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By

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ABSTRACT

Using the Survey of Living Conditions in Uttar Pradesh and Bihar of India and the second round of the Vietnam Living Standards Survey, this paper examines whether and to what extent rural consumption inequality of the poor differs in the two countries. While these two countries have experienced significant growth since the early 1990s, they have different institutional arrangements. As a result, the reforms that they have undertaken could have different impact on the poor. The Shapley decomposition results suggest that not only is average consumption expenditure per capita higher in rural Vietnam than in rural India, but also the distribution is more equitable. Land ownership and education structure are found to be the most important contributing factors of consumption inequality for the rural poor. However, the importance of these contributing factors differs. Land ownership (age structure) turns out to be the most important factor for India (Vietnam). Education is an important factor common to the poor in both countries. Policies to ensure more equal access to land and education hold the key to address consumption inequality for the poor.

Key words: rural consumption inequality, market reforms, India, Vietnam, Shapley decomposition

JEL classification: D63, D31, O15 We estimate an aggregate daily water demand for Sydney using rainfall, temperature,

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Introduction

Both India and Vietnam have experienced dramatic growth. After undertaking major economic reforms¹, India and Vietnam have registered about 7 percent growth since the early 1990's.² While their growth has accompanied by significant poverty reduction without substantial increase in inequality like other fast growing countries such as China in the 1990's,³ there are signs for increases in inequality and vulnerability of the poor. The two countries differ in their historical development. As a result, their institutional arrangements and the reforms that they have undertaken could have different impact on the poor in the two countries. While there is a large body of literature on consumption inequality, hardly any focus on the poor who are most vulnerable. It is therefore important to understand the determinants of inequality of the poor in order to achieve steady inequality and sustainable poverty reduction. Since the impact of market reforms is likely to affect urban and rural areas differently and most of the poor are likely to be in rural areas, this paper therefore examines the changing consumption distribution of the poor in the rural areas, putting it into the perspective of structural change that India and Vietnam have been experiencing in the past decade. This paper asks whether and to what extent rural consumption inequality of the poor differs. Recently a number of studies have compared India with other countries in various aspects. Few have use

¹ India has embarked major economic reforms after the 1991 crisis, while Vietnam has introduced *Doi Moi*, renovation, in 1986.

² India and Vietnam have an average GDP per capita about U.S.\$2200 and U.S.\$1810 (PPP adjusted in the constant 2000 international dollar) during a period of 1997 and 1998. After undertaking major economic reforms in the early 1990s, India has registered an average of 6.8 percent annual GDP growth since 1994.

³ Using the World Bank \$1 a day poverty line, the headcount ratios of India and Vietnam have dropped by 15 percent between 1994 and 2000 and 74 percent between 1993 and 1998 respectively. Their Gini coefficients have only increased slightly in most years during the 90s.

microdata. As far as I am aware, this is the first research project comparing India and Vietnam using household survey data.

Before turning the focus on the poor, it is useful to examine a few dimensions in the historical development that could potentially give rise to different household characteristics, which could, in turns, make the landscape of inequality in India, in general, differs from that in Vietnam. While some say liberalisation in India first started in 1996 with a devaluation of the rupee, the post-1991 crisis reforms being more focused on liberalising the economy has brought about dramatic growth in the 1990's (Gajwani and Kanbur 2006). For Vietnam it was the introduction to *Doi Moi*, 'the renovation', in 1986 that has turned the economy around. Prior to the introduction of *Doi Moi*, Vietnam was a centrally-planned economy. Because of the strong commitment to equal rights under the communist regime, Vietnam may be more equalitarian than India in various fronts.

First, in terms of education, relatively fewer Vietnamese receives no education or is illiterate compared with Indian. Under the influence of the socialist equalitarian ideology and the traditional respect for education accompanied with the Confucism, Vietnam's education policy has achieved a very high literacy rate. On the contrary, continuing high rate of illiteracy is evident in India (Bosworth and Collins 2007). The rate of return to an addition year of schooling is lower in Vietnam than in India in the mid 1990's (Psacharopoulos and Patrinos 2002). Second, if one defines minorities as people who are marginalised, then the division of minority and majority may be more an important contributing factor to household welfare in India than in Vietnam. In India, Muslims and the 'untouchables' (the Scheduled Castes, SC, and Scheduled Tribes, ST)

are the marginalised groups.⁴ They account for almost 30 percent of the population (Borooah 2005). The Schedule caste are scattered in almost all states and most Scheduled Tribes is concentrated in the “central tribe belt” running through the hilly terrain of states such as Gujarat, Mizoram and Bihar. While the socioeconomic conditions of the lower castes have improved, Lanjouw and Stern (1991) and Jeffrey (2002) report evidence of caste-based division. For instance, they attribute the high poverty rate associated with the Scheduled Caste in the rural Uttar Pradesh to poor endowments of human capital and productive assets as well as caste-based discrimination. These factors have limited their access to employment opportunities outside the village. The differences in asset-holdings between households belong to the Scheduled Caste/Scheduled Tribes and other groups were found to contribute about 11 percent (5 percent) of the rural (urban) inequality measured by the Theil index of inequality in the early 90s (Subramanian and Jayaraj 2006). On the contrary, the non-Kinh minorities only account for 13 percent of the Vietnamese population. They contribute to about 2 percent of the between group inequality measured by the Theil Index in 1998 (Glewwe 2000). Most concentrate in the northern mountainous area.

