

VOLUNTARY HEALTH INSURANCE IN VIETNAM: AN EVALUATION

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ABSTRACT

This paper summarises the findings of a series of articles which evaluate the impact of State-implemented voluntary health insurance (VHI) on the Vietnamese health system. The results are generally positive with clear equity gains in terms of utilisation and expenditures, and no evidence of consumer moral hazard. However VHI appears to negatively affect the quality of care, which patients trade off with expected financial gain. Whilst VHI suffers from adverse selection, rather than limiting access to high-risk individuals, more concerted and marketing strategies are required, in particular those targeting the low-educated and remote communities. There is clear evidence that members of voluntary organisations are significantly more likely to purchase a VHI policy. Whilst targeting such groups would promote risk-sharing and limit adverse selection, it is likely that government subsidies will be required for the foreseeable future.

Many governments in low and middle-income countries are introducing health insurance schemes, on the basis that they will increase the private financing of health care services, in turn reducing the burden on the public sector, whilst protecting individual welfare through maintaining or improving access to health care services.¹ In 1986 the Vietnamese Government introduced market economic reforms, known as *doi moi* (renovation). For government health services this meant the introduction of user charges in 1989, followed by the government implemented not-for-profit health insurance in 1992. The system comprises two schemes: compulsory insurance and voluntary insurance.

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Despite adopting health insurance few countries have systematically evaluated its effect on their health system, in relation to stated health policy goals.² This paper summarises the findings of a two-year research project, which examined voluntary health insurance (VHI) in Vietnam¹. The motivation for focussing on the VHI rather than the compulsory scheme was that it presents both the greatest challenges and potential benefits for the Government of Vietnam. The project focussed on two broad areas of investigation. First, it evaluated the effect of VHI on the utilisation of health care services, from both efficiency and equity perspectives, together with an evaluation of its effect on the quality of care. Second, the study was concerned with the future development of VHI with a focus on why some individuals purchase a policy whilst others don't, and an assessment of the scheme's financial sustainability.

Both econometric and qualitative methods are used to analyse the data collected as part of the research. Detailed analysis of each question is presented in a series of separate papers^{3,4} amongst its members, and hence greater inefficiency in the system? Moral hazard, the term commonly used to describe such over-consumption, is expected to occur as a result of the reduction in price to the consumer at the point of service.^{5, 6} The results of empirical tests of each question are summarised in this paper.

Together with a range of explanatory factors, two key concepts are used to analyse why certain individuals purchase VHI whilst others don't. Risk aversion, which draws on the theory of marginal utility of income, is used in economics to predict which individuals will purchase an insurance product. The second concept, adverse selection, describes the situation whereby higher risk individuals are more likely to purchase insurance, in larger quantities than healthy individuals, due to actions resulting from information asymmetry. Under adverse selection the average probability of illness in the risk-pool, and hence insurance claims, tends towards one, leading ultimately to financial instability if not addressed.^{7, 8} The study examined two further issues: does VHI actually lead to reduced health expenditures and if so who benefits, and what is the effect of VHI on quality of care?

Overview of State Health Insurance

Both compulsory (CHI) and voluntary health insurance (VHI) schemes are not-for-profit and implemented by the Government of Vietnam at the province level. CHI targets State employees and employees of large firms, who contribute one per cent of their income into the scheme, with employers contributing a

further two per cent. Approximately seven million people out of a total population of 76 million are eligible for CHI of which around 85 per cent are currently enrolled.^{9,10} VHI targets the remainder of the Vietnamese population. The development of a separate voluntary scheme for the bulk of the population is principally motivated by administrative constraints i.e., in assessing income levels and collecting premia from a largely self-employed population. The presence of such constraints in Vietnam is confirmed in a study that predicts the feasibility of compulsory insurance in a range of countries¹¹.

