

Growth with equity: income inequality in Vietnam, 2002–14

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Abstract We use the 2002 through 2014 Vietnam Household Living Standards Surveys to construct comparable measures of household income and estimates of income inequality over this high-growth period. We focus on two questions: How have benefits from growth been distributed; and do changes in the structure of the economy map into changes in inequality? We explore dimensions in which inequality may vary, notably urban versus rural, and by ethnic status. We also decompose inequality by income source to highlight key factors underlying the relatively low levels of inequality during this period. We find that agricultural opportunities played an important role in dampening inequality, but more important has been the steady development of wage-labor markets in both urban and rural areas. An important caveat to the generally rosy picture we paint is the deteriorating position of ethnic minorities. Finally, we draw comparisons with China and document key differences in their growth-inequality experiences.

Keywords Income inequality · Vietnam · Decomposition

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1 Introduction

Vietnam is now well into its third decade of economic reform (*Doi Moi*). Since the start of the millennium, this process has benefitted from new injections of liberalization through major policy initiatives including the new Enterprise Law in 2000, the U.S.-Vietnam Bilateral Trade Agreement in 2001, and accession to the WTO in 2007. The latter two policies helped integrate Vietnam more tightly into the international economy, and contributed to rising inflows of FDI and a sharp increase in Vietnam's trade-to-GDP ratio. The effects of these policies are reflected in ongoing structural changes in the economy, and in the shift of GDP and labor out of agriculture and into manufacturing and services (see, e.g., Cling et al. 2009, and McCaig and Pavcnik 2013, 2014, 2015). They have also been accompanied by sustained high rates of growth in the economy. Even with the slowdown of Vietnam's economy after 2008, first because of declining external demand, and a few years later, tightening monetary and fiscal policies, real GDP per capita grew at an annual rate of 5.1 %.¹

Our paper examines the distributive implications of these changes, drawing on Vietnam's biennial household surveys from 2002 through 2014. The two guiding questions are:

- How have benefits from this growth been distributed through Vietnam's diverse population?
- Do the major changes in the structure of the economy map into changes in inequality?

From the outset of reforms, measuring and understanding the distributive consequences of economic reform was a high priority of the government of Vietnam, as well as international agencies like the World Bank. This helps explain the collection of household data starting in 1992/93, which followed the successful template of the World Bank's Living Standards Measurement Study. Thus, this paper is not the first to address these questions. There are excellent surveys of this research, most recently World Bank (2013), and a few key themes and patterns have emerged.

First, there has been a marked reduction in absolute poverty, though the rate of decline has slowed since the mid-2000s (World Bank 2013; VASS 2006, 2011). Some of the decline in poverty can also be specifically attributed to the liberalization of markets, as opposed to economic growth more generally.² Given that income levels are higher in cities than in rural areas, and the much larger size of the rural population, the vast majority of the poor live in the countryside. Persistent poverty is especially severe among Vietnam's ethnic minorities, which, given their geographic distribution, adds a strong regional dimension to poverty as well (World Bank 2013; Baulch, Hung, and Reilly 2012). Second, since the early 1990s, consumption inequality has been relatively constant, moving within a fairly narrow range. Measures of income inequality are significantly higher than consumption-based measures, as is usually the case. Estimates suggest a sharp drop in income inequality in the 1990s, flat-

¹Based on our calculations using the World Bank's "World Development Indicators", described in Appendix B. See also Bhattacharya (2013) for a discussion of the macroeconomic policy environment over this period.

²For example, see Benjamin and Brandt (2004), Edmonds and Pavcnik (2006) and Coxhead et al. (2012) for studies pertaining to internal liberalization of markets (especially rice), and McCaig (2011) who explores connections between increased international trade and reductions in poverty.

tening off through the new millennium.³ Third, earlier income-based studies (e.g., Benjamin and Brandt 2004) highlight the important role of robust growth in agricultural incomes in helping to moderate increases in inequality coming from other sources of income. They also identify the potentially disequalizing role of off-farm non-agricultural opportunities in the form of family-run businesses and wage earnings. Their results suggest that the ability of Vietnam to “grow with equity” in the context of significant structural change would depend on more equal access to non-agricultural opportunities.

Like the 2004 paper, we construct comparable measures of household income over time and use the changing composition of income to draw suggestive inferences about the relationship between economic structure and income inequality. There are several points of contrast between this paper and previous work that also studies the post-2000 period.⁴ Most of the other work including World Bank (2013), focuses on consumption-based poverty, whereas we focus primarily on income growth and inequality. We construct household per capita income, spanning the period 2002 through 2014, which allows us to include evidence from the moderate slow-down that occurred in 2010. While we view the estimates of inequality themselves as substantively interesting, it is the decompositions of income inequality by source that yield the most important results in our paper. The decompositions allow us to identify the income sources, and thus markets, that underlie Vietnam’s particular experience of structural change, growth, and distribution of income. In addition, we provide a brief comparison with China over a comparable period in its development. Over a longer period, China has gone through a process similar in a number of respects to Vietnam’s and achieved even faster rates of growth, but accompanied by remarkable increases in inequality. This comparison helps to highlight those margins on which Vietnam has done reasonably well. In numerous respects, Vietnam looks much more like Taiwan, Korea, or Japan.

Overall, we find a small decrease in income inequality in Vietnam, suggesting that growth has been accompanied by equity that extends beyond poverty reduction. There has been some increase in rural inequality, but in the aggregate, this is offset by declining urban-rural differences and declining inequality within urban areas. Less positively, increased rural inequality is driven primarily by slow income growth among ethnic minorities who represent a growing portion of the population. While the incomes of ethnic minorities rose over this period, they fell further behind the Kinh majority. Our decompositions yield two primary insights. First, farm incomes remain an important, relatively equalizing source of opportunity for rural households; and second, large segments of both the rural and urban populations are able to take advantage of new wage-earnings opportunities. Furthermore, the growth of wage income we observe is driven more by rising earnings among those working for wages than simply increased participation in wage labor. This points to the labor market and its attendant linkages to human capital and education, as an important area of

³The first two waves of the Vietnam Living Standards Surveys were conducted in 1992/93 and 1997/98, with a significant longitudinal (panel) dimension. The early studies are based on household consumption measured from these data, and include Glewwe et al. (2002), Glewwe (2004), and the other papers in that volume. Glewwe (2007, 2012) exploits the panel feature of these data to explore questions of distributional mobility between 1992/93 and 1997/98.

