

# **Poverty in Asia: A Brief Overview and An Examination of the Impact of Health Shocks**

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## **Abstract**

In the past, lots of efforts have been made to reduce poverty in the world. However, the speed of poverty reduction seemed to differ by country and by region. In this paper, first the relationship between major economic/socio-economic variables and poverty are examined by region in order to identify regional characteristics. Then, the health sector, which is related to not only static poverty but also dynamic poverty, is examined to demonstrate the impact of health shocks on the poor in one of the high growing countries in East Asia, Vietnam.

It seems that in the East and South Asia region, almost all the countries are on the same bivariate downward trend of economic growth and poverty reduction. However, the same story may not apply to all regions. In Latin America, high poverty rates are found in spite of relatively high income levels. As poverty is multifaceted and cannot be separated out from other dimensions of living conditions, other major socio-economic variables such as infrastructure development, education, and health are examined for the region with the persistent downward trend of poverty, East Asia. The negative correlation was found between infrastructure development variables and poverty, whereas neither education nor health variable shows any strong link with poverty.

In the second part, the effect of health shocks on the living conditions of the poor is examined for Vietnam based on a system of demand equations. It is found that in rural areas both rich and poor show a significantly negative effect on food consumption to cope with severe health disorders. Provision of multidimensional safety-net program might be longed for in rural areas in order to prevent health shocks to deteriorate living standards.

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## **1. Introduction**

In the past, lots of efforts have been made to reduce poverty in the world. Especially since the MDGs (Millennium Development Goals) were announced, poverty reduction as the first goal has been aimed for vigorously. Thanks to those efforts, all in all, in many countries, poverty reduction was achieved. However, the speed and degree of reductions vary by country and by region. Most of the decrease in the number of poor people after 1990 is found in East Asia. In Europe & Central Asia, Latin America & the Caribbean, and Middle East & North Africa, the initial level of the number of poor people was not as high as in East Asia. Their achievement levels may have to be compared with their initial levels. At the same time, although external factors may well be analogous within the region, some countries decreased poverty relatively larger than other countries in similar positions within the same region.

In the next section, how main economic factors are linked to poverty reduction is examined by region in order to illuminate regional characteristics.

## **2. Overview of Poverty**

### **2.1 Economic Variables and Poverty Nexus**

East Asia has shown the largest reduction in the number of poor people. At the same time, East Asia experienced high and stable economic growth in the last two decades. In Cambodia, the average annual GDP growth is 7.0 and 9.8% in the 1990s and for the period between 2000 and 2006, in China 10.6% and 10.4%, in Vietnam 7.4 and 7.2%, in Lao PDR 6.4 and 6.9, and in Thailand 4.2 and 5.2 respectively. In the seminal paper by Dollar and Kraay (2002), it is concluded that poverty measured by the income of the poor may rise with the average income. Also it is stated that the institutional variables, such as trade openness, macroeconomic stability, size of government, financial development, and property rights and rule of law may not have strong effects on the level of income of the poor. In the same line with this result, correlations between the level of income and poverty rates are examined. In order to identify any existing regional characteristic, these relationships are considered by region. In the rest of the section, we focus on low income and lower-middle income countries for analyses<sup>2</sup>.

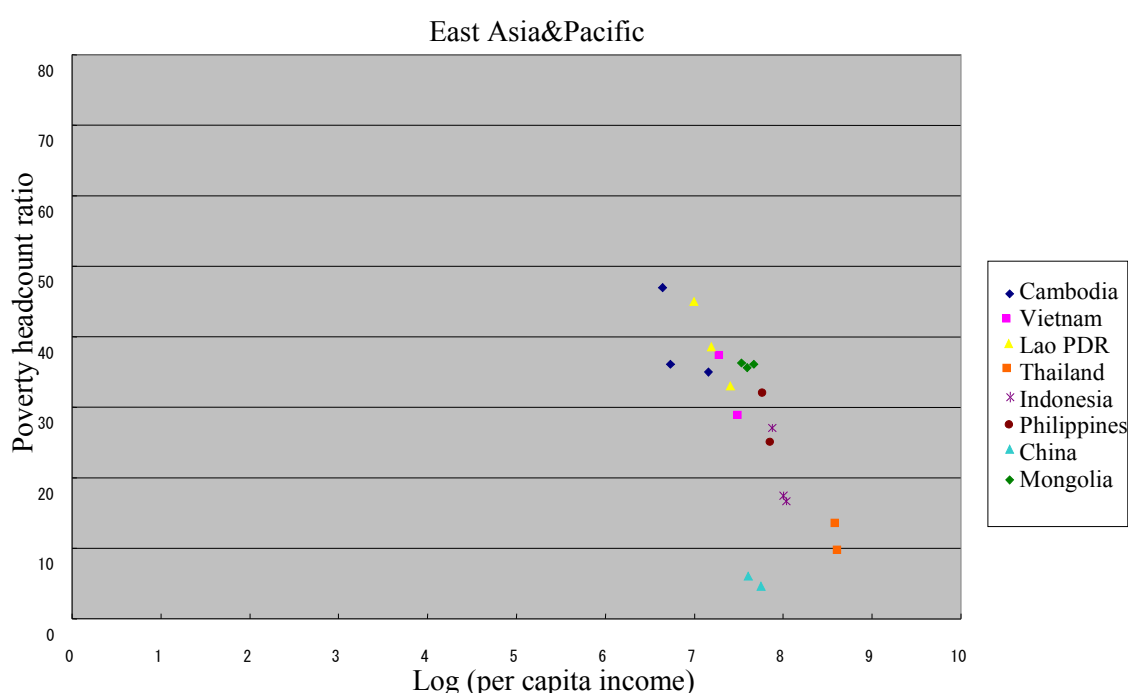
Figure 1 shows the correlations between poverty headcount ratios against the

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<sup>2</sup> Those countries, which reported poverty headcount ratio at least twice between 1980 and 2006, are included in the analysis.

logarithm of per capita income<sup>3</sup> in the East Asia & Pacific region. Except for Mongolia, all the countries demonstrate downward trends. As per capita income rises, poverty rates seem to have dropped in the same manner in the same region. Concerning the case of Cambodia, although a large drop in poverty was found first, the second reduction was not proportional to the first stride.

