insurance and specifically the impact of state taxes on demand.

The document is divided into 5 additional sections. Section 2 provides a background on what is known about the demand for house and contents insurance. Section 3 covers the approach. Section 4 discusses the data and the modelling challenges. Section 5 covers the results of the analysis. Section 6 concludes.

[6] See Tooth and Barker (2007), "The non-insured: Who, why and trends", available at http://www.insurancecouncil.com.au

[7] As discussed in this report, the elasticity estimated is that of the combined effect of supply and demand.

2 Background

This report analyses the demand for house insurance and contents insurance. Contents insurance, as the name suggests, covers the contents of a building typically including unfixed household goods and valuables and personal effects. House insurance (also known as building or home insurance) covers the residential building including fixtures and structural improvements.[8] These insurance policies will provide cover for specified events include fire, theft and storm damage.[9]

Although often purchased combined there are important differences between the two insurances. While contents insurance may be potentially purchased by all households, building insurance is not paid for directly by those who rent or by those pay body corporate fees (as the body corporate will purchase the building insurance on behalf of the members). The two insurance types also differ in terms of the typical level of cover. Building insurance tends to have a higher level of cover (i.e. sum insured) but less frequent claims than contents insurance. For this reason we would expect risk averse consumers to be more concerned with being covered by house insurance.

The demand for insurance takes two forms. Consumers have a choice both whether to purchase insurance and what level of cover to take-out. Consumers can reduce their premium by choosing to accept a higher deductible or a lower sum insured. Whereas we would expect a risk averse consumer to prefer to reduce their premium via a deductible, there are significant concerns by industry participants that many households (particularly in regards to building insurance) are uninsured in terms of the sum insured.[10]

The theory of insurance demand has attracted significant attention among economists. Following Mossin's (1968) seminal paper titled "Aspects of Rational Insurance Purchasing", many researchers have analysed the individual's decision to insure and the extent of cover they purchase. A typical starting point is to assume that individuals are risk averse and maximise their expected utility. From these basic assumptions researchers have modelled how demand varies across a range of dimensions include income and wealth, types of insurance loading and levels of risk aversion.

The theoretical models predict that when full insurance can be bought at actuarially fair prices (i.e. that premium = expected loss), risk averse individuals will fully insure themselves against all risk. Mossin (1968) famously predicted that partial coverage (such as via a deductible) would be optimal if there was a positive proportional loading (as would occur with taxes based on a level of premium). This prediction has gained significant attention given that it is generally thought that most people purchase full coverage. Other researchers have argued that full coverage (having made the decision to insure) may be optimal when there is a fixed premium loading (which might be the case if there were fixed administration costs) or when a portfolio approach to risk is taken. The extent of cover as measured by the level of premium purchased is analysed in this study.

Another area of great interest has been the extent to which insurance demand changes with wealth and income. Mossin's (1968) model also led to the prediction that insurance would be

[8] House and contents policies may also include additional features and a range of optional covers. Common additional features are legal liability for incidents causing harm to other people and their property. Optional covers include domestic workers compensation and injuries to pets. Contents policies for a strata unit will commonly include fixtures not included in the body corporate insurance.
[9] A notable exclusion of most house and contents insurance policies is flood cover.
[10] See ASIC (2005) for a detail discussion of this problem. Much of the problem appears to stem from the difficulty in estimating the cost of rebuilding.

an inferior good i.e. that the rich backed by greater funds would be more likely to self-insure and demand less insurance cover. Wealth and income are however correlated with many other factors related to insurance demand. For example, wealthier people tend to have greater assets at risk and due to their lifestyle face different levels of risk. Wealthier people may also have different attitudes towards risk and a different level of education about risk and insurance. Nevertheless, the relationship between insurance demand and wealth remains an area of great empirical interest and one which is explored in this study.

There have been a growing number of empirical studies into insurance demand. Although most studies have focused on life and health insurance there are a few of note that have incorporated an analysis of property insurance including that of house and contents.

A large study of non-insurance was conducted in the UK (Whlyey et. al 1998). The authors found that around 20% of UK households did not have contents insurance. The study did not attempt to study the effects of price on insurance demand but did examine the extent to which non-insurance was related to demographic factors and in particular income and financial hardship. Of note, they found that about half of the non-insured households had at one stage held insurance but had let the policy lapse due to financial constraints.

Two other studies of note have analysed the relationship of insurance demand and income. Beenstock et al (1988) conducted a panel study across 12 countries and 12 years. They estimated long-run income elasticities of greater than 1; implying property-liability insurance is a superior good. Showers and Shotick (1994) analysed data from the 1987 US Consumer Expenditure Survey to assess the effects of age, income and household characteristics on total insurance expenditure. Of note they found insurance expenditure to be positively related to income, age and size of household and that the marginal importance of income to be greater for small households.

There has been relatively less analysis of the effect of price on insurance demand. This is perhaps because of difficulties in finding a proxy for price. Browne et al. (2000) took the approach of using the market share of foreign insurers in a country as a proxy for price assuming that the presence of foreign firms would indicate a greater level of competition and thus lower prices. They found some support for this as foreign insurer presence was positively and significantly related to general liability insurance demand. The reverse however was also found in the case of motor vehicle insurance demand. A possible explanation is that foreign insurers would stay away from a market due to an existing highly competitive market.

An alternative proxy for price can be found by comparing premiums to claims (or expected claims). Grace, Klein and Kleindorfer (2004) took this approach to estimate a price elasticity of (in absolute terms) for catastrophe[11] and non-catastrophe home insurance expenditure in New York and Florida.[12] They estimated a price elasticity for home owners insurance of around -1 but perhaps surprisingly that the demand for catastrophe insurance to be much more price elastic than non-catastrophe insurance.

Esho et al. (2004) undertook a cross-country analysis of property-casualty insurance (as measured by per capita premiums). Although their focus was on the importance of legal rights they also analysed the effect of factors including price (as proxied by the inverse of the loss ratio). They found evidence for a small negative price elasticity of demand.

There are many correlates with non-insurance. These are described in Tooth and Barker (2007), "The non-insured: Who, Why and Trends". This report categorised the key correlates

[11] Catastrophe insurance refers to major perils such as floods, hurricanes and earthquakes.
[12] The "expenditure" is estimated by the loss costs. The "price" is estimated as the mark-up of premiums over the present value of expected losses.

of take-up of insurance as being related to house type and tenure, financial position, life stage and other demographic factors. It presented findings that were consistent with state taxes having a negative impact on the take-up of insurance but did not attempt to measure the statistical significance of these results.

3 Approach

This study uses data on expenditure by households on house insurance (also known as building insurance) and contents insurance to analyse both the decision to insure and the amount of premium purchased. These measures of demand are analysed against a range of drivers including price (proxied by state insurance taxes), income and wealth, value of assets and demographic variables.

The basic modelling strategy is influenced by a number of factors. Firstly, although the purchase of house and contents insurance is often considered to be a joint decision, as discussed below, many households do not require house insurance (e.g. renters) and so the demand for contents insurance is considered both separately and jointly with that of house insurance. Secondly in many cases the expenditure on house and contents insurance cannot be separated but the insurance products purchased can be inferred. As a result, the analysis of the decision to purchase insurance is examined both separately and jointly with the size of the premium purchased.

The models estimated in this study are based on the following equation:

$$\textit{Insurance demand}_i = \alpha + \beta_1(\textit{Tax}) + \beta_2\,(\textit{Measures of income and wealth}) + \beta_3(\textit{Measures of assets to insure}) + \beta_4(\textit{Dummy household characteristics}) + \beta_5\,(\textit{Year dummy}) + \textit{error term}$$

Four different measures of household insurance demand are used as the dependent variable: two binary choice variables reflecting whether contents and house insurance were purchased; and two expenditure variables reflecting the net (of state based taxes) premium purchased for both house and contents insurance. To model binary choice decisions Probit and bi-variate Probit models were used. To analyse expenditure Tobit models which allow for truncation of the dependent variable were used.

For most models tested, logs of key financial information (value of contents, value of dwelling, net wealth and household income) were used. The use of logs enables easier pooling across survey years and logs are generally more effective as independent variables. Tests were also conducted using level amounts and these tests confirmed there were no significant differences. For the analysis of expenditure on insurance, level financial amounts were used to be consistent with the dependent variable. These were adjusted for inflation to enable pooling across survey years.

Unless otherwise indicated, all analysis in this report makes use of the household weights. The weights enable forecasts for the total population to be made. A few tests were conducted using non-weighted data which confirmed that the use of weighting had little effect on important coefficient estimates.

Using these models, this study focuses on answering a number of questions relating to the sale of house and contents insurance. These include:

- What is the effect of state taxes (and more generally price) on demand for insurance?
  - What is the price elasticity of demand for house and contents insurance in terms of insurance covers sold and in terms of total premium sold?

  - What would occur if state taxes were reduced or removed?
- How does the demand for insurance relate to other factors, including:
  - Income / wealth;
  - Assets to insure;
  - Other cultural and demographic factors; and
  - Levels of financial inclusion?

