

**THE INDIVIDUAL DEMAND FOR PRIVATE HEALTH  
INSURANCE IN MALAYSIA**



**ARPAH ABU BAKAR**

**DOCTOR OF PHILOSOPHY  
UNIVERSITI UTARA MALAYSIA**

**2012**

**THE INDIVIDUAL DEMAND FOR PRIVATE HEALTH INSURANCE  
IN MALAYSIA**

**By**

**ARPAH ABU BAKAR**

**Thesis Submitted to Othman Yeop Abdullah  
Graduate School of Business, Universiti Utara Malaysia  
in Fulfillment of the Requirement for the Degree of Doctor of Philosophy**

### **Permission to Use**

In presenting this thesis in fulfillment of the requirements for a postgraduate degree from Universiti Utara Malaysia, I agree that the University Library may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purpose may be granted by my supervisor or in his absence, by the Dean of Othman Yeop Abdullah Graduate School of Business. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my thesis.

Request for permission to copy or to make use of the materials in this thesis, in whole or in part, should be addressed to:

Dean of Othman Yeop Abdullah  
Graduate School of Business,  
Universiti Utara Malaysia,  
06010 Sintok,  
Kedah, Malaysia.

## **Abstract**

The main purpose of this study is to determine the factors that affect the individual decision to purchase health insurance and the level of coverage purchased. In addition, this study attempts to profile the policyholders and compare this against the profile of non policyholders, and also estimates the price elasticity of health insurance demand. A model to predict the likelihood of purchasing health insurance is also proposed. The thesis was developed based mainly on the Utility Theory, Prospect Theory and Bounded Rationality Theory. The dataset was obtained from the National Health and Morbidity Survey III. The two major analytical tools employed were logistic regression and the Heckman two-stage estimator. Due to the multicollinearity problem, the dataset were split into salaried and non-salaried individuals and were analyzed separately. The results revealed that the likelihood of health insurance purchase among the salaried individuals was higher if the individual's income and education were higher, and if the individual was a female, was a non-Muslim, was a civil servant, as well as if the individual was more risk averse, while the effect of age was nonlinear. The results also showed that those who were older, earned higher income, female, non-Muslims, had high out-of-pocket costs for health care tended to seek a higher amount of coverage. Individuals were less likely to purchase health insurance when the price increased and the price elasticity was relatively low indicating that a high subsidy would be needed to induce purchase. Given individual characteristics, the models were found to be useful in predicting individual's likelihood in purchasing health insurance for both the salaried and non salaried individuals. The findings offer useful inputs for insurance industry players and policy makers on various issues, including health care financing in Malaysia.

**Keywords:** Demand, Health Insurance, Utility Theory, Prospect Theory

## **Abstrak**

Tujuan utama kajian ini adalah untuk menentukan faktor yang mempengaruhi keputusan individu membeli insurans kesihatan dan tahap perlindungan yang dibeli. Di samping itu, kajian ini menganalisis profil pemegang polisi insurans kesihatan dan menganggar keanjalan harga permintaan insurans kesihatan. Model untuk meramal kebarangkalian pembelian insurans kesihatan juga dicadangkan. Tesis ini dirangka berdasarkan Teori Utiliti, Teori Prospek dan Teori Rasionaliti Terbatas. Data diperolehi daripada Tinjauan Kebangsaan Kesihatan dan Morbiditi III. Analisis menggunakan dua kaedah utama iaitu Regresi Logistik dan Penganggar Dua-Tahap Heckman. Data dibahagikan kepada individu yang bergaji dan individu yang tidak bergaji. Hasil kajian menunjukkan kebarangkalian membeli insurans kesihatan adalah lebih tinggi di kalangan individu berpendapatan tinggi dan tahap pengajian tinggi, wanita, bukan Islam, pekerja kerajaan, dan individu yang lebih bersikap pengelak risiko manakala kesan umur adalah tidak linear. Kajian juga menunjukkan individu berpendapatan tinggi, lebih tua, wanita, bukan Islam dan mempunyai kos perubatan sendiri yang tinggi membeli insurans kesihatan dengan tahap perlindungan yang lebih tinggi. Di samping itu, kebarangkalian membeli insurans kesihatan akan meningkat jika harga polisi insurans dikurangkan namun keanjalan harga sangat rendah. Ini bermaksud, subsidi yang sangat tinggi mungkin diperlukan untuk menggalakkan pembelian insurans kesihatan. Dengan adanya maklumat individu, model-model kajian ini didapati berguna untuk meramal kebarangkalian individu membeli insurans kesihatan untuk kedua-dua kumpulan individu bergaji dan tidak bergaji. Dapatan kajian ini menawarkan input berguna kepada pihak industri insurans dan pembuat dasar berhubung beberapa isu termasuk pembiayaan penjagaan kesihatan di Malaysia.