Figure 1 Income and poverty rate: East Asia & Pacific



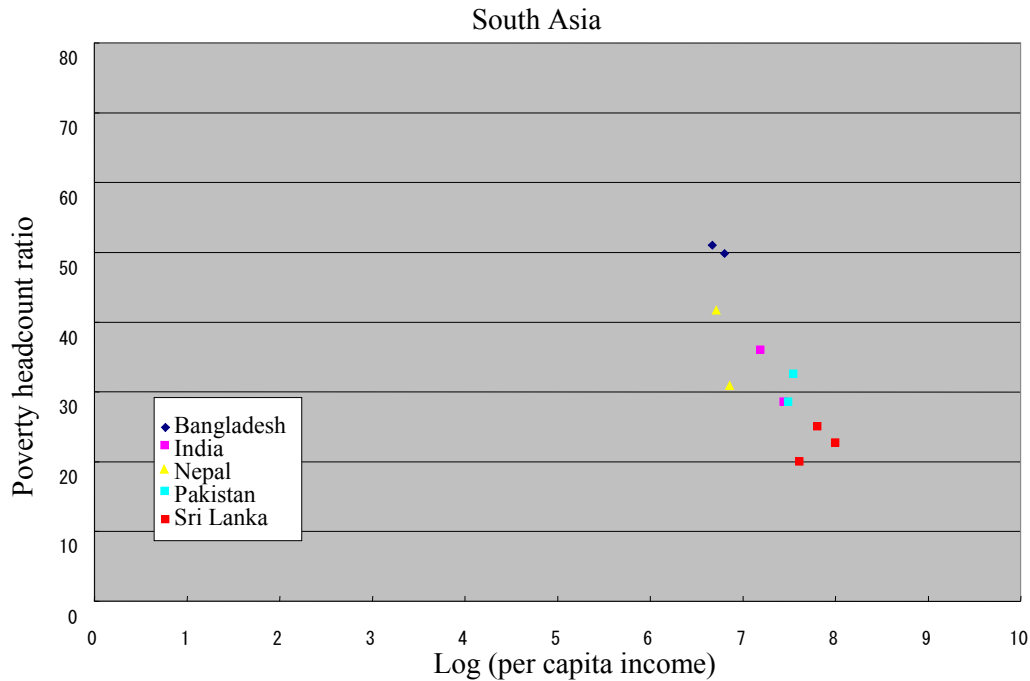
Source: Compiled by the Author based on the World Development Indicators 2009

The same correlation is examined for South Asia (Figure 2). The overall pattern looks similar to the one found for the East Asia & Pacific region. However, when this pattern is considered in a more disaggregated manner, the situations seem to be diverse. Nepal and India made almost equal to 10 % reduction in the poverty headcount ratio as the logarithm of per capita increases by 0.14, Bangladesh made 1% reduction for about the same increase. On the other hand, in Pakistan, the poverty ratio increased as per capita income rose. Sri Lanka as considered as one of the leading countries in this region demonstrated unsystematic relationship between these two variables. These situations may be due to other factors such as institutional instability to ensure the link

<sup>3</sup> Here, per capita income is the one measured in constant 2005 US dollars. Poverty headcount ratios are those calculated with national poverty lines.

between economic growth and poverty reduction in the given period.

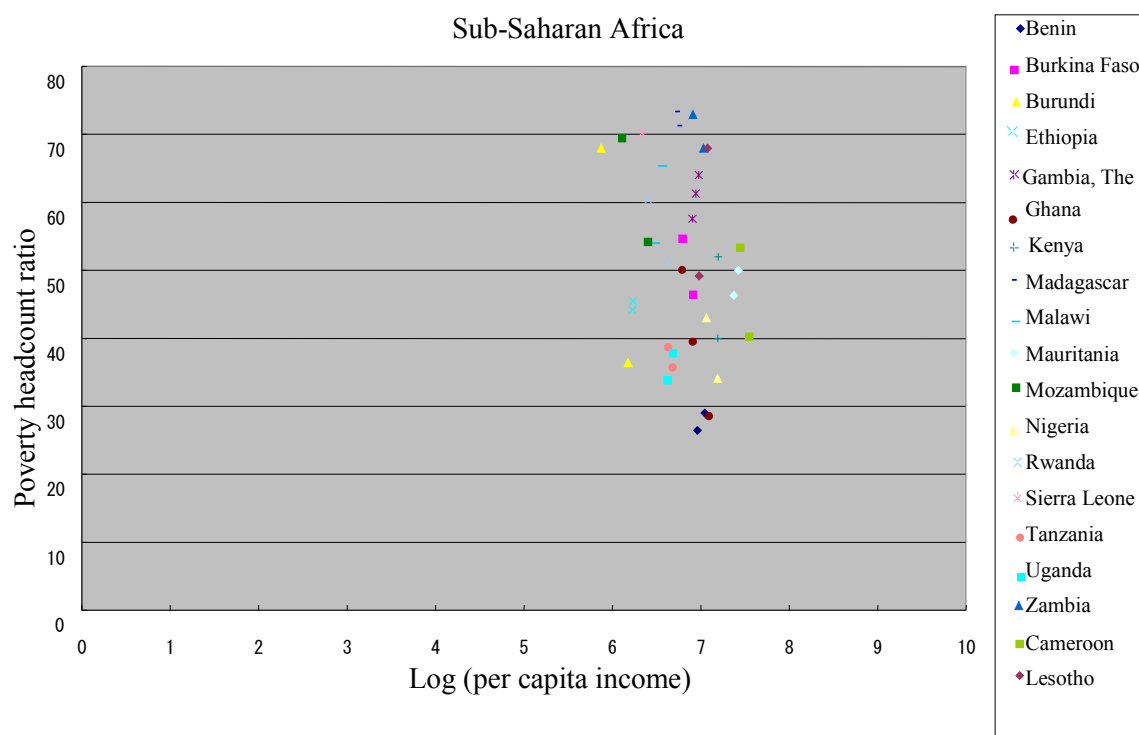
Figure 2 Income and poverty rate: South Asia



Source: Compiled by the Author based on the World Development Indicators 2009

Next, Sub-Saharan Africa is considered. It can be mentioned that no clear pattern is established here. There are countries which made huge reductions of poverty rates by 10 to 14% for 0.1 to 0.2 changes in the income level, such as Cameroon, Ghana, and Mozambique. On the other hand, in Benin, Malawi, Uganda, and Lesotho, as the income level went up, poverty increased. Apparently, there are some factors which are not integrated into economic growth in those countries and hinder economic growth to lead to poverty reduction. In depth analyses might be required to identify those factors. In this paper, we restrict ourselves to merely mention that the different patterns were found for the same set of the variables in the Sub-Saharan Africa region.