The approach used may lead to a slight underestimate of the price elasticity of demand. As tax rates (the proxy for price) may also influence supply, the analysis will reflect not just the responsiveness of demand but the combined effect of demand and supply changes to a variation in price. This is unlikely to be a significant cause for concern. In terms of the supply of house and contents insurance it is likely that supply in the medium term is reasonably elastic. It may be that there are some marginally increasing costs e.g. in obtaining reinsurance, but it seems unlikely that these would be significant.[13] Furthermore the focus of this study is to understand the impact of state taxes. As such we are interested in both the *supply* and *demand* effects.

The data for the study is drawn from three survey years of the Australian Bureau of Statistics (ABS) Household Expenditure Survey (HES) and from information collected by the Insurance Council on state premium based taxes. These data sources are described in detail in the next section.

[13] The CIE (2005) also argues that supply is likely to be very elastic.

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4 Data

ABS Household Expenditure Survey (HES)

The data used is the Household Expenditure Survey (HES) from the Australian Bureau of Statistics (ABS). This survey is conducted every 5 years. For this study three surveys years 1993/94, 1998/99, 2003/04 have been analysed. As the 1993/94 survey did not separately identify building and contents insurance, this study focuses on the 1998/99 and 2003/04 survey years.

The HES includes data on expenditure (including importantly on house and contents insurance premiums) and many other useful household, family and individual characteristics. Of note, the most recent survey (2003/04) includes:

- household expenditure on house and contents premiums (in many cases separately identified)[14]
- other expenditure data used to categorise households including body corporate payments
- dwelling characteristics (e.g. number of bedrooms, value of house)
- geographic information (e.g. state and whether household located in capital city)
- demographic information (e.g. family structure, age, country of birth)
- financial information (e.g. income and wealth data).

The HES includes household weights which enable estimates to be made for entire Australian household population.

The HES has changed over time, progressively becoming more useful for this study. Table 1 summarises some key differences between the survey years. Of note in 2003/04 the survey included questions on the value of contents in the dwelling and direct questions on the wealth of the household.

Table 1: Data available by survey year

	1993/94	**1998/99**	**2003/04**
Demographic information	Y	Y	Y
Value of house	Y	Y	Y
Separately distinguishes housing and contents insurance expenditure	-	Y	Y
Value of contents	-	-	Y
Wealth data	-	-	Y
Location (capital city or other)	-	-	Y
Sample size (households)	8,389	6,892	6,957

[14] The HES also includes expenditure on other insurance covers including compulsory and (separately) optional cover for motor vehicles, compulsory and (separately) optional cover for other vehicles, special personal items, travel insurance, life and health.

Tax data

The HES data is compared with information on state and territory taxes on insurance. In Australia, there are three effective "taxes" that are commonly applied to general insurance product sales.[15] These are:

- Fire Service Levy (FSL) – applied to home insurances. The FSL is used to raise funds for fire brigade services (ranging from 0% to 20%);
- The 10% Goods and Services Tax (GST); and
- Stamp duty – which applies to all general insurance products.

These taxes are applied on each other resulting in a compounding effect such that for some households the total premium is 44% higher than would be the case in a non-taxed environment.

In NSW there is an additional "tax" related to premium volumes. The insurance protection tax (IPT) Act 2001 requires that insurers contribute amounts proportionate to their market share. This IPT may add about an additional 1% on home insurance premiums. Although the Act stipulates that insurers "must not charge ... any amount that is directly attributable to that tax" it would be inconsistent with economic theory if the cost was not passed on to consumers.[16]

The rate of FSL and stamp duty varies greatly by state. A summary of the taxes for home insurance and their cumulative effect is reported as at April 2007 in Table 2 below.

Table 2: State taxes on home insurance premiums

Jurisdiction	NSW	NT	ACT	QLD	WA	SA	TAS	VIC Metro	Vic Country
FSL	19%	0%	0%	0%	0%	0%	0%	19%	20%
GST	10%	10%	10%	10%	10%	10%	10%	10%	10%
Stamp Duty	9%	10%	10%	7.5%	10%	11%	8%	10%	10%
IPT	1%								
Cumulative Total	44%	21%	21%	18%	21%	22%	19%	44%	45%

Source: Insurance Council. As at April 2007

The GST was introduced on 1 July 2000 replacing a number of sales taxes. The effect of the GST on insurance premiums is not straight forward. Insurance companies receive input tax credits (ITCs) for the GST they pay on their inputs. In net terms they only pay for the GST for the value add component of the insurance company. To understand the effect of the GST a number of scenarios are worth considering:

a) If the GST were removed on insurance and all the inputs to insurance the insurance premium would fall by (roughly) the 10% (as insurance companies would lose ITCs but also pay less for inputs)

b) If the GST were removed on just insurance then the change in premium would be less. Insurance companies would still pay GST on inputs but lose the value of ITCs and so the insurance premium would fall by a net amount.

[15] Insurance providers, like other companies pay other forms of company related taxes.

[16] The IPT became effective in late 2001 with levies applied on premiums from previous financial year. Non-registered insurers were required to pay a 1% tax on premium as of 29 November 2001.

The effect of the GST on the take-up of insurance is further complicated by considering the consumer's position. A consumer weighing up purchasing insurance vs. self-insuring also needs to worry about the cost of repurchasing the items damaged or lost. If GST were removed as in scenario a) above then the cost of self-insuring is also reduced as there is no longer GST on the replaced goods. Self-insuring is however more attractive under GST as the 'self-insured' will not pay (through higher premiums) GST on all the insurer's non-claim expenses costs (e.g. marketing costs, claims administration). A self-insurer might also choose not to replace lost property but simply maintain expenditure on some items such as GST free items like health, education or food.

The complexity of these arguments is somewhat moot as the GST is applied consistently across jurisdictions. The effect of changing status of GST (and taxes and regulations that have a consistent effect across jurisdictions) will simply be absorbed in models that include year based effects.

As well as variances across jurisdictions there have been changes in tax rates over time. In summary the major changes have been:

- NSW state stamp duty was reduced from 10% to 5% from 1 August 2002 but then later increased from 5% to 9% as of 1 September 2005.
- In Western Australia the FSL which was 19% was phased out over 2003. The FSL was phased out over the year so that the FSL on an annual policy would only apply to the proportion of the period up to 2004. The removal of FSL was partially offset by a small increase in stamp duty from 8% to 10% as at 1st July 2003.[17]
- In South Australia on 1 July 1999, the insurance based levy for fire brigade funding was abolished and replaced with a broad based system.
- In the ACT from 1 July 2000 an emergency services levy (paid by insurance companies based on market share) was abolished.
- In Queensland in 1985 an insurance based levy for funding fire and emergency services was replaced with an urban fire levy scheme.

In addition to these there have been a number of other minor changes to FSL rates and some other changes to stamp duty rates.

Data issues

Estimating taxes

The tax rate is used both as an independent regressor and in the calculation of net premiums paid. As the insurance premium recorded in the HES is post-tax, for analysing a comparable pre-tax insurance premium across states it is necessary to adjust expenditure for the estimated state premium based taxes.[18]

Unfortunately the choice of the appropriate tax rate to use is not straightforward. The data for the HES is collected over a course of a year and the date when the household purchased insurance (or decided not to renew) may be up to a year prior to when the survey was conducted. In some cases, most notably in Western Australia, changes occurred such that the timing of the interview is important to the estimated tax rate. In Western Australia the FSL

[17] The changes and the response of insurance company pricing to the changes are detailed in Sigma Plus Consulting (2004).
[18] As discussed above the GST is constant across jurisdictions and so is not considered in any adjustments.

was removed (falling from 19% to 0%) and the stamp duty increased over a period that overlapped with HES interviews. In these cases the tax was estimated considering the quarter during which the HES survey was conducted and the likelihood of when the policy was purchased.[19]

In Victoria and for South Australia (up until the FSL was removed) the FSL rates differed between country and city. A field identifying the distinction between country and city is available but only for the HES 2003/04 period. In models using prior survey years a weighted average tax rate for country and city was applied.

A summary of taxes (excluding GST) for the survey period is graphed in Figure 1 below. As shown there has been variation in taxes over the survey periods in all jurisdictions with the exception of Queensland and Tasmania.

