

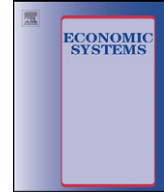


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Changes in urban inequality in Vietnam: 1992–1998

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ABSTRACT

The urban inequality in Vietnam has declined in the 1990s. Using the regression-based decomposition methods [Fields, G.S., 2003. Accounting for income inequality and its change: a new method, with application to the distribution of earnings in the United States. In: Polachek, S.W. (Ed.), *Worker Well Being and Public Policy, Research in Labor Economics*, vol. 22. Elsevier, New Jersey, pp. 1–38; Yun, M.S., 2006. Earnings inequality in U.S., 1969–99: comparing inequality using earnings equations. *Review of Income and Wealth* 52, 127–144.], we identify the contributing factors and distinguish between changes of the inequality due to changing returns to characteristics and distribution of these characteristics. We find that the changing returns to regional factors and to physical assets are behind the decline in urban inequality. However, the decline hides adverse changes from human capital and unemployment. Policies to encourage regional labor market integration, improve the quality of and equal access to education are important to make the equal urban distribution sustainable in the new millennium.

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1. Introduction

This paper examines urban inequality in Vietnam. The labor market reforms, amid the state-led development policy in the 1990s, have affected wage inequality, the reallocation of labor and unemployment. These changes are more likely to be felt in urban areas where wage employment is concentrated. Specifically, this paper applies the regression-based techniques of Fields (2003) and Yun (2006) to two rounds of the Vietnam Living Standards Survey (VLSS): 1992–1993 and 1997–1998.

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Their methods allow us to decompose: (1) the consumption inequality measures, such as the Gini coefficient and the log variance, into different contributing factors; (2) changes in measures of consumption inequality into the components due to differences in endowment and differences in returns.

Vietnam experienced one of the world's highest growth rates between 1993 and 1998. According to the *World Bank* (2002), Vietnam's average annual growth rate was 7.9% in the 1990s, yet it experienced little increase in inequality. For Vietnam as a whole, the Gini coefficient only increased from 0.33 to 0.35 during this period (Glewwe et al., 2000). It is an impressive outcome, especially as the country has achieved significant poverty reduction in the same period.¹ Further disaggregation of the data reveals that the general increase in inequality has not been accompanied by an increase in inequality in urban areas. The static urban inequality is particularly intriguing given that Vietnam has undergone dramatic labor market reforms in the 1990s (wage reform and the introduction of the contract system are discussed later). This is quite different to the Chinese experience. Knight and Song (2003) show that in China urban wage inequality rose after labor market reforms were introduced in the early 1980s. Zhao (2001) shows that the overall inequality in urban China rose from 0.16 at the onset of market reforms in the late 1970s to 0.23 in 1988.

While there has been a flurry of studies on Vietnam's inequality in the 1990s, few use regression-based decomposition methods. Most decompose inequality indices into within- and between-group differences (Glewwe et al., 2000; Dollar and Glewwe, 1998). Others decompose inequality by income source (Gallup, 2004; Adger, 1999). Few, except Heltberg (2002) and Nguyen et al. (2007), use regression-based decomposition methods. The regression-based approach could be used to assess directly, for example, to what extent unemployment brought about by Vietnam's market reforms contributed to total consumption inequality, after controlling for the household characteristics such as education and age structure that could potentially affect welfare. It is important to distinguish between changes attributed to changing returns to various household endowments from the changing distribution of these endowments brought about by the market reforms. Differences in the extent to which changes in inequality are due to the returns or are due to changes in the distribution would have very different policy implications. Therefore, a regression-based approach could fill the void left by standard inequality decompositions.

This paper is different to other studies using regression-based approaches in two ways. First, few study urban inequality. Heltberg (2002) examines overall inequality in Vietnam. The administrative and economic divide between urban and rural Vietnam has made it important to analyze the two sectors separately. Nguyen et al. (2007) focus on the urban-rural differences, rather than inequality within urban areas. Urban dwellers face different economic opportunities and barriers. For instance, changes in labor allocation triggered by the restructuring of the state sector would impact on urbanites more than on rural households simply because of the higher concentration of wage employment in the urban areas. The decomposition allows us to examine, for example, the relationship between unemployment and changes in inequality during Vietnam's market reforms. This has not been studied much. Second, where it is possible and appropriate to do so, this paper compares the urban inequality of Vietnam with that of China and other transition economies. The urban inequality outcomes of Vietnam and China are vastly different, despite the fact that they embarked on similar labor market reforms in the 1990s. Third, instead of relying on a single approach as other studies do, this paper uses two regression-based decomposition methods developed by Fields (2003) and Yun (2006) to uncover and document various forces that are responsible for shaping urban inequality in Vietnam. In addition to providing the all-important robust check, Yun's technique addresses some limitations of Fields' approach.

The next section sketches Vietnam's transition, with the focus on the impact of market reforms on urban areas. Then the data and the inequality changes over time will be described. This is followed by a discussion of the methodology. The next section analyzes the results. Finally, concluding remarks and policy implications are presented.

¹ The percentage of the population living below the total poverty line (food poverty line) has fallen from 25 percent to 9 percent (8 to 2 percent) in the urban areas (*World Bank*, 2000).

2. Background

The introduction in 1986 of the market reform *Doi Moi* unleashed substantial structural change in Vietnam. Since then, it has been undergoing a gradual economic transformation from a centrally planned to a market-oriented economy. Similar to other transition economies, Vietnam's transition was characterized by a demise of state sector enterprises at the onset of *Doi Moi* (O'Conner, 1996). Its total number was halved from 12,000 in the first few years of *Doi Moi*. Also, its output (and state employment) declined sharply in 1989 and 1990. But unlike other transition economies, Vietnam has adhered to a policy of state-led industrial development later in the post-reform period (Arkadie and Mallon, 2003). State credit allocations continue to favor state enterprises. Foreign investors typically enter into partnership with state firms, and they encounter relatively fewer difficulties than do private firms.² For the period 1995–1996 state–foreign joint ventures could account for almost one-third of state-owned enterprises (SOE) output, and that share is rising. The expansion of SOEs³ could have helped to cushion Vietnam from widespread unemployment. In 1998, for instance, the urban unemployment rate in Vietnam was 5.4% compared to 7.7% in 1993 (Bales, 2000).⁴ Note that the VLSS data show a large decline in unemployment between the two survey periods. Admittedly these unemployment rates derived from the VLSSs may understate the rates.⁵ Nonetheless, relative to other transition economies, it is apparent that the unemployment rate in Vietnam did not rise rapidly. All the Central and Eastern European countries (except the Czech Republic) experienced double-digit unemployment rates by 1993 (Svejnar, 1996).⁶ The extent to which the changes in the unemployment rate affect urban inequality is an empirical matter that this paper attempts to address.

The increasing state employment share is a result of the injection of foreign investment and management, as well as a greater exposure to competition due to trade liberalization. If state workers are subjected to a relatively more egalitarian distribution of wage income compared to their private counterparts, the expansion of the state sector could have an equalizing effect. However, it does not come without a cost.