Third, although Vietnam’s reform policies do not have a clear regional character as in China, there is a spatial dimension to its development. Historically, Vietnam was divided into its northern and southern halves before the Unification in 1976. The northern part has a longer history of operating under the socialist economic system. The south, especially the area around Hochiminh City, is relatively better off than the north not only

⁴ The caste system is based on Hinduism. Traditionally the lower castes provide services to the upper castes and therefore, the lower castes are mostly poor. Since the independence, the system of untouchability wherein the upper castes believed that contact with the untouchables could defile them was abolished and the political power of lower castes has increased. The lower castes, including the untouchables were listed in a Schedule of the Constitution and are therefore called the Scheduled Castes (SC).

in terms of per capita expenditures, but also in relation to human capital, physical and social infrastructure. Therefore, the development in the south, especially areas around Hochiminh City, was faster as it could more readily ride on the tide of market reforms. Differences in ecological endowment, for instance, the fertile coastal area versus the Highlands, could affect relative distribution. Harsher geographic terrain has seen the northern mountainous area and central Highlands lack behind the development of the rest of the country.

In addition, mobility is quite restricted in Vietnam even during early reform period. In India, economic reforms have been an increase in spatial inequalities in the development process, especially during the 90s. (Ahluwalia 2000, Bhattacharya and Sakthivel 2004, Purfield 2006). Most of the western and southern states are richer than other states with the poverty belt in the northern states such as Bihar and Uttar Pradesh. Some argue that literacy rather than land quality determines to what extent a state benefits more from the liberalisation, therefore, is responsible for the regional disparities observed in India. Others blame the decline to credit to the less developed states as the culprit (Umesh 2006). In general, it is difficult to expect as a prior whether relative to India, regional disparities in Vietnam contribute more substantially to inequality. Fourth, since the early 90s the GDP share of agricultural sector in Vietnam has declined more rapidly than that in India but its share of services has risen at a slower pace.⁵ The differences in sectoral structure in the two economies could give rise to different location of employment, therefore, resulting in different distributional outcomes.

⁵ In Vietnam, the contribution of agricultural sector to the GDP fell from 41 percent in 1991 to 26 percent in 1999. The share of services rose slightly about 38 percent in 1990 to about 40 percent in 1999 before easing to around 38 percent in mid-2000s. On the contrary, the growth rate of services industries of India grew rapidly from 11.5 percent of the GDP in 1993/94 to 46.6 percent in 1998.

Finally, Vietnam adopted land reform policy in the late 80s and the early 90s (Ravallion and van de Walle 2006). As a result, land is fairly evenly distributed despite of regional variations. While the number of landless people in Vietnam has reportedly increased after over a decade of market reforms, it is expected to be fewer in number than that in India. Due to historical reasons, India inherited a semi-feudal agrarian system. Relatively fewer rural Indian households own land. However, both countries share a recognised problem of land fragmentation. Some argue that the effect of land ownership on inequality may diminish with the reduction in the share of GDP generated in the agricultural sector (Cater 2004). Recall in Vietnam the share of GDP in the agricultural sector has declined at a faster pace and the land reform has resulted in a relatively equitable land distribution. It is therefore postulated that the effect of land ownership in general may be less important in Vietnam where the weight of the agricultural sector in the overall economy has fallen off more rapidly than in India.

The analysis so far suggests that Vietnam may be more equitable than India in general. However, it is not sure if we confine the comparison to the rural areas where most of the poor reside would lead to different conclusions than those from comparing the entire nations. For instance, while SC/ST may make the majority-minority division more an important factor in terms of inequality in India, the wider distribution of these groups relative to the concentration of ethnic minorities in a few poor provinces in rural Vietnam could change the picture when we focus on the poor. Although analytically insightful, this paper ignores the outflow of rural poor into the cities to seek better economic opportunities. To the extent the rural-urban migration differ between Vietnam and India, this paper could under- or over-state the rural inequality among the poor. Next

section describes the data and rural inequality of the poor in the two economies. This is followed by a discussion of the methodology. The next section analyses the results. Concluding remarks and policy implications are presented in the last section.

Data and methodology

This paper uses two surveys conducted by the World Bank. One is the Survey of Living Conditions in Uttar Pradesh and Bihar of India; and another one is the second round of the Vietnam Living Standards Survey (VLSS). Both were carried out during 1997-1998 and both draw data collected from household and community surveys modeled after the World Bank's Living Standards Measurement Study (LSMS) surveys. For the Survey of Living Conditions, data were collected from 120 villages drawn from a sample of 25 districts in Uttar Pradesh and Bihar states. A total 2,250 households were interviewed. The sampling strategy is such that weights have to be used to reflect the stratified sample structure. For the Vietnam Living Standards Survey 1997-1998, the sample was primarily selected from the households selected in the original 150 communes/wards of the first round of the VLSS conducted during 1992-1993. The sample increased by 1200 households. The selection of the additional households was chosen so that the total sample of 6000 households oversampled specific domains. Therefore the 1997-98 data must be weighted in order to correct for the bias due to over-sampling.

Note that this paper uses per capita real expenditures as a measure of inequality instead of per capita household real income. Income itself may not be a good candidate. Evaluation of income is often problematic. Seasonality is an issue for income; in

particular agricultural income could be extremely volatile. Provided that households could smooth their consumption, then consumption expenditure will be a better measure. For practical purpose, it is harder to get an accurate measure of income than expenditures especially most households in India and Vietnam are self-employed.