Figure 3 Income and poverty rate: Sub-Saharan Africa

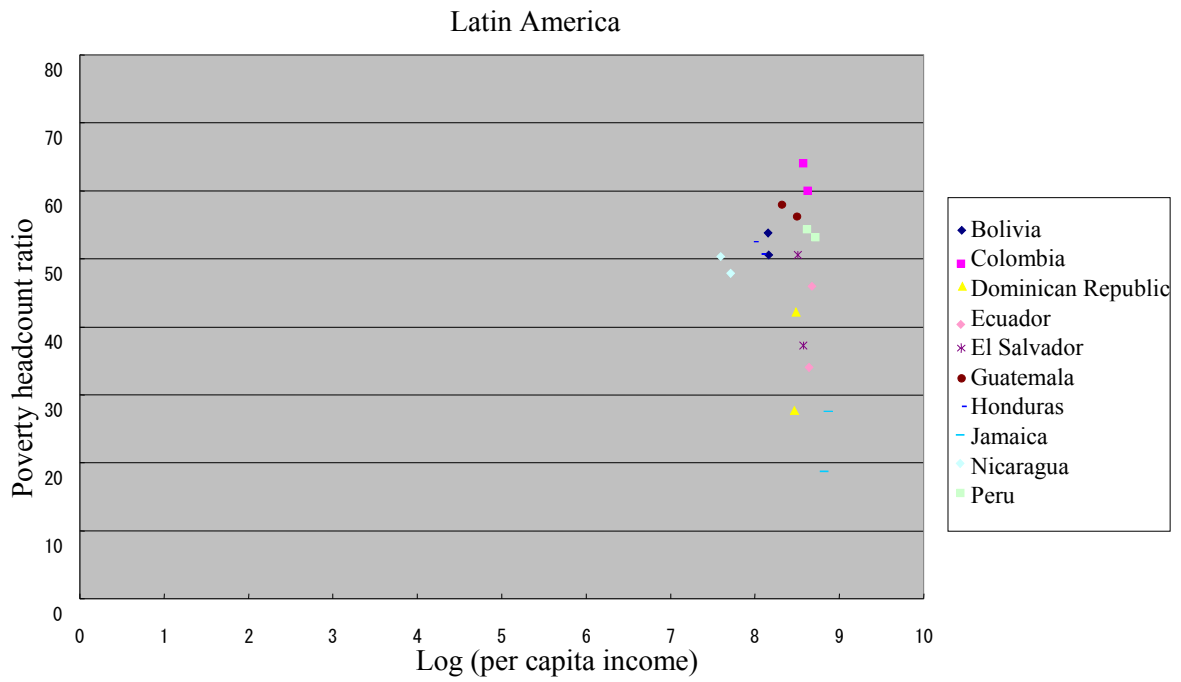


Source: Compiled by the Author based on the World Development Indicators 2009

Figure 4 demonstrates the same correlation analysis for the Latin America region. This region exhibited somewhat mixed results as well as in the Sub-Saharan Africa region. Most of the countries positioned close to the upper right corner, which means that high income level with high poverty rates. El Salvador shows a big drop in poverty rates by 10% with an increase of the logarithm of per capita income by 0.05. Whereas, in Dominican Republic, Ecuador, the poverty rates increased quite a lot by more than 10 % as the logarithm of income rose by 0.015 to 0.035.

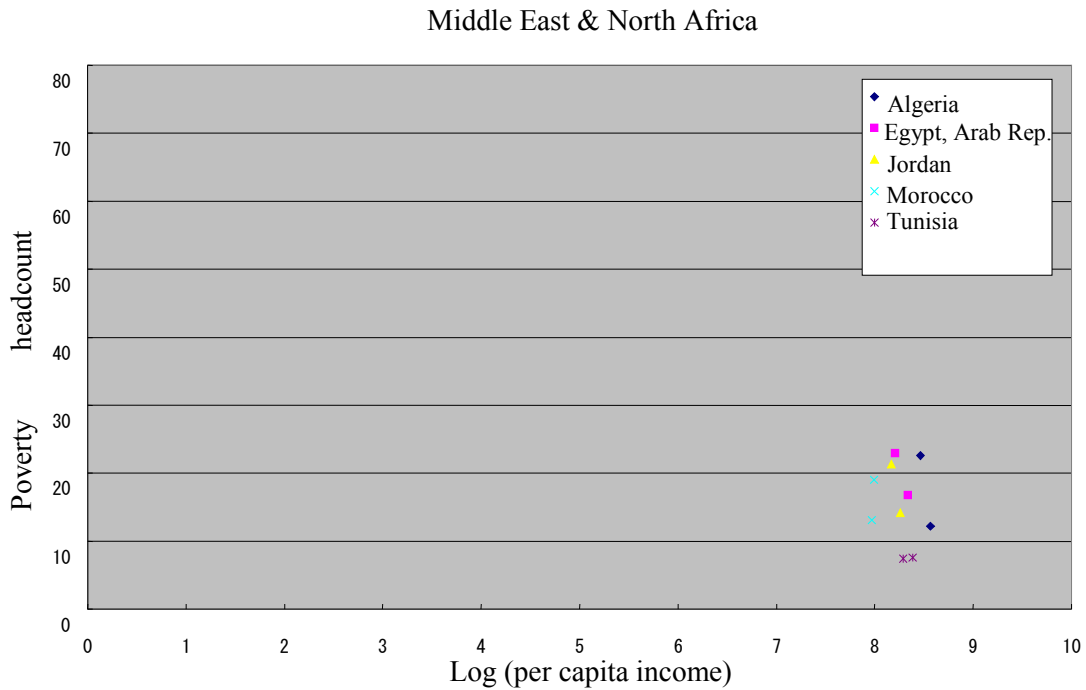
In the Middle East & North Africa region, most of the countries are found in the lower right corner. This denotes that those countries maintain high income levels with low poverty rates. Concerning a pattern, although not many observations are found here, the majority seems to have the steep downward trend.

Figure 4 Income and poverty rate: Latin America



Source: Compiled by the Author based on the World Development Indicators 2009

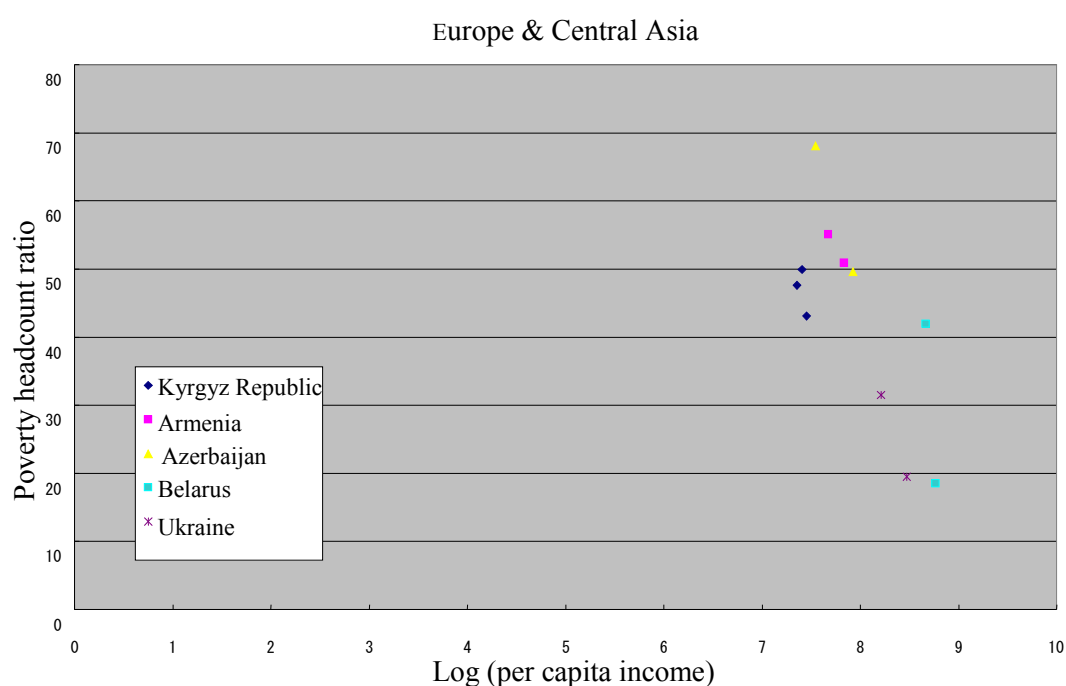
Figure 5 Income and poverty rate: Middle East & North Africa