The expansion of the state sector is at the expense of the development of the private sector. A multi-sector economy was endorsed after the commencement of *Doi Moi*, with the private sector co-existing with the state sector. Despite their rapid growth in numbers,⁷ private firms continue to face many barriers. These include restrictions on land-use rights as equity in joint ventures and, more importantly, limited credit access. With priority still being given to the state sector, the private sector has remained relatively small.⁸ At one extreme, the private sector is comprised of many small enterprises characterized by low-paid jobs. At the other, it consists of large foreign-investment firms that presumably offer better-paid jobs to skilled workers in particular.

Another important feature of Vietnam's transition is labor market reform: the introduction of a labor contract system, and a wage reform in 1993. These reforms have given employers more autonomy in hiring and firing, as well as more freedom to set wages. Even SOEs have engaged in

² Foreign investment law that allows foreign direct investment was passed in December 1987.

³ The SOE employment share relative to wage employment grew almost 1% from 1993 to 1998 (Gallup, 2004).

⁴ The unemployment rate rose on the back of the Asian financial crisis in the late 1990s but eased again in the early 2000s. According to the Vietnam General Statistics Office, the urban unemployment rate is about 5.78%.

⁵ The data available in the VLSS92 and VLSS98 only allow Bales (2000) to define an unemployed person as anyone who has not worked in the past 7 days, but who is looking for work, or has not sought work because they are waiting to start a new job, or who think no work is available or do not know how to find work. The official definition of unemployment includes those working less than 8 h and seeking additional work, but the VLSS does not contain information on whether a person seeks an additional job.

⁶ For instance, Bulgaria's unemployment rate rises from 1.5% in 1990 to peak at 16.4% in 1993 before it eases to 12.5% in 1996. Hungary, Poland and the Slovak Republic all experience a double-digit unemployment rate between 1990 and 1996 (USAID, 2001).

⁷ From 1987 to 1994 the number of private industrial enterprises grew tenfold, and in the latter year there were almost half a million household enterprises. Employment in the (formal) private sector more than doubled between 1996 and 2000.

⁸ Between 1995 and 1998 the state sector accounted for 46% of Vietnam's total industrial growth. The domestic private sector only contributed 22%.

substantial restructuring to link workers' productivity more closely to their profit.⁹ Relative to SOEs, private firms are expected to allow larger wage differentials, as human capital is more likely to be rewarded in the manner that it is in market economies. However, the relatively small private sector in Vietnam may limit the potential impact of rising inequality. If employers gave greater rewards to highly skilled and more experienced workers, the wage differentials by education and by experience could have increased and inequality could have risen overall.

China also introduced similar labor market reforms in the early 1990s. By the mid-1990s, the rates of return to different skill levels widened (Knight and Song, 2001). Unlike Vietnam, urban inequality in China has increased sharply (Gustafsson and Li, 2001; Khan and Riskin, 2001).¹⁰

In contrast to some Eastern European countries,¹¹ Vietnam did not experience a sharp increase in the level of government transfers to individuals. In addition, coverage of social transfers is generally not pro-poor (Prescott, 1997). It is unlikely that the decline in urban inequality in Vietnam is a result of its social transfer policy.¹²

3. Data description

The data are drawn from the Vietnam Living Standards Surveys (VLSS). The surveys are conducted by the World Bank and the General Statistical Office (GSO) of Vietnam. The first round of the survey was carried out during 1992–1993 (VLSS93); the second round was done during 1997–1998 (VLSS98). Ideally it is useful to extend the period of study beyond the 1990s now that the Vietnam Household Living Standards Surveys are available.¹³ Unfortunately, the new surveys do not track the same households surveyed in the two rounds of the VLSS. As this paper mainly concerns changes as opposed to levels of inequality, keeping initial conditions constant is very important. We only use households surveyed in both the VLSS93 and the VLSS98 to ensure that the two samples are as comparable as possible. By focusing on panel households, initial conditions are held constant.¹⁴ Following Glewwe and Nguyen (2002), we excluded from our sample households where the head has changed and the new head was not part of the first wave of the survey. Also, we only include households that supplied expenditure data and data on physical assets such as tools and machinery, livestock and business assets. Inclusion of the latter reduces the full sample from 726 to 528 households for the first wave and from 536 to 366 for the second one. Careful interpretation of the results is necessary given these relatively small sample sizes.

Like all longitudinal surveys, over time the VLSSs lose part of their samples due to survey attrition. The retention rate of the VLSS98 is 89.6%. The attrition bias of the Vietnamese data is found to be sufficiently small and unlikely to be a serious concern (Glewwe and Nguyen, 2002; Falaris, 2003).¹⁵

The VLSSs cover only registered households. 'Unregistered' households such as rural migrants are excluded. To the extent that the households of rural migrants are at the low end of the consumption

⁹ The wage market reform specified the 'basic wage' to be paid to all state employees based on a multiple of the minimum wage rate. In practice, individual enterprises have been able to establish their own enterprise-specific matrices to calculate a different 'basic wage' for different skills. Also, enterprises have gained the right to set a 'base wage' that is calculated on an enterprise-specific minimum wage rate – higher than the economy wide one – as determined by productivity within the enterprise. In addition, a performance-related bonus from the net profit of SOEs can be distributed to workers. As a result, skill-based wage differentials could widen. For more details on the labor market reforms see McCarty (1999) and O'Conner (1996).

¹⁰ Gustafsson and Li (2001) report that the income-based Gini coefficient for urban households rose from 22.8 in 1988 to 27.6 in 1995. Khan and Riskin (2001) report an even bigger increase from 23.3 to 33.2 for the same period.

¹¹ Keane and Prasad (2001) suggest that social transfer is the key contributing factor for Poland's small increase in inequality in the post-reform era.

¹² According to one estimate, only 10–20% of workers and the elderly enrolled in any formal social security program in Vietnam. This is in sharp contrast to 70–80% in Eastern European countries (Chu and Gupta, 1998).

¹³ It is useful in the future for getting longer range comparisons using the VHLSS02 and VHLSS06 to examine the changes in urban inequality. The VHLSS06 may be released in late 2007.

¹⁴ However, to the extent that these households are not a representative sample it may impose some limitations on generalising from the conclusions of this paper to urban Vietnam as a whole.

¹⁵ Of the 4800 households interviewed in the VLSS93, all but 96 (2.0%) were to be re-surveyed for the VLSS98. These 96 households are excluded because they are from the Red River Delta which was not an over-sampled region. Of the rest of the selected households, only 4300 households were reinterviewed as 404 (8.4%) of the original households have left the village.

distribution, the urban inequality may be under-estimated. In addition, if the rich have under-reported their consumption relative to the poor, urban inequality would also be under-stated.