In order to compare expenditures across the two countries I use estimates of purchasing power parity (PPP). One common approach for comparisons between developing countries is to work with the World poverty line of the World Bank. It is defined as US\$1 PPP per person per day in 1985 prices (World Bank 2000) inflated by CPI to represent the same PPI for India and Vietnam in 1997 and 1998. Based on the ratio of PPP to the official exchange rate and the official exchange rate published by the World Bank, I derive the PPP conversion factor for India and Vietnam. The local currency is then converted into the international dollar using the PPP. There are huge differences between measuring per capita household expenditures in the U.S. dollars using the official exchange rate and that in the US dollars adjusted for PPP. Since PPP provides a standard measure allowing comparisons between real price levels across countries, the observed discrepancy highlights the lower price levels in India relative to Vietnam.

Table 1 presents the average per capita household expenditures for Bihar and Uttar Pradesh of the northern region in India as well as the seven regions in Vietnam. Bihar and Pradesh are in the poverty belt in the northern states of India. Table 1 shows that provinces in the Northern Uplands and the Central Highlands regions⁶ are the most comparable with Bihar and Uttar Pradesh in terms of the average per capita household

⁶ According to Minot and Baulch (2002), the ten poorest rural provinces of Vietnam are in the Northern Uplands, with poverty rates ranging from 55 to 78 percent. It ranges from 45 to 67 percent for the provinces in the Central Highlands.

expenditures. In the rest of the paper, I will compare Bihar and Uttar Pradesh of India with the provinces in Northern Uplands and Central Highlands of Vietnam and will also present the data on rural Vietnam as a whole.

Table 1 Per capita household expenditures, PPP adjusted in US\$

	Per capita household expenditures, PPP adjusted in US\$	Per capita household expenditures, in US\$ (@OER)
Northern region of India (Bihar, UP)	554.505	117.14
Vietnam		
Red River Delta	930.3149	195.12
North Central	850.782	178.44
Central Highlands	810.737	170.04
Central Coast	894.535	187.62
South East	1420.35	297.90
Mekong	919.170	192.78
Northern Uplands	729.761	150.06

As shown in Table 2, in general, Vietnam has a higher level of average per capita household than that of India. Provinces in the Northern Uplands and the Central Highlands register an average of 30 percent above that of Bihar and Uttar Pradesh. In Vietnam, about 57 percent of the minorities concentrate in the provinces of Northern Uplands (40 percent) and Central Highlands (17 percent). On the contrary, only 38 percent minorities reside in Bihar and Uttar Pradesh. The average consumption expenditures of the majorities in the two Vietnamese provinces are 35 percent higher than those of the two Indian states. The minorities also fare better in Vietnam than in India in terms of the consumption expenditures (32 percent higher). While the overall majority-

minority gap in the Northern Uplands and Central Highlands provinces 74 percent of that at national level, it is 41 percent wider than that in Bihar and Uttar Pradesh. It appears that once we focus only on the poor, whether one belongs to a marginalised group or not does not matter as much in India relative to Vietnam. One plausible explanation is that the majority-minority division is more captured by other factors. Indeed, the empirical findings presented later show that land appears to capture part of the effect of the dimension of majority-minority.

In terms of the average per capita consumption expenditures, households with a low-educated household head are generally worse off than those with a high-educated household head. In the Northern Uplands and Central Highlands provinces, the consumption expenditures of households with a high-educated head is about 41 percent higher than those with a low-educated head – about 10 percent higher than at national level. In Bihar and Uttar Pradesh, households with a high-educated head register an average consumption expenditures level of 73 percent more than their counterparts. The consumption expenditures gap of the two types of households in the two poor Indian states is almost 30 percent wider than that in the poor provinces in the two Vietnamese regions. Human capital is apparently a more important determinant of household welfare in two rural Indian states.

Table 2 Per capita household expenditures in rural areas, by majority/minority and education of household heads

	India (Bihar, Uttar Pradesh)	Vietnam (Northern Uplands, Central Highlands)	Rural Vietnam
All			
Per capita household expenditure, in international price adjusted by PPP	571.94	743.84	904.15
Per capita household expenditure in US\$ (@OER)	120.80	155.98	189.60
Majority			
Per capita household expenditure, PPP (current international price)	636.70	856.50	957.37
Per capita household expenditure in US\$ (@OER)	134.47	179.67	200.76
Minority			
Per capita household expenditure, PPP (current international price)	464.03	613.27	631.19
Per capita household expenditure in US\$ (@OER)	98.00	128.60	132.36
Education: Low			
Per capita household expenditure, PPP (current international price)	495.48	672.56	858.29
Per capita household expenditure in US\$ (@OER)	104.65	141.04	179.98
Education: Medium			
Per capita household expenditure, PPP (current international price)	665.96	797.52	921.86
Per capita household expenditure in US\$ (@OER)	140.65	167.24	193.31
Education: High			

Per capita household expenditure, PPP (current international price)	856.10	951.44	1130.81
Per capita household expenditure in US\$ (@OER)	180.81	199.52	237.13

Notes: The PPP conversion factor to official exchange rate is 0.2097 and 0.2112 for Vietnam and India. Their respective official exchange rates per U.S. dollar are 11683.33 dongs and 36.31 rupees. All these figures are reported for 1997 (World Bank, <http://ddp-ext.worldbank.org/ext/DDPQQ/showReport.do?method=showReport>). 2) Education high: Below primary; education medium: primary and secondary for Vietnam, primary and middle school for India; education high: vocational training, diploma and university degree for Vietnam, matriculation, intermediate, diploma and degree for India.

