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HA NOI MEDICAL UNIVERSITY**

Research report

**ASSESSMENT OF FINANCIAL PROTECTION IN THE VIET NAM
HEALTH SYSTEM: ANALYSES OF VIETNAM LIVING
STANDARD SURVEY DATA 2002-2010**

By

Hoang Van Minh, Nguyen Thi Kim Phuong, and Priyanka Saksena

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I. INTRODUCTION

Vietnam is located in Southeast Asia and shares borders with China to the north and Lao People's Democratic Republic and Cambodia to the west. The country covers an area of 331,000 square km and in 2010 has a population of about 85 million. Gross domestic product (GDP) per capita in Vietnam in 2010 was approximately US\$ 1200. Life expectancy at birth in Vietnam in 2009 was 70.2 years for males and 75.6 years for females [1].

Since 1990, together with the changes made in socioeconomic policies, multiple reforms have been taking place in Vietnam's health sector. Central among these reforms were the introduction of user fees collected at public health care providers, legalization of the pharmaceutical market and private medical practices provided by both public and private health care providers, and the initiation of health insurance schemes at the national level. Initially the national health insurance scheme covered mainly government civil servants and workers of state-owned enterprises, and pensioners (former government employees). The eligibility was then extended to workers of private enterprises, school children (on a voluntary basis), and some socially assisted groups. As of 2002, health insurance (HI) coverage was just 16% of the population. For the poor, a health care fund for the poor was established in every province, using mainly government funds to reimburse providers directly [2]. However, from 2006, all of the poor were eligible to be covered with national health insurance through full government subsidies for health insurance premiums [3]. A similar policy is applied for all children under 6 from 2009[4]. According to the health insurance law approved in 2008, school children and the near poor have to join HI compulsorily, with government subsidies that account for 30% and 50% of premiums, respectively. However, the enrolment rate in these two groups is not high, especially for the near poor. Thanks to the government policy to cover the poor and under- six children, as of 2010, HI coverage reached around 60%. Expanding further coverage seems to be a challenge. Farmers, workers' dependants, self-employed, and informal workers are still out of the system. According to a recent plan announced by the Ministry of Health (MOH), the government is committed to achieve health insurance universal coverage by 2020.

In Vietnam, total health expenditure has significantly increased during recent years. In nominal terms, per capita health expenditure went up from VND 345,000 (US\$ 23) in 2002 to VND 1,580,000 (US\$ 85) in 2010. If the 1994 constant price was applied, the figure was VND 217,938

(US\$15) in 2002 and VND 521,000 (US\$ 28) in 2010 (Figure 1). The total health expenditure as a share of GDP rose from 5.1% in 2002 to 7% in 2010 (Figure 2) [5].

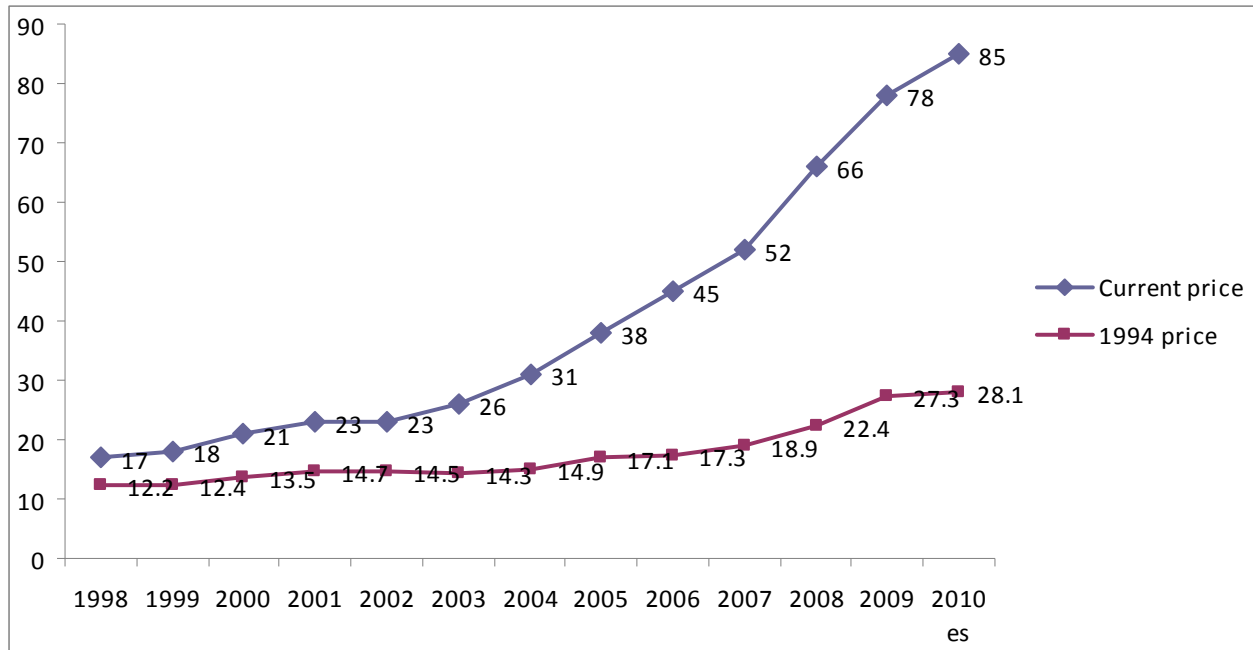


Figure 1: Per capita health expenditure, Vietnam 1998-2010
(Source: National Health Account 2010)