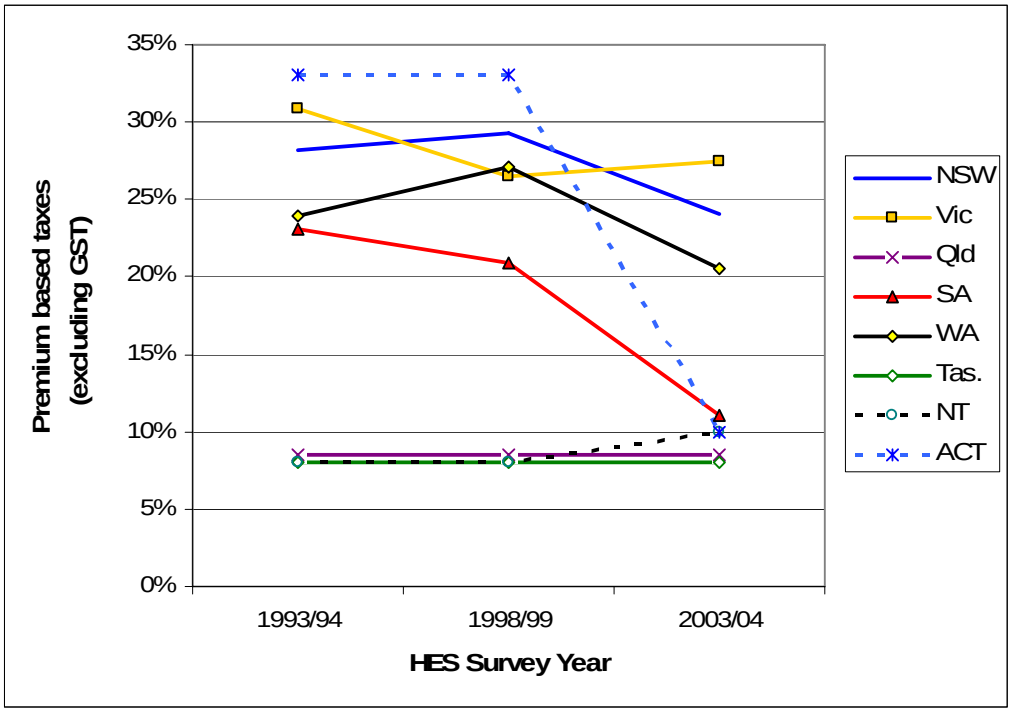

Figure 1: Average premium state based taxes (FSL, Stamp Duty and IPT) estimated by jurisdiction by HES survey year

A further complication in regard to the use of taxes as independent variables is that there may be some lag in the time taken for households to react to changes. This is likely to some degree. The non-insured are unlikely to be aware of most changes in taxes and so may take some time to respond. Insurance has high retention rates and so even for insured households

[19] In Western Australia the FSL was progressively removed over 2003 so that people only paid the FSL for the proportion of the period in 2003 that they were covered. Thus a premium cover from 1 July 2003 would have included 50% of the 2003 FSL (which was 19%). Insurance cover beginning in 2004 or later attracted no FSL. In addition from 1 July 2003 stamp duty was increased from 8% to 10%. The HES interviews were conducted progressively from July 2003 to June 2004. The data records the quarter in which survey interview was conducted. Using this information the % tax paid is estimated using the assumptions that a) any day in the survey period was equally likely; and b) the insurance was purchased at any period with equal likelihood in the 12 month period prior to the interview date. Thus if the interview quarter is July to September 2003 then insurance may have been purchased between July 2002 and September 2003.

to who changes in taxes are most prominent there is likely to be significant momentum and a slow response to changes in tax rates. Since it is not known how long the lag (if at all) may be, the analysis has in effect assumed a lag of zero. There is not a serious issue as in most cases the state taxes were reasonably stable in years prior to the HES interviews and the main variation is between jurisdictions. Thus this study is in effect estimating demand elasticity over a number of years.

Recording of insurance expenditure data

Table 3 shows the estimated number of households with insurance cover by type of tenure.

Table 3: 2003/04 Insurance cover expenditure recorded (# households surveyed) for house insurance (HI) and contents insurance (CI)

	HI and CI					
Tenure type	Comb-ined	Sepa-ated	HI Only	CI Only	None	Total
Owners not in body corporate	3,170	944	292	22	158	4,586
Owners in body corporate	*34*	*25*	*10*	213	74	<400
Renters	*<10*	*<5*	*<5*	632	1,211	1,850
Others	*<30*	*<5*	*<10*	46	82	<180
Total	**3,236**	**<1000**	**<350**	**<920**	**<1,550**	**6,957**

The table highlights a number of apparent anomalies. There are a small number of households who would not appear to need house insurance but have identified some separate expenditure on house insurance. These include those paying body corporate fees, renters and other tenure arrangements. There may be a number of reasons for this, including miscoding of type of insurance expenditure and miscoding of body corporate expenditure.

There are also a number of households who appear to not need house insurance but have a combined house and contents insurance policy. It seems likely that in most cases the expenditure is on contents insurance and it was coded as combined insurance due to a lack of understanding of what is covered by the policy.

There are a reasonable number of owners in a body corporate who also recorded spending on house insurance. This suggests the expenditure on body corporate fees is not a precise guide as to whether a dwelling is covered with building insurance via a body corporate. Similarly there are a number of other tenure types neither owned nor rented which have purchased house insurance. The implication is that some households are excluded in the analysis for house insurance that should be included with the result that the number of households uninsured is underestimated.

The table also shows that there are some owners not part of a body corporate who purchased contents insurance but did not purchase house insurance. This again appears strange. An owner who is risk averse would be expected to seek cover for the higher exposure which we would expect to be related to the building. These may reflect coding errors but could also be cases where the dwelling structure is of little value.

There are a few additional complications that affect the samples that can be used. Firstly, as discussed above there are additional variables available in 2003/04 (most notably value of contents) not available in prior survey years. Secondly, house and contents insurance is listed

as inseparable in many cases (see Table 4 below).[20] In 1993/94 all house and contents insurance was listed as inseparable and in 1998/99 and 2003/04, 53% and 60% of cases were inseparable.

Table 4: HES expenditure data captured on insurance by survey year (number of observations)

	1993/94	1998/99	2003/04
No expenditure recorded	2,225	1,734	1,525
Some expenditure recorded	6,164	5,158	5,432
House insurance	-	1,559	1,283
Contents insurance	-	2,100	1,894
House and contents inseparable	6,164	2,729	3,236
% of insured expenditure inseparable	100%	53%	60%

In cases where expenditure is not listed as separable, it is still typically possible to infer what products were purchased. In 1998/99 and 2004/04 we assume that an inseparable expenditure reflects that people have purchased both house and contents insurance (otherwise it could be separated)[21]. In 1993/94 we can infer that for those who do not need house insurance, the insurance expenditure refers to contents insurance.

The set of observations that can be used varies for the different dependent variable being analysed is summarised in Table 5 below.

Table 5: Categories of expenditure to be analysed

Dependent variable analysed	Sample that can be used
1. Whether purchased contents insurance	Full 98/99 and 03/04 sample For household with no need of house insurance in 93/94
2. Contents insurance expenditure	Full 93/94, 98/99 and 03/04 samples for renters 98/99 and 03/04 samples for cases where insurance expenditure separately identified
3. Whether purchased house insurance	Full 98/99 and 03/04 sample for those who need house insurance Unable to use 93/94 sample
4. House insurance expenditure	98/99 and 03/04 samples for cases where insurance expenditure separately identified for those who need house insurance

[20] There were a few instance of recorded expenditure on both 'contents insurance' and 'house and contents inseparable'. Presumably this may relate to covers being taken out by more than one person.
[21] In some cases households had no need for house insurance (because they did not own a place or they paid money to a body corporate).

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5 Results

Overview

In 2003/04 there were around 7.74 million households in Australia of which around 1.8m had not purchased home or contents insurance. A summary of the level of cover is shown in Table 6 below. Of note there are 1.8m households without any form of insurance cover.

Table 6: 2003/04 Insurance cover (# households)

Household's (millions with insurance)		Purchased house insurance		
		No	Yes	**Total**
Purchased contents insurance	No	1.80	0.37	**2.17**
	Yes	0.99	4.57	**5.57**
	Total	**2.80**	**4.94**	**7.74**

Table 15 in the Appendix shows descriptive statistics for the key independent variables in the survey year 2003/04. As can be seen from this table the take-up of insurance is significantly correlated with many housing and demographic variables including housing tenure, dwelling type, age and country of birth. There is also some reasonable variation across states and between city and non-city areas.

Table 16 in the Appendix shows the descriptive statistics for proportion of households and the average expenditure of households by type of insurance. Over the three survey periods real household incomes and dwelling values have all increased notably. The real average weekly expenditure on house and contents insurance has also increased such that the ratio of expenditure on house and contents insurance to household income has been reasonably stable, at around 1% for a combined house and contents policy.

Contents insurance

To analyse the decision to purchase contents insurance a Probit model was used on the full population of households for 2003/04 and for 1998/99 survey years. Table 17 shows the estimation results for pooled data (1998/99 and 2003/04) in column 1 and for the 2003/04 survey year in column 2. Most coefficients are statistically significant with signs as expected. The results presented are shown as the marginal effects on the probability of taking out insurance. The key implied elasticities (taken at mean values of the independent values) are summarised in Table 7 below.

As expected there is a statistically significant negative relationship between state taxes and the probability of taking up insurance. There is little difference between the estimates of both specifications. The coefficient estimates implies that a 10% reduction in price will increase the probability of a household purchasing contents insurance by around 0.04. The implied price elasticities, shown in Table 7 are around -0.45 (taken at the mean values).