Table A1 presents the summary statistics of the variables used in the empirical work. On average, among those who work, more households with high educated members in the two Indian states than the Northern Uplands and Central Highlands provinces. However the reverse holds for medium education. Fewer minorities concentrate in the two Indian states than provinces in the two Vietnamese regions. Poor rural households in Vietnam and India face fairly different age structure. For instance, more households have children under 9 years of age in Bihar and Uttar Pradesh; while slightly more elderly live in households located in provinces in the Northern Uplands and Central Highlands. The industrial structure of employment of the poor is profoundly different in the two countries. The poor in Vietnam primarily engage in agricultural-related activities, while a wider dispersion among the poor in India is evident. Different household characteristics of the poor could potentially shape the landscape of inequality differently in the two countries.

In terms of inequality, almost all inequality measures suggest that the household consumption is more equitable in the Northern Uplands and Central Highlands provinces compared with the two Indian states (Table 3). Consumption distribution in Northern Uplands and Central High is slightly more equitable than the nation as a whole.

Table 3 Various measures of rural consumption inequality in 1997/98

	India (Bihar, Uttar Pradesh)	Vietnam (Northern Uplands, Central Highlands)	Rural Vietnam
Gini coefficient	0.3347	0.2360	0.2528
Coefficient of variation	0.7672	0.5443	0.5716
Standard deviation of logs	0.5503	0.4647	0.4781
Theil coefficient	0.1991	0.0919	0.1127
Atkinson measure			
= 0.5	0.0880	0.0564	0.0597
= 1.0	0.1585	0.1070	0.1130
= 2.0	0.3704	0.2284	0.2462

As shown by Atkinson (1970), if Lorenz curves cross, one could no longer be confident about the robustness of inequality measures. When one Lorenz curve is everywhere above the other i.e. the distribution represented by the former dominates the latter, then one could conclude that the upper curve represents a more egalitarian distribution unambiguously (Lorenz dominance). The Lorenz curves presented in Figure 1 suggests that the per capita average expenditures of the provinces in the Northern Uplands and the Central Highlands are distributed more evenly than that of Bihar and Uttar Pradesh. Figure 2 shows the Transformed Lorenz Curves which plots the distance of a Lorenz curve from the 45-degree line. Again, the India states have the greatest inequality.

Figure 1 Lorenz curves for India and Vietnam, PPP-adjusted in international currency

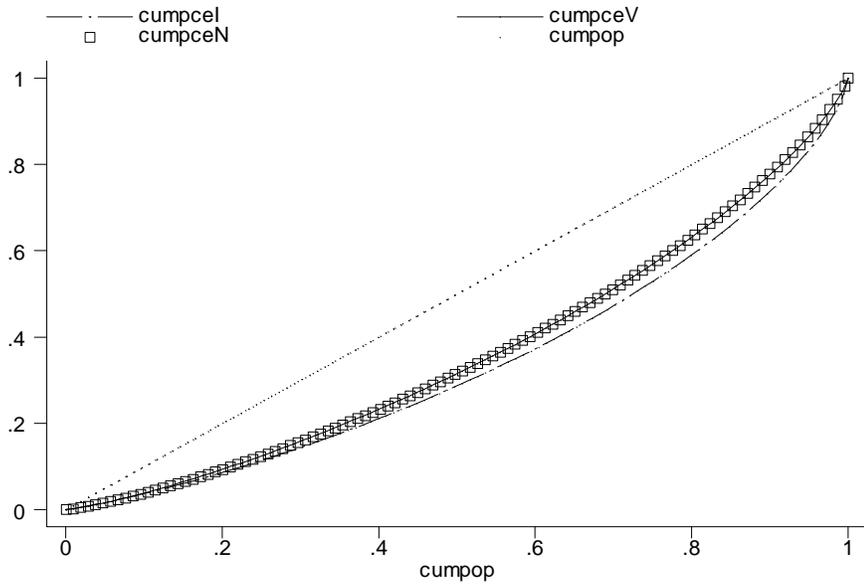
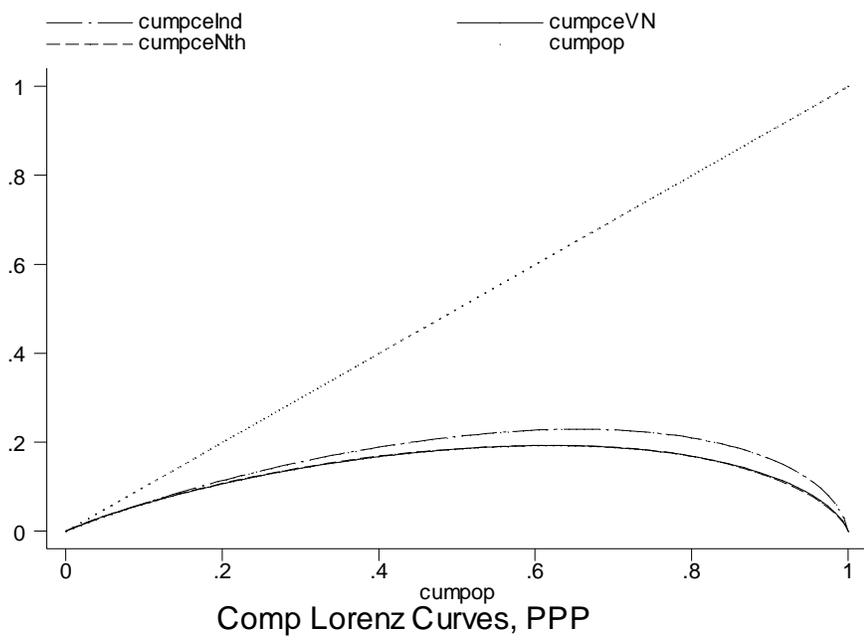


Figure 2 Transformed Lorenz Curves



In sum, rural Vietnamese households have a higher consumption level as well as a more equitable distribution relative to those in the two Indian states. However, the gap of average per capita expenditures between majorities and minorities is wider in Vietnam.