Source: Compiled by the Author based on the World Development Indicators 2009

Next, in the Europe and Central Asia region, the downward trend is found as well. However, as in the Middle East and North Africa region, the downward slope is rather steep. This pattern indicates that the income elasticity of poverty rate is large, compared to other regions. Although Kyrgyz Republic and Belarus demonstrated somewhat off the trend of the region in the given period, it seems to be on their own downward trends.

Figure 6 Income and poverty rate: Europe & Central Asia



Source: Compiled by the Author based on the World Development Indicators 2009

Overall, the downward trend was found, in general, between the level of income and poverty rates for the period between 1980 and 2006. In East Asia and South Asia, almost all the countries are on the same downward trend. However, it can be noted that region specific characteristics are identified quite strongly. For example, issues such as institutional instability affecting in some countries in South Asia and a high tendency to have high poverty rates regardless of income levels in Latin America were detected.

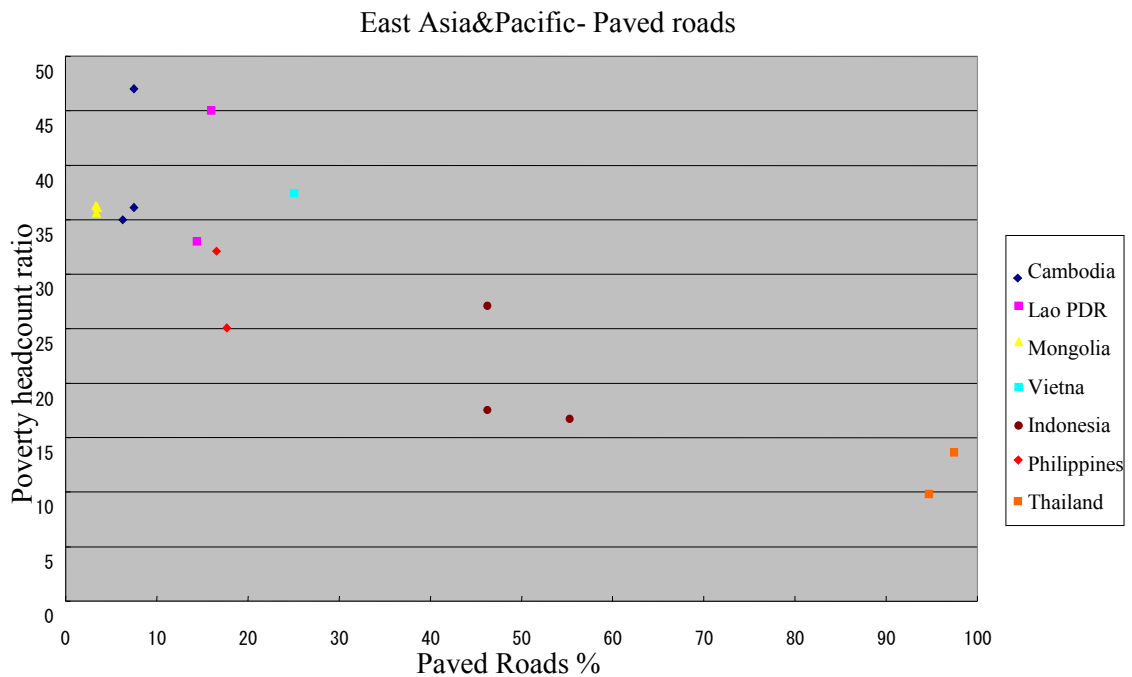
So far, the main economic variable has been examined. As poverty is a multifaceted issue, other socio-economic dimensions in relation to living conditions should be considered. In the following section, reductions of poverty are investigated with socio-economic factors, such as infrastructure development, education and health to see whether all the living conditions are improving in a same manner as poverty is alleviated.

## 2.2 Concerns on Socio-economic Factors

So far, the linkage between poverty and major economic variables was investigated. However, only the dimension of economic variables cannot express the situation of poverty entirely. First, the improved status in terms of economic variables does not mean the improved living conditions and environment. Second, those who are left behind may be worse off than before in terms of living standards. Third, measurement errors may exist in economic variables and poverty indicators. The third issue has been addressed in Lipton and Ravallion (1995), Jalan and Ravallion (2000), Sawada (2000), and Shinkai (2006) etc. Second issue is partially replied by the above literature. However, since the living conditions and environment would be different by country and by region, this issue should be tackled by specific area. Here, the first issue is mainly addressed in order to meet the purpose of this paper which is the comprehension of poverty situations from different dimensions in Asia.

First, given that Asia is considered as a region with advanced infrastructure which has largely contributed to high economic growth as indicated in the previous literature, the association of infrastructure with poverty is investigated. Figure 7 and 8 show the relationship between infrastructure development measured by percentages of paved roads and the number of telephone subscribers.

