

Preference Heterogeneity and Selection in Private Health Insurance: The Case of Australia

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Theory: Asymmetric Information and Risk Selection

- Standard theoretical models of insurance predict that asymmetric information about risk can lead to **adverse selection**.
 - ⇒ Adverse selection results in a **positive correlation** between insurance coverage and ex post realization of losses.

Mixed Evidence on Positive Correlation Hypothesis

- Evidence of positive correlation in some markets
 - ~ Annuities (Finkelstein and Poterba, 2002, 2004)
- No correlation in some markets
 - ~ Life insurance (Cawley and Philipson 1999)
 - ~ Car insurance (Chiappori and Salanie 2000)
- *Negative* correlation in others (**Advantageous Selection**)
 - ~ Long-term care insurance (Finkelstein and McGarry 2006)
 - ~ Medicare supplemental insurance (Fang et al 2008)

Why No Positive Correlation?

1. Information is close to symmetric
 - ~ Insurers are good at predicting losses
 - ~ Explains zero correlation, not negative
2. Private information is multi-dimensional
 - ~ Other factors not used in pricing are positively correlated with insurance demand, but negatively correlated with losses
 - ~ Hemenway (1990) deMeza & Webb (2001) emphasize importance of risk preferences
 - ~ Example: smokers and motorcycle riders are less likely to have insurance even though they are more likely to need care

Multiple Dimensions of Private Information

- Previous studies have considered several types of private information that may be sources of advantageous selection
 - ~ Preventive health behavior
 - ~ Other risky behaviors
 - ~ Risk tolerance
 - ~ Income/wealth
 - ~ Cognition
- General results:
 - ~ People who engage in preventive behavior are more likely to have insurance and less likely to have claims
 - ~ Similar results for income and cognition
 - ~ Risk aversion predicts insurance coverage but not use of medical care

Risk Selection in Australian PHI

- Australia is an interesting case to study because:
 - ~ Role of PHI is similar to other non-US countries
 - ~ PHI is subject to strong underwriting rules (community rating)
 - ~ Adverse selection has been a major policy concern

Research questions:

1. What is the relationship between hospital insurance coverage and hospital utilization?

Is there adverse or advantageous selection?

2. How does this relationship change when we control for individual preferences?

What are the sources of advantageous selection?

Outline

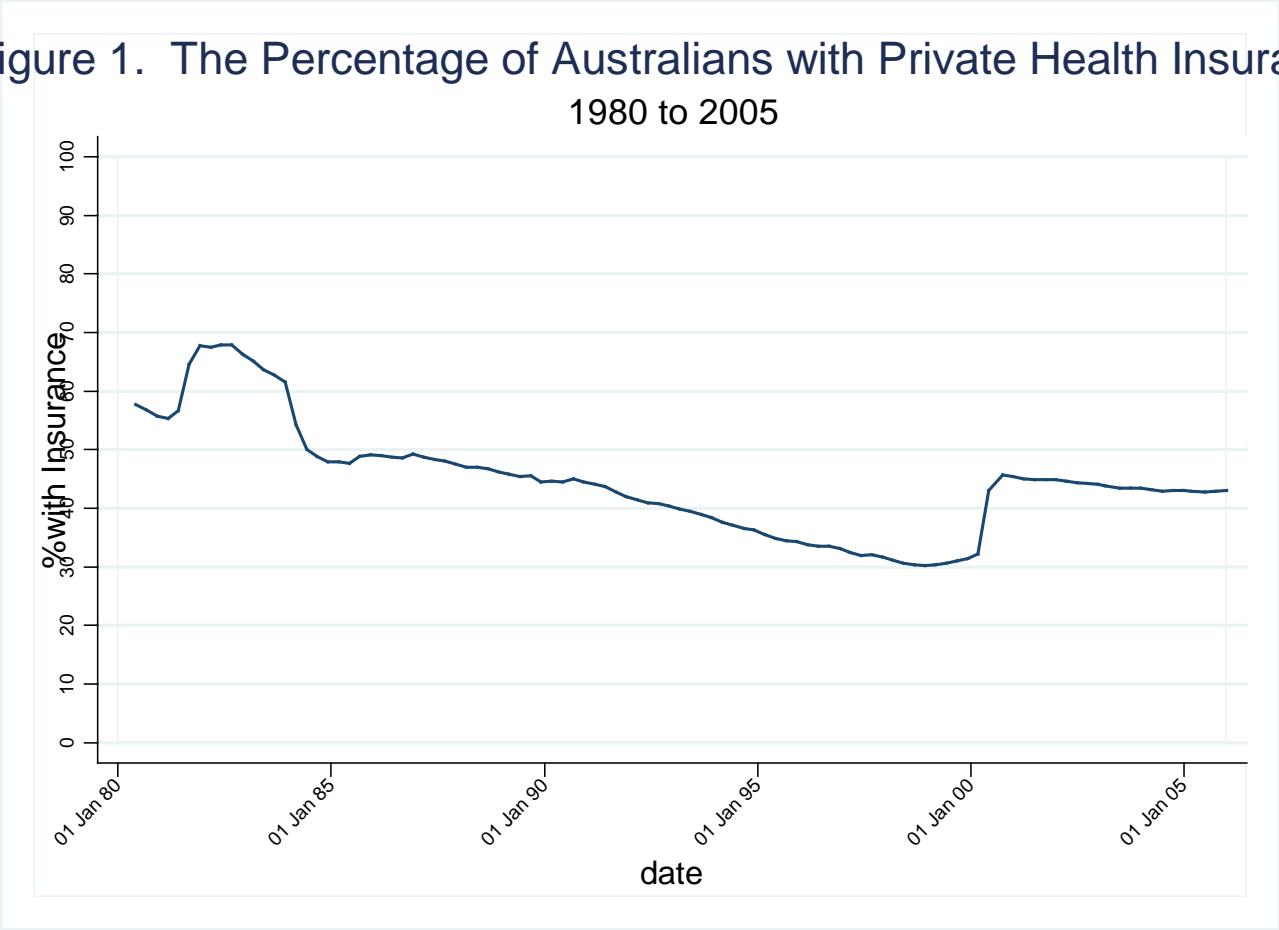
- Australia's health care system
- Testing for adverse or advantageous selection
(Australian National Health Survey)
- Sources of multidimensional private information
(Australian National Health Survey)
- More evidence on importance of risk aversion
(Australian Household Expenditure Survey)