Determinants of household expenditures

To investigate the determinants of household welfare one can estimate a standard model specified as follows for rural households.

$$\ln Y_i = \alpha + \beta_j x_{ij} + \varepsilon_i$$

x_{ji} is a vector of exogenous factors that could be broadly divided into three categories. As outlined in the background section, both India and Vietnam have undergone dramatic economic restructuring. Therefore the first set of the explanatory variable captures the possible impact of economic restructuring on household expenditures. Transition involves substantial shifts in the industry composition of employment. Changes in labour allocation across industries could affect inequality. I therefore include the proportion of household member employed in different industries relative to the number of working persons in the household (agricultural, manufacturing, trade, electricity and construction, transportation and other industries). Transition also involves substantial shifts in occupation distribution. However they are not included as they are highly correlated to the variables capturing industry composition of employment.

Demographic characteristics of households may also have a close link to the distribution of consumption expenditures among its members. Aside from education of household members, age structure could also matter, for instance, because personal

expenditures may vary in terms of its size and composition according to the lifecycle. Therefore the second group includes factors that capture household characteristics. It includes human capital factors (proportion of household members with low level of education (below primary), medium level of education (primary and secondary for Vietnam, primary and middle school for India) and high education level (vocational training, diploma and university degree for Vietnam, matriculation, intermediate, diploma and degree for India)⁷, age and its squared term for the household head, gender of the household head. It also includes variables to describe the age structure of the household (proportion of member under 6 years of age, between 6 and 10, between 11 and 15, between 16 and 65, and older than 65 years of age)⁸.

The last group of variables includes a majority dummy and in logarithm of land per capita⁹. For Vietnam, the division of majority-minority is mainly along the ethnic division and is one of the dimensions that could shape rural inequality. The Kinh comprises about 84 percent of all Vietnamese. Its impact is likely to be large given most ethnic minorities are residing in rural areas especially the two poorest regions.

Theories often suggest that physical assets are important in explaining inequality. Land is the primary physical assets held by households. With economic growth reward those who have productive assets more, inequality in land holdings could see the poor benefits less. This could lead to increasing inequality over time. To investigate the impact of physical assets on inequality, we include per capita land into the vector of explanatory variables.

⁷ They are calculated relative to the total number of working household members.

⁸ They are calculated relative to the household size.

⁹ Land refers to agricultural land only as information on other types of land is not available in the Survey of Living Conditions in Uttar Pradesh and Bihar of India.

It is widely acknowledged that infrastructure is important in explaining inequality. A lack of infrastructure means that it is difficult for poorer (low-endowed) households to participate in certain productive activities than richer households. This could lead to increasing inequality over time. While information on accessibility to road and electricity is collected in the community survey of the VLSS98 and the Survey of Living Conditions in Uttar Pradesh and Bihar of India, missing values in these questions in the VLSS98 have precluded us to include them in the model to investigate the impact of infrastructure on inequality.

For rural Vietnam, I also include variables seven regional dummies for the urban sample (Northern Uplands, Red River Delta, North Central, Central Coast, Southeast, Mekong Delta and Central Highlands) to capture the impact of regional disparities on consumption inequalities.

Factors contributing to inequality

Recently there has been exciting advance in the regression-based decomposition approaches to analyse inequality (for example, Bourguignon, Fournier et al. 2001; Morduch and Sicular (2002); Fields (2003); Wan (2004)). The decomposition method of Morduch and Sicular (2002) and Fields (2003) overcome the limitations of non-regression-based approaches (Cowell and Jenkins 1995) as well as of the regression-based simulation techniques (Bourguignon, Fournier et al. 2001), namely, the relative contributions of factors are not independent of the order in which the factors are introduced into the analysis. Since their decomposition methods are path dependence, it is possible to consider the relative impacts of a larger number of variables on changes in

inequality. Based on the consumption or income generating functions, Fields' decomposition can identify the share of contributing factors to both the level and changes of inequality. Contrast to the approach of Morduch and Sicular (2002), Fields' method could identify the contribution of the residual term to total inequality. However, the contribution of the residual term to total inequality is often large and leaves a large share of inequality unexplained (Wan 2004). These methods also fail to take into account of the contribution of the constant term to total inequality.

This paper uses the Shapley value decomposition (Shorrocks 1999, Shorrocks and Kolenicov 2005). The Shapley value is originated from the cooperative game theory problem how to divide a pie fairly. The Shapley solution is to assign each player the marginal contribution averaged over all possible coalitions of agents. Shorrocks (1999) re-interpret the Shapley value by considering an indicator such as the overall poverty is determined by various factors, and assigns to each factor the average marginal contribution derived from all the possible ways in which the factors are dropped. Using the Shapley value and its application to examine inequality could deal with the problem of large residual and it could use to decompose any inequality index. In addition, the decomposition is always exact and that all factors are treated symmetrically. Shorrocks and Kolenicov (2000) apply the method to examine the regional poverty in Russia.