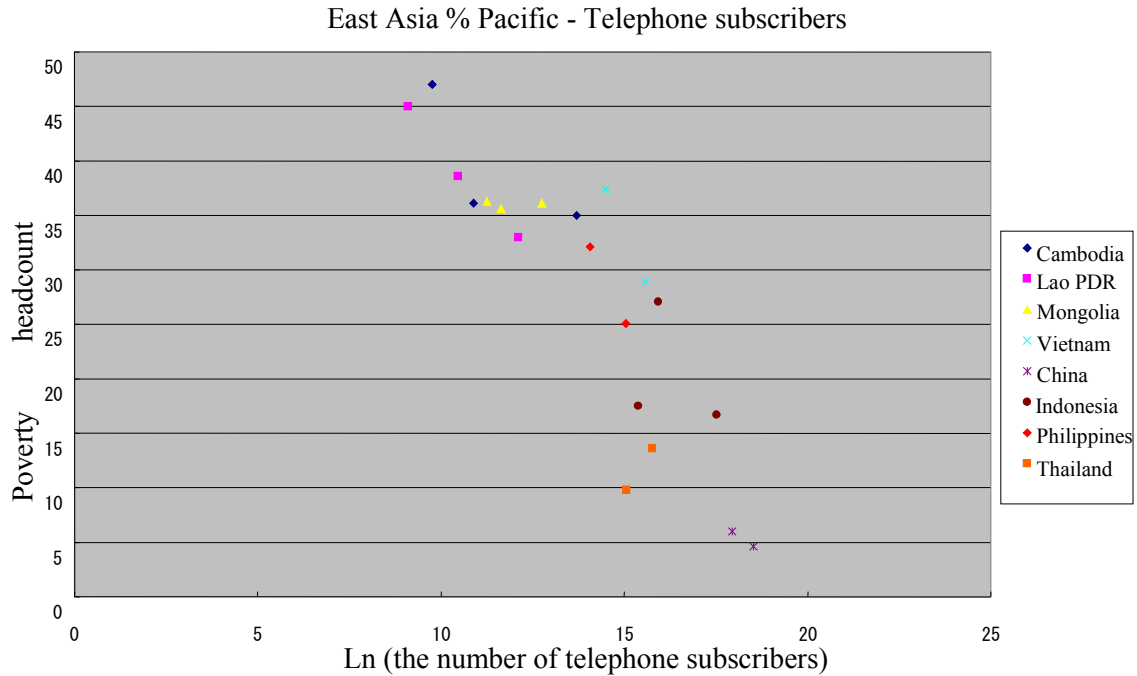
Figure 7 Rates of paved roads and poverty: East Asia



Source: Compiled by the Author based on the World Development Indicators 2009



Figure 8 Telecommunication and poverty: East Asia

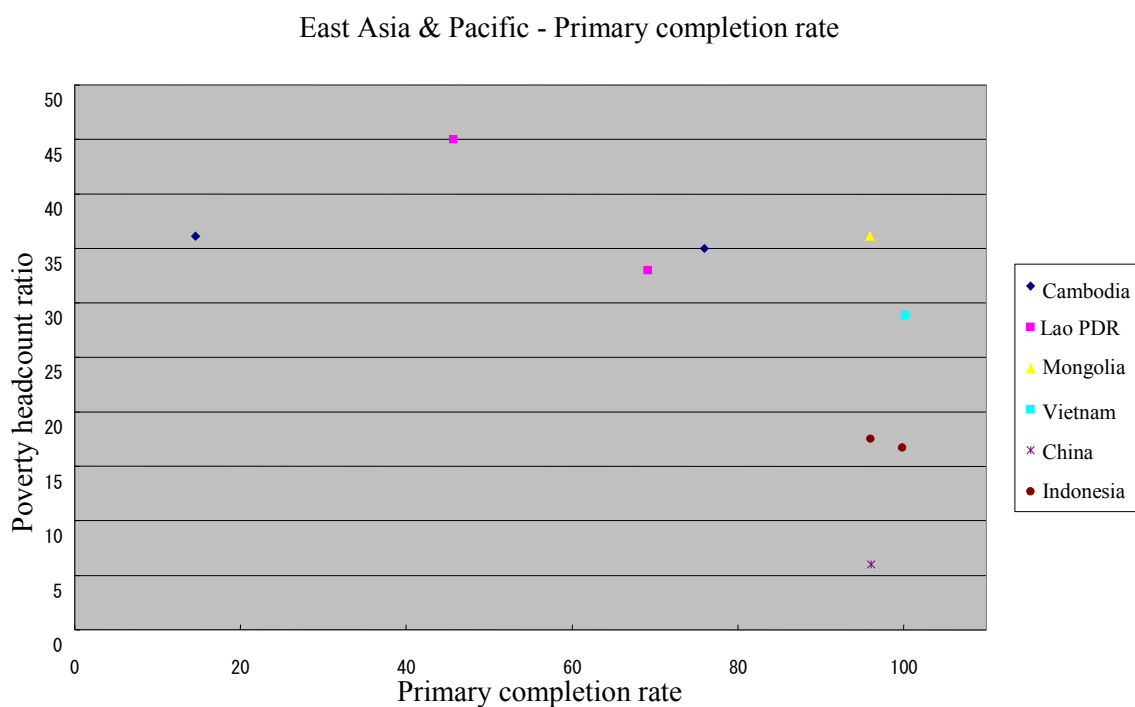


Source: Compiled by the Author based on the World Development Indicators 2009

The number of telephone subscribers seems to be more strongly than rates of paved roads correlated but, by and large, it can be stated that the poverty headcount ratio declines with the progress of infrastructure development.

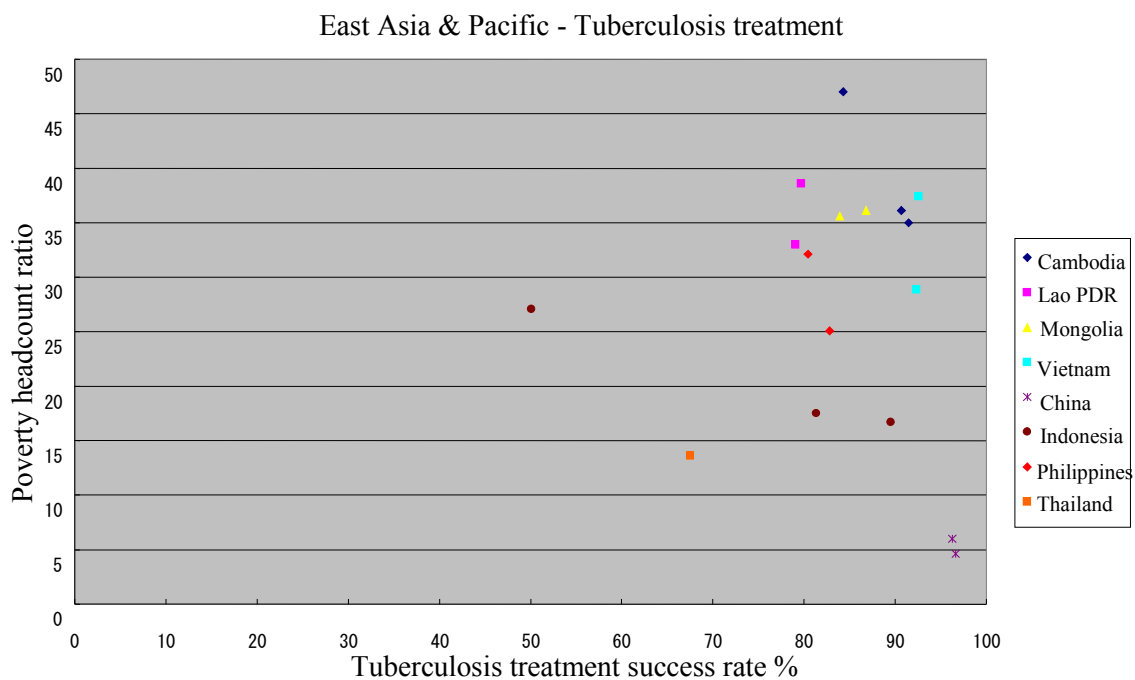
Next, the level of education, assessed by primary completion rate, is considered. As represented by Figure 9, this relationship is not very systematic in the East Asia & Pacific region. There are countries, such as Cambodia and Lao PDR, where drastic improvement was made in the given period and this improvement is much larger than that of poverty. Although higher primary completion rate seems to be associated with lower poverty rates, that correlation is not so strong. It seems that for the nexus between education improvement and poverty reduction, those factors, which are not purely economic measures, may play larger roles, such as institutional regulations and external favorable conditions. A linkage between education and poverty require further examination.