**Katakunci:** Permintaan, Insurans Kesihatan, Teori Utiliti, Teori Prospek

## **Acknowledgements**

First and foremost, I would like to thank Allah for giving me the strength to complete this thesis. And after too many years, many thanks are due to many people. To my supervisors, Associate Prof Dr Angappan for his profound insights, endless patience and tremendous guidance and efforts; and to Prof Dato' Dr Syed Mohamed Aljunid for his critical views, excellence and wonderful supports throughout this process. I also would like to thank Dr Shamzaeffa, Dr Azahadi and Balkhis for their support in the data gathering and analysis stage.

I am grateful to my colleagues at UUM for their confidence in me and to my friends at UNU-IIGH for the enjoyable moments and learning experience. A special dedication goes to Dr Nursofiza for her never lasting mentoring and companion.

I also thank Universiti Utara Malaysia for the financial support and the Institute for Public Health for assistance in the data gathering stage. I would like to thank the Director General of Health, Malaysia for his permission to use the data from National Health and Morbidity Survey III and publish this thesis.

Finally, my deepest gratitude to my husband and my parents for their supports; my daughters, Athirah, Alyssa, Nur Aisyah, Ain Assyifa' and my sons, Aliff and Afiq for their patience and sacrifices.

# TABLE OF CONTENTS

## PREFACE

Certification of Thesis Work	ii
Permission to Use	iv
Abstract	v
Abstrak	vi
Acknowledgement	vii
Table of Contents	viii
List of Tables	xi
List of Figures	xiii

## 1.0 INTRODUCTION 1

1.1 Introduction	1
1.2 Background of the Study	4
1.2.1 Health Insurance	5
1.2.2 Health Insurance Industry in Malaysia	7
1.2.3 The Malaysian Health Care System and Health Care Financing	11
1.2.4 Health Care Financing around the World	18
1.3 Problem Statements	26
1.4 Research Questions	32
1.5 Research Objectives	32
1.6 The Importance of the Study	33
1.7 Structure of Thesis	35

## 2.0 LITERATURE REVIEW 37

2.1 Introduction	37
2.2 Theories Related to Decision Making	38
2.2.1 Expected Utility Maximization Theory	38
2.2.2 Prospect Theory	46
2.2.3 Bounded Rationality Theory	53
2.2.4 Theory of Reasoned Action	55
2.3 Past Empirical Studies on Health Insurance Demand	57
2.3.1 Income Effect on Health Insurance Demand	59
2.3.2 The Effect of Socio-Demographic Factors on Health Insurance Demand	65
2.3.3 The Effect of Health Status and Health Utilization on	70