Essentially, based on a consumption or income-generating function $Y = f(X_1, \dots, X_K)$, different sets of explanatory variable are dropped and the associated inequality measures are re-calculated. The contribution of X_k to total inequality, $C(X_k)$ could be expressed as

$$C(X_k) = I(Y) - I(Y_k) \quad \text{where } k = 1, \dots, K$$

These contributions are the first-round effect when only one X_k is dropped. The second round effect could be obtained by dropping two variables, X_k and X_j , as a group.

The second round $C(X_k)$ can be written as

$$C(X_k) = I(Y_j) - I(Y_{jk}) \quad \text{where } k \neq j \text{ and } j = 1, \dots, K$$

If multiple $C(X_k)$ is obtained at each round, they are averaged first before averaging across all rounds. The contribution of the residual or the unexplained component can be expressed in terms of the difference between the Gini coefficient calculated based on original consumption data and the one based on predicted per consumption with all Xs are included.

4. Results

Table 4 presents the results of the consumption equations for the two Indian states, the provinces of the two Vietnamese regions and rural Vietnam as a whole. The F-statistics indicate the overall significance of the consumption regressions. And the R-squares serve as further evidence of the goodness-of-fit of the model.

For the Indian states, despite the positive sign, no statistically significant differences even at a 10 percent level are found in terms of per capita consumption expenditures between households belongs to the minority group and those belongs to the majority group. On the contrary, rural Vietnamese households belongs to the majority group, on average, have higher per capita consumption expenditures than those belongs to the minority group. For instance, among the provinces in the Northern Uplands or Central Highlands, a Kinh household spends US\$92 on average more than a minority household. In general, age structure is more important in rural Vietnam. For instance, an additional child under five years of age in the two Indian states would only lower the per

capita consumption expenditures by US\$49 on average. However, it would reduce a rural Vietnamese household resides in the Northern Uplands or Central Highlands provinces by US\$85, and a further US\$27 for a household in rural Vietnam. Relative to a household with more members with higher education, a household with more members with lower education spends about US\$60 less if it is in the Northern Uplands or Central Highlands provinces of Vietnam than if it is located in the two states of India. A comparison with rural Vietnam suggests that the effect of education on per capita consumption expenditures is less important among the provinces in the two poorest regions than in rural Vietnam as a whole. In addition, land per capita is found to affect per capita consumption positively for both India and Vietnam. However, the impact is slightly more important in the Northern Uplands or Central Highlands provinces as well as much more important for the rural Vietnam as a whole than the two Indian states. Furthermore, more variables that capture the industry location of employment are significant for Vietnam than India in general, suggesting that location of employment is a more important contributing factor in Vietnam. Employment opportunities to engage in industries such as manufacturing, trade and finance (relative to agriculture) have a significantly large positive impact on the poor's welfare in Vietnam.

Table 4 Determinants of per capita expenditures, India and Vietnam (weighted)
 Dependent variable: per capita expenditures in local currency and adjusted by PPP

	India (Bihar, Uttar Pradesh)		Vietnam (Northern Uplands, Central Highlands)		Rural Vietnam	
	Rs.	US\$	Dongs ('000)	US\$	Dongs ('000)	US\$
Household head's age	49.182 (1.24)	6.202	-5.280 (-0.38)	-2.076	26.557 (2.42)	10.439
Household head's age square	-0.434 (-1.07)	-0.055	0.092 (0.73)	0.036	-0.232 (-2.13)	-0.091
Gender of household head	-395.168 (-0.78)	-49.832	31.9625 (0.39)	12.565	54.957 (0.94)	21.604
Proportion of household members with low education	-2135.94 (-5.10)	-269.348	-522.419 (-3.20)	-205.365	-783.395 (-5.84)	-307.956
Proportion of household members with medium education	-740.749 (-1.21)	-93.411	-212.815 (-1.23)	-83.659	-437.839 (-3.42)	-172.116
Majority	271.932 (1.25)	34.291	234.963 (2.48)	92.365	292.098 (3.36)	114.825
No of members less than 6 years old	-389.634 (-5.20)	-49.134	-215.494 (-5.67)	-84.7115	-283.248 (-11.61)	-111.346
No of members between 6 and 10 years old	-279.393 (-3.20)	-35.232	-160.331 (-7.80)	-63.027	-169.544 (-7.90)	-66.648
No of members between 11 and 15 years old	-222.381 (-1.66)	-28.043	-29.874 (-1.23)	-11.743	-115.578 (-5.55)	-45.434
No of members between 16 and 65 years old	132.640 (1.83)	16.7263	-53.299 (-1.97)	-20.952	-100.620 (-4.87)	-39.554
No of members over 65	-171.254 (-0.75)	-21.596	-83.2702 (-1.63)	-32.734	-94.441 (-2.57)	-37.125
Proportion of working members in manufacturing	464.429 (1.13)	58.566	1416.409 (6.66)	556.796	376.095 (1.83)	147.844
Proportion of members in electricity and construction industry	-874.637 (-2.29)	-110.294	23.129 (0.04)	9.092	-160.056 (-0.73)	-62.919
Proportion of members in trade	508.698 (1.45)	64.1484	1562.386 (4.68)	614.181	633.084 (4.35)	248.868