VHI targets three population sub-groups: (i) schoolchildren, (ii) individuals in households eligible for humanitarian assistance to whom VHI should be provided free-of-charge, and (iii) other adults, including the self-employed (e.g. farmers and service workers), employees of small enterprises, and government employees in certain provinces at the district level and below. Apart from relatively high coverage amongst schoolchildren, the uptake of VHI amongst paying adults has been minimal to date, standing at around 0.6 per cent of eligible adults. The analysis presented in this paper focuses on sub-group third above i.e., self-employed adults including rural farmers, who are further separated into members and non-members. VHI is implemented and administered by Provincial Health Insurance offices, which have autonomy over premium levels and benefits within a range specified by central government. As such the scheme is essentially organised in a top-down fashion. An annual policy costs on an average between 60,000 and 120,000 Vietnamese Dong (US\$ 4-9). As a not-for-profit scheme, premia are not risk-rated, with all individuals facing the same premium level within any one province.

Two types of insurance policy are typically offered under VHI; the one covering only inpatient services, and the other covering both inpatient and outpatient services. The benefits of VHI are purely financial with members receiving 80 per cent reduction in any applicable user charges with a ceiling on annual health expenditures set at six months of the minimum basic salary.¹² No further benefits are offered e.g. treatment in a separate facility, or by different medical professionals. At the time of purchase the insured person must designate a public health facility at which all benefits can be obtained. Members cannot, for example, use the insurance policy to reduce charges at private or non-designated public facilities.

Sampling and Data Collection

Data were collected through a tailor-made household survey conducted in three provinces in Vietnam: Hai Phong, Ninh Binh and Dong Thap. Hai Phong Province is located in the north-east of Vietnam, with a population of 1.7 million, and with one-third of the population classified as urban. It was selected given its

uniqueness as the first province where health insurance was introduced in 1989¹³, allowing a comparison between a more advanced and less advanced scheme. Two additional provinces were selected, one in the north of Vietnam and one in the south. All provinces with a functioning VHI scheme were considered^(a). Ninh Binh in north-eastern Vietnam and Dong Thap in the Mekong Delta region in the south-west were selected. Both Ninh Binh, with population of 1 million, and Dong Thap, with around 1.5 million, are predominantly agricultural provinces, with over 80 per cent of the population defined as rural.

Within each province, one urban and two rural districts were randomly selected, reflecting the predominantly rural population structure of Vietnam. In each district three communes, referred to as wards in urban areas, were randomly selected giving a total of twenty-seven communes included in the sample. VHI members were randomly drawn from lists supplied by the respective Provincial Health Insurance offices. Non-members were selected from lists of residents in each selected commune, provided by the local Commune People's Committee. The number of individuals who had purchased VHI was extremely low in most communes according to the lists provided, and hence this group was over-sampled in order to constitute approximately 50 per cent of the total sample. Weighting was applied in the statistical analysis to correct for this.

Fieldwork was conducted during the period April to June 1999. The survey included questions on household socio-economic characteristics, utilisation of health services, health expenditures, health insurance and patient satisfaction. Interviews were conducted in the respondents' household by trained interviewers. A total of 1,649 adults were interviewed, of which 19 per cent were conducted in Ninh Binh, 40 per cent in Hai Phong and 41 per cent in Dong Thap. A response rate of 90 per cent was achieved, a figure not uncommon amongst rural communities in Vietnam. In addition to the household survey, in-depth interviews were conducted with fifty-four respondents, selected through stratified random sampling in order to ensure a mixture of VHI members and non-members, age, gender and income levels. Attitudinal issues such as satisfaction with VHI and health services, and sensitive issues such as unofficial payments for health services were investigated using this method.

Explanatory Variables for Econometric Analysis

Similar explanatory variables are used to address the research questions and were divided into three categories: health status, socio-economic variables and VHI membership status. Health status is used as a proxy for need and

(a) All provinces had a VHI scheme at the time of the survey, but only fifty five out of sixty-one provinces had an operating VHI scheme.

measured using two variables, the first based on self-assessed health status for the 12 months preceding the survey. Two dummy variables are created to represent good and fair health status. Individuals with poor health status thus form the reference category. The second variable assesses whether or not the respondent has a long-standing limiting illness and is entered as a dummy variable.