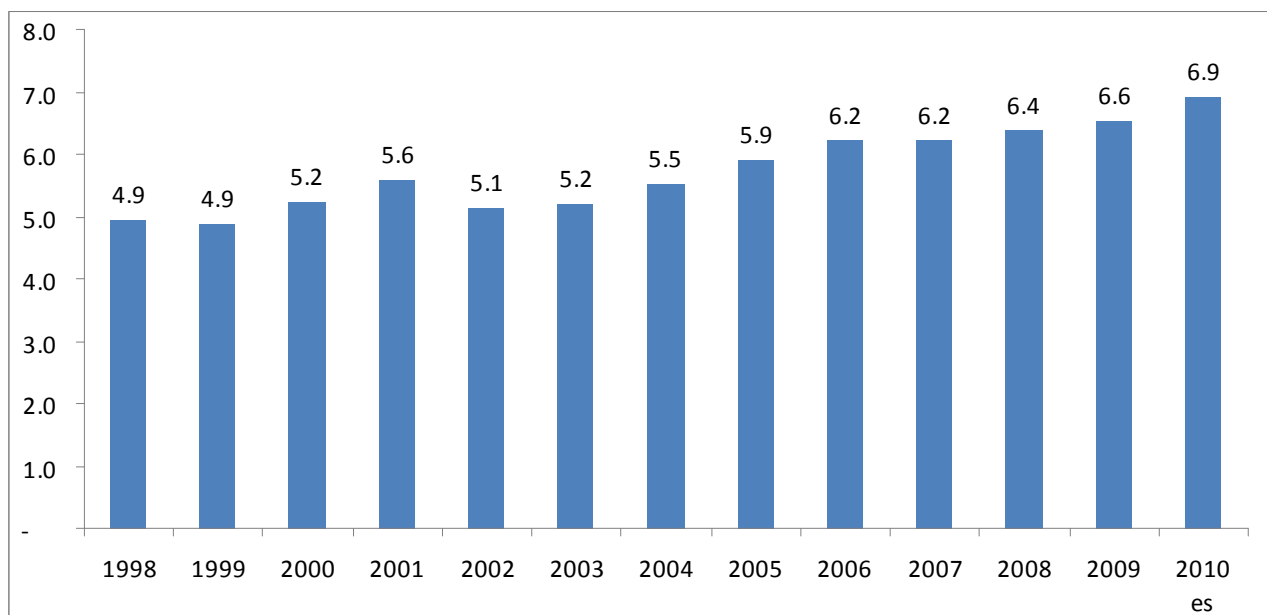


Figure 2: Total health expenditure as a share of GDP, Vietnam 1998 - 2010
(Source: National Health Account 2010)

Like many other developing countries, Viet Nam is using three main sources to finance national health care expenditure, including the government direct budget subsidy; social health insurance; and direct out-of-pocket payments by households [6]. Figure 3 show the composition of overall national health expenditure, for 2009, obtained from the latest MOH National Health Accounts (NHA) results.

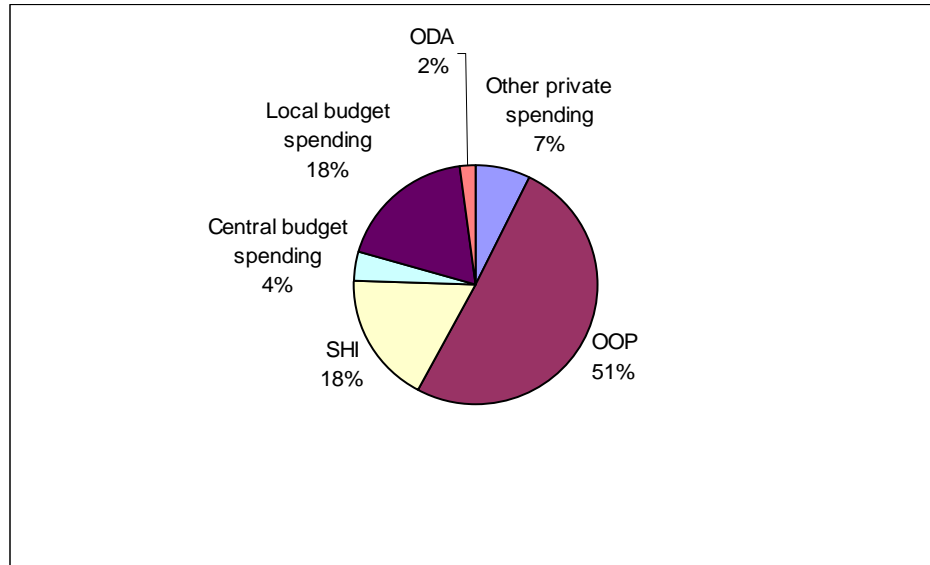


Figure 3: Composition of national health expenditure, 2009
(Source: Author's own calculation from MOH NHA, 2011)

It is important to note that in 2009, out-of-pocket payment (OOP) for health care still accounted for more than 50% of total health expenditure, which is very high compared to internationally recommended level of below 30% of total health expenditure [7]. However, positive trend of reducing OOP has been observed in the last decade, especially during the last five years, as the results of increased funding proportion from health insurance (Figure 4).