The models allow us also to estimate the importance of income.[22] Although, in both specifications the take-up of contents insurance is positively correlated with household

[22] Expenditure is more stable than household income and thus, as is commonly argued, a better predictor of lifetime income than is current income. Tests were conducted using expenditure on other goods and services as an independent variable.

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income, it much less significant in the specification that includes the value of contents. The implied income elasticity of demand for contents insurance in terms of whether purchased from Part 1 of Table 17 is 0.13. When value of contents is controlled for the implied income elasticity reduces to 0.04.[23]

Table 7: Implied elasticities from Probit model on take-up on contents insurance premium

	Pooled (1998/99 and 2003/04)	2003/04
Tax (price)	-0.452***	-0.454**
	(0.096)	(0.144)
Income	0.126***	0.039**
	(0.010)	(0.014)

Elasticities calculated at sample means. Robust standard errors are in parentheses.
***, ** and * indicate significance at the 1%, 5% and 10% levels.

Not surprisingly, the decision to purchase insurance is highly correlated with the estimated value of household contents. This variable was only available for 2003/04 and as can be seen by comparing the two specifications its inclusion has a significant impact on many of the estimated coefficients of other independent variables.

Although the take-up of insurance is strongly correlated with age, age is much less significant once other factors, in particular value of contents, are controlled for. The probability of take-up of insurance is only noticeably lower for the very young (age <25) and noticeably higher for the very old.

Country of birth appears to be important determinant of the take-up of contents insurance. The results suggest that even after controlling for other demographic factors, the probability of taking out insurance will drop by 0.10 for those born in non-English speaking countries. One explanation is that this may reflect the difficulty that people for people whose first language is not English of understanding policies. As discussed below the same is not found for house insurance.

The coefficients on dummies relating to house tenure are also significant. Consistent with the descriptive findings presented in Table 15 those with a mortgage are directionally more likely to have contents insurance than those who own their dwelling outright. Those who do not own are less likely to have contents insurance. This appears to be partially explained by the value of assets being insured. Another finding of interest is that among renters those in public housing are even less likely to be insured.

Previous descriptive statistics had suggested that people outside of capital cities were more likely to take out insurance. There is still some evidence for this although the effect seems to be lessened by controlling for other factors notably country of birth.

A number of additional specifications were tested to analyse the effect of other potential correlates with the take-up of insurance. Additional dummy variables were tested by inclusion into the pooled Probit model discussed above. Recall that this model already includes controls for household income, dwelling type and tenure. A summary of the results is presented in Table 8 below. The results provide evidence that non-insurance is related to financial

[23] If we were to control for family demographic factors (age, country of birth and household size) the implied income elasticity is .2 (taken at mean values).

exclusion. Of note the results suggest that households are more likely to be insured if they answered yes to "Would use own savings as source of emergency money". Those who can obtain emergency money from a financial institution either via a loan or temporary increase in credit card debt are also more likely to be insured. There are also other indications of non-insurance being linked to financial hardship. Of concern is that those who stated they "could raise $2000 emergency money in a week" are also more likely to be insured (i.e. those unable to raise $2000 are less likely to be insured). Perhaps not surprisingly those unemployed and those who had money shortages were more likely to be non-insured.

A number of other non-financial indicators were also tested. No significant relationship was found between non-insurance and gambling (a number of alternative specifications were tested). Also, no significant relationship was found with measures of security (being in a multi-storey apartment and having spent money on security services).

Table 8: Summary results of test of dummy variables on take-up on contents insurance

Variable tested	Coefficient	Standard error
Source of emergency money		
Could use own savings	0.127***	(0.010)
Loan from a bank etc	0.031***	(0.006)
High interest loan from a finance company	0.030***	(0.007)
Loan on credit card	0.020***	(0.003)
Would sell something	0.005*	(0.002)
Loan from family or friends	0.000	(0.002)
Loan from welfare or community organisation	0.011	(0.009)
Use some other source	0.001	(0.003)
Could raise $2000 emergency money in a week	0.172***	(0.015)
Could not pay registration/insurance on time due to money shortages	-0.161***	(0.023)
Unemployed	-0.100**	(0.036)
Spent more than 5% of Household income on gambling	-0.005	(0.027)
Purchased security services	0.053	(0.115)
Flat is part of multi-storey (3 or more levels)	0.066	(0.038)
Potential to buy house insurance	0.424***	(0.028)

Coefficients show the marginal increase in probability of purchasing contents insurance.
Robust standard errors shown.
Estimates taken from results where variable is added to the pooled Probit model in Table 17.
***, ** and * indicate significance at the 1%, 5% and 10% levels.

Expenditure on contents insurance

We also might expect households to reduce their level of premium in response to higher tax rates. They might rationally do so by increasing their level of deductible or reducing their total sum insured (in effect making the decision not to fully replace all items in case of loss).

The analysis of contents insurance expenditure is limited to those who had separately identified their level of contents insurance expenditure and thus excludes those who recorded an inseparable house and contents insurance expenditure. This group is not a random sample as it includes a disproportionately large number of renters[24] and even within home owners may likely reflect differences in buying behaviour.

To model expenditure on insurance Tobit and Heckman selection models were considered. A Tobit model was considered most appropriate as there are no factors that we would expect to affect the decision to insure that would not also affect the level of insurance to be undertaken.[25]

The results of the Tobit model on contents insurance expenditure are shown in Table 19 and a summary of the key implied elasticises shown in Table 9. The results are consistent with the Probit analysis above with an estimated elasticity for the take-up of contents insurance of around -0.5. The results support the view that households also adjust their cover so as to reduce their premium. A comparison with the Probit models conducted on the full population suggests that a reasonable estimate is likely to be closest to that from the pooled model. On this basis the price elasticity of demand for contents insurance premium is around -0.75.

An analysis was also conducted on the sub-population of households who have no need for house insurance (for this group the 1993/94 survey was also available). The implied elasticities are shown in the lower half of Table 9. This population appears to be more price elastic with estimated total price elasticities of demand ranging between -1.1 and -1.6.

Table 9 also shows implied income elasticities of demand. These are noticeably smaller for 2003/04 specification as this includes controls for value of contents. The results imply that an income elasticity of demand of around 0.4 (including controls for dwelling type and tenure) and <0.2 once the value of contents are controlled for.

[24] The level of contents insurance expenditure is known for all renters, but only for about 25% of owners.

[25] One challenge with analysing expenditure on insurance is that in effect there is a minimum level of premium that people can purchase. Although one household reported spend as little as $.06 per week on contents insurance this is likely to be due to a part-year policy. In practice it is difficult to obtain a cover for less than $1/week (even net of taxes). It is possible that not correcting for this minimum would bias the results. A number of tests were conducted at different minimum levels. Results presented use a cut-off of a $1/week (real values as at 2003/04).

Table 9: Implied elasticities from Tobit model on expenditure on contents insurance premium

	Implied elasticity for take-up of contents insurance		Implied elasticity for net premium of contents insurance	
	Pooled	2003/04	Pooled	2003/04
Full population				
Tax (price)	-0.468*	-0.599*	-0.735*	-0.942*
	(0.196)	(0.301)	(0.308)	(0.474)
Income	0.265***	0.116**	0.416***	0.183**
	(0.023)	(0.045)	(0.036)	(0.070)
Without potential for house insurance				
Tax (price)	-0.808**	-1.112*	-1.095**	-1.580*
	(0.265)	(0.489)	(0.362)	(0.696)
Income	0.303***	0.055	0.411***	0.078
	(0.038)	(0.079)	(0.054)	(0.112)

Pooled is 1998/99 and 2003/04 for the full population and 1993/94, 1998/99, and 2003/04 for the households without need for house insurance.
Elasticities calculated at sample means. Standard errors are in parentheses.
***, ** and * indicate significance at the 1%, 5% and 10% levels.

Key findings: Analysis of contents insurance

The results of the analysis imply that as expected households are sensitive to price signals. The demand elasticity for the take-up of contents insurance is estimated to be around -0.5. This is consistent with estimated demand elasticities for other broad product categories.

There is also evidence that household respond to higher taxes by reducing their premiums (either by reducing their level of cover or increasing their deductibles). The price elasticity of demand for expenditure on insurance is estimated to around -0.75 but greater in magnitude for those without need for house insurance.

The results also shed light on the income elasticity of demand. Income is closely related to the level of assets to insure. When the value of contents is controlled for, the income elasticity of demand is estimated to be low (<0.2) and not statistically significant in some models.

Other demand factors were also analysed. After controlling for factors including the value of assets and income evidence was found that the insurance demand is:

- less for those born in non-Western countries
- slightly related to age (less for age<25 and more for age>55)
- less for those without need for house insurance
- lower for those without access to financial institutions

House insurance

For the analysis of house insurance the applicable sample is reduced to only those households that are owner occupied and not part of a body corporate. Since contents insurance is also applicable in these cases, the decision to purchase house and contents insurances is considered jointly.