Note that this paper uses per capita real expenditures as a measure of inequality instead of per capita household real income. Income itself may not be a good measure. Evaluation of income is often problematic. Seasonality is an issue for income; in particular agricultural income could be extremely volatile. Provided that households could smooth their consumption, then consumption expenditure would be a better measure. For practical purposes, it is harder to get an accurate measure of income than expenditure especially since most households in Vietnam are self-employed.¹⁶ The per capita consumption expenditure variable used in the paper was constructed from the VLSS data by a team of GSO and World Bank staff. The variable includes food and non-food expenditures, the value of food produced and consumed at home, and the estimated rental values of durable goods and the household's dwelling.¹⁷

All inequality measures suggest that urban inequality has fallen for our sample during the period studied (Table 1). For instance, inequality has fallen by about 4% measured by the Gini coefficient and around 13% by the log variance. The Theil coefficient has declined by 7% to 0.172.¹⁸

During the transition, inequality changes at quite a different pace within different groups. For instance, within the six regions, households in the Northern Upland experience by far the largest fall in inequality as indicated by the Gini coefficient. Conversely, households in the Red Delta and the Mekong Delta register a rise in inequality. Inequality also changes at different rates at different points in the consumption distribution. Decreases in inequality between the top and bottom seem to be a prominent feature of Vietnam's transition, as indicated by the 90/10 ratio (decile ratio). Almost all households post a fall in the decile ratio irrespective of their characteristics.^{19,20}

4. Determinants of household expenditures

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

$$\ln Y_i = \alpha + \beta_j x_{ij} + \gamma_j z_{ji} + \phi_j H_{ji} + \varepsilon_i$$

where $\ln Y_i$ is the logarithm of per capita household expenditure²¹ in a thousand dong for household i and x_{ji} is a vector of exogenous factors that could be broadly divided into three categories. The first set of the explanatory variables captures the possible impact of economic restructuring on household expenditures. These variables include the proportion of unemployed members in the household and the proportion of household members in different ownerships of employment relative to the number of working persons (government sector, SOEs, private sector or self-employed). Transition also involves substantial shifts in the employment composition by occupation. Changes in labor allocation

¹⁶ Glewwe and Dang (2005) suggest that if per capita expenditures are measured with error, comparisons of the same people over time could potentially exaggerate the extent of the increase in per capita expenditures of the poor relative to the non-poor. However, using the VLSS92 and VLSS98, they find that even after removing bias due to measurement error, the poor are still doing much better than the rich. Hence, measurement error, if present, is not likely to seriously bias the overall picture of urban inequality.

¹⁷ During the 1990s, Vietnam experienced booms in house prices. The per capita expenditure used to measure urban inequality has included imputed use values for housing that are derived from the value of the dwelling for all household owners as well as renters. More detailed information on the surveys and the constructed variables is given in World Bank (2001).

¹⁸ Further disaggregation of total expenditures into food and non-food expenditures has seen that inequality measures based on the former have declined and those based on the latter have risen. Thus, the improved equality of food expenditures has offset the rising disparities of non-food expenditures, driving the decline in the overall urban inequality observed.

¹⁹ A rise in the decile ratio is only found for households in the Southeast and households where all members have clerical and trade-related occupations.

²⁰ The picture of equality between the 25th percentile and the 50th percentile is fairly mixed. A narrowing of inequality differentials of some groups is accompanied by a slight shift towards equality for others. Inequality differentials between the median of the distribution (the 75th percentile) and the 50th percentile is also mixed, but the number of groups that experience a rise in inequality is fewer, compared to that occurring between the 25th and 50th percentile. Thus, the expenditure structure is more compressed (more equal) above the mean than below it.

²¹ Expenditure per capita of surveyed households is readjusted by price indexes for regions and months. Expenditure per capita in 1993 is inflated to 1998 prices.

Table 1
Changes inequality in Vietnam 1992–1998, various measures

	1992–1993	1997–1998
Gini	0.3306	0.3165
Theil coefficient	0.1853	0.1716
Variance of logs	0.3546	0.3077
Atkinson		
$\varepsilon = 0.5$	0.0875	0.0802
$\varepsilon = 1.0$	0.1656	0.1501
$\varepsilon = 2.0$	0.3147	0.2989

Note: All inequality measures are significant at a 5% level of significance.

across occupations could affect inequality. We therefore include the proportion of household members with different occupations relative to the number of working persons in the household (professionals, office and trade-related occupations, production and labor-related jobs, agricultural-related occupations).²²

Demographic characteristics of the households may also have a close link to the distribution of income among its members. Aside from the education of household members and the classic example of gender pay differences, age structure could also matter. This is because personal expenditures may vary in terms of size and composition according to the stage of the lifecycle. The second group includes factors that capture household characteristics. It includes human capital factors (proportion of household members with: primary education, lower secondary education, upper secondary education, vocational education, tertiary education, and below primary education excluded),²³ age and its squared term for the household head, and gender of the household head. It also includes variables to describe the age structure of the household (proportion of members under 6 years of age, between 6 and 10, between 11 and 15, between 16 and 65, and older than 65 years of age).²⁴

The last group includes variables for six regional dummies for the urban sample (Northern Uplands, Red River Delta, North Central, Central Coast, Southeast)^{25,26} and an ethnic dummy. Regional disparities are fairly pronounced in Vietnam. Part of it could be a result of the historical division of the economic systems of the North and South regimes before Unification in 1976. Differences in ecological endowment, for instance the fertile coastal area versus the highlands, could affect relative distribution. If transition involves bringing down regional barriers and results in less segregated regional markets, it could have an equalizing impact on the distribution. Ethnic differences (the Kinh group comprises about 84% of all Vietnamese) are another dimension that could shape urban inequality, though its impact is not likely to be large given that most ethnic minorities reside in rural rather than urban areas.

Theories often suggest that physical assets are important in explaining inequality. Credit constraints combined with risk means that it is more difficult for poorer (low-endowed) households to accumulate assets to participate in certain productive activities than it is for richer households. This could lead to increasing inequality over time. Interestingly, preliminary data analysis shows that the

²² The transition also drives substantial shifts in the industry composition of employment. Between 1985 and 1990, the employment share of agriculture actually rose slightly. The sector re-absorbs laid-off state sector workers and demobilised soldiers. As well, its income prospects have improved. As in most transition and developing countries, the Vietnamese employment share of agricultural industry has dropped substantially in later years; that of trade and services has risen. Variables to capture employment in different industries are not included, as they are highly correlated with occupational variables.

²³ They are calculated relative to the total number of working household members.

²⁴ They are calculated relative to the household size.

²⁵ Central Highland is excluded as it belongs to the rural areas.

²⁶ Instead of examining more detailed differences among major urban centres, we follow the literature to control for wider regional differences. These regional dichotomies seem to capture the most important variations and are widely used in studies on Vietnam (Glewwe et al., 2000; Glewwe and Dang, 2005; Heltberg, 2002). Further, there is usually an association between the regional dichotomies and urban centres. For example, the Southeast often associates with Ho Chi Minh City, the Red River Delta with major cities such as Hanoi and Haiphong.