⁴This paper is a heavily updated and revised version of Benjamin et al. (2009), which is Chapter 2 of McCaig’s PhD dissertation. Brandt was also involved in preparing the report, World Bank (2013), which builds on and extends these earlier studies including looking at issues that we do not address here.

future research in better understanding how Vietnam has achieved “growth with equity” to this point.

2 Estimation of household income

Our research is based on a set of estimates of household per capita income, denoted y_i , that we calculate using the seven *Vietnam Household Living Standards Surveys* (VHLSS) conducted in even years from 2002–2014. Several conditions need to be satisfied before we can draw informative and reliable inferences. To begin, note that the underlying sampling unit is the household. The VHLSS defines household membership on the basis of physical presence: Individuals must eat and live with other members for at least six out of the past twelve months, and contribute to collective income and expenses. Among other things, this means that family members who have moved away to work or school (e.g., migrants) are not considered household members. Using these data, we calculate total household income, then divide by household size to create per capita income. As with consumption-based studies of inequality, the implicit assumption is that individual living standards are tied to overall household resources and that these are shared equally among household members. To mimic an individual-based income distribution, we weight the household data by household size.

The VHLSS surveys are stratified on the basis of geography, with the smallest unit of analysis being the commune. To reduce costs, the General Statistical Office (GSO) implements longer and shorter versions of the survey, with the longer survey including both income and consumption (expenditure) modules. We only use the smaller sample of households that were given the longer survey so that our income and expenditure estimates are drawn from the same sample of households. Moving up levels of aggregation, communes are a subset of districts, and districts are a subset of provinces. Provinces can further be aggregated into regions. The geographic structure of sampling was relatively consistent over our sample. The same communes are used from 2002 through 2008 (based on the 1999 Population and Housing Census), but based on the 2009 census, fresh communes were drawn for the surveys from 2010 onward (Phung and Nguyen [n.d.](#) and General Statistics Office [2008](#)). Because of the stratification of the survey by geography, we also use the sampling weights to obtain nationally representative summary statistics.

The surveys, and the income modules in particular, were conducted consistently over time. The reference period is almost always the last twelve months and the types of revenue-generating activities, along with their accompanying expenses, are defined consistently across the surveys. To better focus on the most important income sources, we divide annual household income into six major sub-aggregates: crop income; agricultural sideline income; non-farm business income; wage earnings; remittances (e.g., wages remitted from non-resident family members); and “other” sources (see Appendix [A](#) for further details).

Total household income is the sum of these six categories, and is designed to measure all observable income sources at the household’s disposal for either consumption or saving. In order to make income comparable across space and time, especially so that it can be used as a measure of potential living standards, we convert all nominal incomes into nationally representative January 2012 prices using three sets of deflators. These pertain to survey month, survey year, and location. First, since the households within each survey year are interviewed during different months, we use the within-year monthly deflators that the GSO included in the datasets to convert the reported values to January prices of the respective survey year. This is an especially important exercise in high inflation years. Second, to link January prices of each respective survey year to January 2012, we utilize official GSO

monthly CPI figures. And third, to reflect differences in the cost of living across regions we employ regional deflators based on Gibson et al. (2014).

Finally, in order to provide robust estimates of trends in inequality, we address the possibility that some of the most extreme measures of income are noise. Of course, it is impossible to know for certain whether any particularly large or small estimate of income is due to measurement error, or genuine differences in income. In our experience, however, at least some of these outliers are the result of measurement error that affects either revenue or costs. To account for this possibility, we trim the top and bottom tails of the distribution. Specifically, we drop observations in the bottom 1 % of either the individual income or consumption distribution, and households with values greater than fifteen times the median for either individual income or consumption. All trimming rules are calculated separately by year, and for urban and rural areas.⁵ Trimming drops less than 2 % of observations. In Appendix A, we report the core results of our paper using the untrimmed sample. The bottom line is that although the levels of inequality are slightly reduced by trimming, overall trends and patterns are unaffected.

To aid in interpreting the income levels reported below, as our empirical results are reported in thousands of constant 2012 VND, a reported estimate of “7,311” is worth about \$1,000 USD in PPP terms.⁶

3 Results

3.1 Growth and the evolution of inequality

The top panel of Table 1 provides estimates of average per capita income and consumption for 2002 through 2014. For each measure, we also calculate the implied average growth rate, using 2002 and 2014 as endpoints. Overall growth in household per capita income was an impressive 6.9 % per year. By 2014, per capita household income was 25.8 million VND, or about \$3,535 USD per capita in PPP terms. For comparison, we also report GSO/World Bank consumption estimates based on the same VHLSS surveys. Per capita consumption increased commensurately with our estimates for income, growing an average 8.0 % per annum. In Appendix B we compare the growth rates based on the VHLSS to measures from the National Income and Expenditure Accounts. The patterns are similar.

Turning to inequality, we show estimated inequality using the Gini coefficient and Theil index in the lower panel of Table 1. In the first row we report the Gini coefficients for income, which started at 0.375 in 2002, rose in 2008 and 2010, and then fell back to 0.360 in 2014. Over the twelve year period, the Gini fell by 0.015. The standard error of the difference between 2014 and 2002 is approximately 0.004, suggesting that the decrease is statistically significant. The Ginis for per capita consumption are shown in the next row for comparison. As is typical, consumption is less unequally distributed than income. The trend, however, is similar: Inequality rises modestly from 0.342 in 2002 to 0.380 in 2010, and then falls to 0.336 in 2014. The Theil index estimates for both income and consumption mirror the pattern of the Gini.

⁵See, for example, Cowell et al. (1999), for a discussion of the robustness of conclusions concerning trends in inequality to different strategies for dealing with “dirty data”.