Respondents are grouped into four age categories, three of which are entered into the model as dummy variables. Individuals aged over 65 years form the reference group. Income, religion, marital status and province of residence are included in the model as socio-economic characteristics. Per capita annual consumption expenditure in the respondent's household is used as a proxy for income for two reasons. Firstly, survey responses regarding household expenditures are considered more reliable than those regarding income, given the sensitivity of the latter issue. Secondly, income tends to vary considerably by season, particularly amongst farmers who form almost 40 per cent of the sample, leading to potential problems of bias in cross-sectional data. Consumption expenditures on the other hand tend to vary less across seasons and are hence preferable as a measure of economic status.¹⁴ A range of other variables are used to represent social status, including age, sex, years of schooling, religion, and whether an urban or rural resident. Distance to health facilities was also collected. Finally in order to compare VHI members with non-members, and hence the independent effect of VHI, a dummy variable representing purchase of a VHI policy since January 1997 was created. This cut-off point in time was necessary to capture sufficient numbers of members for the survey, whilst limiting problems of recall^(b).

RESULTS

The Effect of VHI on Utilisation Levels (An Empirical Test of Moral Hazard)

We first analyse whether or not an individual has been ill during the three months prior to the survey, and if so, their subsequent utilisation behaviour. Information was collected retrospectively at the time of the interview. Utilisation is defined either as a visit to a health facility, which includes any government or

(b) As a result of the need to include individuals, who had purchased a VHI policy since January 1997, VHI membership is defined differently according to the research question. For example when analysing the impact of VHI on utilisation only members at the time of survey were included. For the general analysis of demand for VHI however, those were not current members, but had bought a VHI policy previously were included in the definition.

private health facility and private pharmacies, or a visit by a health worker to the respondent's home. Contacts with service providers relating to preventive care, which are not covered under VHI, were discounted from the analysis. Amongst ill individuals, a Poisson or a negative binomial model is used to estimate the effect of a variety of factors on the frequency of service utilisation amongst the ill[©]. In the sample, a large proportion of those respondents who did not utilise health services during the three months preceding the survey had not been ill. The distribution of health service utilisation amongst ill individuals is presented in Table 1.

TABLE 1
UTILISATION OF HEALTH SERVICE AMONG ILL INDIVIDUALS

Number of contacts with health services	Percentage of individuals
0	10 per cent
1	33 per cent
2	26 per cent
3	14 per cent
4	4 per cent
5 or more	13 per cent

The results of the two models (illness, and utilisation conditional on illness) are presented in Table 2. The non-significance of the 'VHI' dummy variable in the utilisation model suggests that there is no significant difference in utilisation levels between members and non-members, controlling for health status and various other factors. This implies that moral hazard is not present in the scheme. Individuals with higher levels of education, are significantly less likely to have been ill during the period in question. Individuals living in Hai Phong province have a significantly lower probability of being ill than residents of Dong Thap Province, a finding that merits further investigation. One possible explanation might be the differing environmental and climatic situation between Dong Thap province in the Mekong River Delta of southern Vietnam, and Hai Phong province in the north-east of Vietnam.

(c) A full justification and description of the regression model used can be found in Jowett and Martinsson, 2000b, available from the author.

TABLE 2

ESTIMATION RESULTS FOR ILLNESS AND UTILISATION MODELS

	Illness model		Utilisation model	
	Coefficient	Standard error	Coefficient	Standard error
Constant	1.207***	0.263	0.711***	0.176
Good health status in last 12 months	-1.416***	0.192	-0.580***	0.136
Fair health status in last 12 months	-0.884***	0.174	-0.413***	0.098
Long standing limited illness	-0.095	0.253	0.220*	0.133
Hai Phong	-0.913***	0.128	-0.749***	0.123
Farmer	0.071	0.152	0.184*	0.105
Government employee	0.119	0.361	0.579**	0.279
Service worker	0.114	0.186	-0.017	0.143
Hired worker	-0.081	0.215	0.097	0.149
Ancestor worshipper	0.088	0.130	0.163	0.117
Buddhist	0.236	0.157	0.161	0.125
Catholic	0.055	0.328	-0.388	0.236
Female	-0.139	0.103	-0.049	0.077
Married	-0.069	0.126	0.075	0.093
5-9 years education	-0.224*	0.130	-0.232**	0.092
10-15 years education	-0.411**	0.179	-0.120	0.140
>15 years education	-1.489	1.015	-0.303	1.191
18-35 years old	-0.198	0.206	0.157	0.132
35-50 years old	0.039	0.202	0.305**	0.131
51-65 years old	0.148	0.216	-0.111	0.141
VHI	-0.372	0.847	0.005	0.594
VHI in Hai Phong	0.551	0.757	0.241	0.586
Consumption expenditure per capita (VDN '000s) and a VHI member	0.076	0.117	-0.018	0.072
Consumption expenditure per capita (VDN '000s) and not a VHI member	0.026	0.028	0.040***	0.014
Number of adults		862		397