The descriptive statistics shown in Table 15 in the appendix provide initial evidence that demand for house insurance is less elastic. For those who need house insurance, the take-up of contents cover is materially lower (proportion insured is 0.90 for contents vs. 0.96 for house) than for house.

Table 18 shows the results of a bi-variate Probit model on house and contents insurance. The table shows the marginal effects taken at mean values on the decision to purchase house insurance and separately the decision to purchase contents insurance. As expected the results demonstrate that the decision to purchase house and contents insurance is very closely related. The correlation coefficient (*rho*)[26] is large and significantly greater than 0. This indicates there are unobserved factors that influence both the decision to purchase contents and house insurance. The unobserved factors most likely include attitudes to risk. This finding may also reflect that there is a search cost to purchasing insurance and so households are more likely to purchase contents insurance once house insurance is also purchased.

The implied elasticities for income and price for house and contents insurance from this model (taken at mean values) are also shown in Table 10 below. There are a number of results of interest. First as evidenced by the difference in the elasticities for contents insurance in Table 7 and Table 10 it appears that in general demand for insurance is less elastic among those who need house insurance than for the general population.

Second, among those who need house insurance, the demand for house insurance appears to be much less elastic than that for contents insurance. From Table 10 the implied elasticity for house insurance coverage (i.e. whether insurance purchased) is around -0.13 (and lower for using just the 2003/04 data) close to a third of the comparable price elasticity for contents insurance. This is expected as there is a higher potential loss associated with household insurance and thus household insurance may be considered more of a necessity.

Finally, the implied income elasticity for the take-up of house insurance is very small and might be considered negligible. For the take-up of house insurance, the implied income elasticity from the pooled model is 0.014 and from the 2003/04 model is not significantly different from zero (in an economic or statistical sense). The 2003/04 result is more likely to reflect the true income elasticity. Although both models include a control for dwelling value, the 2003/04 model also includes the value of contents variable which may when combined with dwelling value may better control for sum insured.[27]

[26] The correlation coefficient (*rho)* measures the correlation in the error terms of the equations for house and contents insurance.

[27] The appropriate sum insured will reflect rebuilding costs which will not match dwelling value as this also incorporates land values.

Table 10: Implied elasticities from model on house insurance for those who need house insurance

	1998/99 and 2003/04 pooled		Just 2003/04	
	House insurance	**Contents insurance**	**House insurance**	**Contents insurance**
Tax (Price)	-0.127***	-0.365***	-0.062	-0.163
	(0.035)	(0.066)	(0.036)	(0.068)
Income	0.014***	0.044***	0.005	0.024
	(0.004)	(0.005)	(0.003)	(0.006)

Elasticities calculated at sample means. Standard errors are in parentheses.
***, ** and * indicate significance at the 1%, 5% and 10% levels.

In regard to other independent variables there are some interesting findings. Those owners living in a "semi" (i.e. a building with shared walls) are less likely to take out a house insurance policy. Consistent with the descriptive statistics, mortgage holders are more likely to take out house insurance. This may be because they believe they have to (as a condition of the mortgage) or because they feel more exposed. As with contents insurance the results indicate that age is important to a slight degree with those aged over 55 being more likely to have house insurance. Not surprisingly, those households with higher dwelling value are also more likely to be insured.

One notable difference between the results on contents and house insurance equations is in regards to "country of birth". Whereas those households where the reference person is born in a non-English language country are much less likely to take out a contents insurance cover this appears to be of no relevance to the likelihood of taking out a house insurance policy. Furthermore among those who have purchased house insurance, the take up of contents insurance is much lower (0.84 vs. 0.94) when the household reference person is born in a non-English language country. This would suggest that the reason for "country of birth" being important may not just be a problem of language.

Expenditure on house insurance

The analysis on expenditure on house insurance was conducted similarly to contents insurance above. Although households are unlikely to knowingly underinsure to reduce the insurance premium (as the householder has limited choice over the degree of repair), it may be rational to reduce the level of deductible. As with the analysis of contents insurance expenditure, the analysis of house insurance expenditure is limited to those who had separately identified their level of house insurance expenditure and excludes those who recorded an inseparable house and contents insurance expenditure.

The results of the Tobit model are shown in Table 20. Although the results are directionally consistent with the contents insurance model, estimated coefficients on many variables including state taxes are not statistically significant. A summary of the key implied elasticities is shown in Table 11. The estimated coefficient on the implied demand elasticity for household insurance premium is smaller than -0.15 and not statistically significantly different from 0. These results are consistent with the hypothesis that households are not likely to lessen their household insurance coverage to reduce their insurance premium. The implied income elasticity of demand for household insurance premium is slightly positive but this most likely reflects that household income is in part a proxy for the level of cover (remember that the dwelling value includes land value and does not reflect rebuilding costs).

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Table 11: Elasticities derived from Tobit model on expenditure on house insurance premium

	Implied elasticity for take-up of house insurance		Implied elasticity for $ premium of house insurance	
	Pooled	**2003/04**	**Pooled**	**2003/04**
Tax	-0.005	-0.010	-0.039	-0.115
	(0.150)	(0.333)	(0.164)	(0.478)
Household income	0.053***	0.117***	0.031*	0.091*
	(0.013)	(0.023)	(0.013)	(0.037)
Dwelling value	0.098***	0.218***	0.075***	0.220***
	(0.010)	(0.047)	(0.015)	(0.042)

Elasticities calculated at sample means. Robust standard errors are in parentheses.
***, ** and * indicate significance at the 1%, 5% and 10% levels.

Key findings: Analysis of house insurance

The demand for house insurance differs markedly to that of contents insurance. The potential loss from damage to a house is typically much greater than that of contents. In addition there is little practical choice as to the level of replacement and thus the level of cover. It is thus not surprising that we observe a higher take-up for house than contents insurance among those who need house insurance and that we observe a lower price elasticity of demand both in terms of take-up covers and in the amount of premium for house insurance.

Although less elastic, the analysis provides evidence that households are sensitive to price changes and thus high taxes on insurance will lead to households being uninsured. The estimated price elasticity of demand for the take-up of house insurance is estimated to be around -0.13. Once the value of assets is controlled for, there is little evidence that demand for household insurance is income elastic.

Other demand factors were also analysed. Unlike contents insurance, few other factors appear to be statistically significant. The likelihood of taking out house insurance increases with the value of the assets (as estimated by dwelling value and value of contents). There is also some evidence that those with mortgages are more likely to take-out house insurance cover. Interestingly where as those born in non-English language countries are less likely to take out contents insurance cover there is no evidence this is the case with house insurance.

Insurance and financial exclusion

Another area of interest is the extent to which non-insurance is related to other measures of financial exclusion. It is possible that for many taking out insurance is a first step towards the use of other wealth accumulation and protection products. Without some longitudinal data that shows changes in behaviour at a household level over time, it is difficult to test causality. Regardless some useful analysis can be undertaken using the HES as it records the value of financial assets and liabilities by type of asset.

Table 12 summarises the take-up of different financial wealth management products for the 2003/04 survey period. The table indicates that there are 1.54m households in 2003/04 without some form of financial asset outside of super. Of these 0.95m where recorded as having purchased either house or contents insurance. Of the 0.54m who also did not record having superannuation assets 0.26m recorded having house or contents insurance. These results are consistent with the view that for many house and contents insurance is purchased prior to investment in wealth management financial products. It is thus possible that insurance is a stepping stone to other financial products.

Table 12: Households (millions) with financial accounts and insurance (2003/04)

	Number of households (millions) by whether has house or contents insurance		
Category	None	Some	Total
All households	1.80	5.93	7.74
With some non-super financial asset*	1.21	4.98	6.19
Without a non-super financial asset	0.59	0.95	1.54
Without super or any other financial asset	0.28	0.26	0.54

* Non-super wealth management financial asset defined as a non-zero asset value in accounts held with financial institutions, shares, debentures and bonds, own incorporated business or other financial investments. This definition does not consider asset values of dwelling contents, children's assets, other property, unincorporated business and vehicles.

Key findings: Insurance and financial exclusion

There are a large number of households who are financially excluded in that they have no financial assets or that their only financial asset is a superannuation product.

Many of these financially excluded households still hold a home insurance policy. This suggests that for many insurance has an important role in wealth protection for otherwise financially excluded households.

More on the effects of taxes

The effect of taxes, being of significant interest was the subject of further analysis. This section explores in more depth the analysis of taxes, including a discussion of some of the challenges to the analysis, an assessment of the effect of taxes by segments of the population and forecasts of what would occur if the state taxes were removed.

More on data issues and challenges

The analysis of the effect of taxes relies on variation between states and over time in tax rates. There are a limited number of jurisdictions and although there has been some variation over time there are at present only three surveys to use, only two of which separately identify house and contents insurance. A potential challenge to the study is that there are other state based factors that influence the results. If this were the case the models may over or under estimate the effect of the taxes.