⁶See World Bank International Comparison Program, <http://data.worldbank.org/indicator/PA.NUS.PPP>, accessed March 17, 2015.

Table 1 Income and inequality, all Vietnam

	2002	2004	2006	2008	2010	2012	2014	Changes
Average per capita:								
Household Income	11,318	14,166	16,074	18,257	21,790	23,992	25,843	6.9
Household Consumption	9,188	11,648	11,913	13,682	22,521	23,098	23,923	8.0
Inequality:								
Gini - income	0.375 (0.003)	0.370 (0.004)	0.374 (0.004)	0.389 (0.005)	0.396 (0.005)	0.375 (0.004)	0.360 (0.003)	-0.015
Gini - consumption	0.342 (0.002)	0.350 (0.004)	0.335 (0.003)	0.333 (0.004)	0.380 (0.005)	0.350 (0.004)	0.336 (0.004)	-0.005
Theil - income	0.255 (0.005)	0.249 (0.008)	0.255 (0.008)	0.278 (0.011)	0.281 (0.009)	0.252 (0.007)	0.225 (0.005)	-0.030
Theil - consumption	0.212 (0.004)	0.218 (0.005)	0.196 (0.005)	0.193 (0.005)	0.269 (0.011)	0.217 (0.007)	0.200 (0.006)	-0.012
Sample size	29,026	9,041	9,020	9,011	9,218	9,225	9,223	

(1) This table reports measures of mean per capita income and inequality by year for all of Vietnam; (2) Values in thousands of constant 2012 VND; (3) Standard errors in parentheses; (4) “Changes” is the average annual growth rate of per capita incomes between 2002 and 2014 (expressed as a percentage for levels of income), and the change in level of inequality between 2002 and 2014 for the inequality measures

By their nature, estimates of inequality are summary statistics of the entire distribution of income and may hide important changes in the distribution. As such, we present two ways of visualizing the change in the entire income distribution. Figure 1 shows income by year for key percentiles of the income distribution: 90th, 75th, 50th, 25th, and 10th. For each percentile, we also show the implied average rate of growth of income between 2002 and 2014. The most important point to note is the solid growth throughout the distribution over

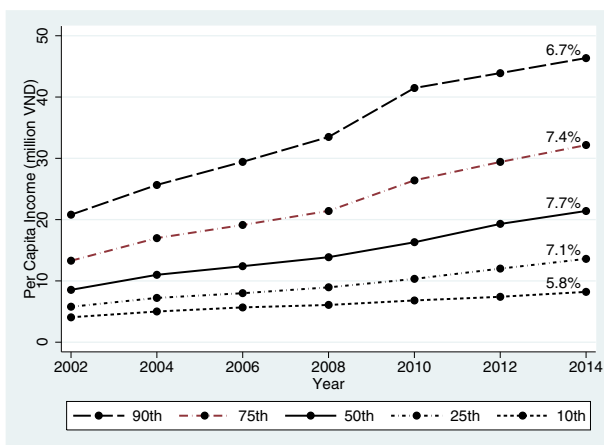


Fig. 1 Income levels and income growth by percentile. *Notes:* This figure reports average household per capita income by percentile. Beside each line, we report the average growth rate between 2002 and 2014 for that percentile

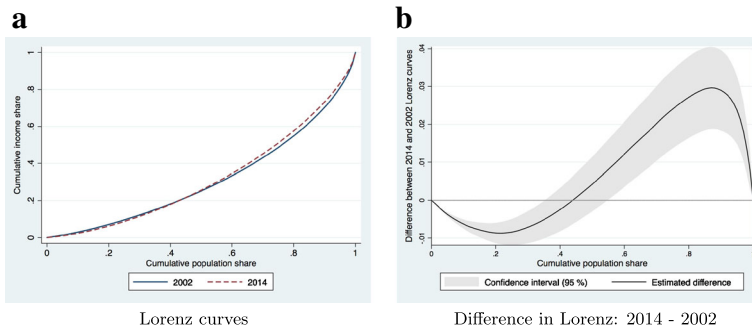


Fig. 2 Lorenz curves of income per capita, 2002 and 2014. *Notes:* These figures show the Lorenz curves for household per capita income in 2002 and 2014. Panel **a** shows the Lorenz curves themselves, while panel **b** shows the 95 confidence intervals for the differences between the 2014 and 2002 Lorenz curves. Figures created using DASP (Abdelkrim and Yves-Duclos 2007)

this period. Even the bottom decile experienced 5.8 % average growth, which is likely to be reflected in significant reductions in poverty. Growth rates are generally higher as one moves up the percentiles. The growth rate of the median was fastest, at 7.7 % per year, while growth at the 90th percentile was slightly lower at 6.7 %. The decline in the Gini and Theil indices is due to the middle of the distribution catching up slightly with the upper end of the distribution, which offsets the slower growth of the poorest households in the 25th percentile and lower.

This pattern is confirmed in Fig. 2a, which shows the Lorenz curves for the start and end years, 2002 and 2014. Does a clear picture of changes in inequality emerge? The Lorenz curve for 2014 is below that for 2002 until approximately the 40th percentile, after which it lies above. Figure 2b shows the difference in Lorenz curves for the two years more clearly, with the 95 % confidence interval. It is easier to see that inequality increased in the bottom of the distribution, but decreased in the upper half of the distribution, consistent with Fig. 1. Inequality indices that put a greater weight on inequality at the bottom of the distribution may not show the same decline in inequality as measured by the Gini coefficient and the Theil index.

3.2 Spatial dimensions of inequality

Location is an important determinant of inequality in many countries. Thus, in Table 2 we explore the role of location for explaining levels of inequality between 2002 and 2014. In the first row, we report the percentage of individuals classified as urban, which increased from 22.7 % to 31.4 %, an increase of almost 9 percentage points. This represents an increase of over one-third in the level of urbanization. Some of this is due to migration from country to city, but also arises as previously rural areas develop and are reclassified as urban. This is important to bear in mind as we compare differences in income between rural and urban areas over time: urban and rural status is not an immutable geographic characteristic, but is correlated with economic development. That said, over the time period we study, Vietnam is almost three-quarters rural. Consequently, as a matter of both arithmetic and economics, much of what happens overall is driven by results in the countryside.