Table 2
Sample statistics

	1992–1993		1997–1998	
	Mean	S.D.	Mean	S.D.
Ln per capita household expenditures	7.85	0.60	8.11	0.55
Age of household head	47.19	13.11	49.68	12.34
Age square of household head	2398.77	1300.73	2620.28	1289.21
Gender of household head	0.57	0.49	0.59	0.49
Proportion of member with				
Primary education	0.27	0.32	0.25	0.31
Lower secondary	0.25	0.30	0.19	0.27
Upper	0.10	0.20	0.10	0.21
Vocational and technical training	0.14	0.26	0.18	0.29
Tertiary education	0.04	0.15	0.06	0.19
Majority	0.90	0.31	0.92	0.27
Red River Delta	0.16	0.37	0.12	0.33
North Central	0.09	0.29	0.11	0.31
Central Coast	0.15	0.36	0.17	0.38
Southeast	0.20	0.40	0.18	0.39
Mekong	0.23	0.42	0.23	0.42
Proportion of members <6	0.09	0.12	0.05	0.10
Proportion of members 6–10	0.12	0.15	0.11	0.15
Proportion of members 11–15	0.10	0.15	0.11	0.14
Proportion of members over 65	0.05	0.11	0.07	0.15
Government sector	0.10	0.23	0.13	0.30
SOEs	0.07	0.19	0.16	0.34
Private sector	0.10	0.22	0.31	0.42
Self-employed	0.73	0.32	0.40	0.45
Proportion of unemployed members	0.03	0.09	0.02	0.06
Proportion of members with				
Professional occupations	0.08	0.23	0.09	0.23
Clerical and trade occupations	0.35	0.39	0.27	0.33
Production-related occupations	0.28	0.36	0.35	0.36
Agricultural-related occupations	0.29	0.41	0.29	0.29
Ln per capita business assets	7.21	2.12	7.38	1.98

per capita asset differentials between the top and the bottom 10% of most groups are narrowing.²⁷ To investigate the impact of physical assets on inequality, we include per capita physical assets in the vector of explanatory variables capturing household characteristics.

Table 2 presents the distribution of these three groups of explanatory variables between 1993 and 1998. The average age of heads of household rose from 47 to 49.3 over the period studied. The members of the households, of course, grew older. The urban residents enjoyed a higher level of expenditure over time. More households are headed by males rather than by females in 1998 relative to the case in 1993. Over half of the households surveyed have members with lower secondary education or below in 1993; over time, more have the upper secondary qualification. Also, fewer households contain children of 10 years old or younger, but more have elderly members. The data in 1993 indicate that the majority of households report a high ratio of self-employed members. This could reflect the under-development of the wage sector. Nonetheless, the share of the self-employed had declined in 1998. The data reveal a shift from self-employment to wage employment over time. Within the wage sector, more households have members involved in the private sector; their share has increased more than threefold in 5 years, and this is accompanied by an increasing share in the state sector. Recall that the Vietnamese government adopts a state-led industrial development policy. The expansion of the state sector could reflect the working of that policy. The occupational structure has shifted away from agricultural-related occupations towards professional and production-related

²⁷ Red Delta and the Southeast region are the only exceptions.

Table 3
Per capita expenditures estimation

	1992–1993		1997–1998	
	Coef.	t-values	Coef.	t-values
Age of household head	–0.0095	–0.90	–0.0074	–0.47
Age square of household head	0.00004	0.35	0.0001	0.47
Gender of household head	–0.0190	–0.51	–0.0408	–0.88
Proportion of member with				
Primary education	0.2229	2.92***	0.2174	2.28**
Lower secondary	0.1970	2.48**	0.4728	4.56***
Upper secondary	0.3564	3.27***	0.5880	4.51***
Vocational and technical training	0.4912	5.06***	0.5452	4.89***
Tertiary education	0.2944	1.96**	0.5899	3.91***
Majority	–0.1175	–1.76**	–0.0285	–0.32
Red River Delta	0.4826	7.31***	0.1008	1.12
North Central	0.0039	0.05	0.1003	1.15
Central Coast	0.2316	3.41***	0.0881	1.07
Southeast	0.5802	8.06***	0.4663	5.16***
Mekong	0.4831	7.78***	0.3397	4.36***
Proportion of members aged				
Less than 6	–1.3590	–7.51***	–1.3956	–5.26***
6–10	–0.6881	–4.95***	–0.7297	–4.17***
11–15	–0.4974	–3.54***	–0.7827	–4.29***
Over 65	–0.0741	–0.42	–0.0371	–0.19
Proportion of members in				
Government sector	–0.0505	–0.49	0.1851	1.59
SOEs	0.04594	0.43	0.1531	1.46
Private sector	–0.3402	–3.58***	0.0540	0.59
Proportion of unemployed members	–0.5316	–2.49**	–0.7992	–2.08**
Proportion of members with:				
Professional occupations	0.3702	3.30***	0.1589	1.05
Clerical and trade		3.22***		0.53
Occupations	0.1857		0.0536	
Production-related		0.37***		–0.64
Occupations	0.0244		–0.0593	
Ln per capita business assets	0.0940	9.87***	0.0676	5.33***
Constant	7.2910	24.30***	7.4819	16.87***
No. of observations		528		366
F-statistics		23.43		11.80
R ²		0.5488		0.4750
Adjusted R ²		0.5253		0.4347

Notes: (1) The dependent variable is log of per capita expenditures in thousand dong. (2) Proportions of household members who are self-employed, work in agricultural industry are the omitted categories for sectoral and industry dummies respectively. Northern Uplands is the omitted categories for region dummies. Central Highlands is not included as it is mainly rural. (3) Coefficients with *, ** and *** are significant at 10 per cent, 5% and 1% levels, respectively.

ones. Per capita physical assets of households, which include the value of all farm and non-farm business assets, have increased by 7% in logarithm during the period studied. Perhaps this reflects an increase in new economic opportunities in the post-reform era.

The estimated results indicate that education of household members is positively related to household expenditures (Table 3). Over time, households with more tertiary, vocational, and upper secondary graduates show a significantly greater increase in their consumption level than others. While such an increase could raise inequality, one has to be careful not to draw a conclusion that high rates of return to education are 'bad'. High rates of return to education could provide incentives for parents to invest in their children's education. This could have positive implications for the economy in the longer term. Higher levels of physical assets are strongly associated with higher levels of household consumption. A comparison of the coefficients suggests that the returns have declined over

time. How do we reconcile the fact that returns to education have increased but returns to physical assets have fallen? How do human capital and physical capital affect inequality? As time goes by, enterprises have to supply products that are more sophisticated. Investment in physical assets alone is not sufficient to bring increased returns. Instead, skill and the knowledge of how to get more out of new technology could be a more binding constraint. The need for human capital could be intensified if there is inequality of access to education and diverse school quality. Better-educated households are more likely to receive advantage from the extra capital investment. Imperfect labor markets could also make hiring workers endowed with suitable skills difficult. The deterioration of the quality of education has been a widespread concern in Vietnam (ADB, 2000). Under such circumstances, educational inequalities and imperfect labor markets could interact to create inequalities in the returns to investments in physical capital and human capital (van de Walle, 2003).

The age structure of children in households matters. Per capita expenditures negatively relate to the proportion of children in the household (adults at prime age are the omitted category). The negative relationship is stronger in 1998 than in 1993. The proportion of elderly people in the household is not found to affect per capita expenditure.

The sector in which household members are employed also has a bearing on consumption. More private sector employees (relative to the self-employed) in a household are associated with a reduction in per capita expenditure in 1993. The private sector in the early 1990s mainly comprised low-pay jobs in small household enterprises. They may not have generated high living standards.²⁸ No significant negative difference is found in 1998. Further, returns to occupations could also change during periods of economic reform. In Vietnam, consumption increases with the share of professionals or clerical and trade-related workers in the household (relative to agricultural work) in 1993. However, such an effect is not found in 1998.

Unemployment reduces per capita expenditures. Households with more unemployed members are worse off in both survey periods, and the reduction in expenditure per capita became larger over time. This could have had the effect of increasing inequality. It is interesting to see to what extent unemployment contributes to the level as well as the changes in inequality. And how does Vietnam compare to other transitional economies such as China in this regard?