Proportion of members in transportation	1134.811 (1.35)	143.103	-368.613 (-1.25)	-144.903	646.369 (2.43)	254.091
Proportion of members in commercial and finance	1245.710 (2.35)	157.088	601.095 (2.14)	236.293	648.123 (3.14)	254.780
Log of land per capital	775.612 (7.77)	97.807	259.956 (5.16)	102.190	411.078 (9.83)	161.596
Red River Delta					228.338 (1.85)	89.761
North Central					126.207 (0.96)	49.612
Central Coast					111.701 (0.78)	43.9102
Central Highlands					-35.038 (-0.21)	-13.774
Southeast					492.034 (2.04)	193.421
Mekong Delta					-398.032 (-2.58)	-156.468
Constant	6619.676 (6.59)	834.761	590.981 (1.13)	232.317	-713.766 (-1.68)	-280.584
Adjusted R ²	0.2304		0.3711		0.3421	
F-test	14.36		30.18		25.31	
No. of observations	1567		811		3145	
Population size	12386382		2347428		9374818	

The analysis so far suggests that household characteristics are important in determining the per capita consumption expenditures. Note that the determining factors for consumption differ between the poor area in rural India and Vietnam. Note also that the estimated coefficients for a given variable vary greatly when comparing poor rural households across the two countries. However, it is not clear to what extent different household characteristics contribute to the inequality for the rural poor in the two countries. Based on the regression results of the consumption (without logarithm), the Shapley decomposition of the Gini coefficient is applied to identify the contribution of each household characteristic to total inequality. Recall that consumption expenditures per capita are more equally distributed in rural Vietnam and the provinces of the two poorest regions than the Indian states. Table 5 reports the results of the Shapley decomposition.

Table 5 Shapley decomposition

	India (Bihar, Uttar Pradesh)	Vietnam (Northern Uplands, Central Highlands)	Rural Vietnam
Gini	0.3347	0.2360	0.2528
Characteristics of Household head	11.212	9.879	9.622
Education structure	12.755	12.629	11.698
Majority	9.278	12.065	9.231
Age structure	17.329	18.930	17.882
Industry structure	9.925	12.346	9.096
Land	18.580	15.370	15.218
Region			11.980
Explained	79.080	81.219	84.727
Residual	20.920	18.781	15.273
	100.00	100.00	100.00

In general, household characteristics contribute positively to the overall inequality for the poor in rural India and Vietnam. They explain about 80 percent of the observed inequality measured by the Gini coefficient. For the two poor Indian states, per capita land turns out to be the most important contributing factor. It accounts for almost 19 percent to the overall inequality. Age structure and education structure of a household are the next most important contributing factors. Together these two factors account for about 30 percent of the Gini coefficient. Per capita land, education and age structure explain almost half of the overall consumption inequality observed. The age structure of a household, per capita land, and education structure are again the three key important factors that contribute to the overall inequality for provinces in the poor Vietnamese regions. Together, they account for 47 percent of the overall inequality and together they contribute about 58 percent of the explained component. At national level, however, region disparities replace education structure of a household to become the third important contributing factor to the overall inequality in Vietnam.

Comparing across the poor households in the two economies, land per capita is more important in determining the overall inequality in India than in Vietnam. India inherited a semi-feudal agrarian system, while Vietnam followed an equalitarian ideology.¹⁰ In India land traditionally concentrates in the hands of a few. According to the India Rural Development Report of 1992, 43% of the country's rural population was absolutely or near landless. Households belong to scheduled castes and tribes make up a majority of the landless households. According to a government Rural Labour Enquiry

¹⁰ While Vietnam traditionally follows the equalitarian ideology, landlessness in rural areas is increasing. According to Akram-Lodhi (2005), in 1993, about 8.2 percent of rural households were landless. By 1998, it had increased to 9.2 percent. By 2002 it doubled to 18.9 percent (World Bank 2004).

report, landlessness has been steadily rising among the scheduled castes and scheduled tribes.

Education is found to be almost equally important for the poor households in rural Vietnam and in India. It is more important in explaining the consumption differences for households in the poor provinces in the Northern Uplands and Central Highlands than the rural Vietnam as a whole. Human capital stands out to be an important determinant of inequity for the poor irrespective of the different development paths that Vietnam and India have undertaken.

Age structure is more important for the consumption of the poor in Vietnam than India. The relationship between age structure and household's welfare has been firmly established in the literature via the earnings capacity of households affected by factors such as dependency ratio and the number of readily supply prime-age labour.

The consumption disparities are more influenced by the location of employment of household members in Northern Uplands and Central Highland (12 percent) than Bihar and Uttar Pradesh (10 percent) as well as rural Vietnam as a whole (9 percent). This result could be attributed to the very different patterns of location of employment of Vietnamese households in the two regions. Recall that most rural poor households in Vietnam have a high proportion of members working in agricultural sector. Few have members engage in activities in other sectors. The proportion of members engage in agricultural activities is high in comparison to the national level as well as to the two Indian states. The location of employment is relatively more evenly distributed in Bihar and Uttar Pradesh despite of the importance of agricultural sector.