In 2002, rural incomes were 9.6 million VND (i.e., 9,568 thousand VND in the tables), and more than doubled in real terms to 22.5 million VND in 2014. The implied annual growth rate was over 7 %. Urban incomes also grew at an impressive pace of 5.4 % per

Table 2 Urban/Rural and spatial dimensions of inequality

	2002	2004	2006	2008	2010	2012	2014	Changes
Percentage Urban	22.7	23.6	23.5	27.6	29.7	29.6	31.4	8.8
Per capita income								
Rural	9,568	12,068	13,858	15,333	17,952	20,909	22,527	7.1
Urban	17,291	20,953	23,295	25,926	30,891	31,311	33,079	5.4
Ratio (urban/rural)	1.81	1.74	1.68	1.69	1.72	1.50	1.47	-0.34
Inequality								
<i>Gini</i>								
Rural	0.341 (0.002)	0.344 (0.004)	0.353 (0.005)	0.364 (0.004)	0.371 (0.005)	0.375 (0.004)	0.365 (0.005)	0.025
Urban	0.365 (0.004)	0.351 (0.008)	0.350 (0.009)	0.374 (0.011)	0.375 (0.009)	0.337 (0.008)	0.313 (0.006)	-0.052
<i>Theil</i>								
Rural	0.209 (0.004)	0.211 (0.007)	0.224 (0.007)	0.238 (0.007)	0.242 (0.009)	0.248 (0.007)	0.233 (0.008)	0.024
Urban	0.236 (0.007)	0.227 (0.014)	0.230 (0.016)	0.260 (0.019)	0.252 (0.016)	0.208 (0.014)	0.170 (0.008)	-0.066
Decompositions (“Between” inequality as percentage of all-Vietnam Theil):								
Urban/Rural	14.4	13.0	11.1	11.3	12.3	7.4	7.6	-6.8
Provinces	20.7	17.3	14.9	15.2	17.9	12.6	10.3	-10.4
Provinces × Urban/Rural	27.9	25.0	22.5	22.6	24.7	18.5	16.9	-11.0

(1) This table reports measures of mean per capita income and inequality by year separately for urban and rural Vietnam; (2) Values in thousands of constant 2012 VND; (3) Standard errors in parentheses; (4) “Changes” is the average annual rate of growth of per capita incomes between 2002 and 2014 (in percentage terms for levels of income), and the change in levels between 2002 and 2014 for the other variables; (5) The decompositions represent the percentage of the overall income Theil for Vietnam (from Table 1) that can be attributed to inequality between (i) urban and rural, (ii) provinces, and (iii) urban/rural interacted with province

year, but notably slower than in the countryside. In 2002, urban incomes were 1.8 times higher than rural incomes, but with faster rural growth, the urban-rural ratio fell to only 1.5 by 2014. Hence, the diminishing urban-rural gap is one contributing factor to the decline in national inequality.

In Table 2, we also show estimated inequality using the Gini and Theil indices for the rural and urban samples. The rural Gini starts at 0.341 in 2002 and rises steadily to 0.375 in 2012, before falling slightly in 2014 to 0.365. Over the period, the net effect was an increase of 0.025. The standard error of the difference between the 2014 and 2002 Ginis is approximately 0.005, suggesting that the increase in the Gini is statistically significant. The Theil index for rural income inequality (not surprisingly) mirrors the pattern of the Gini (See Appendix A for further details on the evolution of rural and urban incomes across the distribution).

For urban Vietnam, the pattern is reversed, with the Gini dropping from 0.365 to 0.313. With a standard error of 0.008, the decline is statistically significant. Note, however, that there was a rise in inequality in 2008 and 2010, before the declines in 2012 and 2014. Again, the Theil index shows a similar pattern to the Gini coefficient, in this case, a decline

over the period. The fall in urban inequality helped contribute to the decline in overall inequality.

How much inequality arises from variation of economic opportunity across locations? Is inequality becoming more or less local? To address these questions, we formally decompose the Theil index of inequality into that part attributed to differences of income between locations, and that part due to differences among households within a location. In the bottom panel of Table 2, we show results of this decomposition, beginning with location defined as rural versus urban. In relative terms, the contribution to the Theil index of the “between” urban and rural component, that is, the difference in average income between the two, fell consistently over time: The urban-rural gap accounted for 14.4 % of the Theil in 2002, but only 7.6 % in 2014. Thus, inequality is increasingly within rural and urban areas, not between them. Moving to a finer measure of location – being in one of 60 provinces – the relative contribution of location to Theil-measured inequality also fell by half, from 20.7 % in 2002 to 10.3 % in 2014. Lastly, we define location based on urban/rural within-provinces. Again, income differences between locations have become less important in accounting for inequality: inequality is increasingly a within-location outcome. This means, for example, that households in cities outside major development poles like Hanoi and Ho Chi Minh City are catching up. Indeed, FDI is likely helping spread development beyond the two largest, and historically most important cities. This happens directly, as well as through the channel of migration.⁷

3.3 Ethnic minorities and inequality

As noted by Baulch and Vu (2011) and World World Bank (2013), ethnic minorities are a key sub-population that is distinctly over-represented in poverty, and left behind in the development process. To explore this further, in Table 3, we look more closely at the rural income distribution (where ethnic minorities live), separating minority households from the ethnic majority (mostly) Kinh. The results are striking, and consistent with previous research on the tenuous, and deteriorating position of ethnic minority households (see World Bank 2013 for an excellent list of references, as well as Baulch et al. 2012, van de Walle and Gunewardena 2001, and van de Walle and Cratty 2004). First, note that the share of minorities in the rural population is rising over time, from below 15 % in 2002 to over 18 % in 2014. This is a consequence of higher fertility among minorities, combined with rising urbanization among the Kinh. Average incomes of the Kinh households rose by 7.5 % over the period, while minorities experienced a respectable, but significantly lower growth rate of 5.7 %. The ratio of Kinh to minority incomes thus rose from 1.64 in 2002, to more than 2 by 2014. At least some of the increase in rural inequality can therefore be pinned on the rising Kinh-minority income gap.