	Health Insurance Demand	
2.3.4	The Effect of Health Care Providers' Quality on Health Insurance Demand	71
2.3.5	The Price Elasticity of Health Insurance Demand	72
2.3.6	The Factors that Affect the Amount of Health Insurance Coverage	74
2.4	Chapter Conclusion	77
<b>3.0</b>	<b>RESEARCH FRAMEWORK AND METHODS</b>	<b>79</b>
3.1	Introduction	79
3.2	Research Framework	79
3.2.1	Theoretical Model	82
3.2.2	Hypotheses	91
3.3	Methods	102
3.3.1	Data Collection	102
3.3.2	Unit of Analysis	106
3.3.3	Measurement of Variables	107
3.3.4	Examining the Data	118
3.3.5	Analyzing the Factors that Affect the Decision to Purchase Health Insurance	120
3.3.6	Predicting the Likelihood of a Person Buying Health Insurance, Given the Person's Characteristics	123
3.3.7	Analyzing the Price Effect	123
3.3.8	Analyzing the Factors that Affect the Amount of Health Insurance Coverage Purchased	123
3.4	Chapter Conclusion	123
<b>4.0</b>	<b>RESULTS AND DISCUSSION</b>	<b>125</b>
4.1	Introduction	125
4.2	Descriptive Statistics	126
4.2.1	Summary Statistics of Samples	126
4.2.2	Profiles of Policyholders and Non Policyholders	131
4.3	The Factors that Affect the Decision to Purchase Health Insurance	142
4.3.1	Logistic Regression for Salaried Individuals	145
4.3.2	Logistic Regression for Non Salaried Individuals	156
4.3.3	Non Significant Variables	157
4.4	The Effect of Price on the Demand for Health Insurance	163
4.5	The Likelihood of a Person Buying Health Insurance, Given the Person's Characteristics	168
4.5.1	Reduced Form Model for Salaried Individuals	168



4.5.2	Reduced Form Model for Non Salaried Individuals	172
4.6	The Factors that Affect the Amount of Insurance Coverage Purchased	175
4.7	Chapter Conclusion	186
<b>5.0</b>	<b>CONCLUSIONS AND RECOMMENDATIONS</b>	<b>189</b>
5.1	Introduction	189
5.2	Conclusion	189
5.3	Recommendation	196
5.3.1	Benefits to Policymakers and Insurance Industry Players	196
5.3.2	Future Research	201
	References	<b>209</b>
	Appendices	<b>215</b>

## LIST OF TABLES

Table 1.1	Types of MHI and Market Share	8
Table 1.2	Number of Public and Private Hospitals from 2003 to 2009	12
Table 1.3	Total Expenditure on Health as % of GDP for Selected Countries, estimates for 1998 to 2008	13
Table 1.4	Per Capita Total Expenditure on Health (PPP in \$), Estimates for 1998 to 2008	13
Table 1.5	Total Expenditure on Health in Malaysia by Sources of Financing (Public vs Private), from 2000 to 2008	15
Table 1.6	Total Expenditure on Health in Malaysia by Sources of Financing for 2008	16
Table 1.7	Ministry of Health Annual Budget and Per Capita Allocation	17
Table 1.8	Proportion (in %) of Total Expenditure on Health by Sources of Financing for Selected Countries, from 2000 to 2008	19
Table 1.9	Out-of-pocket Expenditure (OOP) as a Percentage of Private Expenditure on Health for Selected Countries, from 1998 to 2008	20
Table 1.10	Private Prepaid Plans (PPP) as a Percentage of Private Expenditure on Health for Selected Countries, from 1998 to 2008	20
Table 1.11	Health Care Environment among Selected Countries	23
Table 3.1	Independent Variables and Supporting Theories and Literatures	85
Table 3.2	Summary of Predictions	102
Table 3.3	Types of Health Insurance Policies Owned by the Sample Respondents	107
Table 3.4	Old Categories for Race and Religion	109
Table 3.5	Old and New Categories of Types of Occupations	110
Table 3.6	Risk Attitude Scales for Safety Behaviors	118
Table 3.7	Individual Respondents' Relationship with Head of Household	119
Table 3.8	Descriptive Statistics of the Continuous Variables after Transformation	121
Table 4.1	Socio-Demographics of Sample	127
Table 4.2	Descriptive Statistics of the Continuous Variables	129
Table 4.3	Chi-Square tests for Sample Data vs Population Data	130
Table 4.4	Profiles of Policyholders and non Policyholders according to Gender	133
Table 4.5	Profiles of Policyholders and non Policyholders according to Religion and Race	134
Table 4.6	Profiles of Policyholders and non Policyholders according to Education Level	135