The division of majorities and minorities contributes more to the inequality of provinces than the two Indian states. And the majority and minority division is more important for provinces in the two regions than at national level. These results could be attributed to the fact that minorities highly concentrate in the Northern Uplands and Central Highlands provinces than other parts of the rural Vietnam. Among the minorities households, 57 and 15 percent reside in Northern Uplands and Central Highlands, accounting for 70 percent of minorities household in rural Vietnam. In comparison, about 28 percent of the households in Bihar and Uttar Pradesh belong to the same group. Having said that, part of the effect of majority-minority dimension on inequality may be captured by the effect of land per capita. Recall that land ownership in India is closely associated to the caste system. Using national data Borooah (2005) attributes over one-third of the average income differences attribute to discrimination against the Scheduled Tribes/Scheduled Castes relative to Hindus.

The results so far suggest that the poorest in rural Vietnam are more equitable than their counterparts in India as measured by the Gini coefficient. Nonetheless, these households in India and Vietnam are facing very similar set of key determinants of inequality, though with different intensity, in spite of the vastly different institutional arrangements and development paths of the two countries.

5. Conclusions

Using microdata, this paper examines the rural consumption inequality of the poor in India and Vietnam, and its contributing factors. We find that not only is the average consumption expenditures per capita higher in rural Vietnam (as a whole; and provinces

in Northern Uplands and Central Highlands) than in rural India (Bihar and Uttar Pradesh), but also the distribution is more equitable. The importance of the contributing factors of consumption inequality for the rural poor, however, is different between the two countries.

Land turns out to be the most important contributing factor to consumption inequality for the two India states. Age structure and education structure of households are the two other key factors explaining the differences in consumption distribution for households in Bihar and Uttar Pradesh.

While land is an important factor in accounting for the consumption inequality for households in Northern Uplands and Central Highlands, it only takes the second place. Instead age structure is the most important factor that accounts for almost 19 percent of the rural consumption inequality in the two regions. Education structure is the third important contributing factor. Poorly educated household members are found to be as much a stronger predictor for low consumption expenditures for households in North Uplands and Central Highlands as in Bihar and Uttar Pradesh. It accounts for about 13 percent of consumption inequality in both countries. While the ranking of different contributing factors to consumption inequality differs between households in the Indian states and those in the Vietnamese regions, our results show that being a landowner with good education and more prime age household members will increase the prospect of a household having higher consumption than otherwise.

Comparison with their national counterparts indicates that all the Vietnamese household characteristics are more important in explaining inequity among the rural poor. In particular, industry structure is much more important in determining the distribution of

consumption expenditures for poor households than an average household in rural areas.¹¹ The fact that same household characteristic affects poor households differently from an average rural household highlights the importance of future research on the determinants of inequality on the poor.

The findings of this paper lead to policy implications that could reduce rural consumption inequality in the poor areas of India and Vietnam. First, given the large contribution of land to inequality, further land reforms in promoting more equal access to land is crucial. In addition, given the negative association of land ownership with minorities (ethnic and/or castes), special attention should be paid on equitable land distribution to the disadvantaged group. Further land reform is especially more important for Bihar and Uttar Pradesh. Second, education is one of the key contributing factors to consumption inequality for the poor in India and Vietnam. Government must ensure equal access of education as well as quality of education in the poor areas. This is more so to maintain education provision in the poor areas. This could be illustrated by the education is more a key factor in explaining consumption disparities in Northern Uplands and Central Highlands than rural Vietnam as a whole. Thirdly, more attention should be paid on formulating policies to assist the development of other sectors especially in the two poor Vietnamese regions given the heavy reliance on agricultural sector as the main source of employment. Increase in economic opportunities outside of agricultural sector is to narrow the consumption disparities.

¹¹ Majority is also more an important factor to explain inequality for poor households than an average household in the rural areas. This could be due to the fact that part of the effect of belonging to the majority group on inequality is captured by regional dummies at the national level rather than its effect is more important among poor households *per se*.

Fourth, given that age structure is one of the key elements in shaping the landscape of inequality, any redistributive policies have to be sensitive to the age composition. For instance, the inequality-reducing effect of a one percent income tax rise may be different on the older rather than the younger the population. In addition, its effect on the poor deserves more attention.

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Appendix

Table A1 Summary statistics

	India (Bihar, Uttar Pradesh)	Vietnam (Northern Uplands, Central Highlands)	Rural Vietnam
Log per capita household expenditures in			
Local currency	8.304	7.374	7.577
PPP adjusted US\$	6.233	6.441	6.644
Head's age	47.935	43.668	46.790
Head's age ²	2491.053	2056.417	2365.780
Head's gender	0.974	0.860	0.809
Education (relative to no. of working members)			
Low education	0.619	0.669	0.645
Medium education	0.158	0.283	0.294
High education	0.223	0.048	0.061
Majorities	0.721	0.492	0.821
Age structure (No.)			
< 5	0.990	0.491	0.391
5 and <9	1.017	0.899	0.731
9 and <15	0.710	0.820	0.714
15 and <65	3.735	2.897	2.804
Over 65	0.215	0.253	0.292
Proportion of household members working in			
Agriculture	0.639	0.930	0.874
Manufacturing	0.109	0.036	0.044
Electricity, construction	0.048	0.009	0.015
Trade	0.089	0.006	0.034
Transportation	0.026	0.002	0.006
Commerce, finance	0.089	0.017	0.027
Log land per capita	4.784	7.063	7.469
Regions			
Red Delta			0.249
North Central			0.177
Central Coast			0.101
Central Highland			0.031
Southeast			0.045
Mekong Delta			0.177