This can also be seen by the increasing concentration of ethnic minorities in the bottom decile group of the rural income distribution, which we show in two ways. First, we report the percentage of ethnic minorities that are in the bottom decile. This rose from 25.2 % in 2002 to 35.6 % in 2014, an increase of more than ten percentage points. In conjunction with their rising share of the rural population, this means that ethnic minorities make up a larger share of the bottom decile group. In 2002, ethnic minorities accounted for about a

⁷McCaig and Pavcnik (2015) report that among manufacturing workers in 2009, over 25 % of the youngest workers (aged 20–24) had migrated across provincial boundaries. For further discussions of the links between migration and inter-provincial income differences, see Fukase (2013) and Diep and Coxhead (2010).

Table 3 Minority Dimensions of Rural Inequality

	2002	2004	2006	2008	2010	2012	2014	Changes
Percentage Minority	14.6	15.1	16.0	16.3	18.0	18.4	18.3	3.7
Per Capita Income								
Kinh	10,148	12,900	14,912	16,520	19,642	23,093	24,840	7.5
Minority	6,179	7,394	8,310	9,231	10,243	11,206	12,194	5.7
Ratio	1.64	1.74	1.79	1.79	1.92	2.06	2.04	0.40
Minorities in the bottom decile group:								
As % of Minorities:	25.2	28.8	29.6	27.8	30.3	34.1	35.6	10.3
As % of Decile	36.9	43.5	47.2	45.3	54.5	62.6	65.0	28.1
Inequality								
<i>Gini</i>								
Kinh	0.334	0.332	0.342	0.350	0.352	0.349	0.333	0.000
	(0.002)	(0.005)	(0.005)	(0.004)	(0.005)	(0.006)	(0.005)	
Minority	0.294	0.309	0.300	0.331	0.339	0.361	0.388	0.095
	(0.006)	(0.010)	(0.012)	(0.011)	(0.008)	(0.010)	(0.014)	
<i>Theil</i>								
Kinh	0.201	0.198	0.211	0.222	0.220	0.218	0.197	-0.004
	(0.004)	(0.008)	(0.007)	(0.007)	(0.009)	(0.009)	(0.008)	
Minority	0.155	0.176	0.173	0.208	0.209	0.241	0.290	0.135
	(0.008)	(0.015)	(0.022)	(0.022)	(0.013)	(0.017)	(0.034)	
Decompositions ("Between" group inequality as percentage of All-Vietnam Theil):								
Minority/Kinh	5.8	7.2	7.7	7.3	9.6	11.3	11.7	5.9

(1) This table reports measures of mean per capita income and inequality by year for rural Vietnam, partitioned by ethnic minority status (Minority or Kinh); (2) Values in thousands of constant 2012 VND; (3) Standard errors in parentheses; (4) "Changes" is the average annual rate of growth of per capita incomes between 2002 and 2014 (in percentage terms for levels of income), and the change in levels between 2002 and 2014 for the other variables; (5) For the bottom decile group, we report the percentage of minorities in the bottom decile group, as well as the percentage of the bottom decile group comprised of minorities; (6) The decomposition represents the percentage of the Theil for Rural Vietnam (from Table 2) that can be attributed to inequality between minorities and Kinh

third (36.9 %) of individuals in the bottom decile group. By 2014, this doubled to two-thirds (65.0 %). Low income has a pronounced ethnic dimension.

Just as interestingly, inequality has risen rapidly *among* ethnic minorities, from a Gini of 0.294 in 2002 to 0.388 in 2014. The Theil index increases similarly rapidly. While inequality increased among rural Kinh from 2002 to 2012, it fell back in 2014 to essentially the same level as in 2002. This is true for both the Gini and Theil. Hence, the rise in rural inequality is due to the growing gap between Kinh and minorities combined with inequality among minorities. A subset of minority households is thus doing especially poorly, while others are better able to participate in the broader growth in rural areas. As a final exercise, we decompose the Theil index into within and between components for minorities and Kinh. The between ethnic-group contribution doubled from 5.8 % of rural inequality in 2002 to 11.7 % in 2014. Given the significant size of the minority population, an important part of the rise of inequality in the countryside can thus be attributed to issues pertaining to the integration of these minorities in the development process.

3.4 Structure of income

We now turn to identifying changes in economic structure, as reflected in the composition of income, that may help explain these patterns of inequality. Table 4 summarizes the composition of income by source. In the top panel, we report mean income from each source for 2002 and 2014, the implied annual average growth rates over the period, and the share of total income coming from each source in 2002 and 2014. In the bottom panel we break down the overall averages into the mean conditional on positive, and the share of households participating in a given activity. The rationale for doing so is straightforward. Mean household per capita income in each activity is influenced by two margins: the share of households that participate in the activity (the extensive margin), and the amount of income generated by each participating household (the intensive margin). As a result of structural change in the economy, changes at the extensive margin will give rise to differences in the average growth rate in an income source calculated over all households, compared to only over households earning income from that source. This distinction will be useful when we decompose inequality by income source later on.