* Significant at 10 per cent level

** Significant at 5 per cent level

*** Significant at 1per cent level

The Effect of VHI on Income-related Inequality in Service Utilisation

As part of the regression analysis highlighted in earlier section, two interaction terms were included combining consumption expenditures and VHI membership/non-membership. These two interaction terms allow an analysis of differences in utilisation levels amongst individuals of different income levels, firstly amongst all VHI members, and secondly amongst all non-members. The key finding, as presented in Table 2, is that amongst VHI members, income has no significant effect on an individual's level of service utilisation. Amongst non-members, however, the estimation shows a positive and significant relationship between income and utilisation. These results indicate that membership of VHI removes income-related inequality in the utilisation of health services.

VHI also has several other effects on utilisation behaviour. First, it appears to encourage persons with illnesses to use government health services rather than self-treat. Assuming that the quality of care is superior in government health facilities, this is one way in which VHI is probably having a positive health effect for its members. By reducing self-treatment with medicines bought privately, it is possible that indirectly VHI assists in reducing the growing resistance of patients to antibiotics and other medicines such as anti-malarials.

The Effect of VHI on Health Expenditures

A range of questions were asked concerning the total cost of the respondent's last contact with health services, including travel costs, official payments for consultations, other tests (e.g. X-ray), medicines, and any extra or unofficial payments. Table 3 presents total out-of-pocket payments cross-tabulated by insurance status and consumption expenditure quartile.

The findings presented in of Table 3 reveal that average payment in the highest income quartile is VND 420,000, 150 per cent greater than individuals in the lowest income quartile. Substantial difference in out-of-pocket expenditures between VHI members and non-members has also been observed. In each consumption quartile except the highest, VHI members consistently paid less than non-members. In the lowest consumption quartile non-members paid on an average 50 per cent more than members. In most cases the difference in average payments between the two groups far outweighs the cost of purchasing a VHI card, implying that, on an average, the card paid for itself after only one visit.

TABLE 3

HEALTH EXPENDITURES AT LAST VISIT BY CONSUMPTION QUARTILE
(VIETNAMESE DONG)

Consumption quartile (annual per capita expenditure in respondent's household)	Members	Non-members	All respondents
1 ≤ 1,912,000 VND	153,000 (8.9)	183,000 (17.1)	171,000 (13.1)
2 1,912,000 to 2,703,000 VND	158,000 (4.4)	224,000 (12.8)	188,000 (7.8)
3 2,703,001 to 3,816,000 VND	174,000 (3.6)	319,000 (9.1)	236,000 (5.8)
4 > 3,816,000 VND	477,000 (6.7)	346,000 (6.7)	420,000 (6.7)
Average =	245,000 (5.8)	260,000 (11.9)	252,000 (8.4)

(Figures in parentheses indicate percentages.)

Further it can also be understood from data presented in Table 3 that an individual living in a low-consumption household, health expenditures during the last visit were on an average 13.1 per cent of annual income, compared with 6.7 per cent in high-income households. This finding confirms the pattern found in several studies in low-income countries^{15,16} that richer households sacrifice substantially less in financial terms in order to access health services. When VHI members and non-members are compared within income quartiles, the impact of VHI membership becomes more evident. For example, in the lowest consumption quartile, non-members paid on an average 17.1 per cent of their annual income during their most recent contact with health services, compared with 8.9 per cent for VHI members.