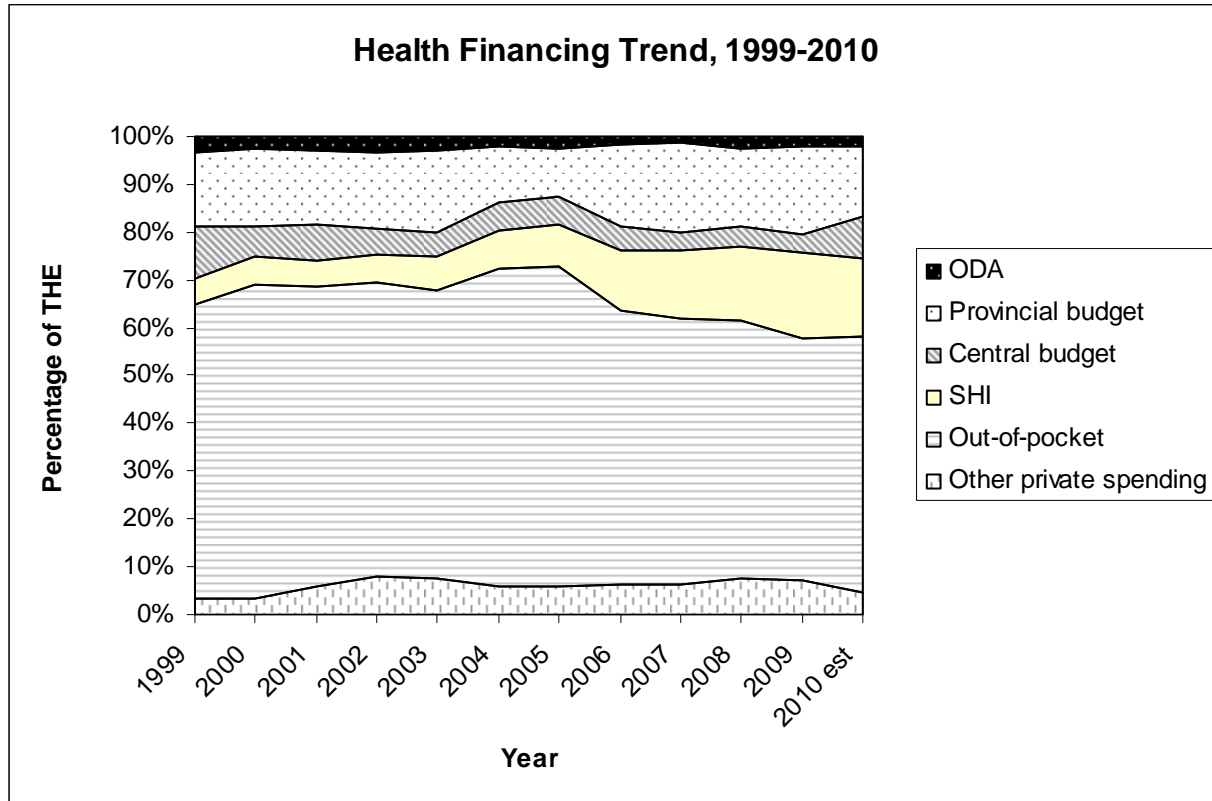


Figure 4: Trend of health financing, 1999 – 2010
 (Source: Author's own calculation from MOH NHA, 2011)

The high share of household direct OOP of total health expenditure while as much as 40% of total population hasn't been covered with any form of financial protection such as health insurance, implies that many households especially the near poor might have been in financial hardship when being sick and seeking care. In reality, households may choose not to use services, or refuse treatment, to avoid payment. If households choose to pay for treatment, the amount of OOP can be so high in relation to household income that it can result in "financial catastrophe" for the individual or the household. Such high expenditure can mean that people have to cut down on necessities such as food and clothing, or are unable to pay for their children's education. International studies have shown that, globally many households have been impoverished because of the out-of-pocket health expenditure [8-10].

II. OBJECTIVES

The overall objective of this study is to examine the extent to which households are able to access health services, and are protected from excessive out-of-pocket payments when they use health services.

Specifically, we aimed to analyze the patterns of the following:

- 1) *health care utilization;*
- 2) *household out-of-pocket health expenditure; and*
- 3) *catastrophic and poverty impacts of the household out-of-pocket health expenditure.*

III. METHODS

3.1. *Data*

Data used in this research were obtained from a nationally representative household survey, Viet Nam Living Standard Survey (VLSS) 2002, 2004, 2006, 2008 and 2010. VLSS is a cross-sectional household survey conducted by the General Statistical Office (GSO) of Viet Nam every two years. The survey collected information through face-to-face interviews with household heads and key commune officials in communes containing sample enumeration areas. The numbers of households included in the VLSS in 2002, 2004, 2006, 2008 and 2010 were 45,000, 37,200, 36,756, 36,756 and 46,995 respectively. However, the number of households that were included in this research (with information on expenditure) of the VLSS in 2002, 2004, 2006, 2008, and 2010 were 29,530, 9,188, 9,189, 9,189 and 9,402, respectively. The weighted number of households for 2002, 2004, 2006, 2008 and 2010 were 17,276,879, 18,634,683, 21,471,506, 20,960,121 and 22,334,062, respectively. Data were analyzed using Stata statistical software version 10. All analyses of the data from respondents were weighted according to the probability of each household unit being sampled to reflect the entire Vietnamese population. The weighting factor is provided by the GSO. Logistic regressions were used to identify the socio-economic correlates of the catastrophic and poverty impacts of household out-of pocket health expenditure.

3.2. *Definitions of key variables*

In the VLSSs, health care utilization and household out-of-pocket health expenditure were measured by asking the heads of the household the question “Has anyone in your household visited health facilities or had home visits by physicians for check-ups and treatment over the last 12 months?” If

the answer was “yes” the follow-up questions asked the: 1) number of outpatient visits and corresponding household expenditure over the past 12 months and 2) number of inpatient visits and corresponding household expenditure over the past 12 months.

The dependent variables are dummy variables on catastrophic health expenditure and impoverishment. The independent variables are socio-economic indicators such as sex of household head, household size, number of elderly people in the household, number of children under 6 years in the household, living area (urban/rural), and whether there was at least one household member who was a health insurance enrollee (yes or no) and household expenditure quintile.

We used definitions from WHO on catastrophic health expenditure and impoverishment. The measures of catastrophic health expenditure and impoverishment have been clearly described elsewhere [8, 11]:

- ***Out-of-pocket health payments:*** Out-of-pocket health payments refer to the payments made by households at the point they receive health services. Typically these include doctor’s consultation fees, purchases of medication, and hospital bills. Although spending on alternative and/or traditional medicine is included in out of pocket payments, expenditure on health-related transportation and special nutrition are excluded. Out-of-pocket payments are net of insurance reimbursement.
- ***Household’s consumption expenditure:*** Household consumption expenditure comprises of both monetary and in-kind payment on all goods and services, and the money value of the consumption of home-made products.
- ***Household’s capacity to pay:*** A household’s capacity to pay is defined as effective income remaining after basic subsistence needs have been met. Effective income is taken to be the total consumption expenditure of the household.

$$CTP_i = EXP_i - SE_{45-55i}$$

Some households may report food expenditure that is lower than subsistence spending. This indicates that the household’s food expenditure is less than the estimated poverty standard for that country. Such a situation could also be due to the fact that the reported food expenditure in the survey does not consider food subsidies, coupons, self-production and other non-cash means

of food consumption. In this particular case, the non-food expenditure is used as non-subsistence spending.