Figure 9 Level of education and poverty



Source: Compiled by the Author based on the World Development Indicators 2009

Figure 10 Health indicator and poverty



Source: Compiled by the Author based on the World Development Indicators 2009

Finally, a relationship between health indicators and poverty headcount ratios is considered. It seems that there is no clear relationship between these two variables.

In Cambodia and Indonesia, better health service provision appears to be correlated with reductions of poverty rates. On the other hand, in other countries, almost no relationship is found, or somewhat opposite cases are identified. Health service also involves an issue of both quantity and quality. The above mentioned indicator is more associated with a quality of service. At the same time, quantity, such as the number of patient treated, would be imperative. Irregular results indicate the necessity of country-wise or area-wise studies. The health sector is also associated with dynamic poverty. Severe health disorder may bring people around the poverty line into transient poverty and even into chronic poverty.

In order to better capture the health sector and living conditions of the poor, one of the countries, which did not show a clear relationship, Vietnam, is taken for further investigation.

### **3. Health Sector and Living Conditions of the Poor: the Case of Viet Nam**

Vietnam is one of the rapidly growing countries in East Asia in the last two decades. Average annual GDP growth rates in the 1990s and after 2000 were 7.419 and 7.179% and average annual per capita GDP growth rates were 5.507 and 5.972, respectively<sup>4</sup>. During that time, life expectancy prolonged from 64.56 in 1985 to 73.38 in 2004 for females and from 60.70 to 68.43 for males. For children, although in the 1990s, stunting declined from 50% to 35%, wasting increased in all regions (Glewwe, Koch, Nguyen (2002)). After 2000, a percentage of diarrhea treatment for children under 5 years old increased from 39.4% to 64.8%<sup>5</sup>. It seems that the overall health conditions of the people have been improved with high economic growth. However, whether the poor also had been better off is a matter of concern. Health defects might occur to anybody despite the level of income. However, under those incidents, in the same line of the statement made by Sen (2000, 2002), the poor might have to struggle harder to recover and the effect of those incidents on the life might be larger. Health incidents also have a tendency to bring those people around the poverty line not only to transient poverty but also to chronic poverty.

First, the incidents of health defects are observed. Table 1 presents rates of people

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<sup>4</sup> These figures are calculated by the author based on the World Development Indicators 2009.

<sup>5</sup> Based on the World Development Indicators 2009.

who reported any illness or injuries occurred during the past 12 months by quintile<sup>6</sup>. It seems that the richer people get, the higher rates of health defects they reported. This does not necessarily mean that the poor are healthier than the rich. It is not very hard to consider that there is a case where medical expenses are higher than people can afford to receive appropriate treatment and high treatment costs become a barrier for people to report health defects. If that is the case, poor people may wait to visit health facilities until severe cases emerge. Table 2 shows the number of visits to health facilities in the past 12 months. For outpatients, the rich tend to visit health facilities more than the poor. Concerning inpatients, the number of visits does not seem to vary much. Although the 5<sup>th</sup> quintile demonstrates the largest number of visits for inpatients, the difference among groups is not very significant.

Table 1 Rates of illness or injuries by quintile<sup>7</sup>

	quintile 1(poorest)	quintile 2	quintile 3	quintile 4	quintile 5
Suffered from any illness or any injuries last year					
Mean	28.39%	31.86%	36.29%	38.48%	38.57%
Std. Dev.	0.4510	0.4661	0.4810	0.4867	0.4869

Source: Compiled by the author based

Table 2 The number of visits to health facilities

	quintile 1	quintile 2	quintile 3	quintile 4	quintile 5
Outpatient: How many times did they visit health facilities among those who had visited					
Mean	1.8051	2.1236	2.2350	2.3877	2.2961
Std. Dev.	1.8762	2.4424	2.6106	2.9906	2.6739
Inpatient: How many times did they visit health facilities among those who had visited					
Mean	1.1972	1.1447	1.1522	1.1858	1.3738
Std. Dev.	0.6463	0.7430	0.5332	0.5097	1.0861

Source: Compiled by the author

<sup>6</sup> All the analyses in this section were made by the author based on VLSS 2006. I would like to give special thanks to General Statistics Office of Vietnam.

<sup>7</sup> Total household expenditure per capita is used to categorize households into five groups in order to reflect the living conditions more closely.

Table 3 Health care expenditure burden

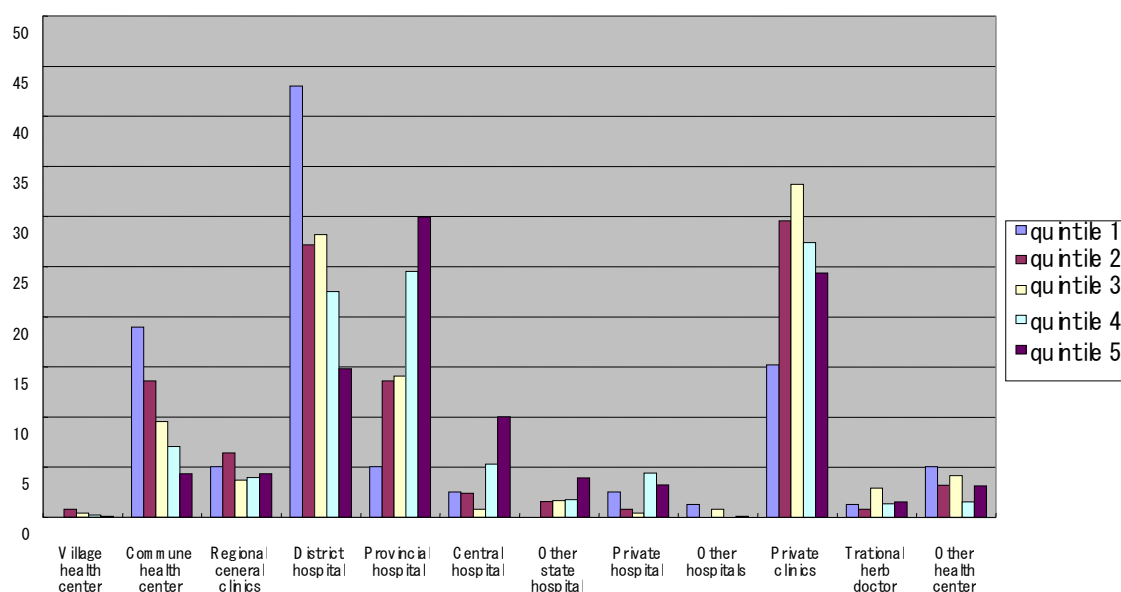
	quintile 1	quintile 2	quintile 3	quintile 4	quintile 5
Did household cover all the expenses and was that enough?(%)					
Yes, enough	77.38	86.04	88.62	91.03	93.53
Yes, but not enough	14.33	9.19	8.03	5.83	4.8
No	8.29	4.77	3.35	3.14	1.67