The Effect of VHI on the Quality of Health Care Services

The household survey included a series of questions regarding patient satisfaction with the quality of service received during their most recent contact

with health services. Table 4 presents the correlation coefficients between several aspects of patient satisfaction collected as part of the survey and VHI membership.

TABLE 4

CORRELATION COEFFICIENTS OF VHI MEMBERSHIP AND PATIENT SATISFACTION

	VHI member
Satisfaction with district hospital	-0.2146***
Satisfaction with provincial hospital	0.1479***
Satisfied with waiting time	-0.2015***
Satisfied with attitude of health worker	-0.2044***
Satisfied with advice of health worker	-0.1283***
Satisfied with skill of health worker	-0.0706**

** Significant at 5 per cent level *** Significant at 1 per cent level.

The correlation results show a strong, negative correlation between VHI membership and almost all aspects of patient satisfaction. Only general satisfaction with provincial hospitals shows a positive correlation. Several further questions were also asked specifically of VHI members regarding satisfaction with the insurance scheme. The findings reveal that there is some dissatisfaction amongst VHI members over the length of time they had to wait to receive health care (e.g. administrative procedures). Dissatisfaction is also stronger amongst VHI members regarding the attitude of health staff during consultations. The dissatisfaction amongst VHI members is in part due to the impression that patients making direct payments to service providers receive a substantially better service. In general VHI members are satisfied with the insurance scheme, in particular when financial benefits, for example at provincial hospitals, are substantial.

Demand For Voluntary Health Insurance

Those individuals not eligible for either compulsory insurance or subsidised voluntary health insurance are confronted with the choice whether or not to purchase VHI. A random utility framework is applied to analyse this choice.¹⁷ In practice VHI is sold through promotion activities organised by Provincial Health Insurance offices, which target a limited number of communes at any one time. These campaigns are sporadic, and no detailed information on such activities is available. Their effectiveness will vary across provinces in part as a result of the competence of each insurance office. Intuitively, individuals only face the decision whether or not to buy VHI if they are aware that the product exists, an

issue similar to that of constrained choice sets outlined in the UK.¹⁸ Thus we first examine those factors influencing whether or not a respondent has heard of VHI, which might be considered a proxy for the effectiveness of marketing strategies, followed by an analysis of demand only amongst those individuals aware of VHI.

A two-part model is used to estimate the two models using the maximum likelihood technique. This model allows for the possibility of non-random sample selection given that the approach uses choice-based sampling^d (i.e. the second model is based on a positive response in the first model, and hence only a sub-sample is used to estimate the second model). The results of the estimations are presented in Table 5.

Although health status has no significant effect on awareness of VHI, those individuals reporting good health are, *ceteris paribus*, significantly more likely not to have purchased VHI. This finding indicates that adverse selection is present in the scheme. Per capita consumption expenditures, which are used as a proxy for income, have neither a significant effect on the probability of an individual being aware of VHI, nor on the likelihood that they have purchased a VHI policy. This suggests income does not influence the purchase decision and contradicts the findings of studies in other countries.^{19, 20}

Individuals who say they worry less about future health, used as a proxy for risk-aversion, are significantly less likely both to be aware of VHI and to have purchased it. This finding is in line with economic theory i.e. that risk-averse individuals are less likely to purchase insurance^(e). There is a positive schooling effect with better-educated individuals more likely both to have heard of and to have purchased VHI. Distance from an individual's household to the nearest district hospital has a significant and negative effect on awareness of VHI, suggesting that current marketing activities are ineffective at promoting the scheme in remote communities. Distance also has a negative effect on the likelihood of VHI purchase. Given that individual demand for health care is inextricably linked with demand for health insurance²¹ and that there is evidence that distance has a rationing effect on demand for health care.²²

(d) The full model is outlined in Jowett and Martnson, 2000

(e) An exploration of the theory of insurance in terms of risk aversion can be found in most economics textbooks.