- **Household subsistence spending:** The household subsistence spending is the minimum requirement to maintain basic life in a society. A poverty line is used in the analysis as subsistence spending. Poverty line is defined as the food expenditure of the household whose food expenditure share of total household expenditure is at the 50th percentile in the country. In order to minimize measurement error, we use the average food expenditures of households whose food expenditure share of total household expenditure is within the 45th and 55th percentile of the total sample. Considering the economy scale of household consumption, the household equivalence scale is used rather than actual household size. The value of the parameter β has been estimated from previous studies based on 59 countries' household survey data, and it equals 0.56

$$eqsize_h = hhsiz_e_h^\beta$$

- **Catastrophic health expenditure:** Catastrophic health expenditure occurs when a household's total out-of-pocket health payments equal or exceed 40% of household's capacity to pay (We also used the cut-off point of 10%, 20% and 30%).
- **Impoverishment:** A non-poor household is impoverished by health payments when it becomes poor after paying for health services, based on the poverty line defined above.
- **Living standard:** In this study, we measured the living standard of the households based on their consumption expenditure. Households were classified into living standards quintiles.

IV. RESULTS

4.1. Health service utilization

The patterns of health service utilization are presented in Table 1 and Table 2. The rates of health care utilization, among the surveyed population, during the last 12 months for 2002, 2004, 2006, 2008 and 2010 were 19.6%, 39.0%, 43.8%, 35.0% and 40.9%, respectively (Table 1). The average number of health care utilization per person during the last 12 months for 2002, 2004, 2006, 2008 and 2010 were 1.25, 1.07, 1.26, 1.27 and 1.50, respectively (Table 2). Overall, health service utilization has increased gradually over the years and in 2010 reached 1.5 times (0.12 inpatient stays per person per year and 1.38 outpatient visits per person per year) (Table 2).

Table 1: Health service utilization rates (as % of the population) during the last 12 months

| Characteristics | 2002 | 2004 | 2006 | 2008 | 2010 |
|--|------|------|------|------|------|
| Utilization of inpatient services (%) | 6.1 | 6.9 | 6.6 | 6.6 | 8.1 |
| Utilization of outpatient services (%) | 14.5 | 33.9 | 39.6 | 31.8 | 37.1 |
| Overall utilization (%) | 19.6 | 39.0 | 43.8 | 35.0 | 40.1 |

Table 2: Number of health service utilization per person during the last 12 months

| Characteristics | 2002 | 2004 | 2006 | 2008 | 2010 |
|--|------|------|------|------|------|
| Utilization of inpatient services (time/person) | 0.35 | 0.09 | 0.08 | 0.09 | 0.12 |
| Utilization of outpatient services (time/person) | 0.91 | 0.99 | 1.18 | 1.18 | 1.38 |
| Overall utilization (time/person) | 1.25 | 1.07 | 1.26 | 1.27 | 1.50 |

Table 3 summarizes the annual rates of health service utilization (use of health service or not) by socio-economic status. In all the study years, the rates of health service utilization were higher among health insurance enrollees. The rates were also a bit higher among the better-off people and among the people living in urban areas.

Table 3: Health service utilization rates during the last 12 months by socio-economic status

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|-------------------------|-------|-------|-------|-------|-------|
| | (%) | (%) | (%) | (%) | (%) |
| Health insurance | | | | | |
| Yes | - | 39.1% | 47.7% | 39.1% | 45.8% |
| No | - | 39.0% | 39.3% | 29.8% | 33.8% |
| Location | | | | | |
| Rural | 19.4% | 38.0% | 43.4% | 34.4% | 40.4% |

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|
| | (%) | (%) | (%) | (%) | (%) |
| Urban | 20.2% | 42.0% | 45.0% | 35.3% | 42.1% |
| Expenditure quintile | | | | | |
| 1st quintile | 18.1% | 34.9% | 40.5% | 34.5% | 37.5% |
| 2nd quintile | 17.6% | 36.9% | 41.0% | 33.5% | 39.4% |
| 3rd quintile | 18.7% | 38.2% | 44.0% | 36.2% | 40.8% |
| 4th quintile | 20.5% | 40.1% | 46.5% | 34.5% | 42.2% |
| 5th quintile | 22.7% | 44.5% | 47.2% | 36.5% | 44.6% |

Table 4 presents the results of logistic regression analysis of factors in health service utilization among the study population. Factors associated with a higher probability of seeking care were being female, or old age (greater than 55 years of age). Similarly, people living in urban areas use more health care than rural one. It is important to learn that having health insurance or belonging to a higher wealth quintile clearly increase the likelihood of health care utilization. These results are statistically significant for all years.

Table 4: Regression results for health service utilization

(Odds ratio with p-values in parentheses)

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|-------------------------|-------------|-------------|-------------|-------------|-------------|
| Health insurance | | | | | |
| Yes | NA | 1.14 (0.00) | 1.59 (0.00) | 1.74 (0.00) | 1.93 (0.00) |
| No (Ref.) | NA | | | | |
| Sex | | | | | |
| Male (Ref.) | | | | | |
| Female | 1.2 (0.00) | 1.31 (0.00) | 1.34 (0.00) | 1.26 (0.00) | 1.31 (0.00) |
| Age | | | | | |
| <17 (Ref.) | | | . | | |
| 18-24 | 0.99 (0.76) | 0.75 (0.00) | 0.71 (0.00) | 0.71 (0.00) | 0.69 (0.00) |

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|
| 25-34 | 1.05 (0.43) | 0.86 (0.01) | 0.74 (0.00) | 0.74 (0.00) | 0.72 (0.00) |
| 35-44 | 1.17 (0.02) | 0.92 (0.17) | 0.85 (0.01) | 1.00 (0.97) | 0.84 (0.01) |
| 45-54 | 1.38 (0.00) | 1.05 (0.43) | 0.98 (0.7) | 1.20 (0.00) | 1.01 (0.92) |
| 55-64 | 1.87 (0.00) | 1.58 (0.00) | 1.56 (0.00) | 1.89 (0.01) | 1.45 (0.00) |
| 65+ | 2.34 (0.00) | 1.92 (0.00) | 1.83 (0.00) | 2.36 (0.00) | 1.88 (0.00) |
| Education* | | | | | |
| Less than primary (Ref.) | | | | | |
| Graduated primary | 0.87 (0.00) | 0.71 (0.00) | 0.62 (0.00) | 0.72 (0.00) | 0.71 (0.00) |
| Graduated secondary | 0.71 (0.00) | 0.77 (0.00) | 0.65 (0.00) | 0.59 (0.00) | 0.6 (0.00) |
| College/ University | 0.86 (0.01) | 0.63 (0.00) | 0.57 (0.00) | 0.64 (0.00) | 0.65 (0.00) |
| Location | | | | | |
| Urban | 1.22 (0.00) | 1.05(0.11) | 1.16(0.00) | 1.05(0.00) | 1.1(0.00) |
| Rural (Ref.) | | | | | |
| Expenditure quintile | | | | | |
| 1st quintile (Ref.) | | | | | |
| 2nd quintile | 1.11 (0.01) | 1.27 (0.00) | 1.25 (0.00) | 1.13 (0.00) | 1.32 (0.00) |
| 3rd quintile | 1.29 (0.00) | 1.41 (0.00) | 1.54 (0.00) | 1.36 (0.00) | 1.51 (0.00) |
| 4th quintile | 1.53 (0.00) | 1.55 (0.00) | 1.77 (0.00) | 1.31 (0.00) | 1.64 (0.00) |
| 5th quintile | 1.92 (0.00) | 1.93 (0.00) | 1.84 (0.00) | 1.51 (0.00) | 1.85 (0.00) |

*Note: NA: Data not available, Ref. Reference, * Children under 6 years of age were excluded*

4.2. Household out-of-pocket expenditure for health care

Figure 5 and Figure 6 show the amount of out-of-pocket health payments (OOP)¹ of a household per month during the last 12 months (among the households who paid for health care). In nominal terms, the means of OOPs were VND 67,300 in 2002, VND 126,400 in 2004, VND 140,000 in 2006, VND 201,300 in 2008, and VND 243,000 in 2010 (Figure 5). After adjusted for inflation

¹*Out-of-pocket health payments refer to the payments made by households at the point they receive health services. Typically these include doctor's consultation fees, purchases of medication and hospital bills. Out-of-pocket payments are net of insurance reimbursement.*

(values calculated using 2010 price), the means of OOPs were VND 141,000 in 2002, VND 234,800 in 2004, VND 225,100 in 2006, VND 239,700 in 2008, and VND 243,000 in 2010 (Figure 6). In all of the five surveyed years, the means of the OOPs were higher among the household where there was no health insurance enrollee. Households living in urban areas and households belonged to higher expenditure quintile spent significantly higher than one living in rural areas or of lower expenditure quintile (Table 5).

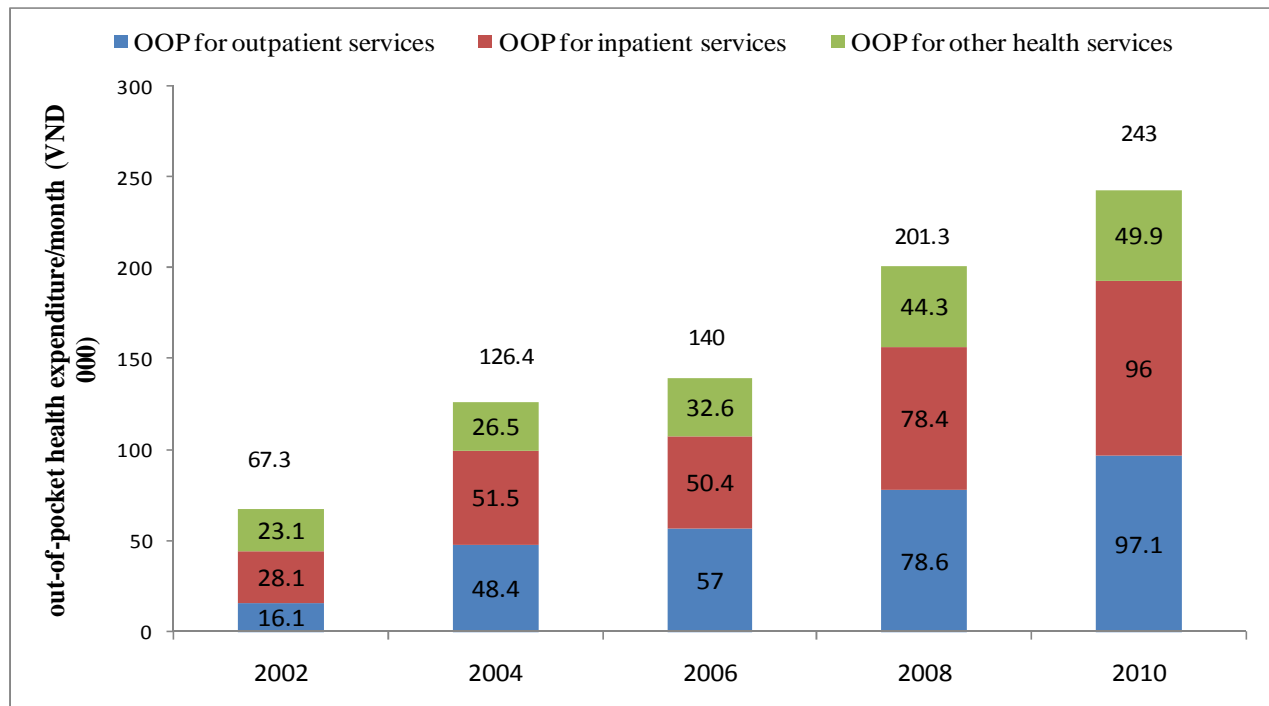


Figure 5: OOP for health care per household per month
(Nominal terms; thousands VND)