All regional dummies, except North Central, are important in explaining the expenditure variation in the early reform period. In 1998, household expenditure per capita is only higher for households in the Mekong Delta and the Southeast (relative to the Northern Upland), but the per capita expenditure differentials have become smaller over time. The diminishing differentials from regional factors could reflect that economic opportunities brought by the market reform have spread out. Data examination provides some support for this proposition. For instance, the VLSS93 reveals that Ho Chi Minh City of the Southeast is the only province that has foreign-shared firms present. In the subsequent survey they are found to locate in other provinces as well. The narrowing regional gap could have an equalizing impact.

5. Factors contributing to income inequality: level and changes

The methods of Yun (2006) and Fields (2003) have overcome the limitations of non-regression-based approaches (Cowell and Jenkins, 1995) and of the regression-based simulation techniques (Bourguignon et al., 2001), namely the relative contributions of factors are not independent of the order in which the factors are introduced into the analysis. Therefore, it is possible to consider the relative impacts of a larger number of variables on changes in inequality. Further, their methods are not as data demanding as the non-regression-based methods, as a sufficiently large sample is required to partition the population into different cells to derive a meaningful within-group inequality measure. The inequality measure is defined as follows

$$I_t = I_t(Y_{1t}, Y_{2t}, \dots, Y_{Mt}), \quad i = 1, \dots, M \quad \text{and} \quad t = 1, 2$$

²⁸ A closer examination of the data reveals that, in 1993, most private sector employees worked for small household enterprises; few worked for joint ventures and foreign-owned companies. The average hourly wage rate was the lowest in small household enterprises relative to other sectors.

where Y_{it} is the expenditure of a household i at time t . Suppose it is generated from

$$Y_1 = \beta_{01} + \sum_{k=1}^{K-1} \beta_{k1} x_{k1} + e_1 \quad \text{and} \quad Y_2 = \beta_{02} + \sum_{k=1}^{K-1} \beta_{k2} x_{k2} + e_2$$

where Y_{mt} is log expenditures per capita, x , β and e are, respectively, vectors of independent variables, coefficients and of the residuals. Based on the consumption functions, Fields (2003) derives a ‘relative factor inequality weight’ to show the contributions of a factor k (s_k) to inequality as

$$p_k(Y) = \frac{s_k(Y)}{R^2(Y)} \quad \text{where} \quad s_k(Y) = \frac{\text{cov}(\beta_k x_k, Y)}{\sigma^2(Y)} = \frac{\beta_k \sigma_{x_k} \text{cov}(x_k, Y)}{\sigma_Y}$$

and σ_{x_k} , σ_Y denote the standard deviation of x_k and Y , respectively. Since the constant does not contribute to the inequality, it is excluded from the analysis. Hence, the factors contributing to inequality consist of residuals (the K th factor) and $K - 1$ independent variables in the consumption function. The share of the contribution of a factor k to the change in overall inequality measured by any inequality index²⁹ $I(\cdot)$ over time can be written as

$$\Pi_k = \frac{s_{k1} I_1 - s_{k2} I_2}{I_1 - I_2}$$

Therefore Fields’ decomposition can identify the share of contributing factors to both the level and changes of income inequality. Yun (2006) develops a method that not only decomposes the contribution of a factor k to the change of inequality in the spirit of Fields’ approach, but it also decomposes the contributions into coefficients and characteristics effects by using an auxiliary equation as suggested by Juhn et al. (1993). Given the consumption equation at time 1, we replace the coefficients of the consumption function with those of time 2, while keeping the household characteristics and residuals unchanged. The auxiliary equation can be written as follows³⁰:

$$Y^* = \beta_{02} + \sum_{k=1}^{K-1} \beta_{k2} x_{k1} + e_1$$

Let the variance of log expenditures per capita be the inequality measure. By computing the variance for log expenditures per capita Y_1 , Y_2 and Y^* , we could decompose the change in inequality over time as follows:

$$\begin{aligned} \sigma_{Y_1}^2 - \sigma_{Y_2}^2 &= (\sigma_{Y_1}^2 - \sigma_{Y_2}^2) + (\sigma_{Y^*}^2 - \sigma_{Y_2}^2) \\ &= \sum_{k=1}^{K-1} (s_{kY_1} \sigma_{Y_1}^2 - s_{kY^*} \sigma_{Y^*}^2) + \sum_{k=1}^{K-1} (s_{kY^*} \sigma_{Y^*}^2 - s_{kY_2} \sigma_{Y_2}^2) + (s_{KY_1} \sigma_{Y_1}^2 - s_{KY^*} \sigma_{Y^*}^2) \\ &= \sum_{k=1}^K (\beta_{k1} \sigma_{x_{k1}}^2 \rho_{x_{k1}, Y_1} \sigma_{Y_1} - \beta_{k2} \sigma_{x_{k1}}^2 \rho_{x_{k1}, Y^*} \sigma_{Y^*}) \\ &\quad + \sum_{k=1}^K (\beta_{k2} \sigma_{x_{k1}}^2 \rho_{x_{k1}, Y^*} \sigma_{Y^*} - \beta_{k2} \sigma_{x_{k2}}^2 \rho_{x_{k2}, Y_2} \sigma_{Y_2}) + (\sigma_{e_1}^2 - \sigma_{e_2}^2) \end{aligned}$$

where the K th factor is the residual with $\beta_{K1} = \beta_{K2} = 1$.

The first term represents the coefficient effect. It captures the effect due to changes in skill prices for observables at fixed x ’s. The second term represents the effects of the changing distribution in endowment, namely the changing education and experience distributions, at fixed prices. It is the characteristic effect. The last term is the residual effect that captures the effects of changes in the distribution of residuals (distribution of unobservables, which are the changes in unmeasured prices and quantities).

²⁹ Fields (2003) argues that the relative contribution of a factor to overall inequality is invariant to the choice of inequality measure under the six axioms proposed by Shorrocks (1982).

³⁰ The auxiliary distribution could alternatively be defined as $W^* = \beta_{0A} + \sum_{k=1}^{K-1} \beta_{kA} x_{kB} + e_B$.

Table 4

Fields' decomposition of the level of wage inequality, 1992–1998 (%)

	1992–1993		1997–1998	
	Sj	P(Sj)	Sj	P(Sj)
Restructuring	7.995	14.570	7.441	15.665
Ownership	2.071	3.773	3.569	7.514
Occupation	5.635	10.268	2.589	5.450
Unemployment	0.290	0.528	1.283	2.701
Household characteristics	29.750	54.214	32.742	68.932
Gender of the head	−0.091	−0.166	0.091	0.191
Age of the head	0.047	0.086	−0.082	−0.173
Education of members	4.605	8.392	13.265	27.926
Age structure of members	8.070	14.707	10.363	21.818
Business assets	17.118	31.195	9.105	19.170
Regional effect	16.291	29.688	7.290	15.348
Majority	0.839	1.529	0.026	0.054
Total				
Explained	54.875	100	52.501	100
Residual	45.125		47.499	

First we use Fields' method to analyze the contributing factors to the level of inequality in 1993 and 1998 (Table 4). The first column of each year indicates the extent to which different factors contribute to the inequality. The second column measures the proportion of the inequality explained by various factors with the total explained proportion, R^2 , as 100%. Note that Fields' (2003) method decomposes only the inequality explained by the independent variables in an income generation equation, which is the percentage represented by the R^2 . The remainder of the inequality is attributed to the residuals. The adjusted R^2 statistics are 0.53 and 0.43 for the expenditure regressions for the first and second survey periods respectively. Given that the two equations explain almost half of the household expenditure per capita, we could be reasonably confident of the decomposition results.