Source: Compiled by the author

The burden of health care expenditure seems to be heavy on the poor as expected (Table 3). Although the percentage of those who cover health expenses on their own is lower for the poorest quintile than the least poor quintile, the highest percentage of people who felt that the payment was not enough to cover the cost of treatment. It can be stated that those in the poorest quintile do not seem to visit health facilities much due to the high treatment cost at health facilities and even if they do, they visit less than the rich.

The high cost of treatment seems to hinder the poor to visit health facilities. Then, when they visit, what type of facilities do they visit? Figure 10 shows the type of health facilities visited by quintile. The poorer groups tend to visit government facilities such as District hospitals and Commune health centers, whereas the less poor groups are likely to visit Private clinics and Provincial hospitals.

Figure 10 Types of health facilities visited



Source: Compiled by the author

Next, in order to observe the cost burden of health care expenditure more closely, rates of out-of-pocket health expenditures in terms of total household expenditures are investigated (Table 4). The highest rate of health expenditure is seen in the richest group in rural areas but in urban areas, the average rates are similar across quintile groups. The severity of health expenditure is illuminated when the catastrophic payments defined as health expenditures with more than 10 or 25 % of total household expenditure are considered. Table 5 shows clearly that the richer they become, the higher rates of those with catastrophic payments are detected. This is consistent with the results found in the previous literature. This is partly because those richer people visit private clinics which require higher treatment fees. One unique feature is that in Vietnam, those who are covering high health expenditures visited Provincial hospitals rather than Private clinics in both urban and rural areas. Private clinics follow in urban areas as the second most costly health facility and District hospitals are the next costly facility in rural areas. This result may show that government health facilities are not necessarily serving as sorts of safety-net facilities to provide necessary care with low cost, especially in rural areas.

Table 4 Rates of health expenditures (out-of-pocket)

Ave. health expenditure/total expenditure					
	Urban quintile 1	quintile 2	quintile 3	quintile 4	quintile 5
Mean	0.0471	0.0490	0.0591	0.0545	0.0579
Std. Dev.	0.0613	0.0585	0.0859	0.0782	0.0992
	Rural quintile 1	quintile 2	quintile 3	quintile 4	quintile 5
Mean	0.0387	0.0523	0.0621	0.0725	0.0940
Std. Dev.	0.0543	0.0719	0.0883	0.1110	0.1542

Source: Compiled by the author

So far, health conditions were examined by types of health facilities and the number of visits to those facilities by region and quintile group. However, one visit lasts long. People perhaps wait to visit the hospital until the conditions turn out to be severe as observed for the poor. Also, when some unfortunate events happen to more than one member within the same household, households have to cope with higher cost which may not be covered by health certificates or social health insurance<sup>8</sup>. Households in those situations may borrow, sell asset, or reduce expenditures for other purposes. If any sort of expenditures are reduced due to severe health conditions, it can be stated that

<sup>8</sup> Investigation on social health insurance is found in Long (2007).

households could not maintain the same living conditions due to those unexpected incidents. Next, the effect of severe health disorders on the household living conditions is explored.

Table 5 Rates of those with high health expenditures (out-of-pocket, %)

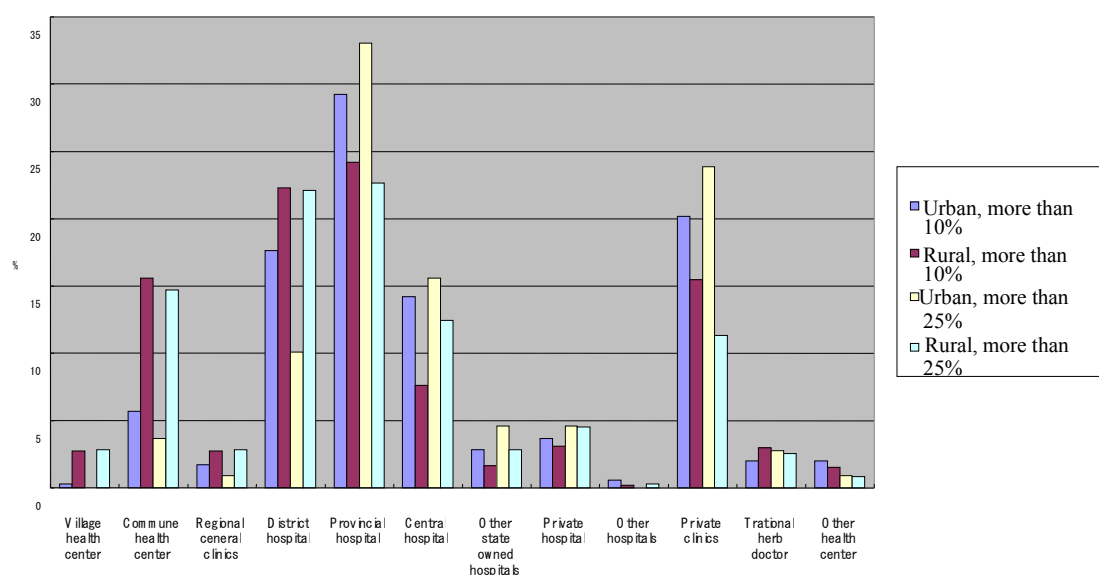
	Urban quintile 1	quintile 2	quintile 3	quintile 4	quintile 5
more than 10%	9.52	14.53	16.72	20.46	24.55
more than 25%	1.98	1.86	5.03	3.42	5.81

	Rural quintile 1	quintile 2	quintile 3	quintile 4	quintile 5
more than 10%	9.52	14.53	16.72	20.46	24.55
more than 25%	1.27	2.93	5.51	7.73	12.62

Source: Compiled by the author

Figure 11 Types of health facilities visited by those with high health expenditures



Source: Compiled by the author

This effect is investigated based on a system of demand functions as suggested by Somi, Butler, and Vahid, Njau, and Abdulla (2009) that has shown the effect of health shocks represented by Malaria. In the event of health shocks, households try to adjust their demand to adjust quickly to tackle the shocks, given the supply side. In this study,

household characteristics are used as independent variables rather than used as adjustment factors for the level of consumption.

$$pc_{ig} = \alpha_g + \beta_{1g}TPC_i + \beta_{2g}TPC_i^2 + \beta_{3g}B_i + \beta_{4g}H_i + \beta_{5g}BA_i + \beta_{6g}GA_i + \varepsilon_i \quad (1)$$

where  $i$  represents each household,  $g$  is each category of expenditure,  $PC$  denotes for consumption expenditure per capita for each expenditure group,  $TPC$  and  $TPC^2$  are per capita total household consumption and its squared,  $B$  stands for total number of days, which any household member stays in bed and needs other person's care,  $H$  is gender of household head,  $BA$  and  $GA$  are the number of boys and girls who are attending schools.

Table 6 and 7 demonstrate the results of estimation of the equation (1). The fixed effects model with provincial fixed effects is applied<sup>9</sup>. For those in the 1<sup>st</sup> quintile, except for positive effects of the number of girls and boys who are attending schools on education expenditure, notable circumstance is not observed in urban areas. In rural areas, the negative and significant effect of the number of days in bed appears for food expenditure and the positive and significant effect of the same variable is detected for health expenditure. The positive and significant effect of the health shock on health expenditure and the negative and significant effects on food are consistent with the findings in the previous literature. Also when household has boys and girls who attend school, they tend to reduce expenditures on food and health and increase expenditure on education. This shows that in rural areas, households in the 1<sup>st</sup> quintile are not likely to maintain the same living standards since they reduce food consumption in order to cope with an increase in health expenditure emerged from health shocks. At the same time, they tend to reduce food consumption to cover an increase in education expenditure. For those in the 2<sup>nd</sup> to 5<sup>th</sup> quintile, any significant negative effect from health shocks is not observed in urban areas. However, the negative and significant effects for the number of boys and girls attending schools for food and health expenditures are found. It can be stated that people in the 2<sup>nd</sup> to 5<sup>th</sup> quintile cover an increase in education expenditure by reducing food and health expenditures in urban areas. In rural areas, for the people in the same group, the negative and significant effects of the number of days staying in bed are found for food, non-food, and education expenditures although the size of its effect for education expenditure is the smallest. At the same time, as found for the 1<sup>st</sup> quintile

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<sup>9</sup> For the 1<sup>st</sup> quintile in urban areas, the fixed effects are significantly different from zero only for non-food consumption when the F-test is conducted. For the 2<sup>nd</sup> to 5<sup>th</sup> quintile groups in urban areas, for food, non-food, education, the fixed assets are significantly different from zero based on the 95% level of confidence. Those in rural areas, all the fixed effects are significantly different from zero based on the 95% level of confidence.



group, the negative and significant effects of the number of boys and girls attending schools are found for food and health expenditures as the positive and significant effects of the same variables are found for education expenditure. The shift in consumption patterns to cover an increase in education expenditure stays the same for the 2<sup>nd</sup> to 5<sup>th</sup> quintile groups. However, for health shocks, relatively rich households tend to decrease food, non-food, and education expenditures to cover up an increase in health consumption in rural areas. Those negative effects are also larger than that for the 1<sup>st</sup> quintile group. In urban areas, education matters than health shocks since health shocks did not yield any significant reduction in any category of consumption. It implies that other means are used to deal with an increase in health consumption from health shocks in richer household in urban areas such as health insurance, or borrowing from financial institutions. On the other hand, in rural areas, richer households seem to be affected unfavorably by health shocks as they sacrifice food, non-food and education expenditures.







	Rural expenditure	2nd to 5th quintile									
	food		nonfood			Durable appliances			Fixed assets		
consumption	0.064 **	0.002	0.050 **	0.001		0.055 **	0.003		0.430 **	0.010	
consumption-squared	-0.00000021 **	0.00000001	-0.00000015 **	0.000000008		-0.00000015 **	0.000000014		-0.000000022	0.000000053	
days in bed	-1.228 **	0.298	-0.909 **	0.228		-0.777	0.420		-1.070	1.579	
female	32.531	31.540	-20.817	24.136		-26.107	44.488		-160.005	167.241	
# of boys attending	-130.104 **	14.747	-18.226	11.285		-34.248	20.801		121.179 *	78.196	
# of girls attending	-114.499 **	15.039	3.967	11.509		37.788	21.213		48.454	79.744	
constant	2316.525 **	25.736	725.437 **	19.694		43.914	36.301		-2406.887 **	136.463	
R-squared	0.242		0.238			0.103			0.499		
Obs.	5393		5393			5393			5393		
	Health		Education								
consumption	0.021 **	0.002	0.010 **	0.001							
consumption-squared	-0.000000078 **	0.000000001	-0.000000036 **	0.000000005							
days in bed	4.855 **	0.295	-0.329 **	0.139							
female	118.736 **	31.255	25.503	14.714							
# of boys attending	-70.368 **	14.614	160.332 **	6.880							
# of girls attending	-59.428 **	14.903	142.773 **	7.016							
constant	243.645 **	25.503	7.340	12.006							
R-squared	0.086		0.169								
Obs.	5393		5393								

Source: Compiled by the author

#### **4. Concluding Remarks**

So far, poverty in Asia was reviewed from various dimensions.

First, economic variables and its relationships to the level of poverty were examined. Overall, the negative link was observed between the level of income and poverty rates for the period between 1980 and 2007. However, that picture somewhat differs by region. In East Asia and South Asia, almost all countries are on the same downward trend but not necessary true for other regions. It can be also stated that some specific attributes are identified by region. For instance, institutional instability seemed to have affected some countries in South Asia. In Latin America, high levels of poverty rates regardless of economic circumstances were perceived. When other factors such as socio-economic factors are considered, whereas infrastructure development revealed the similar downward trend, education and health are not closely associated with poverty. The trend is not very systematic and discrepancies among countries are detected within the East Asia region.

Second, the health sector which is associated with both transient poverty and dynamic poverty is taken for further investigation in terms of its link with poverty. Here, Vietnam is observed as a case of high growing countries which reduced poverty largely over the last two decades. Households reacted health shocks differently by region and by quintile. It should be noted that in rural areas, both rich and poor are struggling to maintain the same living standards after health shocks happened. In rural areas, those in the 1<sup>st</sup> quintile reduce food expenditure and those in the 2<sup>nd</sup> to 5<sup>th</sup> quintile reduce food, non-food, and education expenditures significantly to cope with health shocks. Education expenditure is significantly reduced by relatively rich households but the size of that effect is the smallest. In urban areas, in addition to social health insurance, international health insurance is available for those who prefers to hedge against health risks. However, in rural areas, there is a chance that health insurance facilities might not have reached out to those who prefer to obtain any kind of health insurance if it is available. Not only the coverage but also institutional arrangement of health insurance system may have to be examined further. At the same time, provision of multidimensional safety-net program might be longed for in rural areas in order to prevent health shocks to deteriorate standards of living.

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