There are a number of reasons to believe this risk of a missing variable to be small. Firstly, the results are very consistent with expectations. The estimates of elasticity with respect to taxes are in the expected order and vary as expected between house and contents insurance and between different segments including renters and income groups.

Secondly, the models tested included those with a broad range of variables that might control for variation by state. These include factors such as income, dwelling values, country of birth and the degree of urbanisation.

Finally, to control for other missing state based variation, models were tested including state based dummy variables. The results in regard to state taxes were similar but unfortunately due to the loss of efficiency the estimates had very large standard errors.[28]

A deeper analysis of demand and tax rates reveals one apparent anomaly relating to the take-up of insurance that occurs in rural Victoria. As noted above, the FSL rates in Victoria are higher in non-metropolitan areas. Up until late 1998 the FSL rates were similar. From that time the rates diverged and were around 6% different at the time of the 2003/04 HES survey. Despite these differences the take-up of insurance is generally higher outside of capital cities, a finding which is particularly strong with regards to Victoria. This combination is in-effect a significant outlier in modelling the effect of state taxes. When the analysis is conducted only on capital cities the demand elasticity for insurance is much higher.

The relatively high rates of take-up of insurance in rural Victoria may be due to a number of reasons. The results appear to be partly explained by the effectiveness of "capital city" as a control. When other location measures are used more consistent results are observed.

The high insurance coverage may partly be because there is significant momentum in the take-up of insurance and that those in rural Victoria are responding to tax rates some years prior. Finally, there may be a number of specific regional factors that explain these results. While this may be possible it could be true for all of the analysis.

[28] A Probit model was tested on contents insurance similar to that of column 1 of Table 17 but with state based dummies included. From this model the implied elasticity on tax was -1.08 with a standard error of 0.61. An additional model using all three survey years but restricted to those without need for house insurance returned an implied elasticity of -0.64 and standard error of 1.28.

Analysis by sub-segment

A number of additional tests were conducted to explore the effect of taxes by different population groups. The analysis focussed on contents insurance since this was shown to be most responsive. Analysis was conducted both on the decision to insure and the level of expenditure.

In regard to the decision to insure, there is some evidence to suggest that the lower income quintiles are more price elastic. The differences between quintiles appears however to be not statistically significant. Furthermore the results varied materially depending on which specification was used.

An analysis on the level of expenditure was conducted using the Tobit models. Again the differences between income quintiles were not statistically significant but in these cases they directionally suggested that the lowest income quintile was the least responsive to taxes.

Together these results may appear contradictory, however they may reflect the different behaviour of different income groups. Those on lower income may more likely respond to a tax increase by opting out of insurance. Those on higher income may respond to a tax increase by reducing their level of cover or increasing their deductible.

The impact of reducing or removing taxes

An important area of interest is the effect of removing state taxes. The ACT, South Australia and Western Australia have in the last 10 years successfully moved to alternative methods of funding fire and emergency services.

Table 13 reports the estimated change in households without contents insurance if state taxes were reduced. The table shows separately the forecasted effect of removing Fire Services Levy in the two remaining states of New South Wales and Victoria and the removal of non-GST premium based taxes in all jurisdictions. The more conservative (i.e. 2003/04 model) of the two model results is shown. Regardless, the estimated impact of removing state taxes is significant. The removal of FSL is estimated to result in an additional 180 thousand households taking up contents insurance in NSW and Victoria. The removal of all state taxes is estimated to result in around 300 thousand Australian households taking out contents insurance. Using the pooled model the forecast increase in the take-up of contents insurance is 374 thousand households. Of note, the model forecasts that the take-up of contents insurance will be greater in the lower income quintiles.

Table 13: Effect of removing taxes on non-insurance for contents cover

	Households (000s) without contents insurance				
	From 2003/04 survey	Forecast reduction today if			
		FSL were removed		FSL, stamp duties, and IPT were removed	
Jurisdiction	Estimate	Estimate	Std. Error	Estimate	Std. Error
New South Wales	795	98.6	(26.9)	130.6	(37.9)
Victoria	491	83.2	(22.7)	109.5	(31.7)
Queensland	441			24.3	(6.7)
South Australia	137			13.6	(3.8)
Western Australia	210			16.3	(4.6)
Tasmania	47			2.6	(0.7)
A.C.T and N.T.	49			3.0	(0.9)
Total	2,170	182	(49)	300	(86)

Estimates based on difference between forecast take-up of insurance with and without taxes using the Probit model on 2003/04 data as in Table 17 (using level amounts for non-tax variables so as to ensure no missing data). The current tax rates (described in Table 2 are used as base). Bootstrap standard errors are estimated based on 200 repetitions.

Table 14 reports a similar analysis for house insurance. Since house insurance is less price elastic, the forecast reduction in the number of households uninsured is lower. The effect is, however, significant when compared with the total number of households uninsured. The model predicts that the removal of taxes would result in over a 33% reduction in the number of non-insured households.[29]

[29] Using a pooled model (using 1998/99 and 2003/04 data) the estimated reduction in uninsured households from removing all state taxes increases from 69 to 89 thousand.

Table 14: Estimated effect of removing premium based taxes on the number of household without house insurance

	Households (000s) without building insurance (owner occupiers not in body corporate)				
	From 2003/04 survey	Forecast reduction today if			
		FSL were removed		FSL, stamp duties, and IPT were removed	
Jurisdiction	Estimate	Estimate	Std. Error	Estimate	Std. Error
New South Wales	70	22.8	(11.6)	26.1	(14.3)
Victoria	51	26.4	(13.1)	30.4	(16.0)
Queensland	34			4.8	(2.2)
South Australia	14			3.2	(1.5)
Western Australia	25			3.5	(1.6)
Tasmania	7			0.8	(0.4)
A.C.T and N.T.	3			0.4	(0.2)
Total	203	49	(25)	69	(36)

Estimates based on difference between forecast take-up of insurance with and without taxes using a bi-variate Probit model on 2003/04 data as shown in Table 18 (but using level amounts for non-tax variables so as to ensure no missing data). The current tax rates (described in Table 2) are used as base. Bootstrap standard errors are estimated based on 200 repetitions.

The change to premium (net of taxes) is not straight forward to estimate. Those who take-out insurance as a result of a drop in taxes will generally purchase a lower than average insurance premium. In addition, as discussed above, for contents insurance their is evidence that a change in state taxes will result in a change in the level of cover that households seek and thus there will also be a change in the average net (of state taxes) premium.

32Associated with the change in net premium sold there will be a change in the amount of taxes collected. Clearly if all taxes are removed then their will be no collected tax revenue from insurance. If however, the FSL were removed and/or the nature of state taxes shifted then the revenue raised from state taxes will shift. If FSL were removed then stamp duty revenue would be expected to increase due to an increased number of households purchasing house and contents insurance and a greater level of net (of taxes) expenditure on insurance premiums. Rough estimates of these changes have been calculated - by removing FSL, NSW and Victoria would increase their stamp duty revenue from contents insurance by around 10%-15%.[30]

[30] Estimate based on Tobit model results using 2003/04 sample. Estimates are subject to large standard error.

Key findings: Insurance and state taxes

If state taxes on insurance premiums were replaced, there would be a significant increase in the take-up of house and contents insurance and increases in the level of cover for contents insurance. It is estimated that state premium based taxes are the cause of around 300 thousand households being without contents insurance and 69 thousand households being without house insurance. The projected increase in take-up of house insurance if these taxes were removed represents over 1/3 of the estimated number of households that are uninsured.

If, as in other states, alternative funding arrangements were found for the FSL in Victoria and NSW, then there would substantial reductions in the number of uninsured households. Furthermore these states would raise significantly more revenue from insurance stamp duties, particularly on contents insurance, without any change to the rate of stamp duty.

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6 Conclusion

The analysis of expenditure on house and contents insurance using the Australian Bureau of Statistics (ABS) Household Expenditure Survey (HES) has proved practical and has yielded economically and statistically significant results.

In general the results are as expected. Most importantly they support the view that state premium based taxes have a negative effect on the decision to purchase insurance and level of insurance cover that people undertake. As we would expect households are price sensitive and as results of taxes many households are either uninsured or have reduced their coverage.

Although the response to taxes appears less with regards to house insurance, in terms of the total number of dwellings uninsured the impact is still very significant. The number of uninsured buildings is of particular significance given the potential loss from losing a dwelling.

The analysis of taxes is limited in that it does not control for responses in supply. Although supply is likely to be reasonably elastic, this may result in some underestimate of the price elasticity of insurance. Another limitation is that the analysis of the effect of taxes relies on a small amount of variation between states and over time in tax rates. It is possible there are other unobserved state based factors that influence the results. If this were the case the models may over or under estimate the effect of the taxes. Although this possibility exists, the results are consistent with expectations and robust to a number of tests which control for state based effects.

The analysis has also provided greater insight into the other determinants of demand including income, tenure and other demographic factors. These results too are largely as expected. One finding of note is that demand is significantly related to the value of insurable assets and that this factor explains much of the difference in demand across different demographic segments.

There is some scope for further analysis. The analysis could be easily extended to an analysis of the demand for other insurance including that of optional motor vehicle insurance cover.

Appendix

A1. Detail on the Household Expenditure Survey

The household is the basic unit of analysis in the HES. It is defined as a group of related or unrelated people who usually live in the same dwelling and make common provision for food and other essentials of living; or a lone person who makes provision for his or her own food and other essentials of living without combining with any other person.

The survey also excludes:

- households which contain members of non-Australian defence forces stationed in Australia
- households which contain diplomatic personnel of overseas governments
- households in collection districts defined as very remote or Indigenous Communities - this has only a minor impact on aggregate estimates except in the Northern Territory where such households account for about 23% of the population.

The expenditure information is collected via a number of methods. For the 2003/04 survey years the ABS reports that:

> Expenditure during and prior to the 2003-04 financial year - most types of expenditure relate to purchases recorded in a fortnightly diary at some point within the 2003-04 financial year but less frequent and often large expenditures were collected on a 'recall' basis: for those items, households were asked to recall expenditures over a period which may have extended back before 2003-04, ranging from the last payment made (e.g. for utilities bills) to any purchase made in the last three years (e.g. for house purchases).

A2. Detailed tables

Table 15: Insurance take-up in 2003/04

	000s of households	Proportion Purchased Insurance		
		Contents	House	Either
Full sample	7,736	0.72	0.64	0.77
Tenure				
Owner without a mortgage	2,703	0.87	0.88	0.94
Owner with a mortgage	2,714	0.89	0.92	0.96
Renter	2,127	0.33	-	0.33
Other	192	0.41	0.26	0.48
Landlord public	379	0.22	-	0.22
Potential to buy house insurance	4,996	0.90	0.96	0.96
Dwelling Structure				
House	6,183	0.79	0.76	0.84
Semi	656	0.57	0.28	0.61
Flat	841	0.35	0.06	0.37
Other structure	56	0.29	0.25	0.31
Age of reference person				
< 25	334	0.31	0.18	0.34
25 to 34	1,406	0.62	0.46	0.65
35 to 44	1,735	0.72	0.62	0.76
45 to 54	1,569	0.78	0.74	0.83
55 +	2,692	0.79	0.74	0.85
Country of birth				
Australia	5,574	0.75	0.65	0.78
Main English speaking countries	867	0.71	0.6	0.75
Other	1,295	0.6	0.62	0.7
State				
New South Wales	2,525	0.69	0.61	0.74
Victoria	1,904	0.74	0.70	0.80
Queensland	1,526	0.71	0.60	0.74
South Australia	626	0.78	0.67	0.82
Western Australia	770	0.73	0.63	0.77
Tasmania	199	0.76	0.70	0.79
N.T. and A.C.T	185	0.73	0.58	0.77

	000s of households	Proportion Purchased Insurance		
		Contents	House	Either
Location of usual residence				
Within a capital city	4,733	0.70	0.63	0.76
Outside of capital city	2,817	0.75	0.66	0.78
Source of emergency money				
Own savings	4,444	0.81	0.71	0.85
Loan from a bank etc	2,029	0.82	0.74	0.86
High interest loan from a finance company	562	0.82	0.68	0.85
Loan on credit card	1,930	0.82	0.72	0.85
Would sell something	1,077	0.76	0.64	0.80
Loan from family or friends	2,156	0.69	0.58	0.75
Loan from welfare or community organisation	49	0.63	0.39	0.66
Use some other source	235	0.78	0.67	0.79
Could not raise $2000 emergency money in a week	1,105	0.40	0.32	0.45
Could not pay registration/insurance on time due to money shortages	443	0.44	0.39	0.51

Proportions are calculated as the weighted ratio of household who purchased the insurance product to the entire population.

Table 16: Mean values by survey year

	1993/94	**1998/99**	**2003/04**
Dwelling value ($000s)*	146	162	248
Household income ($/week)*	941	1,042	1,126
Combined house & contents insurance premium, $/week*	9.20	10.37	11.70
Premium as % of household income			
Contents insurance premium		0.52%	0.52%
House insurance premium		0.58%	0.58%
Combined house and contents insurance	0.98%	0.99%	1.04%
Proportion insured			
Contents insurance		0.69	0.72
House insurance		0.62	0.64
House or contents	0.73	0.75	0.77
Of owners (not in a body corporate)			
Contents insurance		0.87	0.9
House insurance		0.94	0.96
House or contents	0.94	0.95	0.96

* Adjusted for CPI (base year 2003/04). Household weights used in all calculations.

Table 17: Probit model on whether contents insurance purchased

	1998/99 and 2003/04	Just 2003/04
log of Tax	-0.342***	-0.357**
	(0.073)	(0.114)
Survey year is 1998/99	0.001	
	(0.010)	
Log of HH income	0.096***	0.030**
	(0.007)	(0.011)
Log value of contents		0.264***
		(0.015)
Log net wealth		0.025**
		(0.010)
Flat	-0.037*	0.035
	(0.018)	(0.023)
Semi	-0.135***	0.002
	(0.021)	(0.025)
Non standard	-0.348***	-0.048
dwelling	(0.053)	(0.070)
Age is 25 to 34	0.090***	0.089*
	(0.019)	(0.035)
Age is 35 to 44	0.113***	0.091*
	(0.019)	(0.036)
Age is 45 to 54	0.122***	0.077
	(0.019)	(0.038)
Age is 55 plus	0.176***	0.142***
	(0.020)	(0.038)
Country of birth	-0.032*	-0.019
Other English	(0.015)	(0.023)
Country of birth	-0.179***	-0.097***
Non-English lang.	(0.015)	(0.021)
2 Family HH	-0.186***	-0.111
	(0.054)	(0.095)
Num. persons in HH	-0.004	-0.023***
	(0.004)	(0.007)
Owner of a body corporate	-0.077**	-0.147***
	(0.026)	(0.040)
Mortgaged	0.013	0.024
	(0.014)	(0.023)
Rented	-0.481***	-0.317***
	(0.016)	(0.035)
Other tenure	-0.474***	-0.436***
	(0.030)	(0.055)
Public landlord	-0.126***	-0.081*
	(0.026)	(0.041)
Capital city		-0.025
		(0.016)
Observations	13,759	6,926
Pseudo-R squared	0.30	0.47
Chi squared (degrees freedom)	3247 (18)	1520 (20)

Coefficients for marginal effects on probability of dependent variable. For dummy variables, marginal effects as a discrete change from 0 to 1. Robust standard errors in parentheses. Base case: Dwelling type= house, Age<25, Country of Birth = Australia, Tenure = Owned outright, Number of families=1, Not in capital city. HH= Household. ***, ** and * indicate significance at the 1%, 5% and 10% levels.

Table 18: Bi-variate Probit Model on Whether Household Insurance Purchased

	1998/99 and 2003/04 pooled		Just 2003/04	
	House insurance	**Contents insurance**	**House insurance**	**Contents insurance**
Log of tax rate	-0.122***	-0.328***	-0.061	-0.152*
	(0.034)	(0.060)	(0.035)	(0.063)
Survey year is 1998/99	0.005	0.019**		
	(0.005)	(0.008)		
Log of HH income	0.013***	0.040***	0.005	0.022***
	(0.003)	(0.005)	(0.003)	(0.006)
Mortgaged	0.031***	0.011	0.017*	0.005
	(0.006)	(0.009)	(0.007)	(0.012)
Flat	-0.029*	-0.030*	-0.013	0.003
	(0.015)	(0.021)	(0.016)	(0.017)
Semi	-0.121***	-0.103	-0.071*	-0.042
	(0.052)	(0.057)	(0.047)	(0.044)
Other structure	-0.105*	-0.053	0.014	0.023
	(0.062)	(0.050)	(0.012)	(0.036)
Age 25 to 34	0.025*	0.031	0.018	0.037
	(0.010)	(0.024)	(0.010)	(0.021)
Age 35 to 44	0.022	0.031	0.015	0.038
	(0.012)	(0.025)	(0.013)	(0.024)
Age 45 to 54	0.034**	0.038	0.023*	0.035
	(0.010)	(0.025)	(0.011)	(0.025)
Age 55+	0.048***	0.065*	0.033*	0.067*
	(0.014)	(0.027)	(0.017)	(0.030)
COB English language	0.002	-0.013	0.001	-0.002
	(0.007)	(0.013)	(0.008)	(0.015)
COB Other language	-0.008	-0.137***	-0.000	-0.048***
	(0.007)	(0.013)	(0.006)	(0.014)
2 family HH	-0.010	-0.159**	-0.021	-0.151
	(0.024)	(0.050)	(0.032)	(0.077)
Num. persons in HH	0.002	-0.001	0.000	-0.006
	(0.002)	(0.003)	(0.002)	(0.004)
Log of dwelling value	0.024***	0.047***	0.019***	0.011
	(0.004)	(0.006)	(0.006)	(0.012)
Log value of contents			0.029***	0.103***
			(0.004)	(0.008)
Log of net wealth			-0.009	0.003
			(0.005)	(0.011)
Capital city			0.003	-0.014
			(0.005)	(0.009)
Rho	0.902***		0.881***	
	(0.011)		(0.023)	
Observations	8975		4566	
Chi- squared (degrees freedom)	481 (32)		435 (36)	

Results show coefficients and standard errors for marginal effects on probability of observing dependent variable. For dummy variables, marginal effects represent a discrete change from 0 to 1.Sample restricted to owner occupiers not in a body corporate. Base case: Dwelling type= house, Age<25, Country of Birth = Australia, Tenure = Owned outright, Number of families=1, Not in capital city, HH = Household. ***, ** and * indicate significance at the 1%, 5% and 10% levels.