Table 4 suggests that household characteristics are the most significant factor for the level of inequality at each survey period. Its importance has increased. In 1998, it accounts for almost 70% of the explained part—an increase of about 16% from that in 1993. Of 54% due to household characteristics, 'per capita physical assets' is the single most important factor. It contributes 17% to the inequality level (31% of the explained portion). Five years later, it only accounts for 19% of the R^2 . This is in contrast to the study of Heltberg (2002). By pooling urban and rural areas, he finds that physical assets matter little in explaining the changing inequality in Vietnam as a whole.

Age structure and the education of household members are the other two key factors in 1993. Together they account for 13% of the household characteristics effect (23% of the explained portion). Their impact increases with time. Education in particular has gained ground registering an increase of almost 20% (measured in terms of the R^2) to become the most important factor contributing to the impact of household characteristics. Glewwe et al. (2000) also report the importance of education in explaining households' consumption.

Regional variables are important predictors of a household's per capita expenditure throughout the period studied. Nonetheless the regional effect lost some ground in 1998 relative to 1993. This is similar to the Chinese experience up to 1988. From the beginning of reform in 1978 until 1988, Khan and Riskin (1998) find a strong convergence of provincial average incomes in China.³¹ The extent to which different regional markets are more integrated in the post-reform era via the mobility of labor (restrictions on migration have been relaxed) for example could reduce the regional differences. In addition, the Vietnamese government has stepped up its effort in putting resources into poorer

³¹ After 1988, household income in different regions has diverged substantially in China. Khan and Riskin (1998) attribute this to the coast development policy.

Table 5

Decomposition of the contributing variables to the changes of inequality measures (Fields' decomposition)

% Change 1993–1998	Gini		Var of log		Gini _{1992–1998} Π (Gini)	Var of log _{1992–1998} Π (Var of log)
	0.33064, Sj (92)	0.31646, Sj(98)	0.35455, Sj (92)	0.30774, Sj(98)		
Restructuring	2.64359	2.35473	2.83475	2.28982	20.36607	11.63974
Ownership	0.68465	1.12943	0.73416	1.09830	–31.3591	–7.7779
Occupation	1.86310	0.81925	1.99783	0.79667	73.59677	25.65669
Unemployment	0.09582	0.40604	0.10275	0.39485	–21.8716	–6.23905
Household Characteristics	9.83667	10.3616	10.548	10.0760	–37.0114	10.08165
Gender of the head	–0.03013	0.02866	–0.0323	0.02787	–4.14532	–1.2855
Age of the head	0.01555	–0.02599	0.01668	–0.02528	2.929524	0.896242
Education of the head	1.52270	4.19777	1.63281	4.08206	–188.606	–52.3157
Household composition	2.66844	3.27963	2.86140	3.18923	–43.0921	–7.00233
Business assets	5.66009	2.88153	6.06939	2.80210	195.9024	69.78896
Regional effect	5.38658	2.30705	5.77610	2.24346	217.1216	75.45673
Majority	0.27734	0.00818	0.29740	0.00796	18.97739	6.182526
Residual	14.9204	16.6146	15.9993	16.1567	–119.454	–3.36065
Total	33.0646	31.6462	35.4556	30.7739	100	100

regions, thus easing regional inequality. The regional effect and household characteristics together explain 40% of the level of inequality (83% of the total explained portion) in each survey period.

In 1993 about 15% of the R^2 is from economic restructuring. In Vietnam the share of economic restructuring's contribution to the explained component has increased by only 1% over a 5-year period. The increase is mainly due to ownership. The expansion of the state sector, in which wage reform has also established a closer link between productivity and wages, along with the growth of the private sector could to some extent explain the rise in inequality associated with shifts in ownership. Unemployment has increased its contribution to the economic restructuring effect over time; but the overall impact remains small. This result echoes that in China in the late 1980s. Back in 1988 China also hardly experienced any effect on household expenditure from unemployment (Meng, 2004). Unemployment became important in explaining China's inequality over the period 1995 to 1999; this was after more than twenty years of market reform.³² In Vietnam, the occupational distribution accounts for 10% of the explained proportion in 1993. By 1998, its importance declined by half.

The analysis indicates that household characteristics, in particular education and age structure, increased their importance in explaining the level of inequality in Vietnam. The impact of economic restructuring on inequality is at most very modest. Nonetheless its contribution to widening inequality is larger than that in China. For China it only accounts for 3% of the increase in inequality in 1988 after a decade of market reforms (Meng, 2004).

Table 5 indicates the changes in inequality as measured by the Gini coefficient and the log variance, as well as exploring to what extent different contributing factors impact on the decline in urban inequality. The following discussion focuses on the changes in the Gini coefficient, as most qualitative results do not differ much from those using the log variance as a measure of inequality. A positive (negative) number indicates that changes in the variable in question contribute to a decrease (increase) in urban inequality.

The regional effect is the main contributor to the narrowing urban consumption gap between rich and poor (217%).³³ It is then followed by the effect of economic restructuring (20%). However, the narrowing of Vietnamese urban inequality hides significant adverse changes in inequality that stemmed from the residual effect (119%) and the household characteristic effect (37%).

³² During this period economic restructuring is the main contributing factor to the increase in the Gini coefficient. It accounts for 88%, of which unemployment accounts for 51%.

³³ The regional effect is statistically significant at a 5% level. Bootstrapping is used to generate the standard error.

Table 6

Yun's decomposition of changes in wage inequality, 1992–1998

	Log-Variance 93 – Log-Variance 98 = 0.046817			
	Char. effect	%	Coeff. effect	%
Restructuring	–0.00904	–19.30971	0.01449	30.94945
Ownership	–0.0059	–12.59593	0.002256	4.8180293
Occupation	–0.00207	–4.418681	0.01408	30.075372
Unemployment	–0.00107	–2.295098	–0.00185	–3.943955
Household characteristics	–0.02071	–44.24582	0.02543	54.32747
Gender of the head	–0.00055	–1.17187	–0.00005	–0.11364
Age of the head	–0.00012	–0.25094	0.00054	1.14718
Education of members	–0.02018	–43.10845	–0.00431	–9.20727
Household composition	–0.00285	–6.09243	–0.00043	–0.90990
Business assets	0.002986	6.3778714	0.029687	63.411091
Regional effect	–0.00016	–0.34283	0.03549	75.79956
Majority	0.00026	0.56056	0.00263	5.62197
Total	–0.02965	–63.33779	0.07804	166.69844
Explained (Char. + Coeff.)			0.04839	103.3606
Residual			–0.00157	–3.35667
Total			0.046817	100

A closer examination of the effect of economic restructuring reveals that ownership (31%) and unemployment (22%) have the effect of increasing inequality in the distribution of household consumption,³⁴ but their effect is completely offset by the equalizing impact of occupation (74%).³⁵ The household characteristic effect has a fairly strong adverse impact on inequality. Aside from the age of the household head and physical assets, all other variables work to widen the urban inequality. In particular, education has a profound impact on increasing inequality (188%). Nonetheless it has been completely offset by the favorable changes from physical assets (196%) and results in a narrowing of urban inequality. Education is not found to be statistically significant but the effect from physical assets is significant at the 5% level. We know from the expenditure regression that returns to education have risen, but returns to physical assets have declined. However, these changes could also reflect changes in levels. To what extent are the changes in physical assets due to changes in returns and to what extent are they due to changes in endowment? We use Yun's decomposition method to identify the sources.