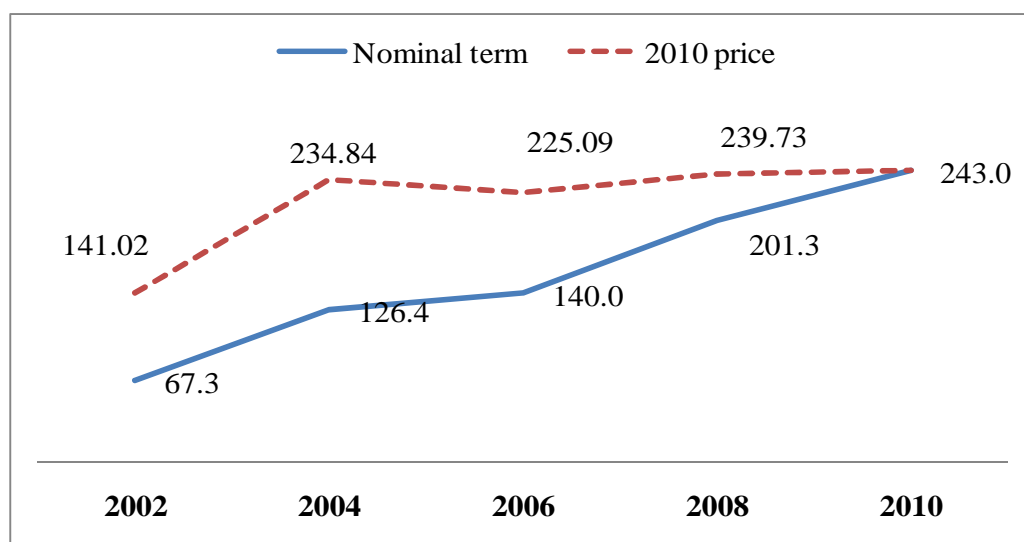


Figure 6: OOP for health care per household per month
(2010 prices, thousands VND)

Table 5: OOP for health care per household per month by socioeconomic status
(Among the households who paid for health care during the last 12 months: in thousands VND)

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|--|------|-------|-------|-------|-------|
| Household with at least one health insurance enrollee | | | | | |
| Yes | NA | 111.9 | 126.8 | 156.9 | 213.1 |
| No | NA | 109.5 | 123.7 | 185.7 | 248.1 |
| Location | | | | | |
| Rural | 58.7 | 93.1 | 106.3 | 153.0 | 219.7 |
| Urban | 94.3 | 160.6 | 174.5 | 251.9 | 294.7 |
| Expenditure quintile | | | | | |
| 1st quintile | 21.7 | 29.9 | 37.4 | 53.3 | 77.1 |
| 2nd quintile | 34.8 | 54.8 | 61.2 | 94.3 | 135.6 |
| 3rd quintile | 52.0 | 82.2 | 91.4 | 136.8 | 197.1 |
| 4th quintile | 75.6 | 113.7 | 142.2 | 189.7 | 296.5 |

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|--------------|-------|-------|-------|-------|-------|
| 5th quintile | 151.7 | 272.1 | 292.9 | 424.7 | 494.3 |

NA: Data not available

4.3. Catastrophic expenditure and impoverishment

Table 6 presents the patterns of catastrophic expenditure (using different cut-off points) and impoverishment by years. The rates and numbers of households with catastrophic expenditure remained high over time until 2008 but decreased in 2010. The proportions of households with catastrophic expenditure in 2002, 2004, 2006, 2008 and 2010 were 4.7%, 5.7%, 5.1%, 5.5% and 3.9%, respectively. In absolute terms, the numbers of households with catastrophic expenditure were 811,499 in 2002, 1,055,910 in 2004, 1,096,177 in 2006, 1,151,500 in 2008 and 862,661 in 2010. The same was true for impoverishment. The rates and numbers of households who were put into poverty were high over the years, until 2008, and also declined in 2010. The rates and numbers of households who were pushed into poverty because of OOPs were 3.4% or 590,446 households in 2002, 4.1% or 769,505 households in 2004, 3.1% or 667,863 households in 2006, 3.5% or 742,587 households in 2008, and 2.5% or 563,785 households in 2010.

Table 6: Pattern of catastrophic expenditure and impoverishment

(Number of households, percentages in parentheses)

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|----------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Cata10 | 5,325,195 (30.8) | 6,324,426 (33.9) | 6,419,485 (29.9) | 6,651,836 (31.7) | 5,442,449 (24.4) |
| Cata20 | 2,583,675 (15.0) | 3,280,167 (17.6) | 3,197,146 (14.9) | 3,380,690 (16.1) | 2,613,193 (11.7) |
| Cata30 | 1,435,719 (8.3) | 1,903,326 (10.2) | 1,882,429 (8.8) | 2,028,348 (9.7) | 1,483,744 (6.6) |
| Cata40 | 811,499 (4.7) | 1,055,910 (5.7) | 1,096,177 (5.1) | 1,151,500 (5.5) | 862,661 (3.9) |
| Impoverishment | 590,446 (3.4) | 769,505 (4.1) | 667,863 (3.1) | 742,587 (3.5) | 563,785 (2.5) |

Table 7 and Table 8 report the patterns of catastrophic expenditure 40% and impoverishment by socio-economic status. Both catastrophic expenditure and impoverishment rates were higher among the households where there was no member with health insurance. Similarly, the rates were found higher among those located in rural areas and among the worse-off groups, compared to those living in urban or among the better-off.