In 2002, income from farming, i.e., cropping and agricultural sidelines, was a major source of total income, accounting for 30.6 % of total household income. Despite the largely rural nature of the economy, income-earning opportunities were more important outside of farming. More than half of all households had family members earning wage income, which was the source of 30.5 % of all income. As remittances are generally wages earned

Table 4 The structure of household income, 2002 and 2014

	2002	2014	Growth	2002	2014
	Level			Share of Income	
Crop income	2,289	3,421	3.3	20.2	13.2
Sideline income	1,173	1,805	3.6	10.4	7.0
Family business	2,603	5,751	6.6	23.0	22.3
Wages	3,456	10,886	9.6	30.5	42.1
Remittances	1,070	1,733	4.0	9.5	6.7
Other income	727	2,247	9.4	6.4	8.7
Total	11,318	25,843	6.9		
	Conditional on Positive			Participation	
Crop income	3,205	5,650	4.7	71.5	60.9
Sideline income	1,730	3,694	6.3	68.2	49.3
Family business	6,348	16,305	7.9	41.0	35.3
Wages	5,775	15,462	8.2	59.8	70.4
Remittances	1,364	2,004	3.2	78.5	86.5
Other income	1,878	4,981	8.1	38.7	45.1

(1) This table reports mean per capita household income by source, in constant 2012 VND; (2) In the top panel, we show the unconditional means, the implied annual percentage growth rate between 2002 and 2014, and the percentage share of total income by source; (3) In the bottom panel, we report average income by source conditional on positive, the implied annual percentage growth rate between 2002 and 2014, and the percentage of households weighted by household size with positive earnings for that source (i.e., the participation rate).

elsewhere, wages and remittances combined accounted for more than a third of household income. Family businesses, on the other hand, contributed 23.0 % to total income, with 41.0 % of all households running at least one family business.

Changes in the structure of the economy between 2002 and 2014 are reflected in the growth rates by income source. Especially noteworthy are new labor market opportunities in industry and services, which contributed to rapid growth of wage earnings of 9.6 % per year. Income from family businesses also grew rapidly, increasing by 6.6 % per year. As expected, income growth in agriculture lagged, but even with the shock to incomes after 2008 caused by falling global farm prices, growth in crop incomes still averaged a respectable 3.3 % over the full period, and sidelines mustered 3.6 % growth. Some of this slow growth reflects the decline in participation in agriculture, which fell from 71.5 % to 60.9 % over the period. (See Appendix A for a detailed comparison of urban and rural income structure).

Cumulatively, these shifts contributed to marked changes in the composition of income. By 2014, wages represented 42 % of household income – an increase of 10 percentage points. Wages and remittances combined were almost half of total income.⁸ This increase came at the expense of farming, and in 2014, cropping and agricultural sidelines contributed only 20.2 % to average per household incomes compared to 30.6 % in 2002. Participation in family-run businesses declined, but this was offset by growth on the intensive margin, which helped to maintain family business's share of income at 22.3 % of household income.

3.5 Inequality and the structure of income

One of the primary advantages of using income data to analyze inequality is that it permits studying the underlying sources of levels and changes in inequality that can be linked to the structure of the economy. While it is not possible to attribute “causality” to these factors, decompositions of income by source are informative in identifying key markets that merit further study in better understanding the causes of inequality (e.g., Jenkins 1995). In the case of Vietnam, we have described the growing importance of wage income in both rural and urban areas: To what extent has the labor market contributed to the inequality outcomes observed? We conduct two types of decomposition: A Shorrocks (1982) decomposition that is valid for any inequality index; and an accounting of the Gini coefficient, following the procedure described in Lerman and Yitzhaki (1985).

3.5.1 The Shorrocks decomposition

The Shorrocks decomposition estimates the proportion of total inequality that can be attributed to a particular income source, independent of the inequality index used. Consider a decomposition of household i 's income according to K income-generating activities:

$$y_i = \sum_{k=1}^K y_{ik}.$$

Mean income can be written as the sum of mean income from each income source. A 1 % increase in average income from source k will lead to a W_k % increase in average total

⁸In a separate analysis we used the individual-level data to explore patterns of wage-labor participation by age, education, and gender. The bottom line is that increased wage labor participation is widespread across all sub-groups in rural areas. The only slight exception is slower participation growth for the declining share of individuals with less than completed primary education.

income, where W_k is the share of income from source k . The decomposition of inequality proceeds in a similar manner. Let Y denote the vector of total income across households, and $S_k(Y)$ denote the contribution of income type k to total inequality, $I(Y)$ such that:

$$I(Y) = \sum_{k=1}^K S_k(Y).$$

The share, $s_k = S_k(Y)/I(Y)$, is the share of $I(Y)$ attributable to income from source k . Shorrocks demonstrated that for any inequality decomposition satisfying a set of desirable properties:

$$s_k = \frac{\text{cov}(y_k, y)}{\text{var}(y)}$$

which is independent of the inequality index, $I(Y)$. This also makes it clear that the contribution of an income source to overall inequality depends on its correlation with total income: income sources earned by the rich will be disequalizing, while income sources earned disproportionately by the poor will equalize incomes. How can s_k be interpreted? Unlike the share of income earned from a particular source, s_k can be negative. Thus, one interesting benchmark is zero. If s_k is negative then the income source is disproportionately earned by the poor and a marginal increase in that income source, maintaining the same correlation with total income, would decrease overall inequality. In practice, very few sources of income will have a negative value of s_k , and thus a second helpful benchmark is the share of income earned from that activity, W_k . If $s_k > W_k$, then income source k contributes more to inequality than it does to mean income, which we define as a disproportionate effect on inequality.

Another way to see the value of W_k as a benchmark is to consider an economy where the rich and poor are identical, except that the rich have more money (as in the apocryphal exchange between Hemingway and Fitzgerald). If everyone earned their income the same way, so that income by source was simply scaled by y_i , then this could be described by $y_{ik} = W_k y_i$. The resulting Shorrocks decomposition would yield $s_k = W_k$. To the extent that income sources are disproportionately earned by the rich, we would estimate $s_k > W_k$.

As a matter of computation, s_k can be estimated by the simple regression:

$$y_{ik} = \alpha_k + \beta_k y_i + u_{ik}, \text{ where } \hat{\beta}_k = \frac{\text{cov}(y_k, y)}{\text{var}(y)}.$$

This regression formulation makes clearer the interpretation of s_k . We are simply estimating the correlation of a particular source of income with total income. The regression framework also allows us to highlight the potential role of measurement error in skewing the estimated contribution of income source k to overall inequality. Household business income, or even farm income, is subject to a considerable degree of measurement error. Unusually high income from a given source will thus feed into a high estimate of overall income. If genuine, the Shorrocks decomposition will correctly identify this as a disequalizing income source. However, if driven by measurement error, the role of this income source will be exaggerated, while the roles of the other sources will be downplayed (because the contributions sum to one).