Table 4.7	Profiles of Policyholders and non Policyholders according to Marital Status	137
Table 4.8	Profiles of Policyholders and non Policyholders according Types of Occupation	137
Table 4.9	Profiles of Policyholders and non Policyholders according Job Category	138
Table 4.10	Profiles of Policyholders and non Policyholders according to Location of Residence	139
Table 4.11	Model 1: Logistic Regression	143
Table 4.12	VIF for Model 1	144
Table 4.13	Model 2: Logistic Regression for Salaried Individuals	146
Table 4.14	Model 3: Logistic regression for Salaried Individuals with Safety Behavior	147
Table 4.15	Model 4: Logistic Regression for Salaried Individuals with Squared Age	150
Table 4.16	Classification Table for Model 4	151
Table 4.17	Model 5: Logistic Regression for Non-Salaried Individuals	157
Table 4.18	Health Insurance Ownership and Types of Health Insurance Purchased	164
Table 4.19	Model 6: Logistic Regression for Salaried Individuals and Price	165
Table 4.20	Model 7: Reduced form Logistic Regression for Salaried Individuals	169
Table 4.21	Classification Table for Model 7	169
Table 4.22	Cross Tabulation Health Insurance Ownership and Predicted Purchase for Salaried Individuals	171
Table 4.23	Chi-Square Test for Actual vs Predicted Purchase for Salaried Individuals	171
Table 4.24	Model 8: Reduced Form Model for Non Salaried Individuals	173
Table 4.25	Classification Table for Model 8	173
Table 4.26	Cross Tabulation Actual Health Insurance Ownership and Predicted Ownership for Non Salaried Individuals	174
Table 4.27	Chi-Square Tests for Actual vs Predicted Ownership for Non Salaried Individuals	175
Table 4.28	Heckman Selection Model – Two-step Estimates	177
Table 4.29	Linear Regression for Factors Affecting Amount of Coverage for Salaried Individuals	179
Table 4.30	Linear Regression for Factors Affecting Amount of Coverage for Non-Salaried Individuals	184
Table 5.1	The Profiles of Insured vs Uninsured	191
Table 5.2	Summary Results for Salaried Individuals	194

## LIST OF FIGURES

Figure 2.1	Illustration of the shape of the utility function in Prospect Theory	48
Figure 3.1	Theoretical Framework for Decision to Buy	80
Figure 3.2	Theoretical Framework for Amount of Coverage Given the Decision to Buy	81

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Introduction**

Private health insurance is one of the sources of funds for financing health care apart from direct taxes, public insurance and out of pocket payments. In some countries such as the United States, private health insurance is the source of funds for medical care for many individuals while in countries like the United Kingdom, the people are highly dependence on the public health insurance. The public health insurance could be in several forms such as mandated social insurance scheme as in the case of Japan or a tax-funded health financing scheme as in the case of United Kingdom.

In Malaysia, there is no specific program for public health insurance. Nevertheless, health care is highly accessible at the public health institutions for a minimal fee. Despite the fact, based on the Central Bank of Malaysia annual reports from year 2005 to 2008, the private health insurance business has grown significantly (Bank Negara Malaysia, 2005, 2009b). The report from the National Health and Morbidity Survey III which is a cross-sectional survey undertaken in year 2006, indicates that about 18.8% of the Malaysian population owned some type of private health insurance (Institute for Public Health, 2008).