Table 7: Pattern of catastrophic expenditure by socio-economic status

(Percentage)

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|--|------|------|------|------|------|
| Household with at least one health insurance enrollee | | | | | |
| No | NA | 8.0 | 7.6 | 6.9 | 5.5 |
| Yes | NA | 4.4% | 4.5% | 5.2% | 3.6% |
| Location | | | | | |
| Urban | 1.9% | 3.1% | 3.0% | 3.1% | 2.7% |
| Rural | 5.6% | 6.6% | 5.9% | 6.4% | 4.4% |
| Expenditure quintile | | | | | |
| 1st quintile | 5.5% | 5.5% | 6.9% | 7.8% | 4.7% |
| 2nd quintile | 4.6% | 6.1% | 4.6% | 6.0% | 4.5% |
| 3rd quintile | 4.7% | 6.4% | 4.6% | 5.5% | 4.1% |
| 4th quintile | 5.0% | 5.5% | 5.2% | 4.5% | 3.4% |
| 5th quintile | 3.6% | 4.9% | 4.3% | 3.6% | 2.5% |

Table 8: Pattern of impoverishment by socio-economic status*(Percentage)*

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|--|-------|-------|------|------|------|
| Household with at least one health insurance enrollee | | | | | |
| No | NA | 5.9% | 4.6% | 4.5% | 4.2% |
| Yes | NA | 3.1% | 2.7% | 3.3% | 2.2% |
| Location | | | | | |
| Urban | 0.7% | 1.2% | 0.9% | 1.1% | 0.8% |
| Rural | 4.3% | 5.2% | 4.0% | 4.5% | 3.3% |
| Expenditure quintile | | | | | |
| 1st quintile | 4.6% | 6.2% | 5.1% | 7.5% | 5.4% |
| 2nd quintile | 11.1% | 12.1% | 9.0% | 8.6% | 6.0% |
| 3rd quintile | 1.0% | 2.2% | 1.0% | 1.5% | 0.7% |
| 4th quintile | 0.4% | 0.2% | 0.3% | 0.1% | 0.4% |
| 5th quintile | 0.1% | 0.0% | 0.2% | 0.0% | 0.1% |

Table 9 presents the results of logistic regression analysis of the determinants of catastrophic expenditure using the cut-off point of 40%. The main findings on the determinants of catastrophic expenditure are: 1) Households with health insurance enrollees had lower rates of catastrophic expenditure. However, the statistically significant differences were only found for 2004 and 2006; 2) Having more people in the household was significantly associated with lower rates of catastrophic expenditure; 3) Having elderly people in the household was significantly associated with higher risk of catastrophic expenditure; 4) Having children under 6 years in the household was significantly associated with higher chance of catastrophic expenditure in 2002 and 2008; 5) Households located in rural areas had significantly higher rates of catastrophic expenditure compared to those living in urban areas; and 6) Households that belonged to the highest quintile had significantly higher rates of catastrophic expenditure compared to those that belonged to the lowest quintile (except 2008). However, the statistically significant differences were only found for 2002 and 2004.

Table 9: Determinants of catastrophic expenditure 40%*(Odds ratio with p-value in parentheses)*

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|--|------------|------------|------------|------------|------------|
| Household with at least one health insurance enrollee | | | | | |
| No (Ref.) | NA | | | | |
| Yes | NA | 0.65(0) | 0.75(0.01) | 0.89(0.37) | 0.81(0.15) |
| Sex of the HH's head | | | | | |
| Male | 1(0.97) | 0.88(0.25) | 0.92(0.45) | 0.99(0.93) | 0.81(0.4) |
| Female (Ref.) | | | | | |
| Household size | 0.77(0) | 0.78(0) | 0.76(0) | 0.78(0) | 0.69(0) |
| Having elderly people in the household | | | | | |
| Yes | 2.07(0) | 2.03(0) | 2.14(0) | 2.41(0) | 2.8(0) |
| No (Ref.) | | | | | |
| Having the children in the household | | | | | |
| Yes | 1.55(0) | 1.09(0.5) | 1.26(0.1) | 1.36(0.02) | 1.37(0.04) |
| No (Ref.) | | | | | |
| Location | | | | | |
| Urban (Ref.) | | | | | |
| Rural | 3.95(0) | 2.87(0) | 2.45(0) | 1.98(0) | 1.67(0) |
| Expenditure quintile | | | | | |
| 1st quintile (Ref.) | | | | | |
| 2nd quintile | 1.03(0.81) | 1.37(0.04) | 0.81(0.14) | 0.97(0.86) | 1.29(0.14) |
| 3rd quintile | 1.17(0.14) | 1.59(0) | 0.94(0.68) | 0.97(0.83) | 1.33(0.11) |
| 4th quintile | 1.48(0) | 1.6(0) | 1.28(0.11) | 0.85(0.31) | 1.21(0.31) |

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|--------------|---------|---------|------------|------------|-----------|
| 5th quintile | 1.62(0) | 2.09(0) | 1.36(0.09) | 0.85(0.37) | 1.03(0.9) |

Table 10 presents the results of logistic regression analysis of the determinants of impoverishment. The main findings on the correlates of the impoverishment problem are: 1) Households with health insurance enrollees had lower rates of impoverishment. However, the statistically significant differences were only found for 2004 and 2010; 2) Having more people in the household was significantly associated with lower proportion of impoverishment; 3) Having elderly people in the household was significantly associated with higher rates of impoverishment; 4) children under 6 years in the household was significantly associated with higher rates of impoverishment in 2002; 5) Households located in rural area had significant higher rates of impoverishment compared to those living in urban areas. However, the statistically significant differences were only found for 2002 and 2010; and 6) Households that belonged to the 2nd quintile had significantly higher rates of impoverishment compared to those belonged to the 1st quintile. Statistically significant differences were only found for 2002, 2004, and 2006.