The Australian Health Care System

- Since 1984, Australia has had a universal, public health insurance system, Medicare, that covers
 - ~ Inpatient care in public hospitals
 - ~ Physician services and other outpatient care
 - ~ Prescription drugs
- Australians can also hold private health insurance for
 - ~ **Care in private hospitals**
 - ~ Ancillary services (e.g. dental)
 - ~ **NOT** physician services
- Premiums must be **community rated**

The Fall and Rise of PHI Coverage

Figure 1. The Percentage of Australians with Private Health Insurance
1980 to 2005



Policies to Increase PHI Coverage, 1997-2000

“Carrots and Sticks” Policies:

- ~ 30% premium subsidy
- ~ 1% income tax surcharge on high income households w/o PHI

- ~ Entry-age rating (Lifetime Health Cover)
 - 2% premium surcharge for every year after age 30 that a consumer enters the market
 - Example: someone entering market at 40 pays 20% more than someone who has been continuously covered since age 30

Data: Australian National Health Survey, 2004-05

- Nationally representative household survey
- Information on:
 - ~ Health insurance
 - ~ Medical care utilization (hospital stays, MD visits)
 - ~ Health status (self-assessed + specific conditions)
 - ~ Some proxies for preferences
- Our sample: 17,646 adults age 25+

Potential Sources of Advantageous Selection

- Risk tolerance, attitude toward prevention, health
 - ~ Smoking
 - ~ Exercise
 - ~ Regularly checks moles and freckles
- Cognition
 - ~ Education
 - ~ Non-native English speaker
 - ~ Mental health index
- Income/Opportunity Cost
 - ~ Household income (categorical)
 - ~ Employed

Empirical Strategy

- Regress hospital nights (H) on insurance coverage (I) conditional on variables used in pricing.

~ Since premiums are community rating, most appropriate test does not condition on individual characteristics:

$$H = \alpha + \beta I + \varepsilon$$

$\beta > 0 \Rightarrow$ adverse selection

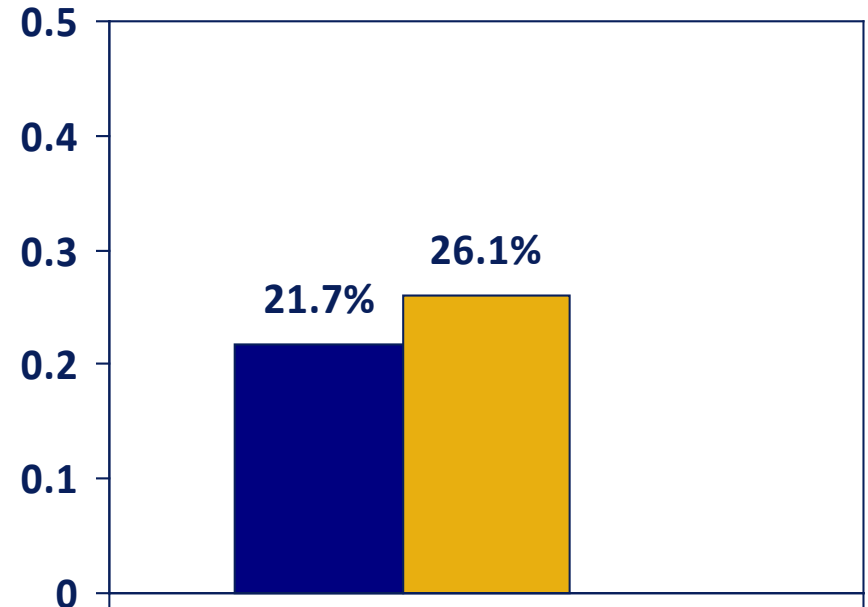
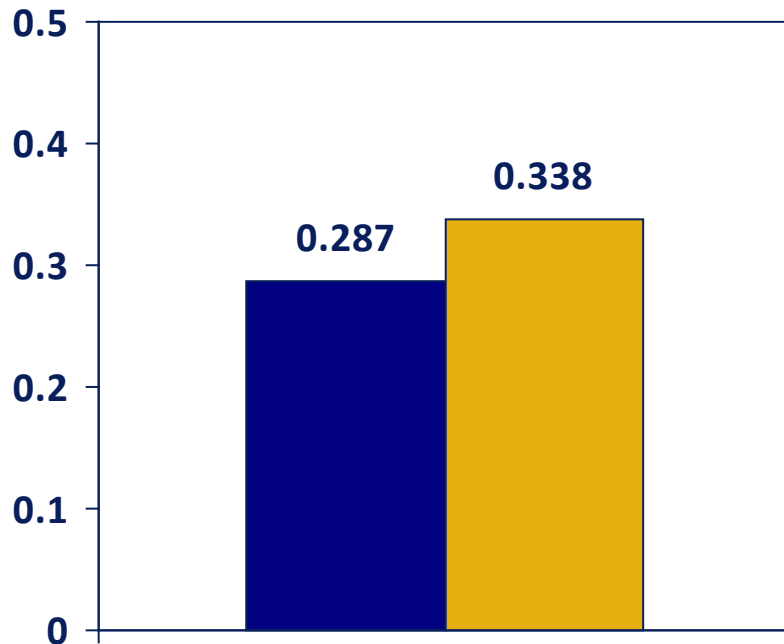
$\beta < 0 \Rightarrow$ advantageous selection

- If the results indicate advantageous selection, then add proxies for other private information to see if β becomes positive

Insurance Coverage and Medical Care Utilization

Insurance is negatively correlated with hospital stays...

and GP visits



Mean Hospital Nights

Prob(GP Visit)

- Private Insurance
- No Private Insurance

Controlling for Preference Proxies and Income

Dep. Variable = hospital nights last 12 months

Key Independent Variable = has private hospital insurance

	Insurance Coefficient	Std. Error
1. No Controls	-0.050**	(0.018)
2. Controls for smoking, exercise, checks moles	-0.022	(0.018)
3. Controls for education, English, mental health	0.003	(0.018)
4. Controls for income, employment	0.045*	(0.019)
5. All Controls	0.079*	(0.019)

Other Information on Preferences

- NHS does not include great proxies for preferences
- It does have a question on why people purchased PHI
- Reasons connect loosely to economic concepts
 - ~ Most common reason is “for a sense of security” which is similar to risk aversion
 - ~ Some respondents say they bought insurance because of a health condition, which is consistent with adverse selection
- We can look at the risk characteristics of people giving different reasons

Risk Characteristics by Reason for Buying PHI

Consumer category	% of insured	Hospital Nights	% in fair/poor health
No PHI	N/A	.337	24.6%
All Insured	100%	.287	13.0%
Insured by reason for purchasing PHI			
security, peace of mind	46.9%	.247	11.9%
choice, access	46.0%	.309	13.1%
financial reasons	19.9%	.185	8.7%
always had it	17.1%	.349	16.2%
age, health condition	8.7%	.612	32.0%

Figures in bold are significantly different from the No PHI category

More information on Importance of Risk Aversion

- If risk aversion is an important determinant of the demand for PHI, we should observe people with PHI insuring against other (uncorrelated) risks.
- We test this by estimating a multivariate probit model
 - ~ Data = Household Expenditure Survey, 2003-04
 - ~ Outcomes = 6 dummies for insurance purchases (health, life, personal accident, home contents, car, appliance) plus smoking plus 5 types of gambling
 - ~ Interest is in the correlation of residuals

Other Purchases by PHI Status

	No PHI	PHI
Life insurance	.114	.239
Personal accident insurance	.068	.158
Home contents insurance	.582	.892
Car insurance	.584	.830
Appliance insurance	.040	.062
Tobacco	.315	.167
Lottery	.041	.058
Lotto	.271	.338
Off-track betting	.022	.034
Poker machines	.061	.055
Other gambling	.122	.155

Figures in bold indicate that the difference between the two categories is statistically significant

Multivariate Probit Results

- Dep. Vars: 6 types of insurance; smoking; 5 types of gambling
- Indep. Vars: Income, demographics
- Results: residual correlations
 - Significant pos. correlation among different types insurance
 - Smoking is neg. correlated with insurance; pos. with gambling
 - Gambling is not correlated with insurance

Summary and Conclusions

- Evidence of **Advantageous Selection** in PHI in Australia
 - ~ Despite policy-induced information asymmetry
 - ~ This implies multidimensional private information
- Pattern explained largely by income and (to a lesser extent) cognition and preference heterogeneity
- Results regarding the importance of risk preferences are weak, but this may be because of poor proxies