TABLE 5
MODELS OF AWARENESS AND DEMAND FOR VHI

	Heard of VHI		Purchased VHI	
	Coefficient	Standard error	Coefficient	Standard error
Constant	2.055***	0.290	3.921***	0.285
Good health status in last 12 months	-0.209	0.178	-0.322**	0.148
Fair health status in last 12 months	-0.083	0.156	-0.041	0.129
Long standing limited illness	-0.037	0.193	-0.129	0.148
Consumption expenditure per capita (in VND 1000)	0.049	0.031	-0.018	0.021
Low level of worry about future health	-0.228*	0.130	-0.304**	0.122
Intermediate level of worry about future health	-0.254**	0.126	-0.256**	0.108
Distance to district hospital	-0.021**	0.010	-0.041***	0.009
Hai Phong	1.092***	0.206	-0.405***	0.145
Ninh Binh	0.968***	0.158	-1.261***	0.141
Farmer	0.262*	0.150	-0.234*	0.136
Government employee	1.935***	0.260	0.620***	0.187
Service worker	-0.114	0.180	-0.276	0.174
Hired worker	0.595**	0.235	-0.332	0.232
Ancestor worshipper	0.016	0.157	-0.131	0.112
Buddhist	-0.080	0.181	-0.185	0.156
Catholic	-0.015	0.203	0.117	0.168
5-9 years education	0.374***	0.122	0.179	0.139
10-15 years education	0.806***	0.169	0.341**	0.165
>15 years education	0.991**	0.386	0.399	0.263
18-35 years old	-0.331*	0.188	-0.264	0.172
35-50 years old	-0.278	0.180	-0.401**	0.160
51-65 years old	-0.024	0.195	0.051	0.160
Female	-0.522***	0.119	-0.068	0.087
Married	0.227**	0.100	0.051	0.112
Rural	-0.593***	0.144	-0.596***	0.132
Number of adults	1319		1013	

* Significant at 10 per cent level ** Significant at 5 per cent level *** Significant at 1 per cent level.

DISCUSSION AND CONCLUSION

The results are generally positive, with VHI having several positive equity effects in the system as a whole and no negative effect in terms of greater inefficiency. However VHI does appear to have a negative effect on the quality of care received by patients, something they trade-off with the financial gains to be made. An analysis of moral hazard, which implies unnecessary over-consumption of health services as a result of being covered by insurance, shows no significant difference between members and non-members. The problem of moral hazard appears to have been countered through the introduction of a 20 per cent co-payment. Regular monitoring is however required as the data presented here refer only to one point in time.

The equity effect of VHI is evident in terms of the significantly lower expenditures made by VHI members, when compared to members, particularly amongst the poor. Similarly an analysis of income-related inequality in utilisation, shows that whilst such inequality is present amongst non-members, this disappears when the utilisation behaviour of VHI members is analysed. This finding is positive and suggests that the government's policy objective related to protecting access amongst the poor have been met. However, the financial implications of the scheme i.e. the extent to which there is a net increase in funding to the health sector, and whether or not the scheme is sustainable requires further analysis. Preliminary calculations suggest that government subsidy is likely to be required for some years.

The main negative effect of VHI appears to be the perceived quality of care received by members. In addition to restrictions on the facility at which the financial benefits can be obtained, members report longer waiting times and worse attitudes of the staff compared to when user charges are paid. Patients thus appear to trade-off the financial benefits of an individual consultation and related interventions, and the time and other costs of lower quality. The result is that for minor health problems, members frequently do not use their policy, preferring to pay full user charges. However when user charges are substantial, patients are more likely to accept lower quality. Another issue, which may complicate this picture, is the unofficial rent-seeking behaviour of health staff. It is possible that health staff believe the private financial gains to themselves are greater when treating non-members. The payment of unofficial charges is widely reported in Vietnam.

Finally the issue of adverse selection requires greater clarity of thought on the part of the Vietnamese Government. Whilst this creates greater financial pressure on the scheme, by reducing the efficiency of risk-sharing in the scheme, it is the case that for many individuals health needs are now being met as a

result of VHI membership, whereas, possibly they were not when full user charges were faced. Whilst some measures can be taken to limit the pool of high-risks, and might be considered unethical in a non-profit insurance scheme. The primary focus for the government should thus be to promote membership amongst relatively healthy individuals to improve the efficiency of risk sharing.

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