Table 19: Tobit model on expenditure on net contents insurance premium

	Pooled (1998/99 & 2003/04)		2003/04	
	Coefficient	Standard error	Coefficient	Standard error
Tax	-1.915*	(0.805)	-2.476*	(1.255)
Real household income	0.001***	(0.000)	0.001**	(0.000)
Year is 1998/99	-0.191	(0.116)		
Mortgaged	0.022	(0.165)	0.188	(0.272)
Flat	-0.147	(0.191)	0.245	(0.272)
Semi	-1.070***	(0.222)	-0.420	(0.309)
Other structure	-3.558***	(0.619)	-3.203***	(0.915)
Age 25 to 34	1.391***	(0.292)	1.934**	(0.590)
Age 35 to 44	1.796***	(0.299)	2.051***	(0.604)
Age 45 to 54	1.879***	(0.304)	2.097***	(0.605)
Age 55+	2.160***	(0.325)	2.489***	(0.625)
COB English language	-0.107	(0.167)	-0.284	(0.251)
COB Other language	-1.678***	(0.180)	-1.646***	(0.269)
2 Family HH	-2.645***	(0.701)	-1.790*	(0.887)
Num. persons in HH	0.091	(0.056)	0.025	(0.086)
Owner of a body corporate	1.183***	(0.218)	1.376***	(0.309)
Rented	-1.803***	(0.187)	-0.554	(0.358)
Other tenure	-2.403***	(0.384)	-1.870**	(0.573)
Public landlord	-1.652***	(0.278)	-1.710***	(0.401)
Value of contents			0.044***	(0.007)
Net wealth			0.000	(0.000)
Capital city			0.530**	(0.179)
Constant	0.739	(1.021)	-1.035	(1.652)
Chi-squared (degrees freedom)	1084 (19)		603 (21)	
Observations				
Censored	3913		1836	
Uncensored	4011		1899	

Dependent variable: Real net (of FSL, Stamp duty and IPT) expenditure on contents insurance,
Base case: Dwelling type= house, Age<25, Country of Birth = Australia, Tenure = Owned outright, Number of families=1, Not in capital city.
***, ** and * indicate significance at the 1%, 5% and 10% levels.

Table 20: Tobit model on expenditure on net house insurance premium

	Pooled (1998/99 & 2003/04)		2003/04	
	Coefficient	Standard error	Coefficient	Standard error
Tax	-0.041	(1.332)	-0.417	(1.744)
Real HH income	0.512***	(0.133)	0.353*	(0.140)
Year98	-0.040	(0.156)		
Mortgaged	0.520**	(0.180)	0.609*	(0.286)
Flat	-0.467	(0.281)	0.062	(0.389)
Semi	-0.766	(0.954)	0.183	(0.960)
Other structure	-4.503**	(1.647)	-0.752	(2.290)
Age 25 to 34	0.962	(0.705)	0.949	(0.844)
Age 35 to 44	1.142	(0.713)	1.221	(0.852)
Age 45 to 54	1.800*	(0.814)	1.474	(0.902)
Age 55+	1.338	(0.701)	1.417	(0.848)
COB English language	0.096	(0.187)	-0.187	(0.249)
COB Other language	0.006	(0.155)	-0.017	(0.235)
2 Family HH	-0.022	(0.467)	0.204	(0.753)
Num. persons in HH	0.075	(0.074)	0.066	(0.109)
Real dwelling value	0.004***	(0.000)	0.003***	(0.000)
Value of contents			0.010**	(0.003)
Net wealth			-0.000	(0.000)
Capital city			0.155	(0.224)
Constant	-0.128	(1.890)	0.384	(2.352)
Chi-squared (degrees freedom)	349 (16)		205 (18)	
Observations				
Censored	445		180	
Uncensored	2766		1236	

Dependent variable is real net (of FSL, Stamp duty and IPT) expenditure on house insurance. Sample restricted to owner occupiers not in a body corporate where house expenditure separately recorded. Base case: Dwelling type= house, Age<25, Country of Birth = Australia, Tenure = Owned outright, Number of families=1, Not in capital city. ***, ** and * indicate significance at the 1%, 5% and 10% levels.

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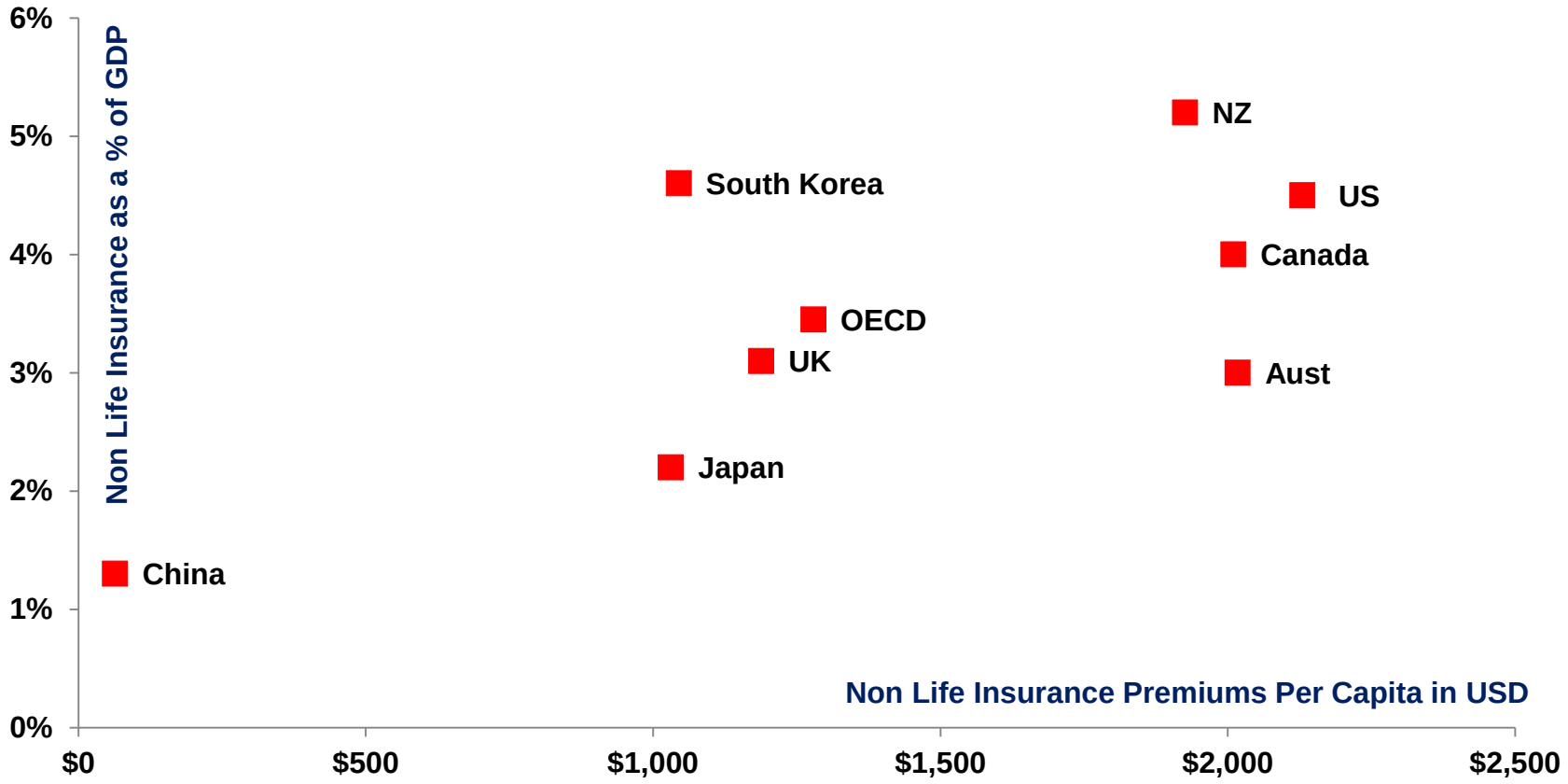
Non Life Insurance Penetration & Density



Source: Sigma & Swiss Re