Table 6 decomposes the fall in urban inequality (roughly 13%) between 1992 and 1998 measured by the variance of log expenditures per capita. Korea is also one of the few countries that experienced a fall in inequality in the late 1980s and early 1990s. Kang and Yun (2003) find that the residual effect is largely responsible for the leveling-off in inequality in Korea. However, it is not the case for Vietnam.

Clearly, the coefficients effect plays a major role in explaining changes in urban inequality. It explains virtually all of the leveling of urban inequality (166%). Conversely, the characteristics effect and the changes in the dispersion of the residuals between the two survey periods work to increase the inequality (63 and 3%, respectively). However, their impact is relatively insignificant given the profound equalizing impact of the coefficient effect, and the result is a decline in inequality.³⁶ Vietnam shares the experience of Costa Rica during 1980–1992. During this period the coefficients effect is also

³⁴ After a decade of reforms, Meng (2004) finds that economic restructuring contributes about 38% of the increased Gini coefficient between 1988 and 1995. Of 38%, unemployment accounts for about 9%.

³⁵ Further exploration finds that the effects of ownership and occupation are not statistically significant but that of unemployment is significant at the 10 percent level.

³⁶ The results of bootstrapping suggest that the coefficient effect is statistically significant at the 5% level but the characteristic effect and the residual are not statistically significant.

found to be important in explaining the leveling of inequality in Costa Rica (Grindling and Trejos, 2005). However, in the case of Costa Rica a fall in returns to education is the underlying culprit.

Of the 166% contribution from the coefficients effect, the regional effect accounts for 76%—almost half of the total coefficient effect.³⁷ Recall that Fields' decomposition indicates that the regional effect accounts for most of the declining inequality as measured by the Gini coefficient. Yun's method reveals further that the changing returns to regional factors, rather than changing distribution of their endowment, drive the equalizing effect on inequality. Market reforms have increased trade activities and labor mobility thus contributing to the narrowing of returns. The impact of household characteristics, especially physical assets, is the next most important factor responsible for 54% of the overall coefficients effect.³⁸ Yun's approach identifies the changing (falling) returns to assets rather than the changing level of endowments as the driving force behind the leveling effect of physical assets on inequality. Of the 166% contributed by the coefficients effect, the economic restructuring effect only accounts for 31%. Closer examination of the equalizing economic restructuring effect reveals that occupational structure contributes most and offsets the impact of the unemployment effect on increasing inequality.³⁹

The characteristics effect contributes 63% to the widening of inequality. Of the 63%, household characteristics are responsible for most of the adverse changes (44%) followed by the effect of economic restructuring (20%). Yun's decomposition reveals that while increases in returns to education are reflected in a negative coefficient effect, changes in the education stock alone account for most of the adverse change from the household structure effect (43%).⁴⁰ Recall that Table 2 reveals that the distribution of education within households has shifted towards a higher education stock, such as one represented by vocational and tertiary education.

6. Conclusions

The VLSS data show a small fall in urban inequality between 1992 and 1998. This is an impressive outcome, especially since it is accompanied by a significant poverty reduction. This paper analyzes some of the sources of urban inequality and its changes during a period of extraordinary growth. Specifically, we use the regression-based techniques of Fields and Yun to decompose the Gini coefficient and the variance of log. The decomposition results show that the drop is mainly driven by a narrowing in regional disparity and a fall in the returns to physical assets. Yet Vietnam cannot afford to be complacent, because the decline masks significant adverse changes in the distribution of human capital and in unemployment.

Market reforms in Vietnam, specifically labor market reforms, have clearly rewarded those with higher education. This paper illustrates that the returns to education in urban areas have increased significantly during the 1990s, particularly for higher levels of education. Within urban areas, households that have increased their stock of higher levels of education have reaped more gains relative to those with less human capital stock. This has resulted in the widening of inequality. While changes in the education stock and its returns are found to increase inequality, one should be careful not to jump to the conclusion that these changes are necessarily 'bad'.

Vietnam also underwent massive economic restructuring in the 1990s. Reallocation of labor generated unemployment. While unemployment has an effect of raising inequality in distribution, its overall effect is limited. It is worth noting that the contribution of unemployment to widening inequality is larger than that in China after a decade of reforms. The expansion of the state sector under the state-led development strategy has resulted in a very different model in explaining urban inequality in Vietnam compared with that in China. Yet one should be careful not to conclude that such a development strategy is necessarily 'good'. Recall that it is not without a cost.

³⁷ The coefficient effect contributed by regional factors is found at a 5% level of significance.

³⁸ A 5% level of significance is found for the coefficient effect attributed to physical assets.

³⁹ The contributions of occupation and unemployment to the coefficient effect are found to be statistically significant at the 10% level.

⁴⁰ It is only significant at the 10% level.

All of the adverse effects that stemmed from human capital and unemployment are offset by the narrowing disparity among households in different regions with different levels of physical assets. Decomposition results have further pointed to the equalization in returns to location, rather than in endowment level, as the source of the equalizing regional effect. Market reforms have unleashed trade activities and factor mobility. The Vietnamese government has also directed resources to poorer regions. These factors could help to equalize returns to location. The decline in returns to, rather than the level of, physical assets is also identified as being behind the equalizing effect of assets on distribution. Returns to assets do not merely depend on the level of investment but also on the knowledge of how to get more out of new technology. Poor quality of education or unequal access to education could be a more binding constraint over time, thus resulting in lower returns to physical assets. This could reconcile the puzzle of rising returns to education but falling returns to assets.

One worrying aspect for Vietnam is that inequality continues to rise, even when the country is not growing as fast as it did in the 1990s. Between 2000 and 2002 Vietnam's average growth rate was 6%. The inequality measured by the Gini coefficient rose to 0.37 in 2002 (Weeks et al., 2004). In order to make the more equal urban distribution experienced by Vietnam during the 1990s sustainable, it is important to pursue policies that could further encourage regional labor market integration by improving infrastructure and enhancing urban labor market flexibility, as well as productivity. More importantly, our results clearly highlight the complementary relationship between physical assets and education. Not only is education important through its intrinsic merit, but it also determines the extent to which households could benefit from their investment in physical capital. Policies that improve the quality of education as well as those intended to ensure more equal distribution of education in urban areas would have a significant impact. Specifically, the government may want to consider using private schools or semi-private schools as a lever to increase the choice of available schools and thus improve schooling outcomes by relaxing the restrictions on private schools.⁴¹ Our results further highlight the heterogeneous nature of urban households. Recognition of such heterogeneity is essential for any urban development policies.