A natural way to address this problem is to employ instrumental variables, using as an instrument some other measure of y_i that does not suffer from the same measurement error. An excellent candidate is household consumption, c_i , which provides an alternative measure of a household's position in the total income distribution. The Shorrocks decomposition

primarily highlights the correlation of income by source with position in the income distribution, and as long as there are no common error components, using c_i essentially gives us a second “take” on this correlation. The IV estimator repackages this second, reduced-form “take” via the correlation of c_i with y_i , and provides a consistent estimate of s_k . In the particular case of these household data, given that home-produced food enters both sides of the household balance sheet (i.e., both income and consumption), we use non-food expenditure, \tilde{c}_i , as our instrument.

We begin with a simple descriptive exercise in Table 5, summarizing the structure of income by quartile in 2002 and 2014. We report the share of total income from a given income source for each quartile group, where the quartiles are calculated using non-food consumption. From Table 4, we know that in 2002 crop income accounted for 20.2 % of household income. In Table 5, we see that the share is much higher for poorer households, generating 39.7 % of income for the bottom quartile group, and 29.7 % for the second quartile group. For the top quartile group, crop income only counted for 9.7 %. Clearly, crop income is more important for lower income households. In the last column, we report the difference in percentages of income accounted for by a given source between the top and bottom quartile group. A positive difference means that the income source is more important for the poor, while a negative sign signals income sources that are earned disproportionately by the rich. Family business income, for example, is earned disproportionately by the top quartile group. Wages, by comparison, are a more evenly distributed source of income across the quartiles, with a relatively smaller increase of 8.5 percentage points from the bottom quartile to the top quartile group. Remittances and other income are relatively evenly spread among the bottom three quartiles and then jump up for the fourth quartile group.

Table 5 Composition of income by quartile group

	Quartile Group				Q1-Q4
	1	2	3	4	
2002					
Crop income	39.7	29.7	23.6	9.7	30.0
Sideline income	15.2	14.1	12.1	6.7	8.5
Family business	9.9	17.0	22.8	28.8	-19.0
Wages	25.8	27.8	27.8	34.3	-8.5
Remittances	5.3	6.3	7.6	12.7	-7.4
Other income	4.1	5.1	6.1	7.8	-3.7
2014					
Crop income	24.8	17.4	13.8	7.4	17.4
Sideline income	10.9	9.8	8.1	3.7	7.1
Family business	9.8	18.5	22.4	27.7	-17.9
Wages	43.4	42.3	41.9	41.8	1.6
Remittances	5.9	6.5	6.8	7.0	-1.1
Other income	5.3	5.4	6.9	12.5	-7.1

(1) This table reports the average share of income by source by quartile group; (2) Quartiles are calculated on the basis of household per capita non-food consumption; (3) The final column provides the difference in percentages of income from a given source between the lowest (Q1) and highest (Q4) quartile groups

The general pattern is similar in 2014. For example, poor households continue to derive a larger share of income from crop income than richer households, but the gradient has decreased significantly as the bottom quartile group of households earn 24.8 % of income from crops in 2014, as compared to 39.7 % in 2002. Even more important is that in 2014, the share of income from wages is essentially flat, with the poorest quartile group now earning a slightly higher share than the richest quartile group. The only income source that has become more skewed toward the rich is “other income”. Overall, the results presented in Table 5 suggest that the distribution of income sources across the quartile groups is uneven. Consequently, differences in growth rates and the distribution of growth of each income source is likely to play a role in changing patterns of inequality.

3.5.2 Decomposing the Gini

A complementary approach is a decomposition of the Gini coefficient suggested by Lerman and Yitzhaki (1985). Let the Gini associated with the vector of household incomes, Y , be denoted $G(Y)$. Lerman and Yitzhaki show that $G(Y)$ can be decomposed as:

$$G(Y) = \sum_{k=1}^K R_k G_k W_k$$

where R_k is the “Gini correlation” of income source k with total income y_i , which is the ratio of the covariance of income source k with the cumulative distribution of income and the covariance of income source k with the cumulative distribution of income source k ; G_k is the Gini coefficient of income source y_k ; and W_k is the share of income source k in total income. We can thus estimate the contribution of source k to the overall Gini as the product of these three factors, and dividing by $G(Y)$, we get another – different – estimate of s_k . With estimates of the three components, we can see whether an income source is highly disequalizing because:

1. It is disproportionately earned by the rich, R_k . This is analogous to the Shorrocks decomposition, in that it depends primarily on the correlation (the “Gini correlation”) between income source k and overall income. As with the Shorrocks, this correlation is subject to bias from measurement error. We will use the IV results from the Shorrocks decomposition to note where measurement error may be more important; or
2. The income source is itself unequally distributed, G_k . The Gini coefficient includes the “zeroes” for households who do not participate in income activity k , so changes in participation will lead to changes in G_k , as will changes in the distribution of y_k conditional on positive; or
3. The income source is an important part of overall income, W_k .

This decomposition does not satisfy the assumption of Two Factor Symmetry in Shorrocks (1982) and thus will produce different inequality shares.

3.5.3 Results

The results of these decomposition exercises are shown in Table 6, with the decomposition for 2002 and 2014 in the upper and lower panels respectively. Each panel reports: (1) the share of the income source, W_k , which is a useful benchmark for the Shorrocks, and a key part of the Gini decomposition; (2) the Shorrocks decomposition, first by OLS, and second by IV; and (3) the separate components of the Gini decomposition: the Gini correlation,