The contents of  
the thesis is for  
internal user  
only

## REFERENCE

- Ajzen, I. (2002). Residual Effects of Past on Later Behavior: Habituation and Reasoned Action Perspectives. *Personality and Social Psychology Review*, 6(2), 107-122.
- Amemiya, T. (1994). *Introduction to Statistics and Econometrics*. London: Havard University Press.
- Arpah Abu Bakar, Habibah Tolos, & Lakehal Ayat, M. (2002). Employees Health Benefits Plan at Universiti Utara Malaysia: A Case Study. *International Journal of Case Studies and Research*, 7(1), 31-55.
- Arpah Abu Bakar, Habibah Tolos, & Razli Che Razak. (2004). *Factors That Affect the Non-corporate Demand For Health Insurance* (Research Report): University Utara Malaysia.
- Auerbach, D., & Ohri, S. (2006). Price and the Demand for Nongroup Health Insurance. *Inquiry - Excellus Health Plan*, 43(2), 122-134.
- Bank Negara Malaysia. (2005). *Insurance Annual Report*. Malaysia: Author.
- Bank Negara Malaysia. (2007). *Financial Stability and Payment Systems Report*. Kuala Lumpur: Bank Negara Malaysia.
- Bank Negara Malaysia. (2009a). *Annual Takaful Statistics*, Retrieved 2011, from <http://www.bnm.gov.my>
- Bank Negara Malaysia. (2009b). *Insurance Annual Statistics*, Retrieved 2011, from <http://www.bnm.gov.my>
- Bank Negara Malaysia. (2010a). *Annual Takaful Statistics*, Retrieved 2011, from <http://www.bnm.gov.my>
- Bank Negara Malaysia. (2010b). *Insurance Annual Statistics*, Retrieved 2011, from <http://www.bnm.gov.my>
- Barringer, M. W., & Mitchell, O. S. (1994). Workers' Preferences Among Company - Provided Health Insurance Plans. *Industrial and Labor Relations Review*, 48(1), 141-152.
- Besley, T., Hall, J., & Preston, I. (1999). The Demand for Health Insurance: Do Waiting Lists Matter? *Journal of Public Economics*, 72(2), 155-181.
- Bhat, R., & Jain, N. (2006). *Factoring Affecting the Demand for Health Insurance in a Micro Insurance Scheme*. Ahmedabad, India: Indian Institute of Management.
- Blumberg, L., J, Nichols, L. M., & Banthin, J. S. (2001). Worker Decisions to Purchase Health Insurance. *International Journal of Health Care Finance and Economics*, 1(3-4), 305-325.
- Breen, R. (1996). *Regression Models: Censored, Sample Selected or Truncated Data*. London: Sage Publications.
- Browne, M. J., & Kim, K. (1993). An International Analysis of Life Insurance Demand. *The Journal of Risk and Insurance*, 60(4), 616-634.
- Buchmueller, T. C., & Ohri, S. (2006). Health Insurance Take-Up By The Near-Elderly. *Health Services Research*, 41(6), 2054-2073.
- Buchmueller, T. C., Grumbach, K., Kronick, R., & Kahn, J. G. (2005). The Effect Of Health Insurance On Medical Care Utilization And Implications For Insurance Expansion: A Review Of The Literature. *Medical Care Research And Review*, 62(1), 3-30.

- Burrows, C., & Brown, K. (1988). *Health Insurance Decision-Making: A Literature Survey, Some Conclusion and A Few Suggestions*. Paper presented at the Tenth Australian Conference of Health Economists, Clayton.
- Camerer, C., & Weber, M. (1992). Recent Developments in Modeling Preferences: Uncertainty and Ambiguity. *Journal of Risk and Uncertainty*, 5(325-370).
- Cameron, A. C., Trivedi, P. K., Milne, F., & Piggott, J. (1988). A Microeconomic Model of the Demand for Health Care and Health Insurance in Australia. *Review of Economic Studies*, 1988, 85-106.
- Chernew, M. E., Frick, K., & McLaughlin, C. G. (1997). The Demand for Health Insurance Coverage by Low - Income Workers: Can Reduced Premiums Achieve Full Coverage? *Health Services Research*, 32(4).
- Chua, H. T. (2009). *Health Care Financing (HCF): What Options for Malaysia*. Retrieved 2009, from [http://www.epu.gov.my/.../HCF\\_What\\_Options\\_for\\_Malaysia\\_1420080107.pdf](http://www.epu.gov.my/.../HCF_What_Options_for_Malaysia_1420080107.pdf)
- Cutler, D. M., & Gruber, J. (1996). Does Public Insurance Crowd Out Private Insurance? *The Quarterly Journal of Economics*, May, 391-430.
- de Canniere, M. H., De Pelsmacker, P., & Geuens, M. (2008). *Relationship Quality and Theory of Plan Behavior Models of Behavioral Intentions and Purchase Behavior*: Universiteit Gent.
- DeMaris, A. (2004). *Regression with Social Data: Modeling Continuous and Limited Response Variables*. USA: John Wiley & Sons.
- Department of Statistics. (2000). *Report on Household Expenditure Survey Malaysia 1998/99*. Kuala Lumpur: Author.
- Department of Statistics. (2006). *Report on Household Expenditure Survey Malaysia 2004/05*. Kuala Lumpur: Author.
- Dewar, D. M. (1998). Do Those with More Formal Education have Better Health Insurance Opportunities? *Economics of Education Review*, 17(3), 267-277.
- Dewar, D. M. (2000). Gender Impacts on Health Insurance Coverage: Findings for Unmarried Full-Time Employees. *Women Health Issues*, 10(5).
- Economic Planning Unit. (1981). *Fourth Malaysia Plan 1981-1985*. Malaysia: Author.
- Economic Planning Unit. (1996). *Seventh Malaysia Plan 1996-2000*. Malaysia: Author.
- Economic Planning Unit. (2001). *Eight Malaysia Plan 2001-2005*. Malaysia: Author.
- Ekman, B., Liem, N. T., Duc, H. A., & Axelson, H. (2008). Health Insurance Reform in Vietnam: A Review of Recent Developments and Future Challenges. *Health Policy and Planning*, 23(252-263).
- Ellis, R. P. (1989). Employee Choice of Health Insurance. *The Review of Economics and Statistics*, 71(2), 215-223.



- Feldman, R., Finch, M., Dowd, B., & Cassou, S. (1989). The Demand For Employment - Based Health Insurance Plans. *The Journal of Human Resources*, 24(1), 115 - 142.
- Fishbein, M., & Ajzen, I. (1972). Attitudes and Opinions. *Annual Review of Psychology*, 23(1), 487-544.
- Friedman, B. (1955). What All is Utility? *The Economic Journal*, 65(259), 405-409.
- Friedman, B. (1974). Risk Aversion and the Consumer Choice of Health Insurance Option. *Review of Economics and Statistics*, 56(2), 209-214.
- Friedman, B., & Savage, L. J. (1948). The Utility Analysis of Choices Involving Risk. *The Journal of Political Economy*, 56(4), 279-304.
- Glied, S. (1994). Revising the Tax Treatment of Employer-Provided Health Insurance. In *American Enterprise Institute Special Studies in Health*. Washington, D.C.: American Enterprise Institute.
- Greene, W. H. (2008). *Econometric Analysis* (6th ed.): Pearson/Prentice Hall.
- Grossman, M. (1972). On the Concept of Health Capital and the Demand for Health. *Journal of Political Economy*, 80(2), 223.
- Gruber, J., & Poterba, J. (1994). Tax Incentives and the Decision to Purchase Health Insurance: Evidence from the Self-Employed. *Quarterly Journal of Economics*, 109(3), 701-733.
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate Data Analysis* (5th ed.). USA: Prentice-Hall.
- Hanoch, Y., & Rice, T. (2006). Can Limiting Choice Increase Social Welfare? The Elderly and Health Insurance. *The Milbank Quarterly*, 84(1), 37-73.
- Healthcare for Free. (2010, 11 Jul 2010). *NST Online*.
- Heim, B. T., & Lurie, I. Z. (2009). Do Increased Premium Subsidies Affect How Much Health Insurance is Purchased? Evidence from the Self-Employed. *Journal of Health Economics*, 20, 1197-1210.
- Hurd, M. D., & McGarry, K. (1997). Medical Insurance and the Use of Health Care Services by the Elderly. *Journal of Health Economics*, 16, 129-154.
- Institute for Public Health. (2008). *National Health and Morbidity Survey III*. Malaysia: Author.
- Jofre-Bonet, M. (2000). Public Health Care and Private Insurance Demand: The Waiting Time As a Link. *Health Care Management Science*, 3(1), 51-71.
- Jowett, M. (2003). Do Informal Risk Sharing Networks Crowd Out Public Voluntary Health Insurance? Evidence from Vietnam. *Applied Economics*, 35, 1153-1161.
- Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decisions Under Risk. *Econometrica*, 47(2), 263-291.
- Kan, M., & Suzuki, W. (2006). The Demand for Medical Care in Japan: Initial Findings From a Japanese Natural Experiment. *Applied Economic Letters*, 13, 273-277.
- Koc, C. (2005). Health-Specific Moral Hazard Effects. *Southern Economic Journal*, 72(1), 98-118.

- Kronick, R., & Gilmer, T. (1999). Explaining the Decline in Health Insurance Coverage, 1979 - 1995. *Health Affairs*, 18(2), 30-47.
- Kunreuther, H., & Pauly, M. (2006). Insurance Decision-Making and Market Behavior. *Foundations and Trends in Microeconomics*, 1(2), 63-127.
- Leung, S. F., & Yu, S. (1996). On the Choice Between Sample Selection and Two-Part Models. *Journal of Econometrics*, 72, 197-229.
- Liu, T. C., & Chen, C. S. (2002). An Analysis of Private Health Insurance Purchasing Decisions with National Health Insurance in Taiwan. *Social Science and Medicine*, 55, 755-774.
- Long, S. H., & Marquis, M. S. (2002). Participation in a Public Insurance Program: Subsidies, Crowd-Out, and Adverse Selection. *Inquiry - Excellus Health Plan*, 39(3), 243-257.
- Madden, D. (2008). Sample Selection versus Two-Part Models Revisited: The Case of Female Smoking and Drinking. *Journal of Health Economics*, 27, 300-307.
- Malaysian Employers Federation. (2005). *Salary and Fringe Benefit Survey for Executives*. Malaysia: Author.
- Malaysian National Health Account (MNHA) Unit. (2008). *Health Expenditure Report (1997-2000)*. Malaysia: Author.
- Manning, W. G., & Marquis, M. S. (1996). Health Insurance: The Tradeoff Between Risk Pooling And Moral Hazard. *Journal of Health Economics*, 15, 609-639.
- Manning, W. G., Newhouse, J. P., Duan, N., Keeler, E. B., & Leibowitz, A. (1987). Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment. *The American Economic Review*, 77(3), 251-277.
- Marquis, M. S., Buntin, M. B., Escarce, J. J., Kapur, K., Louis, T. A., & Yegian, J. M. (2006). Consumer Decision Making in the Individual Health Insurance Market. *Health Affairs, Web Exclusive May 2*, 226-334.
- Marquis, M. S., Buntin, M. B., Escarce, J. J., Kapur, K., & Yegian, J. M. (2004). Subsidies And The Demand For Individual Health Insurance In California. *Health Services Research*, 39(5), 1547-1570.
- Marquis, M. S., & Holmer, M. R. (1996). Alternative Models of Choice under Uncertainty and Demand for Health Insurance. *The Review of Economics and Statistics*, 78(3), 421-427.
- Marquis, M. S., & Long, S. (1995). Worker Demand for Health Insurance in the Non-Group Market. *Journal of Health Economics*, 14(1), 47-64.
- Ministry of Health Malaysia. (2004). *Annual Report 2003*. Malaysia: Author.
- Monheit, A. C., & Vistnes, J. P. (2000). Race/Ethnicity and Health Insurance Status: 1987 and 1996. *Medical Care Research and Review*, 57(11).
- Naito, K. (2009). Health Care Insurance in Japan: Beyond a Binary Vision of State and Family. *International Social Security Review*(3), 49-77.
- Nyman, J. A. (2004). Is 'Moral Hazard' Inefficient? The Policy Implication of a New Theory. *Health Affairs*, 23(5), 194-199.

- Paringer, L. (2007). Hispanic Workers and Employer Sponsored Health Insurance. *American Economist*, 51(1), 40-53.
- Pauly, M. V., & Herring, B. (2007). The Demand for Health Insurance in the Group Setting: Can You Always Get What You Want? *Journal of Risk and Insurance*, 74(1), 115-140.
- Propper, C. (1989). An Econometric Analysis of the Demand for Private Health Insurance in England and Wales. *Applied Economics*, 21(6), 777-792.
- Reisman, D. (2006). Payment for Health in Singapore. *International Journal of Social Economics*, 33(1/2), 132-159.
- Saver, B. G., Doescher, M. P., Symons, J. M., Wright, G. E., & Andrilla, C. H. (2003). Racial and Ethnic Disparities in the Purchase of Nongroup Health Insurance: The Roles of Community and Family Level Factors. *Health Services Research*, 38(1, Part 1).
- Schneider, P. (2004). Why Should the Poor Insure? Theories of Decision-Making in The Context of Health Insurance. *Health Policy and Planning*, 19(6), 349-355.
- Schur, C. L., & Berk, M. L. (1998). Choice of Health Plan: Implications for Access and Satisfaction. *Health Care Financing Review*, 20(1), 29-43.
- Short, P. F., & Taylor, A. K. (1989). Premiums, Benefits and Employee Choice of Health Insurance Premium Options. *Journal of Health Economics*, 8(3), 293 - 311.
- Simon, H. A. (1955). A Behavioral Model of Rational Choice. *The Quarterly Journal of Economics*, 69(1), 99-118.
- Simon, H. A. (1986). Rationality in Psychology and Economics. *The Journal of Business*, 59(4), S209-S224.
- Spehri, A., Moshiri, S., Simpson, W., & Sarma, S. (2008). Taking Account of Context: How Important are Household Characteristics in Explaining Adult Health-Seeking Behavior? The Case of Vietnam. *Health Policy and Planning*, 23(397-407).
- Sturman, M. C., Boudreau, J. W., & Corcoran, R. J. (1996). Why Do Employees Keep Choosing The High - Premium Health Care Plan? An Investigation Of The Financial Consequences And Logic Of Employee Health Care Plan Selections. *Human Resource Management*, 35(1), 317 - 342.
- Syed Aljunid. (1996). *Role of Primary Care Doctors in Private Sector.*, Retrieved 2005, from <http://pcdom.org.my/index.php/primary-care>
- Tobin, J. (1958). Estimation of Relationships for Limited Dependent Variables. *Econometrica*, 31, 24-36.
- Wonnacott, R. J., & Wonnacott, T. H. (1985). *Introductory Statistics* (4th ed.). Singapore: John Wiley & Sons.
- World Health Organization. *World Health Report*. (2008). Retrieved 2010, from <http://www.who.int/whr/2008/en/index.html>
- World Health Organization. *World Health Statistics*. (2010). Retrieved 2011, from [http://www.who.int/entity/whois/whostat/EN\\_WHS10\\_Part2.pdf](http://www.who.int/entity/whois/whostat/EN_WHS10_Part2.pdf)

World Health Organization. *World Health Statistics*. (2011). Retrieved 2011, from [http://www.who.int/entity/whois/whostat/EN\\_WHS2011\\_Part2.pdf](http://www.who.int/entity/whois/whostat/EN_WHS2011_Part2.pdf)