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References

- Adger, W.N., 1999. Exploring income inequality in rural, coastal Viet Nam. *Journal of Development Studies* 35, 96–119.
- ADB, 2000. Vietnam 2010: Entering the 21st Century—Pillars of development. Vietnam Development Report 2001. Joint Report of World Bank, Asian Development Bank and United Nations Development Programme, Hanoi.
- Arkadie, B.V., Mallon, R., 2003. Viet Nam: A Transition Tiger. Asia Pacific Press, Canberra, pp. 143–146.
- Bales, S., 2000. Vietnam's Labor Situation and Trends: Analysis based on the 1992–1993 and 1997–1998 Vietnam Living Standard Surveys Background Paper to the Vietnam Development Report 2000. World Bank, Hanoi.
- Bourguignon, F., Fournier, M., Gurgand, M., 2001. Fast development with a stable income distribution: Taiwan 1979–94. *Review of Income and Wealth* 47, 139–163.
- Chu, K., Gupta, S., 1998. Economic reforms, social safety nets, and the budget in transition economies. In: Chu, K., Gupta, S. (Eds.), *Social Safety Nets: Issues and Recent Experiences*. International Monetary Fund, Washington, DC, pp. 63–93.
- Cowell, F., Jenkins, S., 1995. How much inequality can we explain? A methodology and an application to the United States. *Economic Journal* 105, 421–430.
- Dollar, D., Glewwe, P., 1998. Poverty and inequality in the early reform period. In: Dollar, D., Litvack, J. (Eds.), *Household Welfare and Vietnam's Transition*. World Bank, Hanoi, pp. 29–60.
- Falaris, E.M., 2003. The effect of survey attrition in longitudinal surveys: evidence from Peru, Côte d'Ivoire and Vietnam. *Journal of Development Economics* 70, 133–157.
- Fields, G.S., 2003. Accounting for income inequality and its change: a new method, with application to the distribution of earnings in the United States. In: Polachek, S.W. (Ed.), *Worker Well Being and Public Policy, Research in Labor Economics*, vol. 22. Elsevier, New Jersey, pp. 1–38.

⁴¹ Glewwe and Patrinos (1999) find that private and semi-private schools are not much more expensive than public schools and that they seem to be of higher quality than public schools. Further expansion of private and semi-private schools would potentially foster competition between them and public schools. Restrictions imposed on private and semi-private schools include limits on the fees they can charge and the students they can enroll.

- Gallup, J.L., 2004. The wage labor market and inequality in Vietnam in the 1990s. In: Glewwe, P., Dollar, D. (Eds.), *Economic Growth, Poverty and Household Welfare in Vietnam*. World Bank, Washington, DC, pp. 53–94.
- Glewwe, P., Dang, H., 2005. Was Vietnam's Economic Growth in the 1990s Pro-poor? An Analysis of Panel Data from Vietnam. University of Minnesota, Minnesota.
- Glewwe, P., Nguyen, P., 2002. Economic Mobility in Vietnam in the 1990s. World Bank Policy Research Working Paper 2838, Washington, DC.
- Glewwe, P., Patrinos, H., 1999. The role of the private sector in education in Vietnam: evidence from the Vietnam Living Standards Survey. *World Development* 27, 887–902.
- Glewwe, P., Gragnolati, M., Zaman, H., 2000. Who gains from Vietnam's boom in the 1990s? An analysis of poverty and inequality trends. *Economic Development and Culture Change* 50, 773–792.
- Grindling, T.H., Trejos, J.D., 2005. Accounting for changing earnings inequality in Costa Rica, 1980–1999. *Journal of Development Studies* 41, 898–926.
- Gustafsson, B., Li, S., 2001. A more unequal China? Aspects of inequality in the distribution of equivalent income. In: Riskin, C., Zhao, R., Li, S. (Eds.), *China's Retreat from Equality*. M.E. Sharpe, New York, pp. 44–83.
- Heltberg, R., 2002. Causes of Inequality in Vietnam. Mimeo Institute of Economics, University of Copenhagen, Copenhagen.
- Juhn, C., Murphy, K., Pierce, B., 1993. Wage inequality and the rise in returns to skill. *Journal of Political Economy* 101, 410–442.
- Kang, B.G., Yun, M.S., 2003. Changes in Korean Wage Inequality 1980–2000. Paper for the WIDER Conference on Inequality, Poverty, and Human Well-being. Helsinki, Finland, May 30–31, 2003.
- Keane, M.P., Prasad, E.S., 2001. Poland: inequality, transfers, and growth in transition. *Finance and Development* 38, 50–53.
- Khan, A.R., Riskin, C., 1998. Income and inequality in China: composition, distribution and growth of household income 1988 to 1995. *China Quarterly* 154, 221–253.
- Khan, A.R., Riskin, C., 2001. *Inequality and Poverty in China in the Age of Globalization*. Oxford University Press, Oxford.
- Knight, J., Song, L., 1991. The determinants of urban income inequality in China. *Oxford Bulletin of Economics and Statistics* 53, 123–154.
- Knight, J., Song, L., 2003. Increasing urban wage inequality in China. *Economics of Transition* 11, 597–619.
- McCarty, A., 1999. Vietnam's Labor Market in Transition. Draft Paper Presented at the Law and Labor Market Regulation in Asia Conference, University of the Philippines, Manila, pp. 1–27.
- Meng, X., 2004. Economic restructuring and income inequality in urban China. *Review of Income and Wealth* 50, 357–379.
- Nguyen, B.T., Albrecht, J., Vroman, S., Westbrook, D., 2007. A quantile regression decomposition of urban-rural inequality in Vietnam. *Journal of Development Economics* 83, 466–490.
- O'Conner, D., 1996. Labor Market Aspects of State Enterprises Reform in Viet Nam. OECD Technical Paper no. 117, Paris.
- Prescott, N., 1997. Poverty, Social Services, and Safety Nets in Vietnam. World Development Discussion Paper 376, Washington, DC.
- Shorrocks, A.F., 1982. Inequality decomposition by factor components. *Econometrica* 50, 193–212.
- Svejnar, J., 1996. Enterprises and workers in the transition: econometric evidence. *American Economic Review* 86, 123–127.
- USAID, 2001. Monitoring Country Progress in Central and Eastern Europe. U.S. Agency for International Development, available at http://www.usaid.gov/locations/europe_eurasia/country_progress/seventh/index.html.
- van de Walle, D., 2003. Are returns to investment lower for the poor? Human and physical capital interactions in rural Vietnam. *Review of Development Economics* 7, 636–653.
- Weeks, J., Nguyen, T., Roy, R., Lim, J., 2004. The Macroeconomics of Poverty Reduction: The Case Study of Viet Nam. The Asia-Pacific Regional Programme on Macroeconomics of Poverty Reduction. UNDP, Hanoi.
- World Bank, 2000. World Development Report 2000/2001: Attacking Poverty. Prepared by a joint Government-donor-NGO Working Group. World Bank, Washington, DC.
- World Bank, 2001. Vietnam Living Standards Survey (VLSS), 1997–98: Basic Information, Development Research Group. World Bank, Washington, DC.
- World Bank, 2002. World Development Report 2002: Building Institutions for Markets. World Bank, Washington, DC.
- Yun, M.S., 2006. Earnings inequality in U.S., 1969–99: comparing inequality using earnings equations. *Review of Income and Wealth* 52, 127–144.
- Zhao, R., 2001. Increasing income inequality and its causes in China. In: Riskin, C., Zhao, R., Li, S. (Eds.), *China's Retreat from Equality: Income Distribution and Economic Transition*. M.E. Sharpe, New York, pp. 25–43.