Table 6 Decomposing Income Inequality by Source of Income, 2002 and 2014

	W_k	Shorrocks		Gini		Changes		
		OLS	IV	R_k	G_k	Absolute	Relative	
2002								
Crop income	0.202	0.036 (0.008)	-0.032 (0.006)	0.162 (0.020)	0.620 (0.007)	0.020 (0.003)	0.054 (0.008)	
Sideline income	0.104	0.086 (0.014)	0.012 (0.006)	0.334 (0.022)	0.753 (0.007)	0.026 (0.003)	0.070 (0.007)	
Family business	0.230	0.366 (0.021)	0.300 (0.021)	0.657 (0.009)	0.817 (0.004)	0.123 (0.004)	0.329 (0.011)	
Wages	0.305	0.270 (0.023)	0.425 (0.027)	0.591 (0.014)	0.700 (0.005)	0.126 (0.006)	0.337 (0.013)	
Remittances	0.095	0.163 (0.014)	0.189 (0.011)	0.630 (0.011)	0.823 (0.004)	0.049 (0.002)	0.131 (0.005)	
Other income	0.064	0.080 (0.008)	0.107 (0.008)	0.523 (0.016)	0.877 (0.003)	0.029 (0.002)	0.079 (0.004)	
Total						0.375 (0.005)	1.000	
2014								
Crop income	0.132	0.066 (0.015)	-0.036 (0.018)	0.203 (0.025)	0.765 (0.011)	0.021 (0.003)	0.057 (0.008)	0.000
Sideline income	0.070	0.094 (0.020)	-0.012 (0.006)	0.318 (0.029)	0.880 (0.008)	0.020 (0.003)	0.054 (0.007)	-0.007
Family business	0.223	0.356 (0.030)	0.330 (0.035)	0.603 (0.014)	0.825 (0.004)	0.111 (0.005)	0.308 (0.013)	-0.013
Wages	0.421	0.308 (0.022)	0.410 (0.028)	0.577 (0.011)	0.605 (0.005)	0.147 (0.005)	0.409 (0.013)	0.021
Remittances	0.067	0.058 (0.010)	0.080 (0.012)	0.378 (0.020)	0.801 (0.005)	0.020 (0.002)	0.057 (0.004)	-0.029
Other income	0.087	0.118 (0.013)	0.228 (0.022)	0.548 (0.016)	0.874 (0.004)	0.042 (0.002)	0.116 (0.006)	0.012
Total						0.360 (0.004)	1.000	-0.015

(1) This table reports the decompositions of income by source for 2002 and 2014; (2) The Shorrocks decompositions are estimated by OLS and IV (using non-food consumption as an instrument); (3) The Gini decompositions report R_k (the Gini correlation), G_k (the Gini of income source k), as well as the combined absolute and relative contributions of income source k to the Gini coefficient of total income; (4) “Changes” is the change in the absolute contribution of income source k to inequality in 2014 and 2002; (5) Standard errors in parentheses; (6) Gini decomposition estimated using DASP (Abdelkrim and Yves-Duclos 2007)

R_k , the Gini index of income source k , G_k ; and the absolute and relative contributions of income source k to the overall Gini coefficient. In the last column of the bottom panel, we report the changes in these contributions between 2002 and 2014, which sum to the overall change in the Gini between 2002 and 2014 (the column labelled “Changes”). In addition to

decompositions for each year, we therefore also have a decomposition of the changes in the Gini that can be accounted for by each income source.

In 2002, the Shorrocks decomposition identifies family business and wage income as the primary drivers in overall inequality. They account for over 60 % of inequality for both the OLS and IV estimates. Note the striking difference between the IV and OLS estimates for family business and wage income. This is what we would expect if business income is measured with error. The OLS procedure exaggerates business's contribution to inequality, while the same measurement error understates the role of wage income. That said, the Shorrocks procedure (with IV) shows that while wage income accounts for 30.5 % of income, it accounts for 42.5 % of inequality. Remittance income is also important in generating more inequality than suggested by its share of income. Income from crops and agricultural sidelines are both relatively equalizing income sources as they account for a lower share of inequality than of income. The Gini decomposition also flags wage and family business income as being large contributors to overall inequality. They are both highly correlated with overall income (R_k), and more unequally distributed than crop or agricultural sideline income. The Gini decomposition shows that remittances and other income are also highly correlated with overall income (similar magnitudes of R_k as wage and business income) and highly unequal (large values of G_k), but their smaller share of overall income lowers their impact on overall inequality relative to wage and business income.

For 2014, wage income rises to 42 % of total income. Again, the IV-estimated Shorrocks term is *much* higher than the OLS for wage income, suggesting that measurement error leads to an understated role of wage income in overall inequality. In contrast to 2002, the IV estimate suggests that the contribution of wage income to inequality is the same as its share in mean income. As we saw in Table 5, this is consistent with wage income becoming equally important across the income distribution. The Gini coefficient of wage earnings is actually lower in 2014 than 2002 (0.605 versus 0.700). With rising participation in the labor market, wage income is more prevalent and less unequally distributed, but it is still highly correlated with overall income, and thus an important contributor to overall inequality, as are remittances. Taken together, these results point to the central role of labor markets and wage opportunities as a key part of Vietnam's positive experience of inequality in the presence of high growth.⁹

4 Discussion and comparison to China

China represents a potentially valuable basis of comparison for examining Vietnam's distributive record over the period we analyze. It neighbours Vietnam, and has gone through a similar transition from a closed, planned economy to one that is open, market-based and largely non-agricultural. A number of factors makes this comparison slightly difficult. First, there are obvious issues of comparability related to China's size, as well as important regional differences within China. In terms of population, China is fifteen times larger; in area, it is thirty times larger. Second, the two countries embarked on reforms at slightly different times and so finding periods that overlap in terms of the reform and development process becomes critical. Making things a bit easier is the fact that at the start of reform, the two countries were similar in many respects, most importantly, in low per capita incomes and in the relatively high percentage of the population living in the countryside. With the

⁹Appendix A reports the inequality decomposition separately for the urban and rural samples.

Table 7 Selected Inequality (Gini) Estimates for China, 1991 and 2001

Source	Data	1991			2001		
		Combined	Urban	Rural	Combined	Urban	Rural
Ravallion and Chen (2007)	NBS	0.37	0.23	0.31	0.45	0.32	0.36
Benjamin et al. (2008)	NBS		0.27			0.35	
Benjamin et al. (2008)	CHNS	0.37	0.29	0.39	0.44	0.38	0.46
Benjamin et al. (2008)	CHNS, