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ABSTRACT

Inequality in Vietnamese Urban-Rural Living Standards, 1993-2006*

Using data from five waves of the Vietnam Household Living Standard Survey, we find evidence of significant urban-rural expenditure inequality. Urban-rural inequality in Vietnam increased dramatically from 1993 to 1998, and peaked in 2002 before reducing slightly in 2004, and significantly in 2006. The urban-rural gap also monotonically increases across the expenditure distribution. We use a variant of the Oaxaca-Blinder decomposition method, applied to the unconditional quantile regression method of Firpo, Fortin and Lemieux (2009), to explain the components of the per capita expenditure differentials between urban and rural households at selected quantiles of the distribution. We also compare these estimates with those at mean obtained by OLS. Our results show a number of factors contributing significantly to the high urban-rural gap. These include inter-group differences in education, household demographic structure, industrial structure and their related returns. Adjusting the average characteristics of rural households to those of urban households will reduce about a half of the overall urban-rural expenditure gap. A significant part of the remaining unexplained component lies in the intercept differences; that is, the inter-group differences in other factors not captured in the model that favor urban households.

JEL Classification: O18, O53, C13

Keywords: urban-rural inequality, Vietnam, unconditional quantile regression, Oaxaca decomposition

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1. Introduction

Vietnam has experienced continuously high economic growth since the transition from a centrally planned and controlled economy to a market economy began in 1986. The average annual growth rate of Gross Domestic Product of Vietnam from 1989 to 2008 is 7.4% (ADB, 2008). Over the period, Vietnam has had one of the fastest improvements in living standards and the greatest reduction in poverty in the world. With an annual per capita income over US$1000 in 2008, Vietnam is predicted to become a middle income country by 2010 (World Bank, 2008).

However, this period of transition and opening up of the economy has seen a widening of the gap between the rich and the poor, and between urban and rural areas. Closing the urban-rural gap is now one of the top priorities in the Vietnamese government's development strategy. It is at the center of public debates and in the press, and is a major concern of ordinary Vietnamese people and international donors.[1] Establishing what factors contribute to this urban-rural gap is one of the primary goals of this paper.

Two earlier studies used data from the first two Vietnam Living Standard Surveys (VLSSs), undertaken in 1992/1993 and 1997/1998, to examine this issue. These papers, by Nguyen, Albrecht, Vroman and Westbrook (2007) and Le and Fesselmeyer (2008), found a significant increase in urban-rural expenditure inequality over the period 1993 to 1998, and showed that urban-rural expenditure inequality plays the most important role in explaining national inequality. We extend their analysis, using new methods, up to 2006.

First, we use inequality indices and descriptive statistics to establish an overall picture of urban-rural inequality in Vietnam from 1993 to 2006, and compare urban-rural inequality with inequality across other characteristics over the period. We also briefly compare urban-rural

[1] For example, see To (2008), Rama (2008), Tran (2008), Ngoc (2008).

inequality in Vietnam with other countries at the same level of development and with those at a similar stage of transition. Next, we use the unconditional quantile regression method of Firpo, Fortin and Lemieux (2009) to estimate the determinants of per capita household expenditure in urban and rural households. This is done separately for each of five waves of data from 1993 to 2006. Finally, we use a variant of the Oaxaca-Blinder decomposition method, applied to the unconditional quantile regression method, to explain the components of the real per capita household expenditure differentials between urban and rural households at selected quantiles of the distribution, and to explore how these factors changed over time. We also explore the factors contributing to the increase in expenditure of urban and rural households.

The remainder of the paper is set out as follows. Section 2 summarizes Vietnam's transition and urban development, and reviews existing studies on urban-rural inequality in Vietnam. Section 3 describes the data, while Section 4 provides a profile of urban-rural inequality from both descriptive statistics and inequality indices analyses. Variables used in our analysis are described in Section 5, followed in Section 6 by exposition of the Firpo, Fortin and Lemieux (2009) method of unconditional quantile regression, and our application to it of the Oaxaca decomposition in section 7. The conclusions and policy implications are given in the final section.

2. Background

2.1. Vietnam's transition and urban development

The population of Vietnam, situated in Southeastern Asia and bordering the Pacific, stood at 86 million in 2008. With only 28% of the total population living in urban areas (GSO Vietnam, 2009), the urban population rate of Vietnam is low compared to other countries in the East Asia region and the world, and reflects the lack of urban development in the country.[2] As with many countries in the region, Vietnam was an agricultural economy prior to 1945, with over 90% of

[2] The percentage of East Asian population that is urban is 45%, as compared with 48% for the entire world (UNDP, 2008).

the population living in rural areas, where rice was the major crop of cultivation. From 1945 to 1975, Vietnam experienced 30 years of war.[3] After the war ended, Vietnam was a centrally command and control economy. During this period, the urban population was kept stable at around 19%. By the end of the centrally planned period, Vietnam was one of the poorest countries in the world.

The transition from a centrally planned economy to a market-oriented economy in Vietnam started in 1986. Since then, Vietnam has experienced continuously high economic growth and a significant change in industrial structure. Between 1990 and 2008, the industry and services share of GDP rose from 68% to 83%, while the agricultural share declined from 32% to 17% (GSO Vietnam, 2009).[4] Along with this significant change in the structure of the economy, Vietnam is experiencing a high rate of urbanization, with the proportion of population living in urban areas increasing from 19% in 1986 to 28% in 2008 (UNDP, 2008). However, there is unbalanced growth between urban and rural areas. The urban areas of Vietnam are benefiting from their initial advantages of geographical, infrastructure characteristics and industrial clustering and thus becoming growth centers attracting foreign investment. In contrast, rural areas are viewed as relatively inefficient and by-passed by development.[5] According to the World Bank (2004), while the urban areas of Vietnam contain only 25% of the population, they account for up to 70% of national economic growth.[6] This unbalanced growth creates a marked unevenness between urban and rural areas in terms of employment opportunities and living standard improvements. Therefore, even though the

[3] For more details of urban development in Vietnam during the war period from 1945 to 1975, see Boothroyd et al. (2000).

[4] See Appendix [1] for more details.

[5] For example, see Mundle et al. (1997), Glewwe et al. (2002), Phan (2002), World Bank (2004).

[6] According to an estimation of Mekong Economics (2002) from the data of Ministry of Investment and Planning, during the period from 1988 to 2001, foreign direct investment (FDI) in Vietnam focused in certain key industrial areas such as Ho Chi Minh City, Dong Nai, Ba Ria Vung Tau, Binh Duong in the South, and Ha Noi, Hai Duong, Hai Phong, Quang Ninh in the North. These key areas in the North and the South accounted for around 80% of licensed projects and registered capital. The amount of (FDI) to the two biggest cities, Ha Noi and Ho Chi Minh City, alone accounted for 49% of the total FDI in Vietnam. According to General Statistics Office of Vietnam (2008) during the period from 2000 to 2007, FDI continued concentrate in some advantage business regions in the Southeast and Red River Delta. The numbers as well as amount of FDI capital in other regions were few.

overall standard of living improved remarkably over the last two decades, poverty remains widespread and overwhelmingly found in rural areas. For example, in 2004, 25% of rural people lived in poverty as compared with an urban poverty rate of 3.6% (VASS, 2007). Recent studies about overall inequality in Vietnam - by the Asian Development Bank (2007) using per capita expenditure and McCaig (2009) using per capita income - emphasize that this urban-rural inequality has been the most important contributing factor to overall inequality in Vietnam between 1993 and 2006.

2.2. Literature review and the contributions of our study

The changes since the transition in 1986, from a centrally planned closed economy to a market-oriented open economy, make Vietnam an interesting country in which to study inequality. While a number of studies examine inequality in Vietnam, they focus on issues such as poverty and inequality, ethnic inequality, and rural inequality and urban inequality examined separately. Little attention has been given specifically to urban-rural inequality, the focus of the present paper. As noted above, there are to our knowledge only two studies examining urban-rural inequality in Vietnam: Nguyen, Albrecht, Vroman and Westbrook (2007) and Le and Fesselmeyer (2008). Both use data from the first two waves of the VLSS undertaken in 1993 and 1998, but they adopt different estimation techniques to that utilized in this paper.

Nguyen, Albrecht, Vroman and Westbrook (2007) apply the quantile regression based decomposition proposed by Machado and Mata (2005), while Le and Fesselmeyer (2008) apply the Dinardo et al. (1996) semi-parametric decomposition method.[7] They find that the significant

[7] The Dinardo et al. (1996) decomposition and the Machado and Mata (2005) quantile regression based decomposition both rely on the construction of the counterfactual distribution. The Dinardo et al. (1996) method involves first estimating a probit model to find the probability of a household with a given characteristics living in an urban area. The predicted probability is then used to calculate the reweighting factor. Next, the re-weighting factor is used as a new weight to find the counterfactual density of the rural per capita household expenditure, which is the per capita expenditure that rural households would have if they were endowed with the same characteristics as urban households, but received the rural return. The Machado and Mata (2005)'s quantile regression based decomposition involves first estimating the determinants of per capita household expenditure using a quantile regression for the rural sample. Then the counterfactual distribution for urban sample is constructed from the actual urban characteristics and the estimated rural returns. By replacing the estimated coefficients for each variable, this method can capture the contribution from each factor. However, in both methods, Dinardo et al (1996) and Machado and Mata (2005), the order of decomposition (or, in other words the choice of the counterfactual) is important. Additionally, the method of quantile

increase in the urban-rural gap from 1993 to 1998 is the most important factor explaining the increase in overall expenditure inequality. Nguyen, Albrecht, Vroman and Westbrook (2007) find that, in 1993 across all points in the expenditure distribution, most of the urban-rural gap comes from the characteristic gap. As the Vietnamese economy became more marketized in 1998, the returns gap was found to play a more important role in the composition of the overall urban-rural gap. In addition, the differences in household structure, human capital and ethnicity are found to be the major contributing factors to the urban-rural gap in 1993 and 1998. The increase in returns to education plays the most important role in the widening the gap during the period. The study of Le and Fesselmeyer (2008), using a different decomposition method comes to the same conclusions as that of Nguyen, Albrecht, Vroman and Westbrook (2007).

Although the methods applied by Nguyen, Albrecht, Vroman and Westbrook (2007) and Le and Fesselmeyer (2008) allow the authors to investigate the urban-rural inequality at different points along the distribution, in both methods, the results of decomposition are sensitive to the choice of the counterfactuals (Firpo et al. 2007). Indeed, Le and Fesselmeyer (2008) demonstrate that the use of different counterfactuals will give different results.

What are the contributions of our study to the literature on urban-rural inequality in Vietnam? They are threefold, with the first two being methodological while the last relates to the extended data window we use.

Our first contribution is to use the new method of unconditional quantile regression of Firpo, Fortin and Lemieux (2009) to examine the determinants of urban and rural per capita expenditure at selected percentiles along the distribution. We compare this with OLS at the mean. The advantage of the unconditional quantile regression over the traditional conditional quantile regression of Koenker and Bassett (1978) is that its estimated coefficients are

regression based decomposition proposed by Machado and Mata (2005) involves many simulations and thus requires computationally intensive.

explained as the impact of changes in the distribution of explanatory variables on the quantiles of the unconditional distribution of the dependent variable. Therefore, we can apply the Oaxaca decomposition method directly to the estimation results from the unconditional quantile regression without having to do many simulations as in the method of quantile regression decomposition proposed by Machado and Mata (2005). This represents our second contribution to the literature, since we are the first to apply a variation of the Oaxaca-Blinder decomposition method to the unconditional quantile regression. This allows us to separate the contribution of returns and characteristics from each explanatory variable. In addition, we apply the method of Yun (2005) to transform the estimated coefficients, making our decomposition results consistent with the choice of omitted groups in the presence of categorical variables. By doing so, the decomposition results with the new transformed coefficients are equivalent to the average estimates of returns and characteristics gap with varying reference groups.

Our third contribution is to examine a longer period than previous studies, which have used the first two waves of the VLSS (1993 and 1998). We extend the period to use five waves of the Vietnam Living Standard Surveys covering the period 1993 to 2006. [8] As noted above, this period is important for Vietnam not only because of its continuously high economic growth, but also because of significant changes in the structure of the economy and its accelerated integration into the world market. These have led to a marked change in distribution outcome.

3. Data and Sample

The first two waves of data that we use are from the Vietnam Living Standard Surveys (VLSSs) undertaken in 1992/1993 and 1997/1998, while the next three waves are from the Vietnam Household Living Standard Surveys (VHLSS) undertaken in 2002, 2004 and 2006. These are

[8] Vietnam resumed relations with the International Monetary Fund and the World Bank in 1992; established political normalization with the United States (US) in 1994; became a member of the Association of Southeast Asian Nations (ASEAN) in 1995, ASEAN Free Trade Area in 1996, Asia-Pacific Economic Cooperation in 1998; signed the Bilateral Trade Agreement with the US in 2000; and joined World Trade Organization in 2006.

nationally representative surveys conducted by Vietnam's General Statistics Office with technical assistance from the World Bank and UNDP. Although the subsequent VHLSS questionnaires were simplified compared to the first two waves of VLSS, the question design in both follows the standard set for the Living Standard Measurement Surveys of the World Bank.[9] As a result, these surveys contain comprehensive and comparable information across years, thus facilitating welfare analysis at a household level. The sample consists of 4800, 6000, 29530, 9188, and 9189 households in VLSS1993, VLSS 1998, VHLSS 2002, VHLSS 2004 and VHLSS 2006, respectively. In each wave, there are two sets of questionnaires: a household questionnaire and a community questionnaire. The household questionnaire contains rich information on the demography, education, health, employment, expenditures, credit, saving and poverty reduction participation at the household and individual level. The community questionnaire collects information on the demographic, health, education and infrastructure of all rural communities.

There are 4,000 households surveyed in VLSS 1993 who were re-interviewed in 1998. While there are also panel samples from the last 3 waves - VHLSS 2002, 2004 and 2006 - there are no households re-interviewed between the VLSS and the VHLSS. For our purpose of observing the whole period and making our observed sample nationally representative, we analyze all five waves in separate cross-sections.

The last column of Table [1] indicates the sample size separately, by urban and rural categories.[10] Thus, for example, the 1993 VLSS comprises 1,072 urban and 3,727 rural

[9] For more details about the sample designs, such as the units of clustering, stratifications, and weight constructions in each waves, see World Bank (1998), World Bank (2001) and General Statistics Office of Vietnam (2006).

[10] The survey samples only cover the registered residence. In VLSS 1993, the total number of surveyed households is 4800, but one household (coded 10301) with data on expenditure exists only for two months and is excluded from the sample, leaving the total number of observations in 1993 at 4799. In VLSS 1998, the total number of households being surveyed in the expenditure sample is 6002, but three households are excluded because two household (coded 1302 and 11916) lack information on some sections and another household (coded 7506) contains only one elderly person who lives alone and has meals with their children's family so there is a lack of information on food expenditure. Thus, there are 5999 observations left in VLSS 1998 - see World Bank (1998 a. b) World Bank (2001) and GSO Vietnam (2006) for more details.

households. Column [2] reports the percentage of urban households in the sample, adjusted by household weights. These numbers approximate the actual percentage of urban people.

[Table 1 about here]

To compare the difference between urban and rural living standards, we use total real per capita yearly expenditure (RPCEXP).[11] This is calculated by dividing total household expenditure by the household size. [12] Although income is usually the best indicator for measuring inequality, expenditure is preferred for developing countries. The reasons are discussed in depth in Deaton (1997), Van de Walle et al. (2001) and Glewwe et al. (2002).[13] We calculate real per capita expenditure by using the current per capita expenditure adjusted for the monthly and the regional price indices then converting to the current price of Jan 2006 for comparative purposes.[14]

[11] The calculation of expenditure follows the formula used in the World Bank Living Standard Measurement Survey. Household total expenditure is the sum of expenditure on food and non-food items. Specifically, food expenditure includes both expenditure on purchased items and home-produced products. The value of consumption from home-produced products is calculated using the total quantity of consumed multiplied by the value of such consumption if it was purchased in the market. Non-food expenditure includes expenditures on daily items, utilities, transportation, entertainment, education, health, the imputed values of household appliances or other consumer durables to be consumed in the year, house rent or, for those who live in their own house, the imputed depreciation value of the house in the year for those who live in their own house. Expenditures on consumer durables, house building, social funds, and the purchase of gold, silver, precious germs, stocks or bonds are excluded. Thus the expenditure calculated from the survey is a relatively good measure of living standard - see World Bank (1998b), Glewwe (2003) and Glewwe (2005) for more details.

[12] Households differ in size and in the age of the household members. Theories suggest that larger are likely to be benefit from the economies of scale in household expenditure (i.e., larger households can enjoy the same living standard, with lower per capita expenditure, as smaller households). In addition, adults and children are likely to have different needs and consume a different proportion of the total household expenditure, (see Deaton (1997) for more details about the problem of equivalent scale in calculating household per capita expenditure). By dividing total household expenditure by the number of people in the household, and then using total household per capita expenditure as the measure of welfare for each member of the household, we assume that everyone in the household is identical and has the same needs.

[13] Reasons for preferring expenditure over income are: first, income tends to be under-reported in developing countries, whereas questions on expenditure are answered more honestly. Second, a large proportion of people in developing countries are engaged in self-employment - including farm work. Income from self-employment and agriculture activities is seasonal and thus fluctuates. In addition, estimation of income from agricultural activities often suffers from measurement error. For a given period of time, income only raises the living standard if it is consumed. Therefore expenditure is smoother than income for a longer period, and is thus a better indicator of welfare and living standard for a developing country such as Vietnam.

[14] The price deflator is computed from the monthly price indexes released by the GSO of Vietnam. See Appendix [2] for more details.

4. Overall picture of urban-rural inequality in Vietnam, 1993-2006

4. 1. Urban-rural inequality from inequality indices analysis

This section uses the Gini and Theil indices to provide a comprehensive picture of urban-rural expenditure inequality in Vietnam during 1993 to 2006 period. Table [2] reports inequality indices across years for the whole nation as well as by urban-rural sectors. Using the Gini index, it can be seen that national inequality increased from 1993 to 2002 (the Gini coefficient increased from 0.34 in 1993 to 0.37 in 2002), remained unchanged from 2002 to 2004 and decreased from 2004 to 2006 (the Gini coefficient reduced from 0.37 in 2004 to 0.36 in 2006).

How does this compare with other countries with a comparable level of GDP per capita? Table [3] demonstrates that inequality in Vietnam in 2004 is 0.37, which is lower than Cambodia (whose Gini was 0.42 in 2004), is equal to that of India, and is a little bit higher than in Indonesia (whose Gini was 0.34 in 2002). What about other countries at a comparable transition pattern? While Vietnam has the same pattern of economic transition as China, and is similar to some extent to Russia and Poland, the Gini index of Vietnam in 2004 is lower. For example, China had a Gini of 0.47 in 2004; Russia a Gini of 0.40 in 2002; and Poland a Gini of 0.35 in 2002. However, we cannot draw any precise conclusions about the comparative inequality levels between Vietnam and these last countries because each has different level of development as measured by per capita GDP. More positively, the *trend* of inequality in Vietnam from 2002 to 2006 indicates that it remained stable then reduced slightly during the recent period of high economic growth.

[Table 2 and 3 about here]

Inequality is higher in urban than rural households in all waves. Furthermore, the evolution of inequality indices is different in the urban and rural sectors. In the urban sector, inequality increased from 1993 to 2002 then decreased from 2002 to 2006, with the Gini increasing from 0.34 in 1993 to 0.35 in 2002 then decreasing to 0.33 in 2004 and remaining

stable in 2006. In contrast, in the rural sector, inequality decreased slightly from 1993 to 1998 then increased from 1998 to 2006, with the Gini dropping from 0.28 in 1993 to 0.27 in 1998, and then increasing steadily to the value of 0.30 in 2006.

While the results based on the inequality indices provide a picture of overall inequality, they do not enlighten us as to the composition of overall inequality nor indicate the contribution of *between*- and *within*-group differences that are the focus of our interest. Tables 4.a to 4.c address these issues by using the Theil decomposition to look at the components of between- and within-group inequality across different characteristics of the households. These show the following. First, urban-rural between-group inequality makes the largest contribution to overall inequality. Specifically, the between-group urban-rural inequality accounted for 21% of the overall inequality in 1993, and this increased rapidly to 31% in 1998, 33% in 2002 and then fell slightly to 31% in 2004 and decreased to 25% in 2006 (Table 4a and Figure1). Second, consider ethnicity. Inequality between the majority ethnic group (Kinh) and the minority ones increased continuously over time from 2% in 1993 to 8% in 2006 (Table 4a). Third, consider education. Between-groups inequality by household head's education increased remarkably over time, from 8% in 1993 to 21% in 2006 (Table 4b). Fourth, turning to the household head's employment status, within-group inequality is increasing in households where the head is working in the private sector, working in the service sector and households where the head is elderly (Table 4c). Fifth, inequality between groups by other household head characteristics (such as gender, marital status and age group), is small and rather stable between 1993 and 2006. Finally, it is interesting to observe an opposite trend in inequality within groups of male- and female-headed households. While inequality within households headed by males increased steadily from 1993 to 2006, inequality within households headed by females decreased over the same period.

[Table 4.a, 4.b, 4.c about here]

[Figure 1 about here]

Compared with some other countries in the Asian region, such as India, Indonesia and the Philippines, Vietnam has higher urban-rural inequality. Vietnam has been outperforming China in terms of having little increase in urban-rural inequality during the economic transition process.[15]

The large differences between urban and rural sectors in levels of per capita expenditure are why (i) *overall* inequality is higher than inequality in urban or rural sectors alone, and (ii) between-group inequality by urban-rural sectors makes the largest contribution to the national inequality.

4.2. Urban-rural inequality from descriptive statistics and distributional analysis

Table [1] presented expenditure figures at mean and selected percentiles by urban and rural households, and showed that per capita expenditure is higher in urban than rural areas. This pattern holds regardless of the time and the method used to measure expenditure. The urban-rural expenditure ratio at the mean increased from 1.91 in 1993 to 2.36 in 2002, before declining to 2.24 in 2004 and 2.01 in 2006.

Table [1] also shows that the real per capita expenditure of the top decile of urban households is four to five times higher than the real per capita expenditure of the bottom decile. It is seven to nine times higher than the real per capita expenditure of the bottom decile of rural households. One of the most striking findings from Table [1], as illustrated in Figure [2], is that in 1993 the value of the top decile of rural expenditure is almost equal to the median urban expenditure. The value of the top decile of rural expenditure is under the median urban expenditure for the years 1998, 2002 and 2004. These figures confirm a long lasting

[15] Between urban-rural expenditure inequality in China contributed for 27% to the national inequality in 1985, 40% in 1995, and 44% in 2006. See ADB (2007) for more details.

Vietnamese saying, "*Giau nha que khong bang keo le thanh thi*", meaning the rural rich are not as wealthy as the urban poor who work in the city street.

[Figure 2 about here]

Additionally, Figure [3] illustrates the evolution of the urban-rural natural log RPCEXP gap across the distribution. An important deduction from Figure [3] is that the urban-rural gap, in terms of log per capita expenditure, is monotonically increasing from the poorer to the richer groups of the expenditure distribution. From 1993 to 1998, the gap increased at all points in the distribution. From 1998 to 2002, the gap continued to increase in the middle of the distribution but decreased slightly in the two tails. While most of the decrease in the urban-rural log per capita expenditure gap at mean from 2002 to 2004 came from the decrease of the urban-rural gap in the upper half of the expenditure distribution, all of the decrease at mean from 2004 to 2006 came from the decrease of the urban-rural log per capita expenditure gap at all points in the distribution.

[Figure 3 about here]

Figure [4] illustrates the distribution of the urban and rural real per capita expenditure from 1993 to 2006. It can be seen that the urban distribution is more dispersed while the rural distribution is more concentrated, confirming that there is higher inequality within urban than rural households. In addition, across all points in the distribution, the urban density lies to the right of the rural one, showing that urban expenditure is consistently higher than the rural counterpart at all points along the distribution.

[Figure 4 about here]

There are several possible reasons for the lower per capita expenditure of rural than urban households. Among them are inter-group differences in education, demographic structure, labor market activity, and geographic location and the like. For example, as shown in Table [5], the

heads of urban households have more years of schooling than those of rural households and living standards are positively associated with the years of schooling of the household heads. The urban-rural gap in terms of average years of schooling of the household head increases over time from 2.08 in 1993 to nearly 2.50 in 2006. Furthermore, urban households have more favorable demographic characteristics. These include smaller household size, a lower proportion of children and more laborers. Remarkably, there has been a sharp decrease in the proportion of children from 28% in 1993 to 18% in 2006 in urban households, and from 36% in 1993 to 23% in 2006 in rural ones. In contrast, there has been a rapid increase in the proportion of laborers rising from 60% in 1993 to 67% in 2006 in urban households, and from 52% in 1993 to 62% in 2006 in rural households.[16] Moreover, urban households are more engaged in services and in manufacturing sectors where the returns are higher, while rural households are more engaged in agricultural sector where the returns are relatively low. Furthermore, urban households received more remittances. Moreover urban households are located in areas with more favorable geographic and infrastructure conditions.

To what extent are per capita expenditures determined by these characteristics in urban and rural regions? How much of the inter-group expenditure differential is due to the differences in average characteristics, returns and other factors not captured in the model? Have the contributions of these factors changed over time from 1993 to 2006? The results of the regressions and decompositions in the next section will answer these questions.

[16] Vietnam had a population boom after the end of the war in 1975. According to Haub et al. (2009), the population increased rapidly (by 22.7%), to around 24 million people between 1979 and 1989. During the 1990s, Vietnam had a sharp decline in the population growth rate. According to General Statistics Office of Vietnam (2009), the annual population growth of Vietnam in the early 1990s is 2%, in 2000 is 1.4% and in 2006 is 1.2%. The population growth rate of Vietnam in 2006 is higher than that of Korea 0.3%, China 0.5%, and Thailand 0.8%; but is lower than that of The Philippines 1.8%, Malaysia 2.0%, and Indonesia 1.3%.

5. Variable descriptions

5.1. The dependent variable

Our dependent variable is real per capita yearly total expenditure.[17] We take the natural log of (RPCEXP), to reduce heteroskedasticity. Hence the estimated coefficients give the percentage change in expenditure in response to a unit change in the explanatory variable.

5.2. The explanatory variables

The paper exploits the rich and comparable information across five waves to construct a set of explanatory variables reflecting the demographic, education, employment and other attributes of the household. Table [5] defines variables and provides summary statistics.

[Table 5 about here]

The first set of explanatory variables are the characteristics of the household head namely sex, ethnicity, marital status, general experience and general experience squared. [18] Following Nguyen, Albrecht, Vroman and Westbrook (2007), we use average years of schooling of the more educated household head or spouse as a measure of the household education. This is because the most educated household head or spouse is likely to have the bigger impact on household decisions and thus the household welfare.[19] We include dummy variables for employment status, sectors and industries of employment of the household head. Other demographic variables include household size and the household proportions of children, laborers, and the elderly.[20]

[17] See footnotes 11, 12 & 13 for more details.

[18] General experience is calculated as age minus years of schooling minus six. Six is the age when children start school in Vietnam.

[19] We acknowledge that there may be endogeneity problems in the estimated model. For example, there may be a correlation between of years of schooling of the household head and the error term which includes the variation in other variables not being captured in the model. However, we do not have available any appropriate instruments to solve this problem.

[20] In Vietnam, at the age of 15 children finish lower secondary school, and then many of them work, especially in rural areas. Article 6 of the Vietnamese Labour Code (1994) regulates that employees are persons at least 15 years old who are able to work and have entered in to a labour contract. So we identify labourers are those who are over 15 to retirement age, currently not at

We estimate the impact of per capita remittances from foreign and domestic sources on household expenditure separately. Finally, we include six dummies to control for seven regional differences -this is more detailed than the two regions (North –South) as studied in Nguyen, Albrecht, Vroman and Westbrook (2007). The reason for doing this comes from our results of the Theil decomposition by North-South and by seven regions. The between North-South difference contributes a modest percentage to the overall inequality around 3% to 8% across the years 1993-2006, compared to the between seven regions difference, which is around 13% to 18% across the years 1993-2006, as will be shown later. So our results will be more accurate at regional levels. Moreover, the inclusion of the six regional dummies allows us to capture a part of the geographic differences in prices. According to McCaig (2009) the given regional price indices of the survey may not fully capture the regional price differences for the case of the urban South East region in the VLHSS for 2002 and 2004.

6. Estimation methods, model specifications and estimation results

6.1. Estimation methods

Our descriptive statistics show that mean expenditure is always higher than the median, that the shape of the expenditure distribution is right skewed, and that it contains extreme values. These characteristics suggest that the use of OLS to examine the expenditure at the mean is not sufficient; an evaluation of the determinants of expenditure at different points in the distribution is needed. This can be implemented either by using a (conditional) quantile regression, as introduced by Koenker and Bassett (1978), or an unconditional quantile regression method as developed by Firpo, Fortin and Lemieux (2009).

The advantage of the unconditional quantile regression of Firpo, Fortin and Lemieux (2009) over the traditional conditional quantile regression of Koenker and Bassett (1978) is that

school and working. Old people are those who are over the retirement age (currently 60 years for males and 55 years for females).

the estimated coefficients from the unconditional quantile regression are explained as the impact of changes in the distribution of explanatory variables on the quantiles of the unconditional marginal distribution of the dependent variable. Or more simply, the estimated coefficient from the unconditional quantile regression is explained similarly to OLS however, it applies to different quantiles.

The central idea to the unconditional quantile regression proposed by Firpo, Fortin and Lemieux (2009) is the recentered influence function (RIF). [21] An unconditional quantile regression can be done through one of three estimation techniques: OLS (called RIF-OLS), logistic (called RIF-logit) or non parametric (called RIF-nonparametric). The coefficients of RIF-OLS are estimated as $\hat{\beta}_\tau = \left(\sum_{i=1}^{N} X_i . X_i^T \right)^{-1} \sum_{i=1}^{N} X_i \hat{RIF}(Y_i; \hat{q}_\tau)$. This is analogous to the OLS estimation. Indeed, the only difference is the replacement of the estimated values of RIF at a given statistic of interest - in our case is quantile q_τ - as a new dependent variable. If our statistic of interest is the mean, then the estimation of RIF-OLS for the mean becomes exactly OLS.

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[21] For example, let v be a real value function of a distributional statistic of interest such as a given quantile, F is a probability measure for which v is defined. The influence function (IF) of v at a point y is defined as:

$IF(v(y), F(y)) = \lim_{\varepsilon \to 0} \frac{\left(v(F_\varepsilon, \delta_y) - v(F)\right)}{\varepsilon} = \frac{\partial v(F_\varepsilon, \delta_y)}{\partial \varepsilon}\Big|_{\varepsilon=0}$ where $F_{\varepsilon,\delta_y} = (1-\varepsilon)F + \varepsilon\delta_y$ is the mixture model from which an observation has probability $(1-\varepsilon)$ of being generated by F and a probability (ε) of being an arbitrary value δ_y, the infinitesimal probability measure determined in any given point y.

Being the first derivative of an estimator (IF) measures a magnitude of the change of a distribution if we add an additional observation, thus it can capture the impact of all extreme values. These extreme values, in many cases, are likely to reflect the true information especially needed in inequality analysis (Hampel, 1974).

From the estimation of IF, the RIF is estimated as: $RIF(y,v) = v(F) + IF(y,v)$

For a given quantile q_τ, RIF is estimated as: $\hat{RIF}(Y, \hat{q}_\tau) = \hat{q}_\tau + \frac{\tau - 1\{Y \le \hat{q}_\tau\}}{\hat{f}_Y(\hat{q}_\tau)}$ where: $\hat{q}_\tau$ is the estimator of the τ^{th} population quantile and is estimated as in Koenker and Bassett (1978); $1\{Y \le \hat{q}_\tau\}$ indicates the dummy variable for whether the value of y is below $\hat{q}_\tau$; and $\hat{f}_Y(\hat{q}_\tau)$ is the kernel density estimator of Y at point $\hat{q}_\tau$.

6.2. Model specifications and estimation results

In this section we investigate how the relationship between log RPCEXP and a set of explanatory variables differs between urban and rural areas at the mean and at various quantiles of the log RPCEXP distribution. We do this by estimating a series of OLS and unconditional quantile regression of the form:

$$Y_i = \alpha + \beta X_i + \gamma U_i + \delta U_i * X_i + \varepsilon_i \qquad (1)$$

where: Y_i is the natural log of RPCEXP of individual i, U_i is the urban dummy, X_i is the vector of explanatory variables for individual i, $U_i * X_i$ is the interaction between the urban dummy and the explanatory variables. The vector of coefficients β is the returns to characteristics, and γ and δ give the intercept and slope differential associated with urban location.

To begin with, we estimate a restricted version of (1) that includes only the intercept, the urban dummy and a set of all explanatory variables at the mean using OLS and at selected quantiles using an unconditional quantile regression. Table [6] reports the estimated coefficients of urban dummies and their significant levels. It can be seen that most urban dummies are positive and highly statistically significant. From the estimated coefficient, the percentage of expenditure of an urban household over a comparable rural one is calculated as: $100\left(\exp(\hat{\beta}) - 1\right)$. For example, in 1993, other things being equal, a household living in an urban area has 3%, 21% and 96% higher per capita expenditure than a comparable household living in a rural area at the 10^{th} quantile, the median and the 90^{th} quantile, respectively. In 2002, the rate is 7%, 39% and 125% at the 10^{th} quantile, the median and the 90^{th} quantile, respectively. In 2006, the rate is 1%, 35% and 84% at the 10^{th} quantile, the median and the 90^{th} quantile, respectively. However, in most years the rate is not significant at the 10^{th} quantile of the expenditure distribution except in 1998 and 2002. Interestingly, in all years the coefficient of

the urban dummy increases monotonically from the bottom to the top of the distribution, implying that the urban-rural gap is higher among those with higher per capita expenditures.

[Table 6 about here]

Next, we estimate a full specification of (1) including the intercept, the urban dummy, the set of explanatory variables, plus the interaction terms of the urban dummy with the set of explanatory variables at the mean using OLS and at various quantiles using unconditional quantile regression. We carry out an F test for the hypothesis that all the coefficients of urban interaction terms are equal to zero. The test results reject the null hypothesis, suggesting that there are indeed significant differences in the return to characteristics between the urban and rural sectors. [22]

We use the OLS and the unconditional quantile regression to estimate the determinants of expenditure at the mean and at selected percentiles separately for the urban and rural sectors. [23] The estimation results for the years 1993, 1998, 2002, 2004, 2006 are reported in Tables [7], [8], [9], [10] and [11] respectively. The estimated coefficients of selected variables at selected quantiles along the distribution of urban and rural sectors in 1993 and 2006 are illustrated in Figure [5].

[Table 7 to 11 about here]

[Figure 5 about here]

The values of R^2 from the regression results imply that the fit of the model is higher at the mean and at the middle of the distribution than at the two tails. Over years, the explanatory power of the variables in the model has improved in both urban and rural sectors.

[22] The full regression and test results are not reported here for brevity, but are available from the author on request.

[23] We suspect that households with higher education may have higher variation of individual per capita expenditure around the mean expenditure value of their education group, or the majority households may have a higher variation of their per capita expenditure around the mean value of their group than do the minority ones. We carried out the Breusch-Pagan test for heteroskedasticity. Our test results reject the null hypothesis of hemoskedasticity in the error distribution. Our estimations are carried out to obtain robust standard error.

We now turn to a discussion of the impact of the variables included in the regression. First, note that *education* is highly statistically significant in the determination of household expenditure. Other things being equal, a household with a more highly educated head has a higher per capita expenditure. This is true across all points in the expenditure distribution in both urban and rural areas. It is interesting that, in 2006, the returns to education in urban sector are higher than those in rural sector both at the mean and at other points along the distribution.[24] The returns to education increase quickly in the lower part of the expenditure distribution in both urban and rural sectors over the period from 1993 to 2006.

Second, consider the *ethnicity of the household head*. In the rural sector, other things being equal, ethnic households have lower levels of expenditure than the majority in all survey years from 1993 to 2006. This finding is consistent with Van de Walle et al. (2001) and Baulch et al. (2002). In the urban sector, ethnic households do not have a lower level of expenditure than the majority in 1993; however, by 2006 these ethnic households have a significantly lower expenditure level compared to those households in the lower part of the urban expenditure.

Third, consider the effect of *household demographics.* Household size and the proportion of children in the household are both highly statistically significant. The negative coefficients imply that larger households, or those with more children, have lower per capita expenditure. Households in rural areas with more elderly people also have a significantly lower expenditure.

Fourth, consider *industries*. Households with the head working in agriculture have significantly lower expenditure when compared to households with the head working in the service sector. Although in the upper part of the expenditure distribution the returns to working in the agriculture sector improve significantly, the returns in the agriculture sector remain stable in the lower part of the rural expenditure distribution from 1993 to 2006. Notably, households

[24] The estimated coefficient of variable years of schooling in the earning equation is often explained as the return to education. Due to limitations in using the income as discussed in footnote [13], expenditure is used instead of income to measure the urban-rural inequality.

with the head working in the agriculture sector are those with the lowest expenditure compared to those comparable households with the head working in other sectors.

Households with the head working in the manufacturing sector do not have a per capita expenditure difference when compared to similar urban households with the head working in the service sector in the urban sector in 1993. However, this situation changes over time as the economy becomes more industrialized and liberalized. Urban households with the head working in the service sector now have a significantly higher expenditure than comparable households with the head working in the manufacturing. An explanation for the results comes from the fact that some manufacturing industries such as gas, petroleum, mining, motor bike and car manufacturing are government-protected in the initial period of transition. However, as Vietnam continues its road to international integration, the protection rates of these manufacturing industries have been reduced or removed. In addition, light manufacturing industries such as leather or textile and garment manufacturing developed quickly during the studied period to take the advantage of Vietnam's relatively cheap and low-skilled labour abundance. Returns in these newly developed labour-intensive light manufacturing industries are low. The removal of protection barriers and the compositional shifts within of manufacturing industry result in the relative reduction of the manufacturing industry's return compared to the service industry's return.

Fifthly, consider *sectors*. Households with the head working in the private sector consistently have lower expenditure than comparable households with the head working as public servant or in state-owned enterprises (SOE).

In the initial stages of our observed period, households with a self-employed head working in the informal sector in urban areas had higher expenditure than did households where the head worked in the formal private sector. However, by 2006, in the upper part of the urban

expenditure, households with a self-employed head have lower expenditure compared to comparable households with the head working in the private sector.

This is consistent with the fact that, during the initial period of economic transition with the contraction of the state sector, the informal sector developed quickly to take the advantage of new market opportunities which had previously been restrained during the long period of centrally planned and controlled economy. However, over our studied period, the labour market became increasingly formalized. There is a reduction of labourers in the informal sector. Our estimation shows that the proportion of labourers receiving wages increased from 16% in 1993 to 30% in 2002, and 33% in 2006.

Sixth, consider *remittances.* Both foreign and domestic remittances are highly statistically significant, with a positive impact on the household expenditure. A unit of domestic remittance results in a greater expenditure increase than a unit of foreign remittance. In the upper range of the expenditure distribution, a unit of remittance increases expenditure more than it does at the lower end of the distribution.

Finally, consider *regions*. Both the descriptive and regression results suggest that there are considerable differences by regions in expenditure of both urban and rural households. The urban Southeast has the highest living standard, followed by the Red River Delta, the Mekong River Delta and the South Central Coast. There is no statistical significance for the difference in the living standard of the urban areas of the Northern Upland and the North Central Coast. In the rural areas, the Southeast has the highest living standard, followed by the Central Highland and then the Mekong River Delta, the North Central Coast has the lowest living standard.

7. Oaxaca decomposition and results

7.1. Oaxaca decomposition

In this section, we examine the factors contributing to the urban-rural expenditure gap, along with factors contributing to the urban and rural expenditure increase over the studied period of 1993 to 2006. We do this by using a variation of the Oaxaca-Blinder (1973) decomposition of the form:

$$\hat{Y}^U - \hat{Y}^R = \underbrace{\left(\overline{X}_u - \overline{X}_R\right)\hat{\beta}^*}_{\text{"explained"}} + \underbrace{\left\{\overline{X}_u\left(\hat{\beta}^U - \hat{\beta}^*\right) + \overline{X}_R\left(\hat{\beta}^* - \hat{\beta}^R\right)\right\}}_{\text{"unexplained"}} \quad (2)$$

where: $\hat{Y}^U$ and $\hat{Y}^R$ are the predicted natural log of RPCEXP of urban and rural households, $\overline{X}_u$ and $\overline{X}_R$ are vectors of the mean urban and rural characteristics, $\hat{\beta}^U$ and $\hat{\beta}^R$ are vector of the estimated coefficients in the regression model of log RPCEXP on a set of explanatory variables, including the constant, of the urban and rural sectors respectively, $\hat{\beta}^*$ is a vector of the estimated coefficients from the pooled sample with an urban dummy and other explanatory variables. [25] The first term is the difference in the urban-rural gap due to the difference in characteristics, and is the 'explained part'. The second term is that part of the urban-rural difference in factors other than the observed characteristics – the 'unexplained part'. [26]

[25] The reason for including the urban dummy as a group indicator in estimating the reference structure is extensively discussed in Fortin (2008), Jann (2008), and proved in Elder et al. (2010). An example is that, if the average education of urban households is higher than that of rural ones, then the estimated coefficient of return to education of the pooled sample without urban dummy will capture a part of the mean difference in education between the two groups, resulting in the estimated return to education of the pooled sample being higher than the estimated return to education of urban or rural households alone. This phenomenon will understate the unexplained part and overstate the explained part.

[26] In this method of decomposition, there is the possibility that the unexplained part captures some of the characteristics differences in other factors which are not captured in the model. Firpo et al. (2007) proposes a method of decomposing the inter groups differences using two step procedures. In the first step, as in Dinardo et al. (1996), the method involves first estimating a probit or logit model to find out the probability of an individual with a given set of characteristics being in urban area, then use the predicted probability to calculate the re-weighting factor. In the second step, the re-weighting factor is used as a new weight in the OLS and the unconditional quantile regression to find out the counterfactual distribution of the rural sample if rural households have the same characteristics as urban households. After that, the Oaxaca-like decomposition is carried out. However, in this method there is an approximation error in balancing the total composition effect (characteristics gap) and structure effect (return gap) getting from the first step with the sum of contributions from each explanatory variables getting from the second step when carrying the Oaxaca-like decomposition.

Previously, the limitation of the Oaxaca decomposition method is that it can only apply to the mean. However, the unconditional quantile regression proposed by Firpo, Fortin and Lemieux (2009) estimates the marginal impact of a unit of change in an explanatory variable on the unconditional quantiles of the dependent variables (as discussed in section 6.1). Therefore, we can apply the Oaxaca decomposition directly to the estimation results of the unconditional quantile regression without having to do many simulations, as in the method of quantile regression decomposition proposed by Machado and Mata (2005). This allows us to separate the contributions made by the returns and the characteristic gaps from each explanatory variable to the overall urban-rural expenditure gap at any quantile along the distribution.

Additionally, we apply the method of Yun (2005) to have a consistent decomposition results with the choice of different omitted groups in the presence of category variables. The rationale for this method is to restrict the sum of the coefficients for a set of dummy variables in the transformed equation to equal zero. Then the coefficients of the transformed equation are expressed as the deviation from the mean of the estimated coefficients of the single category.[27] By doing so, our decomposition result, using the new transpose coefficients, is equivalent to the average estimates with varying reference groups. The standard errors and significant levels of each gap's components are derived using the method proposed by Jann (2005).

7.2. Decomposition results

7.2. 1 Contributions to urban & rural expenditure increase from 1993 to 2006

Table [12] and [13] provide the decomposition results of the factors contributing to expenditure increase of urban and rural households over the period. Bootstrapped standard errors (with 500 replications) are given in parentheses. [28]

[27] See Appendix [9] for more details about the transformation.

[28] There is no urban area in the Central High Land in 1993. So we exclude the Central High Land region from our sample of decomposition for the contributing factors to the urban expenditure increase between 1993 and 2006.

[Table 12 & 13 about here]

From 1993 to 2006, per capita expenditure increased by 107% for urban households and 98% for rural households. Along the distribution, the rate of increase in urban expenditure is 111%, 114% and 85% at the 10th, 50th and 90th quantiles, respectively. For rural households the rate of increase is 76%, 101% and 107% at the 10th, 50th and 90th quantiles respectively. Notice that the lowest 10th quantile in the rural expenditure distribution has the lowest per capita expenditure and also the lowest rate of expenditure increase over time.

The increase in per capita expenditure comes from both the increase in average characteristics and the increase in the returns to characteristics. In both urban and rural areas, the increase in average characteristics contributes more than one third to the total increase in expenditure, leaving nearly two thirds coming from the increase in the returns to characteristics and the improvement in other factors not controlled for in the model.

Now consider the contribution of the observed variables. Education plays the most important role. From 1993 to 2006, the average increase of 2.7 years of schooling for urban heads contributes 20% to the increase in urban expenditure, and the average increase of 2.21 years of schooling for rural heads contributes 11% to the increase in rural expenditure. On average, the increase in the return to education in urban area contributes up to 31% to the increase in urban expenditure. This is in contrast to the increase in the return to education in rural areas, which modestly contributes 5% to the increase in rural expenditure. The changes in the average demographic structure of the households (including the decreases in household size and the proportion of children, and the increase in the proportion of laborers) together increase household per capita expenditure by 13% and 14% in urban and rural areas, respectively. The changes in the average industrial structure and their related returns increase average expenditure by 3% in urban and 5% in rural areas. The increase in household per capita remittance increases the average household per capita expenditure by 6% in both urban and rural areas. A large part

of the contribution to the overall expenditure increase lies in the intercept differences, which reflects the improvement in other factors not captured in the model (such as infrastructure and other market conditions).[29]

7.2. 2 Contributions to the urban-rural expenditure gap, 1993-2006

Tables [14] to [18] report the decomposition results of the factors contributing to the urban-rural expenditure gap in 1993, 1998, 2002, 2004 and 2006, respectively. [30]

[Table 14 to 18 about here]

In 1993, urban households' per capita expenditure at the mean is 84% higher than their rural counterparts. Along the distribution, the rate is 49%, 83%, and 122% at the 10th, 50th and 90th quantiles, respectively. In 2006, per capita expenditure at the mean in urban areas is 90% higher than in rural areas. Along the distribution, the rate is 77%, 92%, and 96% at the 10th, 50th and 90th quantiles, respectively. The overall urban-rural expenditure gap in 2006 is slightly higher than it was in 1993 at the mean and at the lower and middle of the distribution, but is lower at the top of the distribution.

In each wave, the inter-group differences in average characteristics explain about a half of the overall urban-rural expenditure gap. Specifically the rate is 55% in 1993, 49% in 1998, 48% in 2002, 51% in 2004 and 52% in 2006. The unexplained part, which includes the inter-group differences in the returns to characteristics and other factors not captured in the model, is 45% in 1993 51% in 1998 52% in 2002 49% in 2004 and 48% in 2006. In absolute value, most

[29]According to Nguyen et al. (2008), during the period from 1995 to 2007, Vietnam spent around 10% of GDP on infrastructure investment. In 2007, this rose to 12% of GDP on infrastructure investment, which is equivalent to 45% to 50% of Vietnam's state budget. These figures are well above the average level of the world's developing countries. As a result, as reported in World Bank (2009), the infrastructure system has been significantly improved in both urban and rural areas of Vietnam over the past decades. For example, by the end of 2008, more than 93% of rural households had electricity compared to just over 50% ten years ago. Given the significant improvements in the infrastructure, we would like to capture the impact of infrastructure investment on the expenditure increase in urban and rural but unfortunately the data on infrastructure investment are only at the aggregated province level not segregated by urban-rural.

[30] In 1993 and 1998, there was no urban area in the Central High Land, so to allow a comparable comparison between urban and rural areas we exclude the Central High Land region in our sample of decomposition for these years.

of the increase in the overall urban-rural gap during the period comes from the increase in the return gap, which is consistent with the finding of Nguyen et al. (2007).

Regarding the contributions of each variable, the most important factor in explaining the urban-rural gap is the inter-group difference in education and its related return. For instance, in 1993, increasing the rural sector's average education of the head to the level of the urban sector would decrease the overall urban-rural expenditure gap by 14% at the mean, 18% at 10^{th} quantile, 12% at the median and 17% at 90^{th} quantile. Moreover, in the same year, adjusting rural sector's return to education of the head to the level of the urban sector would decrease the overall urban-rural expenditure gap by 9% at mean, 25% at the 10^{th} quantile, 18% at the median and 1% at the 90^{th} quantile. In 2006, adjusting the rural sector's average education of the head to the level of the urban sector would decrease the overall urban-rural expenditure gap by 21% at the mean, 25% at the 10^{th} quantile, 18% at the median, 22% at the 90^{th} quantile. Adjusting the rural sector's return to education of the head to the level of the urban sector would decrease the overall urban-rural expenditure gap by 35% at the mean, 48% at the 10^{th} quantile, 34% at the median and 33% at the 90^{th} quantile. It can be seen that, as the country moved toward more marketization and opening up the economy from 1993 to 2006, the urban-rural difference - both in terms of difference in return and characteristics by education - became increasingly important in explaining the urban-rural expenditure gap.

The second important explanatory factor is the inter-group difference in industrial structure. In 1993, the urban-rural differences in average characteristics and the returns to characteristics by industrial structure contribute 15% to the overall urban-rural gap at the mean. Along the distribution, the rate is 5%, 11% and 25% at the 10^{th}, 50^{th} and 90^{th} quantiles, respectively. In 2006, the contribution of the inter-group industrial structure differences between urban and rural households is 7% at the mean. Along the distribution, the rate is 6%, 16% and 11% at the 10^{th}, 50^{th} and 90^{th} quantiles, respectively. From 1993 to 2006, as Vietnam

became more industrialized, the part of the urban-rural expenditure gap explained by the inter-group industrial structure difference reduces at the mean. Across the distribution, the inter-group industrial structure difference reduces remarkably at the top and increases at the bottom and the middle of the distribution.

Other factors that also contribute positively to the overall urban-rural gap include the inter-groups difference by ethnicity, household demographic structure, remittance and region. For example, urban households are smaller, and comprise a larger proportion of laborers and smaller proportion of children. Moreover, urban households also receive more per capita remittances than rural households. Over the period, the reduction in the proportion of ethnic households in urban areas and the slight increase in the proportion of ethnic households in rural areas, together with the lower per capita expenditure of the minority in rural areas, results in an increase in the contribution of urban and rural difference by ethnicity to the overall urban-rural gap. At the mean, the inter-group differences by ethnicity contribute 1% to the overall urban-rural gap in 1993. The rate increases to 5% in 2006. Along the distribution, the increase is especially high at the lowest 10th percentile in the expenditure distribution, rising from 3% in 1993 to 14% in 2006.

As noted earlier, a large part of the unexplained component lies in the intercept, which is the urban-rural difference in other factors not captured in the model. [31] These are likely to include infrastructure, geographic conditions and the like, and to favor the urban sector.

8. Conclusions and policy implications

In this paper, we analyzed urban-rural living standard inequality in terms of real per capita expenditure in Vietnam from 1993 to 2006. This was a period of accelerated transition with

[31] The sample stratifications for 2002, 2004 and 2006 allow us to use regional dummies at the provincial level, which was not possible for the first two VLSS. Our estimates using these regional dummies at the provincial level show that urban-rural differences in the constants still account for a significant part of the unexplained component. These estimates are available from the authors on request.

restructuring, marketization and international integration. We found that, while the living standard of all Vietnamese people increased, there is urban-rural expenditure inequality. This is the most important factor in explaining national inequality in this period. Between group urban-rural inequalities increased significantly from 1993 to 1998, peaked in 2002, fell slightly in 2004, and then fell quickly in 2006. This is different to China, a comparable country in many respects. According to Yang (1999) and Lin et al. (2008), China has experienced continuously increasing urban-rural inequality since its reform in 1978. Recent trends in Vietnam from 2002 to 2006 show signs of reducing overall urban-rural inequality. The results confirm the assessments of the World Bank (2007), as well as many other international observers, that Vietnam stood out as an example of a development model that has lifted millions of people from poverty while ensuring the benefits of its vibrant market economy were evenly distributed across society.

An important explanation for the recent evolution of Vietnamese urban-rural inequality relates to migration. [32] In the centrally planned period until the early 1990s (when our analysis began), the Vietnamese government tightly controlled migration flows. Local government in the large urban centers set tough barriers for rural people to migrate to cities; for example, in order to migrate, a migrant must have a house as well as a permanent job in an urban area. However, in the late 1990s, regulations governing geographic movement became less rigorous, and the registration procedure for people relocating was progressively relaxed. During the period of our study, Vietnam's law on residence was amended twice, first in 2001 and then in 2006.[33] Nowadays, rural migrants can access urban education and health insurance, and purchase a house if they can afford it. These relaxed regulations have created opportunities for

[32] In our observed sample, there are 151 households who were registered in a rural area in 2002 and moved to an urban area by 2004, and in 2004 there are 147 households registered in rural areas who moved to an urban area by 2006. Our estimation and decomposition results remain almost the same when we exclude these households from our observed sample. So the expansion of urban areas is not an important explanation for the reduction of the urban-rural gap.

[33] According to Vietnam's Law on Residence, first issued in the Constitution (1992) and amended two times in 2001 and 2006, Vietnamese people have the right to freedom of residence in the territory of Vietnam.

laborers to move from low wage to high wage regions - more specifically, from rural to urban areas, and from low productivity to high productivity provinces. On the one hand, this helps reduce national inequality and promotes national growth through the productivity increase of those who migrate. On the other hand, too great a concentration of economic activity and population in urban centers may have an adverse impact on regional growth, and cause urban congestion and environmental degradation, thereby directly affecting the quality of urban life. To ensure sustainable development in the longer term, policy-makers might consider not only removing migration restrictions but also balancing growth across regions and sectors.

Our results show that education is an important factor in household expenditure determination. This is consistent with Nguyen, Albrecht, Vroman and Westbrook (2007) and Le and Fesselmeyer (2008). It is interesting that, in 2006, the return to education is high for the poor in both urban and rural sectors. Policies facilitating investment in education by the poor will significantly help to reduce inequality. Moreover, we also found that urban-rural differences in education of household heads and their related returns make a significant contribution to the urban-rural expenditure gap. Therefore helping rural people increase their education will reduce urban-rural inequality.

Over the studied period, as Vietnam became more industrialized and liberalized, households whose head worked in agriculture have significantly lower living standards than comparable households with heads working in services or manufacturing. Particularly in the lower part of the rural expenditure distribution, households whose head worked in agriculture have seen little improvement in their returns. Across the ownership structure, we find that households whose head works in the private sector have a significantly lower living standard than comparable households where the head works in the state-owned enterprise or as public servant. The private sector plays an increasingly important role in Vietnam, not only in terms of

its increasing share in the contribution to total GDP, but also in terms of job creation. Yet most private enterprises are small scale and labor intensive, so the returns are low.

Our decomposition results show that the inter-group differences between urban and rural households in education, household demographic structure, industrial structure and remittances - along with their related returns - are the major causes of the high urban-rural gap in Vietnam over the period 1993 to 2006. The higher average endowments of urban over rural households explain about a half of the overall urban-rural expenditure gap. The other half remains unexplained. A significant part of this unexplained component lies in the intercept differences, which captures unobserved factors such as geographical, infrastructural characteristics and so on, that favor urban households.

In both urban and rural areas, the increase in per capita expenditure from 1993 to 2006 arises from both the increase in average characteristics and the increase in return to characteristics. The increase in average characteristics contributes more than one third to the increase in expenditure, leaving nearly two thirds coming from the increase in the returns to characteristics and the improvement in other factors not controlled for in the model.

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Table1: Real per capita expenditure at mean and selected percentiles by urban-rural, 1993-2006

	% Urban[1]	Expenditure at mean and selected percentiles (Unit: 1.000VND)								Urban rural expenditure ratios				Number of observations
		Mean		Q10th		Q50th		Q90th		Mean	Q10th	Q50th	Q90th	Urban - Rural
		Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1993	19.91	4,307	2,258	1,635	1,126	3,470	1,953	8,129	3,737	1.91	1.45	1.77	2.18	1,072 – 3,727
1998	22.43	6,754	3,030	2,622	1,503	5,486	2,641	12,503	4,935	2.23	1.74	2.08	2.53	1,730 – 4,269
2002	23.23	7,957	3,377	2,792	1,629	6,336	2,890	15,007	5,662	2.36	1.71	2.19	2.65	6,909 – 22,621
2004	25.80	9,018	4,025	3,354	1,807	7,719	3,450	16,277	6,778	2.24	1.86	2.24	2.40	2,250 – 6,938
2006	26.72	9,252	4,603	3,557	1,994	7,781	3,936	16,220	7,874	2.01	1.78	1.98	2.06	2,307 – 6,882
Ratio 2006/1993		2.029	1.993	1.978	1.743	2.136	1.979	1.898	2.056					

*Note: *All money values of expenditure are adjusted by spatial and temporal price indexes, converted to the value of Jan 2006. Samples are weighted by sample weights.*

Source: VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculation.

Table 2: Inequality indexes of by urban-rural, 1993 – 2006

	Gini			Theil		
	All	Urban	Rural	All	Urban	Rural
1993	0.34	0.34	0.28	0.20	0.19	0.14
1998	0.35	0.34	0.27	0.23	0.20	0.13
2002	0.37	0.35	0.28	0.25	0.21	0.14
2004	0.37	0.33	0.29	0.24	0.18	0.15
2006	0.36	0.33	0.30	0.23	0.19	0.16

*Note: *(1) Samples are weighted by sample weights.*

(2) Inequality indexes are calculated with 500 bootstrap replications. All values are significant at 5% level.

Source: VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculation.

[1] Percentage of urban is the percentage of urban households with the household weight adjustment.

Table 3: Gini index of selected countries

Country	GDP per capita (US$ 2005) international comparison	Year of Gini	Gini(consumption)
Laos	2,039	2002	0.35
Cambodia	2,727	2004	0.42
Vietnam	3,071	2004	0.37
India	3,452	2004	0.37
Indonesia	3,843	2002	0.34
China	6,757	2004	0.47
Thailand	8,677	2002	0.42
Russia	10,845	2002	0.40
Malaysia	10,882	1997	0.49
Poland	13,847	2002	0.35

Source: UNDP 2008, Human Development Report 2007/2008

Table 4a: Theil decomposition by the contribution of within and between groups, 1993-2006

	Total	By Urban-rural			By region: North-South			By seven regions								Ethnicity of the household head		
		WT urban	WT rural	**BT urban rural**	WT North	WT South	**BT North-South**	WT Northern Uplands	WT Red River Delta	WT North Central Coast	WT South Central Coast	WT Central Highlands	WT South East	WT Mekong River Delta	**BT seven regions**	WT majority	WT minority	**BT major-minor**
1993	100%	47%	32%	**21%**	31%	61%	**8%**	6%	22%	5%	12%	1%	21%	20%	**12%**	85%	13%	**2%**
1998	100%	35%	34%	**31%**	36%	60%	**4%**	7%	18%	8%	7%	2%	26%	14%	**18%**	83%	13%	**4%**
2002	100%	35%	32%	**33%**	41%	56%	**3%**	9%	23%	6%	6%	4%	24%	13%	**16%**	86%	8%	**6%**
2004	100%	35%	34%	**31%**	40%	57%	**3%**	10%	20%	6%	7%	4%	22%	14%	**17%**	85%	8%	**7%**
2006	100%	40%	35%	**25%**	44%	53%	**3%**	10%	23%	7%	6%	5%	22%	14%	**13%**	84%	8%	**8%**

**Note:* *(1) Samples are weighted by sample weights.*

(2) All figures are calculated with 500 bootstrap replications using the method of Biewen (2002) and are significant at the 5% level.

(3)WT and BT are abbreviations for within-group and between-groups respectively.

Source: *VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculation.*

Table 4b: Theil decomposition by the contribution of within and between groups, 1993-2006

	Total	Sex of the household head			Marital status of the household head			By age group of the household head					Education of household head					
		WT Male	*WT Female*	**BT Male-female**	*WT married*	*WT not married*	**BT married-others**	*WT less than 30*	*WT age3040*	*WT age40-retired*	*WT retired age*	**BT**	*WT less than primary*	*WT primary*	*WT secondary*	*WT high school*	*WT college & higher*	**BT education**
1993	100%	66%	32%	**2%**	84%	16%	**0%**	11%	29%	37%	21%	**2 %**	29%	24%	22%	12%	5%	**8%**
1998	100%	67%	30%	**3%**	85%	15%	**0%**	5%	29%	46%	19%	**1%**	24%	21%	24%	13%	5%	**13%**
2002	100%	67%	28%	**4%**	84%	16%	**0%**	5%	24%	49%	20%	**2%**	22%	18%	21%	10%	12%	**17%**
2004	100%	69%	27%	**4%**	81%	19%	**0%**	4%	17%	53%	24%	**2%**	18%	19%	24%	14%	7%	**19%**
2006	100%	72%	26%	**2%**	81%	18%	**1%**	3%	16%	55%	23%	**2%**	16%	19%	21%	16%	7%	**21%**

**Note:* *See Table4a.*

Source: *VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculation.*

Table 4c: Theil decomposition by the contribution of within and between groups, 1993-2006

	Total	By employment status & sector of the household head							By employment status & industry of the household head					
		WT Working age					*WT Old age*	**Between groups**	*WT Working age*				*Old age*	**Between groups**
		WT Working				*WT notworking*	*WT Old age*		*WT Working*			*WT notworking*	*WT Old age*	
		WT private	*WT SOE*	*WT Public*	*WT self employed*				*WT Agri*	*WT Manu*	*WT Service*			
1993	100%	6%	4%	5%	57%	2%	19%	**7%**	29%	8%	21%	5%	21%	**15%**
1998	100%	6%	3%	6%	53%	1%	21%	**9%**	20%	10%	24%	4%	21%	**21%**
2002	100%	10%	5%	9%	38%	3%	22%	**13%**	17%	8%	31%	5%	22%	**17%**
2004	100%	12%	4%	8%	38%	3%	26%	**10%**	18%	8%	29%	4%	26%	**14%**
2006	100%	15%	4%	6%	39%	2%	24%	**10%**	22%	8%	30%	3%	25%	**12%**

**Note:* *See Table4a.*

Source: *VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculation.*

Table 5: Variable description and summary statistics, 1993-2006

Variables	Variable description	Urban					Rural				
		1993	1998	2002	2004	2006	1993	1998	2002	2004	2006
Ln(RPCEXP)	Natural log of real per capita expenditure [2]	15.15	15.61	15.64	15.79	15.86	14.54	14.88	14.92	15.09	15.22
Household head:											
Male	=1 if Male, =0 if Female	0.56	0.60	0.64	0.63	0.63	0.77	0.78	0.80	0.80	0.80
Minority	= 1 if *minority ethnic*, = 0 if majority [3]	0.10	0.08	0.06	0.06	0.06	0.15	0.16	0.17	0.18	0.19
Married	= 1 if *married*, = 0 if single	0.78	0.77	0.79	0.79	0.78	0.82	0.82	0.83	0.82	0.83
Experience	= *age-schyear-6*	33.64	35.18	34.22	35.92	35.88	32.94	34.44	34.86	36.50	36.33
Experience square	Exp square/100	14.02	14.81	14.21	15.25	14.97	13.71	14.33	14.72	15.81	15.51
School year	*Years of schooling* of the more educated household head or spouse	8.48	8.96	9.37	9.43	9.55	6.40	6.76	6.77	6.95	7.06
Old	= 1 if household head is at *retired age*	0.25	0.27	0.24	0.26	0.26	0.21	0.22	0.22	0.23	0.22
Not working	= 1 if household head in *working age* but not working	0.03	0.03	0.05	0.04	0.02	0.00	0.00	0.01	0.01	0.01
Private	= 1 if household head is working in p*rivate sector* [4]	0.09	0.10	0.13	0.12	0.16	0.07	0.06	0.14	0.13	0.15
Public servant	= 1 if household head is working as p*ublic servant* [5]	0.10	0.10	0.13	0.16	0.13	0.02	0.03	0.04	0.04	0.04
SOE	= 1 if household head is working in s*tate owned enterprises*	0.08	0.08	0.09	0.06	0.06	0.01	0.01	0.01	0.02	0.02
Self-employed	= 1 if household head is working as *self-employed*	0.44	0.43	0.37	0.36	0.37	0.69	0.68	0.59	0.56	0.57
Agriculture	= 1 if household head is working in a*griculture*	0.21	0.15	0.15	0.14	0.15	0.67	0.62	0.53	0.50	0.50
Manufacturing	= 1 if household head is working in m*anufacturing*	0.18	0.17	0.18	0.17	0.18	0.05	0.06	0.11	0.12	0.13
Service	= 1 if household head is working in s*ervice* sector	0.34	0.38	0.39	0.39	0.39	0.07	0.09	0.13	0.13	0.14

[2] *RPCEXP is household total yearly expenditure divided by household size.*

[3] *Vietnam has 54 ethnic groups, the Kinh group is the majority one.*

[4] *Private sector includes those who work for private companies, foreign investment sectors, collectives or other households and being paid.*

[5] *Public servant includes those who work for the government, the communist party or social organizations.*

Household demography:											
Household size	Number of people in the household	4.94	4.46	4.26	4.22	4.10	4.97	4.87	4.55	4.46	4.30
Proportion of children	The proportion of children aged *under 15* in the household	0.28	0.23	0.23	0.20	0.18	0.36	0.32	0.28	0.25	0.23
Proportion of laborers	The proportion of people *from 15 to retired* age in the household	0.60	0.61	0.64	0.66	0.67	0.52	0.53	0.58	0.60	0.62
Proportion of old people	The proportion of people *from retired age & over* in the household	0.12	0.16	0.13	0.14	0.15	0.13	0.15	0.13	0.15	0.15
Remittances:											
Domestic remittance	The amount of *per capita domestic remittance* that the household received	0.19	0.36	0.67	0.91	0.82	0.06	0.12	0.38	0.56	0.61
Foreign remittance	The amount of *per capita foreign remittance* that the household received	0.58	0.55	0.43	0.63	0.48	0.06	0.07	0.14	0.20	0.24
Regions:											
Northern Upland	= 1 if living in the *Northern Uplands*	0.13	0.11	0.17	0.16	0.15	0.18	0.16	0.19	0.20	0.20
Red River Delta	= 1 if living in the *Red River Delta*	0.20	0.23	0.17	0.19	0.18	0.25	0.18	0.23	0.22	0.22
North Central Coast	= 1 if living in the *North Central Coast*	0.07	0.06	0.09	0.07	0.07	0.15	0.14	0.12	0.12	0.12
South Central Coast	= 1 if living in the *South Central Coast*	0.13	0.13	0.11	0.11	0.12	0.08	0.10	0.09	0.09	0.09
Central Highlands	= 1 if living in the *Central Highlands* [6]	-	-	0.07	0.07	0.07	0.03	0.06	0.05	0.06	0.06
South East	= 1 if living in the *South East*	0.27	0.31	0.22	0.23	0.24	0.11	0.16	0.10	0.10	0.09
Mekong River Delta	= 1 if living in the *Mekong River Delta*	0.20	0.16	0.17	0.17	0.17	0.21	0.19	0.23	0.21	0.21
Number of observations		**1072**	**1730**	**6909**	**2250**	**2307**	**3727**	**4269**	**22621**	**6938**	**6882**

**Note: (1) These are raw figures computed without sample weight adjustments. Money values are adjusted by spatial and temporal price indexes, converted to the value of Jan 2006.*

(3) The results are rounded to two digits after decimal.

Source: VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculation.

[6] *In the first VLSS 1993 and 1998, there is no urban in Central Highlands.*

Table 6: Estimated urban-rural gap at mean and at various quantiles, 1993-2006

Year	Coefficients	10th	50th	90th	Mean
1993	**urban**	**0.03**	**0.19*** **	**0.67*** **	**0.27*** **
	p-value	(0.02)	(0.03)	(0.07)	(0.02)
1998	**urban**	**0.05****	**0.37*** **	**0.72*** **	**0.36*** **
	p-value	(0.02)	(0.02)	(0.06)	(0.01)
2002	**urban**	**0.07*** **	**0.33*** **	**0.81*** **	**0.38*** **
	p-value	(0.01)	(0.01)	(0.03)	(0.01)
2004	**urban**	**0.02**	**0.30*** **	**0.69*** **	**0.34*** **
	p-value	(0.02)	(0.02)	(0.05)	(0.01)
2006	**urban**	**0.01**	**0.30*** **	**0.61*** **	**0.31*** **
	p-value	(0.02)	(0.02)	(0.04)	(0.01)

**Notes:* *(1) Dependent variable is ln(RPCEXP) and explanatory variables include the intercept, urban dummy and the set of explanatory variables described in Table 5.*
(2) Bold numbers are the coefficients of urban dummies.
*(3) Robust standard errors are in parentheses, P values: *** p<0.01, ** p<0.05, * p<0.1*
(4) The results are rounded to two digits after decimal.

Source: *VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own estimation.*

Table 7: Determinants of expenditure at mean and selected quantiles by urban-rural 1993

VARIABLES	Urban				Rural			
	Q10th	*Q50th*	*Q90th*	*OLS*	*Q10th*	*Q50th*	*Q90th*	*OLS*
Household head:								
Male	-0.03	-0.01	0.02	-0.03	-0.03	0.02	-0.05	-0.01
	(0.06)	(0.05)	(0.09)	(0.04)	(0.04)	(0.03)	(0.05)	(0.02)
Minority	0.31***	0.12	0.21	0.17***	-0.33***	-0.21***	-0.12***	-0.24***
	(0.09)	(0.08)	(0.15)	(0.06)	(0.05)	(0.03)	(0.04)	(0.02)
Married	0.09	0.06	-0.03	0.04	0.02	0.02	-0.06	-0.01
	(0.09)	(0.06)	(0.11)	(0.05)	(0.04)	(0.03)	(0.06)	(0.03)
Experience	0.01	-0.01	-0.01	-0.00	-0.00	0.02***	0.01*	0.01***
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Experience square/100	0.00	0.01	0.02	0.01	0.01	-0.02***	-0.00	-0.01**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
School year	0.05***	0.05***	0.05***	0.05***	0.04***	0.03***	0.04***	0.04***
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Old	0.09	0.41***	0.35*	0.30***	0.06	0.02	-0.14	-0.01
	(0.18)	(0.13)	(0.20)	(0.09)	(0.08)	(0.07)	(0.13)	(0.06)
Not working	0.00	0.50***	0.89**	0.45***	0.30***	-0.12	-0.31	-0.07
	(0.24)	(0.13)	(0.35)	(0.13)	(0.09)	(0.18)	(0.29)	(0.11)
Public servant	0.16	0.34***	0.20	0.28***	0.07	0.23***	0.15	0.17***
	(0.15)	(0.10)	(0.16)	(0.07)	(0.08)	(0.07)	(0.17)	(0.06)
SOE	0.19	0.27***	0.22	0.28***	0.12**	0.40***	0.53**	0.35***
	(0.15)	(0.10)	(0.16)	(0.08)	(0.06)	(0.07)	(0.23)	(0.07)
Self-employed	0.29**	0.35***	0.28***	0.30***	0.14***	0.16***	0.26***	0.18***
	(0.13)	(0.08)	(0.11)	(0.06)	(0.05)	(0.04)	(0.06)	(0.03)
Agriculture	-0.39***	-0.19***	-0.06	-0.16***	-0.12***	-0.23***	-0.53***	-0.28***
	(0.10)	(0.06)	(0.09)	(0.05)	(0.03)	(0.04)	(0.09)	(0.03)
Manufacturing	-0.08	0.03	0.02	0.03	0.06	-0.08	-0.30**	-0.09**
	(0.09)	(0.07)	(0.11)	(0.05)	(0.05)	(0.05)	(0.12)	(0.05)
Household demography:								
Household size	-0.04**	-0.06***	-0.07***	-0.06***	-0.02*	-0.03***	-0.05***	-0.03***

	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Proportion of children	-0.83***	-0.52***	-0.72***	-0.63***	-0.45***	-0.52***	-0.29***	-0.46***
	(0.18)	(0.12)	(0.23)	(0.10)	(0.07)	(0.05)	(0.10)	(0.05)
Proportion of old people	-0.23	-0.37**	-0.36	-0.34***	-0.07	-0.09	-0.28***	-0.14***
	(0.19)	(0.15)	(0.28)	(0.11)	(0.07)	(0.06)	(0.11)	(0.05)
Remittances:								
Domestic remittance	0.03*	0.04**	0.04	0.05***	0.03*	0.10***	0.19**	0.10***
	(0.02)	(0.02)	(0.06)	(0.02)	(0.02)	(0.02)	(0.09)	(0.02)
Foreign remittance	0.00	0.02***	0.08**	0.03***	0.00	0.01*	0.05***	0.02***
	(0.00)	(0.00)	(0.04)	(0.01)	(0.00)	(0.00)	(0.02)	(0.01)
Regions:								
Red River Delta	0.36***	0.53***	0.45***	0.49***	-0.02	-0.10***	-0.11***	-0.09***
	(0.11)	(0.07)	(0.10)	(0.05)	(0.04)	(0.03)	(0.04)	(0.02)
North Central Coast	-0.21	-0.03	-0.03	-0.06	-0.07	-0.13***	-0.14***	-0.12***
	(0.19)	(0.09)	(0.04)	(0.07)	(0.05)	(0.03)	(0.04)	(0.02)
South Central Coast	0.12	0.52***	0.28***	0.43***	-0.05	0.14***	0.26***	0.09**
	(0.14)	(0.09)	(0.09)	(0.06)	(0.06)	(0.04)	(0.07)	(0.03)
South East	0.34***	0.73***	0.69***	0.66***	0.18***	0.25***	0.51***	0.30***
	(0.12)	(0.07)	(0.12)	(0.05)	(0.05)	(0.03)	(0.07)	(0.03)
Mekong River Delta	0.22*	0.58***	0.49***	0.51***	0.21***	0.29***	0.45***	0.32***
	(0.13)	(0.07)	(0.10)	(0.05)	(0.04)	(0.03)	(0.05)	(0.02)
Constant	13.82***	14.47***	15.63***	14.54***	13.86***	14.35***	15.30***	14.45***
	(0.26)	(0.17)	(0.30)	(0.13)	(0.10)	(0.08)	(0.15)	(0.06)
R-squared	**0.15**	**0.28**	**0.18**	**0.41**	**0.10**	**0.20**	**0.14**	**0.31**
No of observations			**960**				**3839**	

***Notes:** *(1) Household head working in the private sector is the base group for employment status and sector of the household head. Household head working in the service sector is the base group for industries of the household head. Northern Uplands is the base group for regions. There is no urban area in Central Highland in VLSS1993. Proportion of laborers in the household is drop to avoid multicolinearity.*

*(2) Robust standard errors are in parentheses, P values: *** p<0.01, ** p<0.05, * p<0.1*

(3) The results are rounded to two digits after decimal.

Source: VLSS- 1993, own estimation.

Table 8: Determinants of expenditure at mean and selected quantiles by urban-rural 1998

VARIABLES	Urban				Rural			
	Q10th	*Q50th*	*Q90th*	*OLS*	*Q10th*	*Q50th*	*Q90th*	*OLS*
Household head:								
Male	-0.00	0.06	-0.07	-0.01	0.05	0.05*	-0.10*	-0.00
	(0.05)	(0.04)	(0.06)	(0.03)	(0.04)	(0.03)	(0.06)	(0.02)
Minority	0.19**	0.14**	0.18	0.14***	-0.48***	-0.25***	-0.11***	-0.27***
	(0.08)	(0.07)	(0.11)	(0.05)	(0.05)	(0.02)	(0.03)	(0.02)
Married	0.12*	0.01	-0.12	0.01	-0.04	0.01	0.08	0.04
	(0.07)	(0.05)	(0.08)	(0.03)	(0.04)	(0.03)	(0.06)	(0.02)
Experience	0.00	0.00	-0.02**	-0.00	0.00	0.01***	0.01**	0.01***
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Experience square	0.01	-0.00	0.02**	0.01	0.00	-0.01***	-0.01	-0.01***
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
School year	0.05***	0.05***	0.06***	0.05***	0.05***	0.02***	0.04***	0.04***
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Old	0.12	0.22**	0.18	0.18***	0.23***	-0.01	-0.10	-0.03
	(0.14)	(0.09)	(0.14)	(0.07)	(0.09)	(0.06)	(0.11)	(0.05)
Not working	0.05	-0.09	0.00	0.02	-0.15	0.05	0.22	0.00
	(0.15)	(0.11)	(0.19)	(0.08)	(0.21)	(0.13)	(0.34)	(0.12)
Public servant	0.19*	0.22***	0.17	0.21***	0.17**	0.17***	0.28**	0.15***
	(0.10)	(0.08)	(0.14)	(0.06)	(0.08)	(0.06)	(0.14)	(0.05)
SOE	0.19*	0.34***	0.31**	0.25***	0.21***	0.38***	0.38*	0.33***
	(0.10)	(0.07)	(0.15)	(0.05)	(0.07)	(0.07)	(0.22)	(0.07)
Self-employed	0.18**	0.20***	0.09	0.17***	0.22***	0.21***	0.17***	0.17***
	(0.09)	(0.06)	(0.09)	(0.05)	(0.07)	(0.04)	(0.06)	(0.03)
Agriculture	-0.29***	-0.29***	-0.03	-0.25***	-0.11***	-0.24***	-0.39***	-0.25***
	(0.08)	(0.05)	(0.07)	(0.04)	(0.03)	(0.03)	(0.08)	(0.03)
Manufacturing	-0.07	-0.08*	0.13	-0.01	0.00	-0.10**	-0.18*	-0.09**
	(0.07)	(0.05)	(0.09)	(0.04)	(0.06)	(0.04)	(0.10)	(0.04)
Household demography:								
Household size	-0.10***	-0.07***	-0.06***	-0.08***	-0.06***	-0.05***	-0.05***	-0.06***

	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Proportion of children	-0.78***	-0.52***	-0.58***	-0.51***	-0.40***	-0.43***	-0.48***	-0.43***
	(0.13)	(0.09)	(0.16)	(0.07)	(0.07)	(0.05)	(0.09)	(0.04)
Proportion of old age people	-0.51***	-0.38***	-0.26	-0.36***	-0.27***	-0.11**	-0.27***	-0.15***
	(0.14)	(0.10)	(0.18)	(0.08)	(0.07)	(0.05)	(0.10)	(0.04)
Remittances:								
Domestic remittance	0.01	0.02***	0.06***	0.03***	0.02**	0.09***	0.31***	0.13***
	(0.01)	(0.01)	(0.02)	(0.00)	(0.01)	(0.01)	(0.04)	(0.02)
Foreign remittance	0.01**	0.04***	0.12***	0.05***	0.00	0.03***	0.13***	0.05***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.02)	(0.01)
Regions:								
Red River Delta	0.15*	0.38***	0.36***	0.28***	0.12***	0.03	-0.12***	-0.00
	(0.09)	(0.06)	(0.06)	(0.04)	(0.04)	(0.03)	(0.04)	(0.02)
North Central Coast	0.01	0.25***	0.36***	0.20***	0.00	-0.07**	-0.15***	-0.07***
	(0.13)	(0.07)	(0.10)	(0.05)	(0.05)	(0.03)	(0.04)	(0.02)
South Central Coast	0.17	0.38***	0.36***	0.31***	0.03	0.10***	-0.00	0.05**
	(0.10)	(0.06)	(0.06)	(0.04)	(0.06)	(0.03)	(0.05)	(0.02)
South East	0.37***	0.76***	0.72***	0.62***	0.35***	0.37***	0.55***	0.42***
	(0.08)	(0.05)	(0.08)	(0.03)	(0.04)	(0.03)	(0.06)	(0.02)
Mekong River Delta	0.08	0.37***	0.38***	0.26***	0.34***	0.15***	0.08*	0.17***
	(0.10)	(0.06)	(0.07)	(0.04)	(0.04)	(0.03)	(0.04)	(0.02)
Constant	14.53***	14.96***	16.10***	15.18***	14.09***	14.77***	15.53***	14.78***
	(0.20)	(0.14)	(0.24)	(0.10)	(0.13)	(0.08)	(0.15)	(0.07)
R-squared	**0.15**	**0.29**	**0.20**	**0.42**	**0.18**	**0.25**	**0.17**	**0.41**
Observations	**1731**				**4268**			

***Notes:** *See Table 7*

Source: VLSS -1998, own estimation.

Table 9: Determinants of expenditure at mean and selected quantiles by urban-rural 2002

VARIABLES	**Urban**				**Rural**			
	Q10th	*Q50th*	*Q90th*	*OLS*	*Q10th*	*Q50th*	*Q90th*	*OLS*
Household head:								
Male	-0.01	-0.06***	-0.02	-0.05***	-0.03**	-0.01	-0.04*	-0.02**
	(0.02)	(0.02)	(0.03)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Minority	-0.21***	0.06	0.09**	-0.02	-0.49***	-0.20***	0.01	-0.22***
	(0.05)	(0.03)	(0.04)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
Married	0.05	0.05*	-0.12***	0.00	0.05***	0.07***	-0.00	0.05***
	(0.03)	(0.03)	(0.04)	(0.02)	(0.02)	(0.01)	(0.03)	(0.01)
Experience	0.01	-0.00	-0.01*	-0.00	0.01***	0.01***	0.00	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Experience square	-0.01	0.00	0.01**	0.00*	-0.01***	-0.01***	0.00	-0.00***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
School year	0.05***	0.07***	0.07***	0.06***	0.04***	0.04***	0.05***	0.04***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Old	0.34***	0.25***	0.15*	0.22***	0.05	0.05*	-0.01	0.03
	(0.07)	(0.05)	(0.08)	(0.04)	(0.03)	(0.03)	(0.05)	(0.02)
Not working	0.11**	0.16***	-0.11	0.07**	-0.12**	-0.04	0.02	-0.03
	(0.06)	(0.05)	(0.08)	(0.03)	(0.05)	(0.04)	(0.09)	(0.04)
Public servant	0.17***	0.22***	0.06	0.16***	0.02	0.17***	0.33***	0.17***
	(0.04)	(0.04)	(0.06)	(0.02)	(0.02)	(0.02)	(0.05)	(0.02)
SOE	0.23***	0.36***	0.23***	0.27***	0.01	0.27***	0.50***	0.28***
	(0.04)	(0.04)	(0.07)	(0.02)	(0.02)	(0.03)	(0.08)	(0.02)
Self-employed	0.20***	0.17***	-0.02	0.13***	0.05***	0.16***	0.20***	0.14***
	(0.04)	(0.03)	(0.04)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
Agriculture	-0.35***	-0.24***	-0.10***	-0.24***	-0.11***	-0.24***	-0.34***	-0.23***
	(0.04)	(0.03)	(0.03)	(0.02)	(0.01)	(0.01)	(0.03)	(0.01)
Manufacturing	-0.03	-0.06**	-0.09**	-0.06***	0.04***	-0.01	-0.14***	-0.03***
	(0.03)	(0.03)	(0.04)	(0.02)	(0.01)	(0.02)	(0.03)	(0.01)
Household demography:								
Household size	-0.07***	-0.05***	-0.04***	-0.05***	-0.05***	-0.04***	-0.04***	-0.04***

	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Proportion of children	-0.49***	-0.65***	-0.57***	-0.58***	-0.41***	-0.62***	-0.73***	-0.60***
	(0.06)	(0.05)	(0.08)	(0.03)	(0.03)	(0.02)	(0.04)	(0.02)
Proportion of old age people	-0.53***	-0.39***	-0.38***	-0.39***	-0.26***	-0.30***	-0.39***	-0.31***
	(0.08)	(0.06)	(0.10)	(0.05)	(0.03)	(0.03)	(0.05)	(0.02)
Remittances:								
Domestic remittance	0.02***	0.04***	0.07***	0.04***	0.02***	0.06***	0.20***	0.09***
	(0.00)	(0.01)	(0.02)	(0.01)	(0.00)	(0.01)	(0.02)	(0.01)
Foreign remittance	0.01***	0.03***	0.06***	0.03***	0.00**	0.01**	0.03*	0.02**
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.02)	(0.01)
Regions:								
Red River Delta	-0.10***	0.19***	0.45***	0.18***	-0.04**	-0.02*	-0.03	-0.03***
	(0.03)	(0.03)	(0.04)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
North Central Coast	-0.25***	-0.02	0.10***	-0.03	-0.13***	-0.10***	-0.03	-0.09***
	(0.05)	(0.04)	(0.03)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
South Central Coast	-0.03	0.23***	0.29***	0.19***	-0.02	0.08***	0.10***	0.05***
	(0.04)	(0.03)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
Central Highlands	-0.16***	0.10***	0.25***	0.09***	-0.18***	0.04***	0.15***	0.01
	(0.05)	(0.04)	(0.04)	(0.02)	(0.03)	(0.02)	(0.02)	(0.01)
South East	0.12***	0.53***	0.76***	0.48***	0.12***	0.29***	0.39***	0.26***
	(0.03)	(0.03)	(0.05)	(0.02)	(0.02)	(0.01)	(0.03)	(0.01)
Mekong River Delta	-0.01	0.22***	0.31***	0.19***	0.15***	0.23***	0.34***	0.24***
	(0.04)	(0.03)	(0.04)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
Constant	14.62***	14.99***	15.96***	15.14***	14.23***	14.82***	15.57***	14.87***
	(0.08)	(0.07)	(0.13)	(0.05)	(0.05)	(0.03)	(0.06)	(0.03)
R-squared	**0.14**	**0.28**	**0.18**	**0.44**	**0.18**	**0.26**	**0.18**	**0.43**
Observations	**6909**				**22621**			

***Notes:** *(1) Household head working in the private sector is the base group for employment status and sector of the household head. Household head working in the service sector is the base group for industries of the household head. Northern Uplands is the base group for regions. Proportion of laborers in the household is drop to avoid multicolinearity. (2) Robust standard errors are in parentheses, P values: *** p<0.01, ** p<0.05, * p<0.1 (3) The results are rounded to two digits after decimal.*

Source: VHLSS -2002, own estimation.

Table 10: Determinants of expenditure at mean and selected quantiles by urban- rural 2004

VARIABLES	Urban				Urban			
	Q10th	*Q50th*	*Q90th*	*OLS*	*Q10th*	*Q50th*	*Q90th*	*OLS*
Household head :								
Male	-0.06	-0.01	0.07	-0.04	-0.04	-0.02	-0.00	-0.01
	(0.04)	(0.03)	(0.05)	(0.02)	(0.04)	(0.02)	(0.04)	(0.02)
Minority	-0.54***	-0.00	-0.01	-0.16***	-0.63***	-0.25***	0.01	-0.28***
	(0.12)	(0.06)	(0.06)	(0.04)	(0.04)	(0.02)	(0.03)	(0.02)
Married	0.15**	-0.03	-0.21***	-0.00	0.05	0.05*	0.01	0.03
	(0.06)	(0.04)	(0.07)	(0.03)	(0.04)	(0.03)	(0.05)	(0.02)
Experience	-0.00	0.00	0.00	-0.00	0.00	0.01***	0.00	0.01***
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Experience square	-0.00	-0.00	0.01	0.00	-0.00	-0.00	-0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
School year	0.04***	0.06***	0.07***	0.06***	0.05***	0.04***	0.04***	0.05***
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Old	0.62***	0.37***	-0.10	0.32***	0.11*	0.11**	0.10	0.10***
	(0.13)	(0.08)	(0.12)	(0.06)	(0.07)	(0.05)	(0.08)	(0.04)
Not working	0.24**	0.06	-0.12	0.06	-0.05	-0.09	0.16	0.08
	(0.11)	(0.09)	(0.12)	(0.06)	(0.10)	(0.08)	(0.16)	(0.08)
Public servant	0.28***	0.28***	-0.05	0.22***	0.04	0.25***	0.43***	0.26***
	(0.08)	(0.06)	(0.09)	(0.04)	(0.05)	(0.04)	(0.09)	(0.03)
SOE	0.25***	0.26***	0.06	0.22***	0.05	0.24***	0.22**	0.18***
	(0.09)	(0.07)	(0.12)	(0.05)	(0.05)	(0.05)	(0.10)	(0.04)
Self-employed	0.37***	0.19***	0.00	0.20***	0.06*	0.20***	0.19***	0.17***
	(0.08)	(0.05)	(0.06)	(0.03)	(0.03)	(0.02)	(0.04)	(0.02)
Agriculture	-0.54***	-0.19***	-0.11**	-0.28***	-0.11***	-0.20***	-0.18***	-0.18***
	(0.08)	(0.05)	(0.05)	(0.03)	(0.02)	(0.02)	(0.05)	(0.02)
Manufacturing	0.03	0.01	-0.10	-0.01	0.06**	0.02	0.02	0.02
	(0.05)	(0.04)	(0.07)	(0.03)	(0.03)	(0.03)	(0.06)	(0.02)
Household demography:								
Household size	-0.03*	-0.03***	-0.04***	-0.04***	-0.05***	-0.04***	-0.05***	-0.05***
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)

Proportion of children	-0.93***	-0.53***	-0.14	-0.55***	-0.63***	-0.66***	-0.57***	-0.62***
	(0.13)	(0.09)	(0.13)	(0.06)	(0.07)	(0.04)	(0.07)	(0.03)
Proportion of old age people	-0.60***	-0.30***	-0.00	-0.34***	-0.32***	-0.25***	-0.29***	-0.26***
	(0.15)	(0.09)	(0.16)	(0.08)	(0.07)	(0.05)	(0.09)	(0.04)
Remittances:								
Domestic remittance	0.02***	0.04***	0.10***	0.05***	0.00	0.03**	0.09***	0.04**
	(0.01)	(0.01)	(0.02)	(0.01)	(0.00)	(0.01)	(0.03)	(0.02)
Foreign remittance	0.01***	0.02***	0.06***	0.03***	0.00**	0.02***	0.07***	0.03***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
Regions:								
Red River Delta	0.02	0.21***	0.37***	0.18***	-0.01	0.03	-0.03	-0.00
	(0.07)	(0.05)	(0.07)	(0.04)	(0.03)	(0.02)	(0.04)	(0.02)
North Central Coast	0.10	-0.09	-0.04	-0.04	-0.16***	-0.10***	-0.04	-0.11***
	(0.10)	(0.06)	(0.06)	(0.04)	(0.05)	(0.03)	(0.04)	(0.02)
South Central Coast	0.23***	0.20***	0.12*	0.18***	0.01	0.07**	0.03	0.04*
	(0.08)	(0.06)	(0.07)	(0.04)	(0.05)	(0.03)	(0.04)	(0.02)
Central Highlands	0.06	-0.03	0.02	0.04	0.00	0.15***	0.13***	0.10***
	(0.10)	(0.06)	(0.05)	(0.04)	(0.06)	(0.03)	(0.04)	(0.02)
South East	0.40***	0.51***	0.40***	0.47***	0.22***	0.42***	0.53***	0.38***
	(0.07)	(0.05)	(0.07)	(0.03)	(0.04)	(0.03)	(0.05)	(0.02)
Mekong River Delta	0.03	0.07	0.16***	0.09***	0.20***	0.20***	0.22***	0.20***
	(0.08)	(0.05)	(0.06)	(0.04)	(0.04)	(0.02)	(0.04)	(0.02)
Constant	14.67***	15.04***	15.89***	15.18***	14.48***	14.87***	15.57***	14.92***
	(0.18)	(0.14)	(0.22)	(0.10)	(0.10)	(0.07)	(0.11)	(0.05)
R-squared	**0.19**	**0.28**	**0.23**	**0.47**	**0.23**	**0.28**	**0.17**	**0.45**
No of observations	**2250**				**6938**			

***Notes:** *See Table 9*

Source: VHLSS -2004, own estimation.

Table 11: Determinants of expenditure at mean and selected quantiles by urban-rural 2006

VARIABLES	Urban				Rural			
	Q10th	*Q50th*	*Q90th*	*OLS*	*Q10th*	*Q50th*	*Q90th*	*OLS*
Household head:								
Male	-0.03	0.03	0.08	0.01	0.02	0.02	-0.01	0.01
	(0.04)	(0.03)	(0.05)	(0.02)	(0.03)	(0.02)	(0.05)	(0.02)
Minority	-0.34***	-0.01	0.08	-0.07	-0.55***	-0.27***	-0.08***	-0.29***
	(0.12)	(0.05)	(0.07)	(0.04)	(0.04)	(0.02)	(0.03)	(0.02)
Married	0.15**	0.06	-0.14**	0.01	0.07*	0.08***	0.04	0.06***
	(0.07)	(0.04)	(0.07)	(0.03)	(0.04)	(0.03)	(0.05)	(0.02)
Experience	-0.00	0.00	-0.00	-0.00	0.00	0.01***	0.00	0.00***
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Experience square	-0.01	-0.01	-0.00	-0.00	-0.00	-0.01***	-0.01	-0.01***
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
School year	0.08***	0.06***	0.06***	0.07***	0.06***	0.04***	0.04***	0.04***
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Old	0.39***	0.11	-0.07	0.13**	0.02	0.08	0.18**	0.05
	(0.13)	(0.07)	(0.12)	(0.06)	(0.06)	(0.05)	(0.07)	(0.03)
Not working	0.15	0.15	0.03	0.05	-0.08	0.00	0.17	-0.06
	(0.15)	(0.10)	(0.19)	(0.09)	(0.11)	(0.09)	(0.20)	(0.09)
Public servant	0.11	0.22***	-0.06	0.14***	0.02	0.32***	0.62***	0.32***
	(0.08)	(0.05)	(0.10)	(0.04)	(0.05)	(0.04)	(0.10)	(0.03)
SOE	0.25***	0.31***	0.17	0.26***	0.10*	0.24***	0.44***	0.24***
	(0.09)	(0.06)	(0.12)	(0.04)	(0.05)	(0.05)	(0.11)	(0.04)
Self employed	0.28***	0.06	-0.18***	0.08**	0.11***	0.24***	0.20***	0.18***
	(0.08)	(0.04)	(0.06)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)
Agriculture	-0.44***	-0.18***	-0.07	-0.23***	-0.12***	-0.24***	-0.11***	-0.19***
	(0.08)	(0.04)	(0.05)	(0.03)	(0.02)	(0.02)	(0.04)	(0.02)
Manufacturing	-0.11*	-0.14***	-0.15**	-0.10***	0.07**	0.00	0.06	0.01
	(0.06)	(0.04)	(0.06)	(0.03)	(0.03)	(0.03)	(0.06)	(0.02)

Household demographic:								
Household size	-0.09***	-0.07***	-0.07***	-0.07***	-0.10***	-0.06***	-0.05***	-0.07***
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Proportion of children	-0.45***	-0.30***	-0.25*	-0.34***	-0.31***	-0.47***	-0.41***	-0.45***
	(0.14)	(0.08)	(0.14)	(0.07)	(0.06)	(0.05)	(0.07)	(0.03)
Proportion of old age people	-0.38**	-0.14	-0.05	-0.12*	-0.11*	-0.18***	-0.18**	-0.16***
	(0.16)	(0.08)	(0.15)	(0.07)	(0.07)	(0.05)	(0.08)	(0.04)
Remittances:								
Domestic remittance	0.04***	0.05***	0.12***	0.08***	0.02***	0.05***	0.13***	0.07***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.02)	(0.01)
Foreign remittance	0.01***	0.01***	0.03**	0.02***	0.00**	0.02***	0.05***	0.02***
	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
Regions:								
Red River Delta	-0.01	0.17***	0.38***	0.17***	0.04	0.03	-0.06*	0.02
	(0.08)	(0.04)	(0.07)	(0.03)	(0.03)	(0.03)	(0.04)	(0.02)
North Central Coast	0.10	-0.06	0.10	0.05	-0.19***	-0.14***	-0.15***	-0.15***
	(0.10)	(0.06)	(0.07)	(0.04)	(0.05)	(0.03)	(0.03)	(0.02)
South Central Coast	0.21**	0.06	0.10*	0.13***	0.08*	0.03	-0.01	0.05**
	(0.08)	(0.05)	(0.06)	(0.04)	(0.04)	(0.03)	(0.04)	(0.02)
Central Highlands	0.01	0.08	0.27***	0.10**	0.05	0.22***	0.14***	0.16***
	(0.12)	(0.06)	(0.08)	(0.04)	(0.06)	(0.03)	(0.04)	(0.02)
South East	0.29***	0.23***	0.44***	0.29***	0.18***	0.32***	0.41***	0.32***
	(0.07)	(0.04)	(0.07)	(0.03)	(0.04)	(0.03)	(0.05)	(0.02)
Mekong River Delta	0.15*	0.05	0.24***	0.14***	0.22***	0.23***	0.17***	0.22***
	(0.09)	(0.05)	(0.06)	(0.03)	(0.04)	(0.02)	(0.04)	(0.02)
Constant	14.52***	15.33***	16.22***	15.43***	14.43***	14.94***	15.63***	15.02***
	(0.21)	(0.12)	(0.23)	(0.11)	(0.10)	(0.07)	(0.10)	(0.05)
R-squared	**0.17**	**0.29**	**0.19**	**0.44**	**0.23**	**0.29**	**0.18**	**0.47**
No of observations	**2307**				**6882**			

***Notes:** *See Table 9*

Source: VHLSS -2006, own estimation.

Table 12: Contributions to expenditure increase in urban at mean and selected quantiles, 1993-2006

VARIABLES	10th		50th		90th		Mean	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total predicted increase	**0.74*** **	**100%**	**0.76*** **	**100%**	**0.61*** **	**100%**	**0.72*** **	**100%**
Due to characteristics								
Sex	0.00	0%	-0.00	0%	0.00	0%	0.00	0%
Ethnicity	-0.01*	-1%	-0.00	-1%	-0.00	-1%	-0.01**	-1%
Marital status	-0.00	0%	-0.00	0%	0.00	0%	-0.00	0%
Experience	0.01	2%	-0.00	0%	-0.01	-1%	-0.01	-1%
School year	0.15***	20%	0.17***	22%	0.13***	22%	0.15***	20%
Employment & sectors	-0.01	-1%	-0.01	-1%	0.01	1%	-0.00	-1%
Industrial structure	0.02***	3%	0.01***	2%	0.01	1%	0.01***	2%
Household size	0.07***	10%	0.05***	7%	0.03***	5%	0.05***	7%
Age structure	0.04***	6%	0.05***	6%	0.03**	4%	0.04***	6%
Remittance	0.01*	1%	0.03***	5%	0.08***	14%	0.05***	6%
Region	-0.02**	-3%	-0.01**	-1%	-0.01*	-2%	-0.01**	-2%
Total	**0.27*** **	**36%**	**0.29*** **	**38%**	**0.27*** **	**44%**	**0.27*** **	**38%**
Due to coefficients								
Sex	-0.00	-1%	0.00	0%	0.01	1%	0.00	0%
Ethnicity	0.18***	24%	0.04	5%	0.05	8%	0.08**	11%
Marital status	0.01	2%	-0.01	-1%	-0.03	-5%	-0.01	-2%
Experience	-0.46**	-62%	0.09	11%	-0.07	-11%	-0.17	-23%
School year	0.34**	46%	0.15*	20%	0.13	22%	0.23***	31%
Employment & sectors	-0.02	-2%	-0.05*	-6%	-0.02	-4%	-0.01	-2%
Industrial structure	0.00	0%	0.03**	4%	0.02	3%	0.01	1%
Household size	-0.24*	-32%	-0.05	-7%	0.11	17%	-0.07	-9%
Age structure	0.09	12%	0.08	11%	0.17*	28%	0.10***	14%
Remittance	0.02***	3%	-0.01	-1%	-0.01	-2%	-0.00	0%
Region	-0.05**	-6%	-0.06***	-8%	-0.05***	-8%	-0.06***	-8%
Constant	0.60**	80%	0.25	32%	0.03	5%	0.35**	49%
Total	**0.48*** **	**64%**	**0.47*** **	**62%**	**0.34*** **	**56%**	**0.45*** **	**62%**

** Note:* *(1) Central Highland region is dropped since there is no urban in this region in 1993.*
*(2) Decompositions are carried out with 500 bootstrap replications. P values for two-sides test: *** p<0.01, ** p<0.05, * p<0.1*
(3) The results are rounded to two digits after decimal.

Source: *VLSS 1993 & VHLSS 2006, own estimation.*

Table 13: Contributions to expenditure increase in rural at mean and selected quantiles, 1993-2006

VARIABLES	10th		50th		90th		Mean	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total predicted increase	**0.56*** **	**100%**	**0.69*** **	**100%**	**0.72*** **	**100%**	**0.68*** **	**100%**
Due to characteristics								
Sex	0.00	0%	-0.00	0%	-0.00	0%	0.00	0%
Ethnicity	-0.01***	-2%	-0.01***	-2%	-0.01***	-1%	-0.01***	-2%
Marital status	0.00	0%	0.00	0%	0.00	0%	0.00	0%
Experience	0.01*	1%	0.01***	2%	0.01***	2%	0.01***	2%
School year	0.06***	11%	0.09***	12%	0.09***	13%	0.08***	12%
Employment & sectors	-0.01***	-1%	-0.01***	-2%	-0.00	0%	-0.01***	-1%
Industrial structure	0.02***	4%	0.04***	6%	0.03***	4%	0.03***	5%
Household size	0.03***	6%	0.03***	5%	0.03***	4%	0.03***	5%
Age structure	0.05***	9%	0.07***	10%	0.05***	7%	0.06***	9%
Remittance	-0.00	0%	0.03***	4%	0.10***	13%	0.04***	6%
Region	0.01**	1%	0.01**	1%	0.01**	1%	0.01**	1%
Total	**0.16*** **	**29%**	**0.26*** **	**37%**	**0.31*** **	**43%**	**0.25*** **	**37%**
Due to coefficients								
Sex	0.01	2%	-0.00	0%	0.01	2%	0.01	1%
Ethnicity	0.06***	12%	0.03**	4%	-0.01	-1%	0.02**	3%
Marital status	0.02	3%	0.02	2%	0.03	4%	0.02*	3%
Experience	-0.03	-6%	-0.17**	-25%	-0.21**	-29%	-0.17***	-25%
School year	0.17***	30%	0.02	3%	-0.05	-7%	0.03	5%
Employment & sectors	0.06*	10%	0.03	4%	-0.11	-15%	0.00	1%
Industrial structure	-0.00	0%	-0.04**	-6%	0.12***	16%	0.01	2%
Household size	-0.37***	-66%	-0.13***	-19%	0.02	3%	-0.15***	-22%
Age structure	0.03	5%	-0.00	-1%	-0.03	-4%	-0.00	0%
Remittance	0.01***	2%	0.00	0%	-0.02**	-3%	-0.00	0%
Region	-0.01	-3%	0.03***	4%	0.03*	4%	0.01*	2%
Constant	0.45***	81%	0.65***	94%	0.62***	86%	0.01	94%
Total	**0.40*** **	**71%**	**0.44*** **	**63%**	**0.41*** **	**57%**	**0.43*** **	**63%**

** Note: (1) Decompositions are carried out with 500 bootstrap replications. P values for two-sides test: *** p<0.01, ** p<0.05, * p<0.1*
(2) The results are rounded to two digits after decimal.

Source: VLSS 1993 & VHLSS 2006, own estimation.

Table 14: Contributions to the urban-rural expenditure gap at mean and selected quantiles, 1993

VARIABLES	10th		50th		90th		Mean	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total predicted gap	**0.40*** **	**100%**	**0.60*** **	**100%**	**0.80*** **	**100%**	**0.61*** **	**100%**
Due to characteristics								
Sex	-0.00	0%	0.00	1%	-0.01	-1%	-0.00	0%
Ethnicity	0.01***	3%	0.00**	1%	-0.01**	-1%	0.01***	1%
Marital status	-0.00	0%	-0.00*	0%	0.00	1%	-0.00	0%
Experience	0.00	1%	0.01**	1%	0.00	0%	0.00	1%
School year	0.07***	18%	0.07***	12%	0.14***	17%	0.09***	14%
Employment & sectors	-0.02**	-4%	0.02**	3%	0.02	3%	0.01*	2%
Industrial structure	0.05***	13%	0.09***	14%	0.10***	13%	0.09***	14%
Household size	0.00	0%	0.00	0%	0.00	0%	0.00	0%
Age structure	0.04***	9%	0.04***	7%	0.02**	2%	0.04***	6%
Remittance	0.00	1%	0.01***	2%	0.07***	9%	0.03***	5%
Region	0.03***	6%	0.07***	11%	0.11***	14%	0.07***	12%
Total	**0.18*** **	**46%**	**0.31*** **	**52%**	**0.46*** **	**58%**	**0.33*** **	**55%**
Due to coefficients								
Sex	0.00	1%	-0.01*	-2%	0.02	3%	0.00	0%
Ethnicity	-0.24***	-59%	-0.12***	-19%	-0.12*	-15%	-0.15***	-25%
Marital status	0.02	4%	0.01	2%	-0.00	0%	0.01	2%
Experience	0.14	34%	-0.41***	-68%	-0.42*	-53%	-0.25**	-41%
School year	0.10	25%	0.11	18%	0.01	1%	0.05	9%
Employment & sectors	0.08*	20%	0.01	1%	-0.09	-11%	-0.01	-1%
Industrial structure	-0.03	-8%	-0.02	-3%	0.09**	12%	0.01	1%
Household size	-0.12	-30%	-0.13**	-22%	-0.08	-10%	-0.12**	-19%
Age structure	-0.13*	-33%	-0.03	-5%	-0.12	-15%	-0.07**	-12%
Remittance	0.00	1%	0.00	0%	-0.04	-5%	-0.01	-1%
Region	0.04**	10%	0.05***	8%	0.02	2%	0.04***	6%
Constant	0.36	89%	0.85***	141%	1.06***	133%	0.77***	127%
Total	**0.22*** **	**54%**	**0.29*** **	**48%**	**0.34*** **	**42%**	**0.28*** **	**45%**

** Note: (1) Central Highland region is omitted since there is no urban in this region in 1993.*
*(2) Decompositions are carried out with 500 bootstrap replications. P values for two-sides test: *** p<0.01, ** p<0.05, * p<0.1*
(3) The results are rounded to two digits after decimal.

Source: VLSS 1993, own estimation.

Table 15: Contributions to the urban-rural expenditure gap at mean and selected quantiles, 1998

VARIABLES	10th		50th		90th		Mean	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total predicted gap	**0.56*** **	**100%**	**0.72*** **	**100%**	**0.91*** **	**100%**	**0.72*** **	**100%**
Due to characteristics								
Sex	0.00	0%	0.00	0%	-0.01	-1%	-0.00	0%
Ethnicity	0.03***	5%	0.01***	2%	-0.01***	-1%	0.01***	1%
Marital status	-0.00*	-1%	-0.00**	-1%	0.00	0%	-0.00	0%
Experience	0.00	0%	0.00	0%	0.00	0%	0.00	0%
School year	0.06***	11%	0.07***	10%	0.12***	13%	0.08***	12%
Employment & sectors	-0.00	-1%	0.01	1%	0.02	2%	0.01**	2%
Industrial structure	0.06***	10%	0.11***	15%	0.10***	11%	0.09***	12%
Household size	0.02***	4%	0.02***	3%	0.02***	3%	0.02***	3%
Age structure	0.04***	7%	0.04***	6%	0.03***	3%	0.04***	5%
Remittance	-0.00	0%	0.01***	2%	0.10***	11%	0.04***	5%
Region	0.04***	7%	0.07***	9%	0.10***	11%	0.07***	9%
Total	**0.24*** **	**44%**	**0.34*** **	**47%**	**0.47*** **	**52%**	**0.35*** **	**49%**
Due to coefficients								
Sex	-0.01	-2%	-0.00	-1%	0.03	3%	-0.00	0%
Ethnicity	-0.23***	-41%	-0.14***	-19%	-0.10**	-11%	-0.14***	-19%
Marital status	0.03	5%	-0.00	-1%	-0.06**	-7%	-0.01	-2%
Experience	0.04	7%	-0.22*	-30%	-0.56***	-62%	-0.27***	-37%
School year	0.12*	21%	0.17***	23%	0.16*	18%	0.12***	17%
Employment & sectors	-0.05	-8%	0.05	6%	0.09	9%	0.03	4%
Industrial structure	-0.01	-2%	-0.02	-3%	0.03	4%	-0.01	-1%
Household size	-0.16*	-28%	-0.06	-9%	-0.03	-4%	-0.07	-10%
Age structure	-0.12**	-22%	-0.07*	-9%	-0.02	-2%	-0.05**	-8%
Remittance	0.00	1%	-0.00	0%	-0.07***	-7%	-0.02***	-3%
Region	-0.00	0%	0.02**	3%	-0.03*	-3%	-0.00	0%
Constant	0.70***	126%	0.66***	91%	1.00***	110%	0.79***	110%
Total	**0.31*** **	**56%**	**0.38*** **	**53%**	**0.44*** **	**48%**	**0.37*** **	**51%**

** Note:* *(1) Central Highland region is omitted since there was no urban observation in this region in 1998.*
*(2) Decompositions are carried out with 500 bootstrap replications. P values for two-sides test: *** p<0.01, ** p<0.05, * p<0.1*
(3) The results are rounded to two digits after decimal.

Source: *VLSS 1998, own estimation.*

Table 16: Contributions to the urban-rural expenditure gap at mean and selected quantiles, 2002

VARIABLES	10th		50th		90th		Mean	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total predicted gap	**0.56*** **	**100%**	**0.73*** **	**100%**	**0.87*** **	**100%**	**0.72*** **	**100%**
Due to characteristics								
Sex	0.00	0%	0.00***	1%	0.01***	1%	0.01***	1%
Ethnicity	0.06***	10%	0.02***	3%	-0.03***	-3%	0.02***	3%
Marital status	-0.00***	0%	-0.00***	0%	0.00	0%	-0.00***	0%
Experience	-0.00**	0%	-0.00**	0%	-0.00*	0%	-0.00***	0%
School year	0.10***	18%	0.10***	14%	0.18***	21%	0.12***	17%
Employment & sectors	-0.01***	-2%	0.02***	3%	0.08***	9%	0.03***	4%
Industrial structure	0.05***	8%	0.09***	12%	0.07***	8%	0.07***	9%
Household size	0.01***	3%	0.01***	2%	0.01***	1%	0.01***	2%
Age structure	0.03***	5%	0.04***	5%	0.04***	4%	0.03***	5%
Remittance	0.00***	1%	0.02***	2%	0.06***	7%	0.03***	4%
Region	0.01***	2%	0.03***	4%	0.06***	7%	0.03***	5%
Total	**0.25*** **	**44%**	**0.33*** **	**45%**	**0.48*** **	**55%**	**0.34*** **	**48%**
Due to coefficients								
Sex	0.01	1%	-0.01**	-1%	-0.00	0%	-0.01*	-1%
Ethnicity	-0.13***	-23%	-0.11***	-15%	-0.01	-1%	-0.08***	-11%
Marital status	-0.00	0%	-0.01	-1%	-0.03**	-4%	-0.01*	-2%
Experience	-0.12*	-22%	-0.12**	-17%	-0.15	-17%	-0.13***	-18%
School year	0.09**	16%	0.27***	38%	0.15***	17%	0.19***	27%
Employment & sectors	-0.01	-1%	-0.02*	-3%	-0.01	-1%	-0.01	-1%
Industrial structure	-0.02***	-4%	0.00	0%	0.05***	6%	0.01**	1%
Household size	-0.08**	-15%	-0.02	-3%	-0.02	-3%	-0.03	-4%
Age structure	-0.06**	-10%	-0.02	-3%	0.04	5%	-0.01	-1%
Remittance	0.01***	1%	-0.00	0%	-0.07***	-8%	-0.02***	-3%
Region	0.00	-1%	0.01***	2%	-0.01	-1%	-0.00	0%
Constant	0.64***	114%	0.43***	59%	0.46***	52%	0.47***	65%
Total	**0.32*** **	**56%**	**0.40*** **	**55%**	**0.39*** **	**45%**	**0.38*** **	**52%**

*** Note:* *(1) Decompositions are carried out with 500 bootstrap replications. P values for two-sides test: *** p<0.01, ** p<0.05, * p<0.1*
(2) The results are rounded to two digits after decimal.

Source: *VLSS 2002, own estimation.*

Table 17: Contributions to the urban-rural expenditure gap at mean and selected quantiles, 2004

VARIABLES	10th		50th		90th		Mean	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total predicted gap	**0.58*** **	**100%**	**0.72*** **	**100%**	**0.80*** **	**100%**	**0.70*** **	**100%**
Due to characteristics								
Sex	0.00	1%	0.01***	2%	0.01	1%	0.00*	1%
Ethnicity	0.09***	15%	0.03***	4%	-0.02***	-2%	0.03***	4%
Marital status	-0.00	0%	-0.00**	0%	0.00	0%	-0.00	0%
Experience	-0.00	0%	-0.00	0%	-0.00	0%	-0.00	0%
School year	0.12***	21%	0.12***	16%	0.14***	17%	0.12***	18%
Employment & sectors	-0.01*	-2%	0.02***	2%	0.04***	6%	0.02***	3%
Industrial structure	0.05***	8%	0.08***	11%	0.03**	3%	0.06***	8%
Household size	0.01***	2%	0.01***	1%	0.00**	1%	0.01***	1%
Age structure	0.04***	7%	0.04***	5%	0.03***	3%	0.03***	5%
Remittance	0.00	0%	0.02***	3%	0.06***	8%	0.03***	4%
Region	0.03***	5%	0.06***	8%	0.09***	11%	0.05***	8%
Total	**0.34*** **	**58%**	**0.37*** **	**51%**	**0.38*** **	**48%**	**0.36*** **	**51%**
Due to coefficients								
Sex	-0.00	0%	-0.01	-1%	0.00	0%	-0.01	-1%
Ethnicity	-0.05	-9%	-0.11***	-15%	0.03	3%	-0.05**	-7%
Marital status	0.03	5%	-0.02	-3%	-0.06**	-8%	-0.01	-2%
Experience	-0.25	-44%	-0.09	-13%	-0.03	-4%	-0.13	-19%
School year	-0.10	-17%	0.15***	21%	0.26***	33%	0.13***	18%
Employment & sectors	0.04	7%	-0.01	-1%	-0.00	0%	0.02	3%
Industrial structure	-0.05***	-9%	-0.01	-2%	0.05***	7%	-0.01	-1%
Household size	0.11	19%	0.06	8%	0.05	6%	0.03	4%
Age structure	-0.10**	-18%	0.02	3%	0.13***	16%	0.00	0%
Remittance	0.02***	4%	0.01	1%	-0.00	0%	0.00	0%
Region	-0.02	-3%	0.02***	3%	-0.01	-1%	0.00	1%
Constant	0.61***	106%	0.35**	48%	0.01	2%	0.36***	51%
Total	**0.24*** **	**42%**	**0.35*** **	**49%**	**0.42*** **	**52%**	**0.34*** **	**49%**

*** Note:* *See Table 16.*

Source: *VLSS 2004, own estimation.*

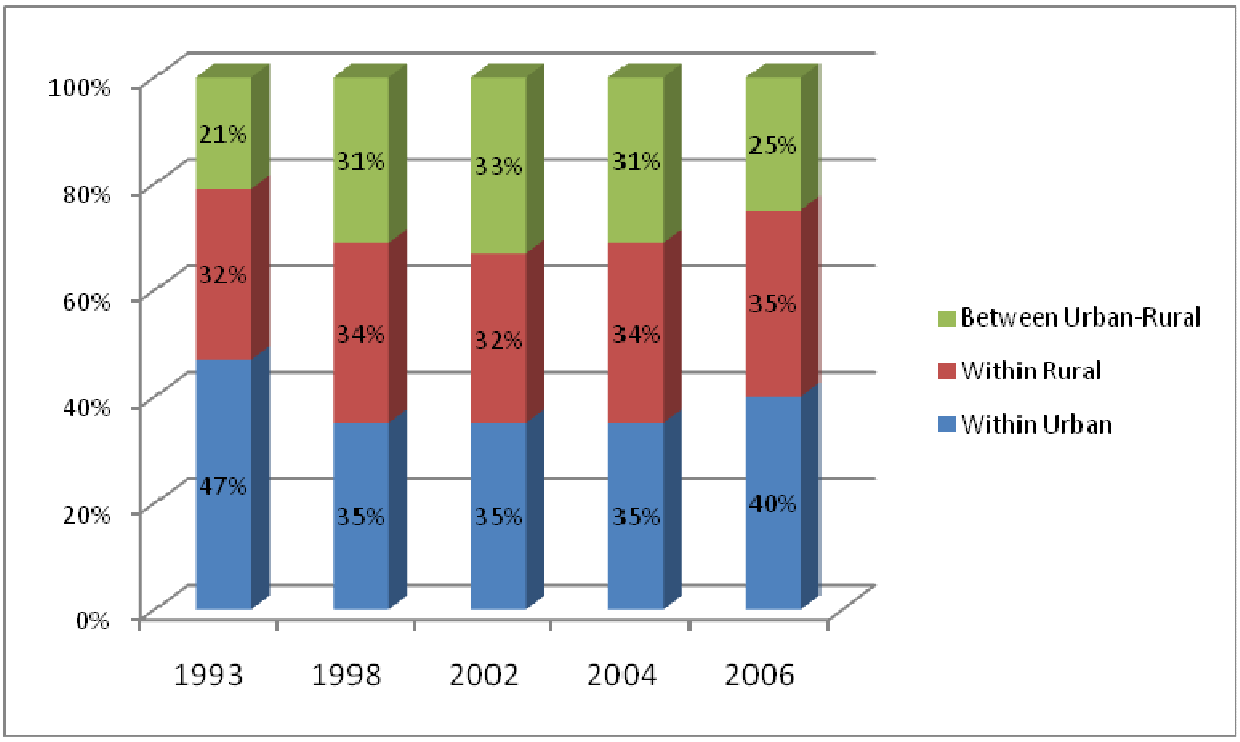
Table 18: Contributions to the urban-rural expenditure gap at mean and selected quantiles, 2006

VARIABLES	10th		50th		90th		Mean	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total predicted gap	**0.57*** **	**100%**	**0.65*** **	**100%**	**0.67*** **	**100%**	**0.64*** **	**100%**
Due to characteristics								
Sex	-0.01	-1%	0.00	1%	0.00	0%	-0.00	0%
Ethnicity	0.08***	14%	0.03***	5%	-0.02***	-3%	0.03***	5%
Marital status	-0.00	0%	-0.00***	-1%	0.00	0%	-0.00**	0%
Experience	0.00	0%	0.00**	0%	0.00	0%	0.00**	0%
School year	0.14***	25%	0.12***	18%	0.15***	22%	0.13***	21%
Employment & sectors	-0.01**	-2%	0.02***	2%	0.06***	10%	0.01***	2%
Industrial structure	0.05***	9%	0.08***	12%	0.03**	4%	0.02***	3%
Household size	0.02***	3%	0.01***	2%	0.01***	2%	0.02***	3%
Age structure	0.02***	4%	0.02***	4%	0.01***	2%	0.06***	9%
Remittance	0.01***	1%	0.02***	2%	0.04***	5%	0.02***	3%
Region	0.03***	5%	0.04***	6%	0.05***	8%	0.04***	7%
Total	**0.34*** **	**59%**	**0.34*** **	**52%**	**0.34*** **	**50%**	**0.33*** **	**52%**
Due to coefficients								
Sex	-0.00	0%	-0.00	-1%	0.01	1%	-0.00	0%
Ethnicity	-0.10*	-18%	-0.11***	-17%	-0.04	-6%	-0.09***	-14%
Marital status	0.02	4%	-0.00	-1%	-0.05**	-8%	-0.02	-3%
Experience	-0.24	-42%	-0.18*	-27%	-0.21	-32%	-0.26***	-41%
School year	0.27**	48%	0.22***	34%	0.22**	33%	0.23***	35%
Employment & sectors	-0.00	0%	-0.06***	-10%	-0.04	-5%	-0.03	-5%
Industrial structure	-0.02	-3%	0.02**	4%	0.05***	7%	0.03	4%
Household size	0.00	1%	-0.05	-7%	-0.07	-10%	-0.03	-5%
Age structure	-0.07*	-13%	0.04	6%	0.06	9%	0.02**	3%
Remittance	0.02***	4%	-0.00	0%	-0.01	-1%	0.00	0%
Region	-0.02	-3%	-0.00	0%	0.00	0%	-0.01	-1%
Constant	0.37	65%	0.44***	68%	0.41	61%	0.47***	74%
Total	**0.23*** **	**41%**	**0.31*** **	**48%**	**0.33*** **	**50%**	**0.31*** **	**48%**

*** Note:* *See Table 16.*

Source: *VLSS 2006, own estimation.*

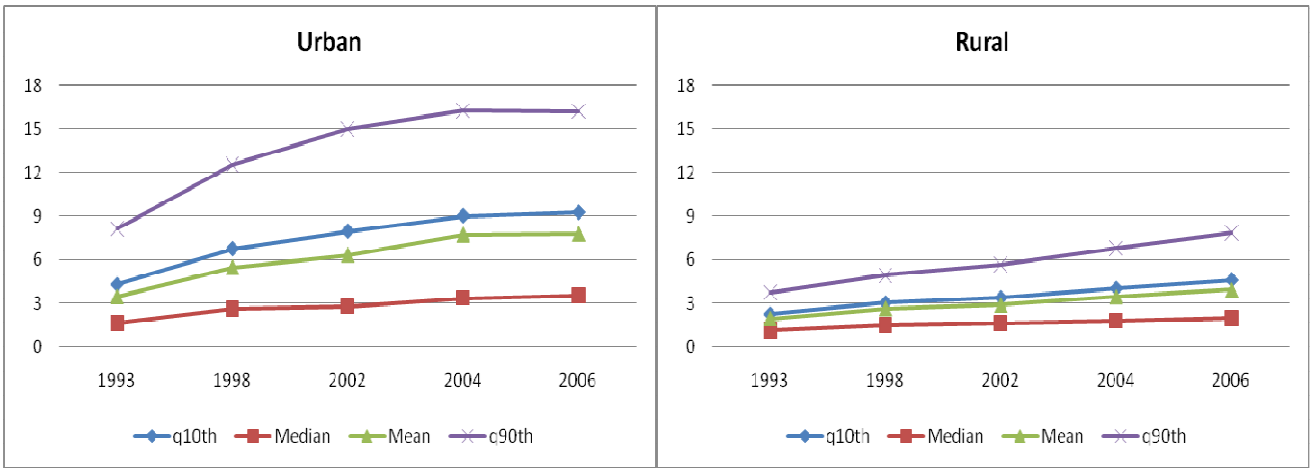
Figure 1: Theil decomposition by urban-rural, 1993-2006



**Note:* *The decomposition results are calculated using 100 bootstrap replications using Biewen (2002) method.*

Source: *VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculations.*

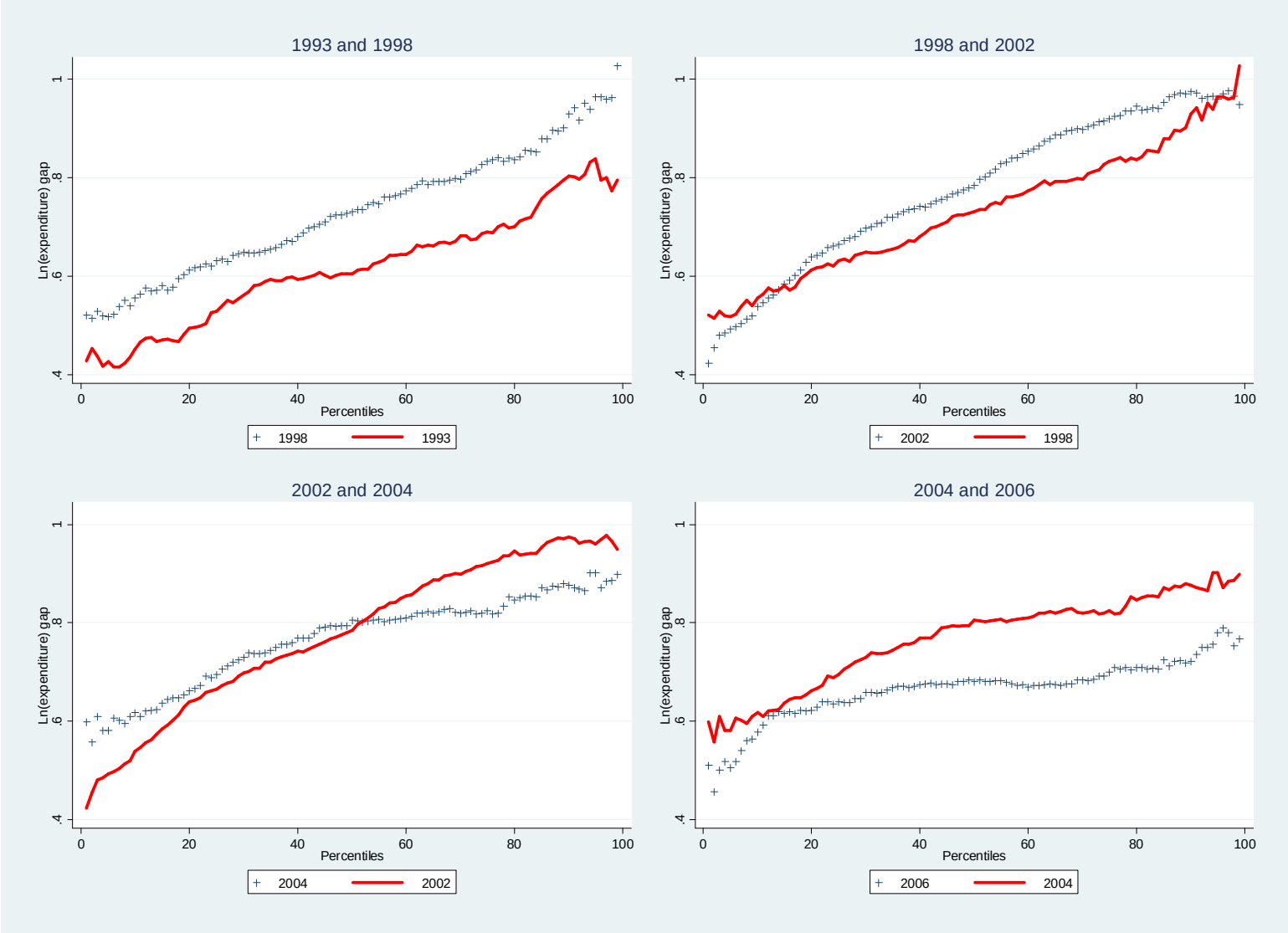
Figure 2: Urban-rural real per capita expenditure at mean & selected percentiles, 1993-2006



**Note:* *All values are adjusted by spatial and temporal price indexes, converted to January 2006 values*

Source: *VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculations.*

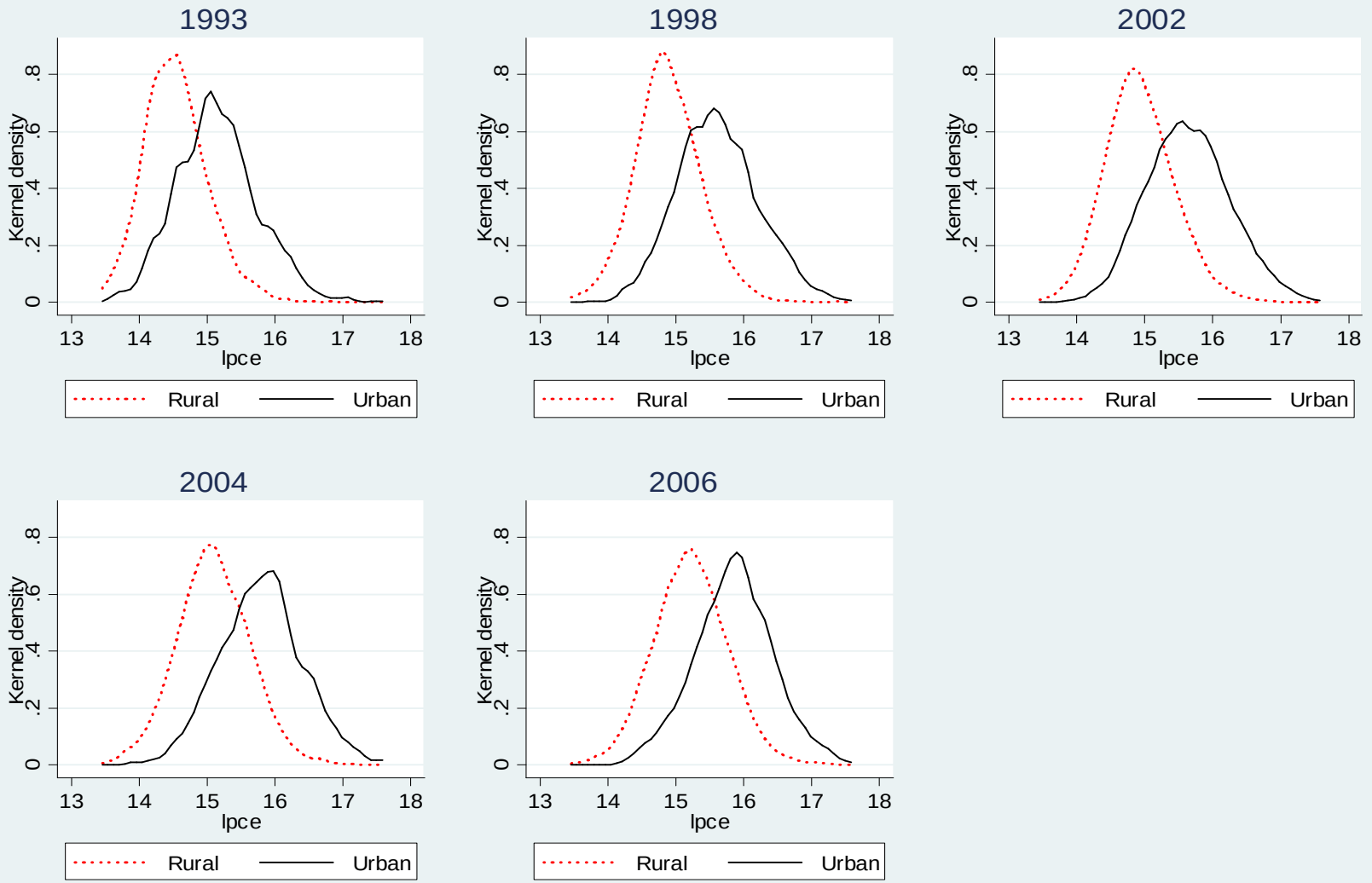
Figure 3: Ln(expenditure) gap between urban & rural across percentiles, 1993-2006



*Note: *All values are adjusted by spatial and temporal price indexes, converted to January 2006 values*

Source: VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculations.

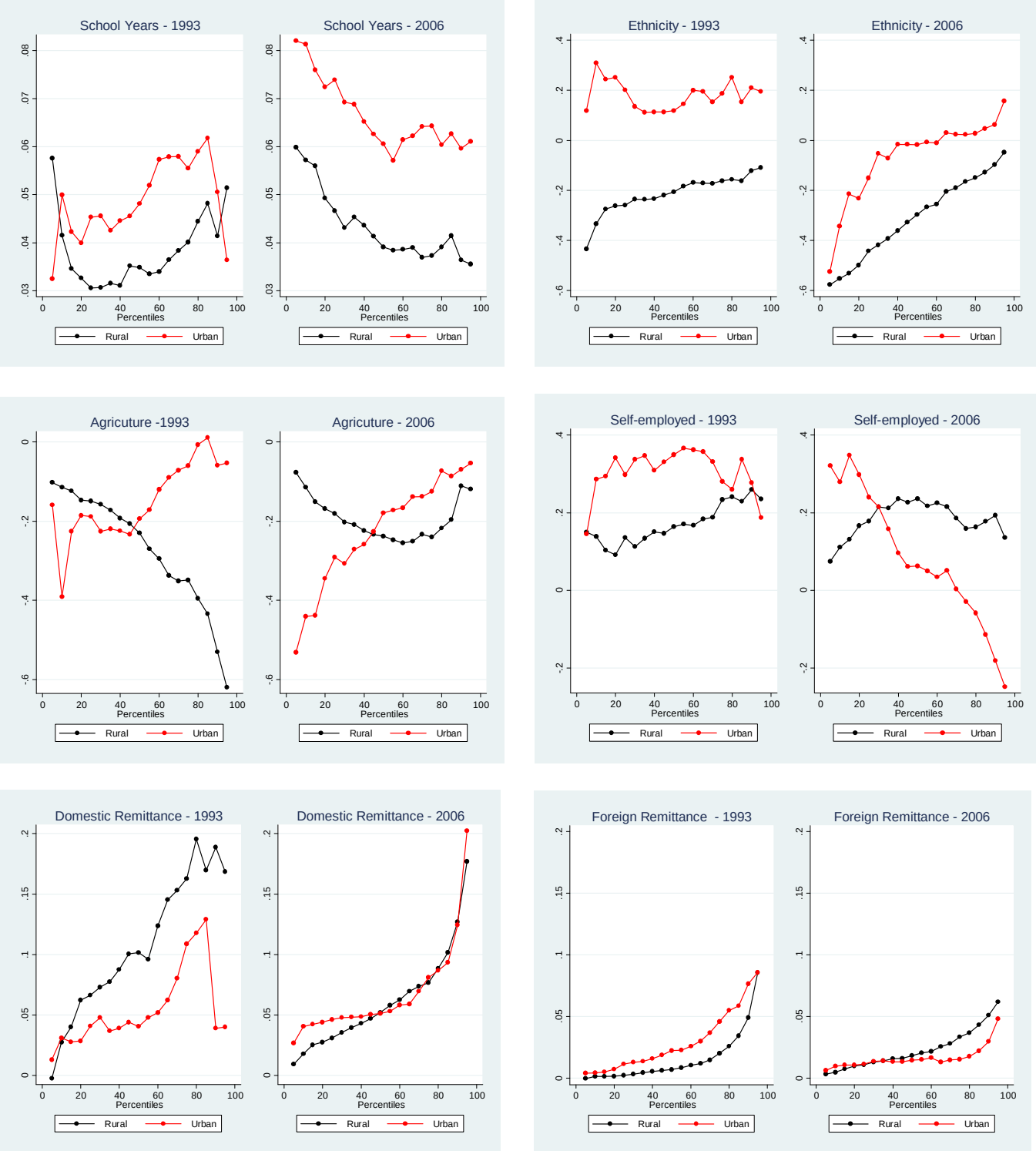
Figure 4: Distribution of expenditure by urban-rural, 1993-2006



*Note: *Gaussian kernel is estimated with a common bandwidth=0.08*

Source: VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculations

Figure 5: Selected unconditional quantile regression coefficients along the distribution by urban-rural, 1993 & 2006

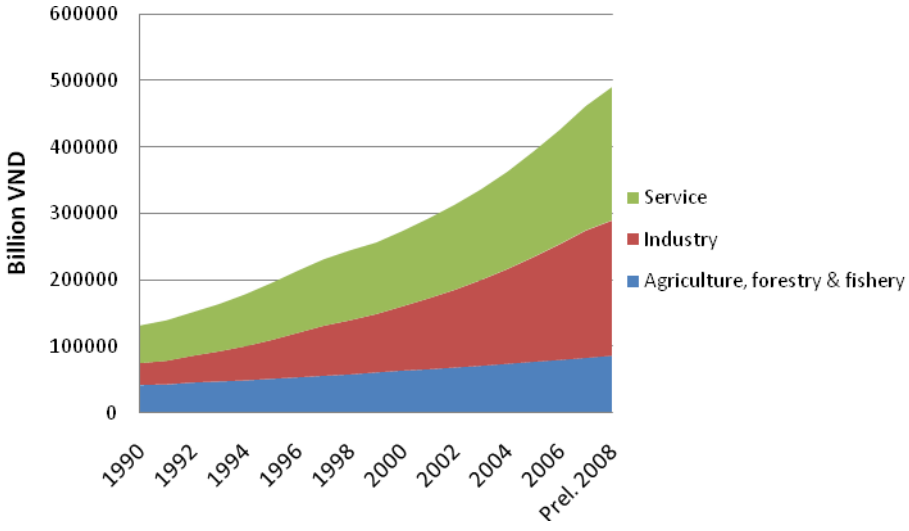


Note: *Majority is the base group for ethnicity.*
Household head working in service sector is the base group for industries.
Household head working in private sector is the base group for sectors of employment.

Source: *VLSS1993 & VHLSS 2006, own calculations.*

Appendix 1: GDP by economic sectors of Vietnam, 1990-2008

(at constant 1994 price, Unit: Billion VND)



Source: GSO Vietnam, 2009

Appendix 2: Price deflator conversion

Series	*CPI conversion (Jan 2006=1)*
Jan 1998	**0.71504**
Jan 2002	**0.78262**
Jan 2004	**0.83876**
Jan 2006	**1.00000**

Source: Own calculation from the monthly CPI indexes 1998-2006, GSO Vietnam.

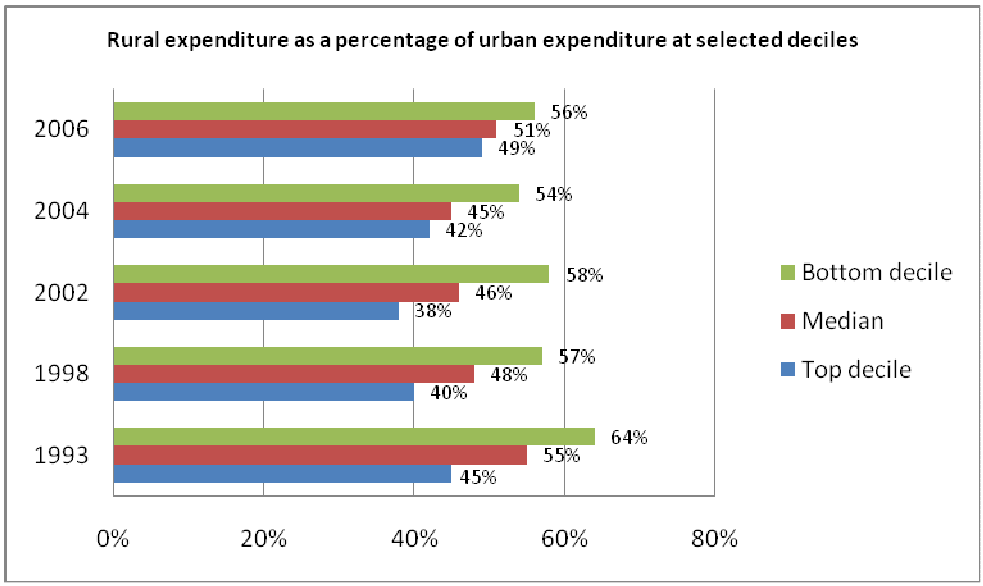
Appendix 3: Urban-rural expenditure ratio across various fields, 1993-2006

	Mean					Q10th					Q50th					Q90th				
	1993	1998	2002	2004	2006	1993	1998	2002	2004	2006	1993	1998	2002	2004	2006	1993	1998	2002	2004	2006
Region																				
Northern Uplands	1.51	1.89	2.34	2.30	2.19	1.39	2.02	2.11	1.86	1.98	1.52	1.94	2.37	2.37	2.50	1.51	1.72	2.28	2.25	1.98
Red River Delta	2.30	2.10	2.57	2.33	2.24	1.73	1.57	1.73	1.56	1.57	2.03	1.92	2.38	2.17	2.17	2.83	2.50	2.93	2.79	2.39
North Central Coast	1.57	2.05	2.09	1.96	2.19	1.68	1.50	1.71	2.00	2.31	1.58	1.81	2.14	2.05	2.14	1.54	2.54	2.15	1.73	2.45
South Central Coast	1.90	1.98	1.99	1.99	1.82	1.71	1.88	1.47	1.96	1.65	1.77	1.76	1.82	1.98	1.82	1.64	1.97	2.34	2.13	1.84
Central Highlands			2.05	1.90	1.62	0.00	0.00	1.35	1.88	1.39	0.00	0.00	1.94	1.97	1.78	0.00	0.00	2.41	1.81	1.62
South East	1.89	1.92	2.35	2.05	1.72	1.68	1.79	1.83	2.23	1.70	1.91	1.92	2.41	2.18	1.58	2.05	2.01	2.45	1.91	1.98
Mekong River Delta	1.63	1.88	1.59	1.61	1.42	1.25	1.22	1.35	1.24	1.26	1.51	1.77	1.55	1.48	1.43	1.83	2.10	1.73	1.75	1.51
Ethnicity																				
Majority (Kinh)	1.70	2.07	2.25	2.11	1.90	1.43	1.52	1.60	1.64	1.59	1.75	1.92	2.11	2.10	1.85	2.08	2.41	2.56	2.30	2.02
Minority	1.84	3.51	2.71	2.82	2.33	2.55	2.80	1.34	1.63	1.35	2.79	3.19	2.44	3.00	2.48	3.85	3.72	3.17	3.18	2.62
Sex of the household head																				
Male	1.89	2.15	2.29	2.17	1.93	1.55	1.74	1.76	1.98	1.90	1.77	1.98	2.30	2.21	1.89	2.09	2.36	2.37	2.24	1.93
Female	1.98	2.22	2.29	2.20	2.01	1.57	1.64	1.64	1.78	1.72	1.87	2.12	2.13	2.16	1.99	2.32	2.45	2.64	2.45	2.07
Employment status of the head																				
Working	1.96	2.24	2.34	2.25	2.02	1.59	1.75	1.67	1.85	1.77	1.83	2.09	2.16	2.24	1.98	2.18	2.56	2.67	2.39	2.05
Not working	2.85	1.80	2.15	1.83	1.70	1.25	1.54	1.99	1.93	2.48	2.43	1.52	2.32	1.89	1.86	3.36	1.63	2.08	2.18	1.68
Sector of the head																				
Private	1.83	2.00	2.08	2.22	2.14	1.64	1.50	1.34	1.58	1.41	1.71	1.79	1.89	2.13	1.85	1.98	2.42	2.44	2.84	2.52
SOE	1.74	1.90	2.22	2.23	2.07	2.17	1.70	1.71	1.51	2.31	1.60	1.69	2.09	1.89	2.05	1.57	2.03	2.71	2.48	2.04
Public	1.82	2.05	2.22	1.94	1.69	1.64	1.93	1.94	1.88	1.70	1.68	1.95	2.00	1.81	1.70	2.27	2.01	2.37	2.06	1.54
Self employed	1.89	2.17	2.19	2.15	1.87	1.52	1.68	1.67	1.85	1.73	1.77	2.01	2.05	2.12	1.85	2.10	2.44	2.46	2.21	1.86
Industry of the household head																				
Agriculture	1.59	1.66	1.62	1.52	1.54	1.36	1.51	1.37	1.51	1.23	1.55	1.59	1.49	1.42	1.51	1.70	1.73	1.73	1.54	1.59
Manufacturing	1.89	1.99	2.23	2.16	1.79	1.43	1.50	1.75	1.61	1.39	1.84	1.79	2.20	2.10	1.67	2.16	2.21	2.52	2.26	1.83
Service	1.62	1.85	2.10	2.07	1.86	1.37	1.41	1.58	1.68	1.63	1.56	1.78	2.04	2.02	1.79	1.76	2.05	2.23	2.25	1.97
Marital status of the head																				
Couple	1.86	2.10	2.16	2.23	1.95	1.44	1.63	1.54	1.77	1.63	1.73	1.97	2.02	2.23	1.84	2.08	2.35	2.45	2.33	2.06
Single	2.00	2.26	2.39	2.24	2.02	1.59	1.74	1.76	1.87	1.84	1.88	2.10	2.24	2.24	2.02	2.31	2.57	2.67	2.42	2.05
Education of the household head																				
Less than primary	1.70	1.94	2.16	1.90	1.64	1.52	1.74	1.57	1.70	1.53	1.65	1.84	2.00	1.87	1.65	1.70	2.06	2.40	1.88	1.55
Primary	1.84	2.06	1.92	1.95	1.68	1.51	1.62	1.55	1.61	1.48	1.81	1.99	1.81	1.97	1.68	1.93	2.43	2.08	2.11	1.68
Secondary	1.89	2.00	2.12	2.02	1.81	1.35	1.57	1.61	1.73	1.73	1.80	1.91	2.04	2.01	1.84	2.01	2.22	2.41	2.06	1.78
High school	2.28	2.30	2.34	2.03	1.83	1.88	2.06	1.99	1.81	1.87	2.18	2.30	2.25	2.11	1.79	2.68	2.22	2.58	2.02	1.90
College & higher	2.11	2.27	2.18	2.18	1.74	2.30	2.07	1.80	1.82	1.75	1.81	2.20	2.05	2.07	1.66	2.16	2.43	2.44	2.27	1.75

**Note:* *All values are adjusted by spatial, temporal price indexes and weighted by sample weights.*

Source: *VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculations.*

Appendix 4: Rural expenditure as a percentage of urban expenditure at selected deciles, 1993-2006



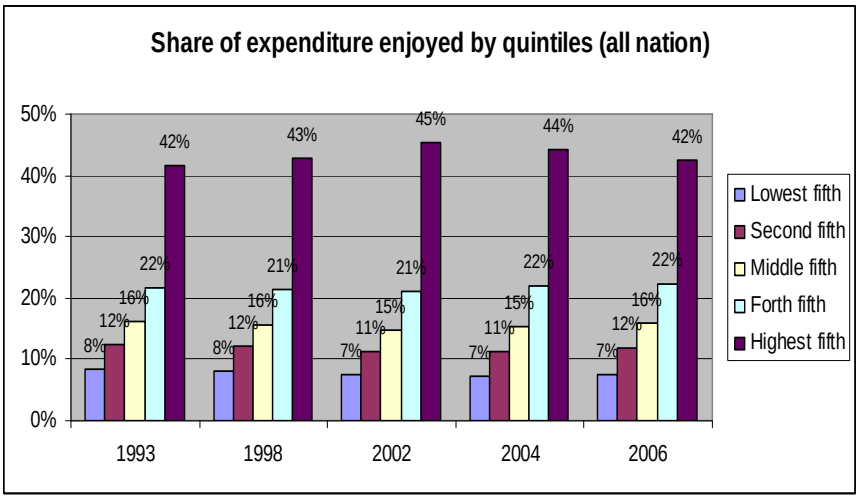
*Note: *All values are adjusted by spatial and temporal price indexes, converted to value of Jan 2006*

Source: VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculations.

Appendix 5: Share of expenditure enjoyed by quintiles (%), 1993-2006

Share of RPCEXP by quintiles of urban rural

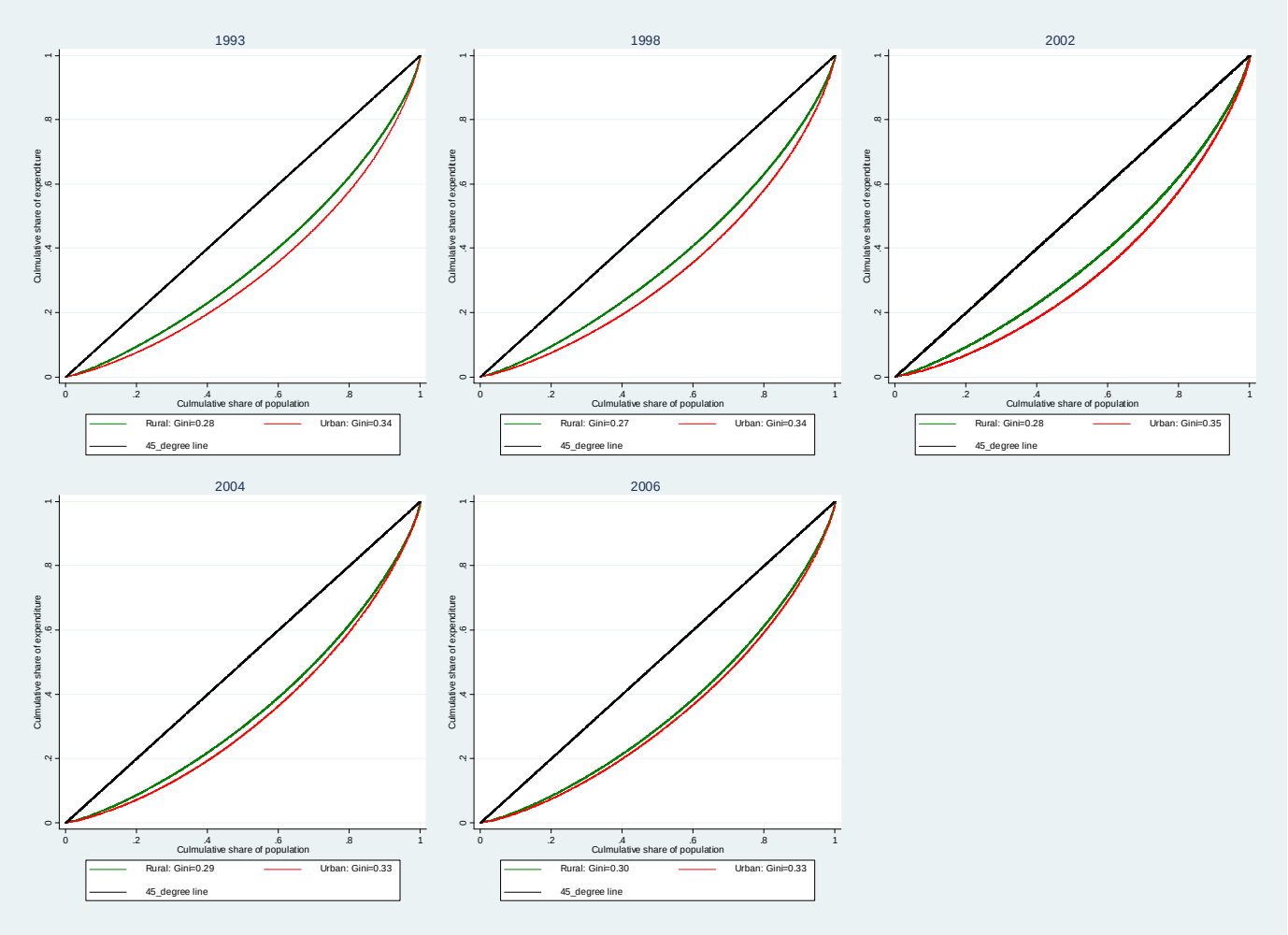
	Lowest fifth		*Second fifth*		*Middle*		*Forth fifth*		*Highest fifth*	
	Urban	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*
1993	*8.11*	*9.55*	*12.43*	*13.72*	*16.53*	*17.33*	*22.4*	*22.18*	*40.54*	*37.21*
1998	*7.72*	*9.73*	*12.12*	*14.05*	*16.44*	*17.53*	*22.56*	*22.32*	*41.16*	*36.37*
2002	*6.87*	*9.23*	*11.57*	*13.45*	*16.22*	*17.14*	*23.44*	*22.29*	*41.9*	*37.89*
2004	*7.33*	*8.77*	*12.32*	*13.3*	*17.14*	*17.25*	*23.04*	*22.69*	*40.16*	*37.99*
2006	*7.53*	*8.55*	*12.52*	*13.11*	*16.94*	*17.17*	*22.66*	*22.7*	*40.35*	*38.46*



*Notes: *Results are weighted by sample weight.*

Source: VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculations

Appendix 6: Lorenz curves by urban-rural, 1993-2006



**Note:* *All values are adjusted by spatial and temporal price indexes.*

Source: *VLSS 1993, VLSS1998, VHLSS2002, VHLSS2004 and VHLSS2006, own calculations.*

Appendix 7: Method of coefficient transformation -Yun (2005)

The Oaxaca decomposition will produce different results in the presence of categorical variables with different choices of the omitted groups. There are many proposed solutions to this problem. In this application we use the method of Yun (2005). A brief description of the method is as follows:

For example, we have a category with J dummy variables: $D_1, D_2, D_3..D_J$. The estimation result with one omitted variable D_1 is written as:

$$y = \hat{\alpha} + \sum_{j=2}^{J} D_j \hat{\beta}_j \qquad \text{where: } \hat{\beta}_1 = 0 \qquad (5)$$

Define: $\overline{\beta} = \dfrac{\sum_{j=1}^{J} \hat{\beta}_j}{J}$

The equation (5) is equivalent to the transformation: $y = \hat{\alpha} - \overline{\beta} + \sum_{j=2}^{J} D_j \hat{\beta}_j + \overline{\beta}$

Since $D_1, D_2, D_3..D_J$ are categorical variables so: $\sum_{j=1}^{J} D_j = 1$ and $\hat{\beta}_1 = 0$ (group 1 is omitted in regression)

$$y = \hat{\alpha} + \overline{\beta} + \sum_{j=2}^{J} D_j \hat{\beta}_j - \sum_{j=1}^{J} D_j \overline{\beta} = \hat{\alpha} + \overline{\beta} + \sum_{j=1}^{J} D_j (\hat{\beta}_j - \overline{\beta}) - \hat{\beta}_1 = \hat{\alpha} + \overline{\beta} + \sum_{j=1}^{J} D_j (\hat{\beta}_j - \overline{\beta})$$

Our model with the transformed coefficients is:

$$y = \alpha^{'} + \sum_{j=1}^{J} D_j \hat{\beta}_j^{'} \qquad (6)$$

Where: $\hat{\alpha}^{'} = \hat{\alpha} + \overline{\beta}$

$$\hat{\beta}_j^{'} = \hat{\beta}_j - \overline{\beta}$$

The model of transformed coefficients satisfy the restriction: $\sum_{j=1}^{J} \hat{\beta}_j^{'} = 0$.

The decomposition results with the new transformed coefficients are equivalent to the average estimates of returns and characteristics gap with varying reference groups.

Appendix 8: Data notes

In our estimation model, we use *ln(RPCEXP)* as dependent variable.

The missing values for ln(RPCEXP) in each years are given in footnote 11. Our sets of independent variables are characteristics of the household head, household demography, per capita remittances and regions.

Regarding our independent variables, there are no missing values for the following variables: *male, minority ethnic, married, household size, proportion of children, proportion of labourers, proportion of old people, remittance and regions*.

Years of schooling of the more educated household head are calculated as the maximum years of schooling of the head or head's spouse.

In 1993, we calculate years of schooling from the information on highest grade completed (s2q06), the period of time being trained (s2q11y & s2q11m) and the highest diploma or degree obtained (s2q08) from files: Scr008.dta, Scr009.dta. For those who report (s2q05=2: never attend school), we set years of schooling=0. There is no missing value for school year.

In 1998, years of schooling are calculated from the information on current schooling, previous schooling, the training time & the time repeated school. These are in s2aq04, s2aq06, s2aq11, s2aq12, s2aq15, s2aq16, s2aq19, s2aq20, s2bq01, s2bq07, s2bq11, s2cq03, s2cq05 and s2cq07, s2eq06, s2eq12y and s2eq12m of files: Scr02b.dta, Scr02c.dta and Scr02e.dta. However, we make an approximation of schooling years for those who have missing values but report the school they last attended, as follows:

replace schyear =5 if schyear=. & s2aq04=3 (if they attend lower secondary school, they must finish primary school-class 5, so their minimum school year is 5 even they have missing value of school year in previous calculation). replace schyear=9 if schyear=. & s2aq04=4 | s2aq04=5 (if they attend upper secondary school or vocational training, they must finish lower secondary school-class9, so their minimum school year is 9). replace schyear=12 if schyear==. & s2aq04==6 ((if they attend university, they must finish upper secondary school-class12, so their minimum school year is 12).

By doing so, there are no missing values for schooling years.

For 2002, 2004: years of schooling is calculated from the grade finished (m2c1), the highest degree obtained (m2c3) in files: muc2.dta, and m1_2_3a.dta, respectively. There is no missing value on school year.

For 2006: the calculation is the same as in 2002 & 2004. Years of schooling are calculated from the grade finished (m2ac1) and the highest degree obtained (m2ac3a) in file muc2a.dta. There is no missing value on school year.

Variables reflecting the household head's *employment status, sectors* and *industry* of working are identified as categorical variables. First we divide the sample into groups of head old, head not working and head working. Among those who are working, we identify their sectors and industry of working. By doing so, we avoid the problem of missing values of industry & sector of the head because most missing values of household head's sectors & industry of working occurs in the group of old household head.