Table 10: Determinants of impoverishment

(Odds ratio with p-values in parentheses)

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|--|------------|------------|------------|------------|------------|
| Household with at least one health insurance enrollee | | | | | |
| No (Ref.) | NA | | | | |
| Yes | NA | 0.76(0.01) | 0.81(0.13) | 0.94(0.66) | 0.71(0.05) |
| Sex of the HH's head | | | | | |
| Male | 0.99(0.93) | 1.08(0.6) | 0.99(0.94) | 0.92(0.56) | 1.17(0.66) |

| | 2002 | 2004 | 2006 | 2008 | 2010 |
|---|------------|------------|------------|------------|------------|
| Female (Ref.) | | | | | |
| Household size | 0.85(0) | 0.84(0) | 0.9(0.02) | 0.88(0) | 0(0) |
| Having elderly people in the household | | | | | |
| Yes | 1.52(0) | 1.55(0) | 1.55(0) | 1.24(0.09) | 1.68(0) |
| No (Ref.) | | | | | |
| Having the children in the household | | | | | |
| Yes | 1.27(0.02) | 1.05(0.74) | 1.12(0.48) | 1.06(0.72) | 0.85(0.39) |
| No (Ref.) | | | | | |
| Location | | | | | |
| Urban | 1.79(0) | 1.3(0.2) | 1.38(0.19) | 1.23(0.33) | 1.98(0) |
| Rural (Ref.) | | | | | |
| Expenditure quintile | | | | | |
| 1st quintile (Ref.) | | | | | |
| 2nd quintile | 3(0) | 2.34(0) | 2.01(0) | 1.28(0.07) | 1.25(0.16) |
| 3rd quintile | 0.25(0) | 0.39(0) | 0.22(0) | 0.21(0) | 0.16(0) |
| 4th quintile | 0.1(0) | 0.04(0) | 0.08(0) | 0.01(0) | 0.09(0) |
| 5th quintile | 0.02(0) | NA | 0.04(0) | NA | 0.03(0) |

V. LIMITATIONS

We need to note some limitations of this study. First, as the VLSS data based on 12-month recall period, the results of this study could be affected by recall biases. Second, because of inconsistencies and unavailability of information about type of health care used in the VLSS data over the study period, our analyses could not show the pattern of catastrophic health expenditure and impoverishment problems by type of medical care. Third, the cross-sectional nature of the data limited our ability to study long-term impacts of household direct out-of-pocket payments. And,

finally, we were not able to study about coping strategies of the households once they faced catastrophic health expenditure and impoverishment problems.

VI. DISCUSSION

1. Health service utilization

The rates of people using health services, in the last 12 months, among the surveyed population, had increased gradually over the years, moving from 19.6% in 2002, to 40.9% in 2010. The average health care utilization (both for inpatient stays and outpatient visits) per person during the last 12 months increased from 1.25 times, in 2002, to 1.50 times in 2010. This can be expected in a country like Vietnam where economic growth has been high and steady over the surveyed years resulting in both an increase in the availability of health care and in the demand for health care. The substantial increases in health insurance coverage (from 16% of the population in 2002 to 60% in 2010) seem to have been a factor for increased utilization. As could be expected, there was a substantial increase in utilization from 2008 to 2010, which is the period when health insurance coverage increase very rapidly (from 37% of the population in 2008 to 60% in 2010).

Apart from health insurance coverage, being female and elderly are factors that increased the likelihood of using more health care services. This can be explained by the fact that elderly people have higher health care needs and women visit health facilities more often than men for family planning and reproductive and maternal health conditions. As can be expected, people of higher expenditure quintiles are also likely to use more health services.

The analysis also showed that the lowest expenditure quintile visited health care services the least. This might be explained by the facts that though many households of this quintile are covered with HI (via government subsidy), they have to pay 5% co-payment when they use health services. This 5% co-payment and other related costs for seeking care may still be a significant financial barrier for access for the poor. This and other other obstacles resulting in the poor's low utilization need to be studied more in depth.

2. Household out-of pocket payment

Household out of pocket payments for health care is common in Vietnam. The means of OOPs paid by a household, were VND 141,000 in 2002, and reached VND 243,000 in 2010 (in 2010 price). Higher wealth quintiles pay more OOP. It is worthwhile to note that OOPs were not significantly different by health insurance status of the household. This can be the results of the fact that co-payment, even with health insurance can be high, depending on the type of services used and the level of care used.

3. Catastrophic expenditure and impoverishment

The proportions of households faced with catastrophic expenditure remained high and was around 5% from 2002 to 2008 and then reduced to 3.9% in 2010. Similarly the rates of households who were put into poverty due to health payments, were high and at around 3% over years, from 2002 until 2008, but declined to 2.5% in 2010. However, unlike for utilization of health service, regression analyses suggests that health insurance coverage is not consistently associated with decreases, especially in later years (2006 to 2010). The overall decreases in the incidence of catastrophic health expenditure and impoverishment can be explained by the rapid economic growth in Vietnam which has seen increased incomes. Indeed, among households in the sample, increases in total household expenditure and household capacity to pay for health care have been higher than increases in OOP in later years.

This implies that there is still much room for the health insurance to provide more in depth financial coverage to match the increases in utilization. This lack of impact of health insurance on financial protection can also be explained by the fact that insured patients still pay significant amount out-of-pocket when they use health services. These out-of-pocket payments can be in the form of 1) co-payment of at least 20% for all kind of costs; 2) payment for medicines/ disposables not covered by HI but prescribed by doctors; 3) additional co-payment, up to 70% of the total cost, if patients by-pass the referral system, which is quite common, as they believe that quality of care is better at the higher level; 4) payment for full cost of care if health insurance card for some reason was delayed or not issued on-time. In addition, as enrollment is at the individual level, not at the household level, while financial risk protection is measured at the household level, the protection impact of health insurance at household level might be further limited. Addressing these issues will increase the impact of health insurance in protecting households against financial risk in the future.

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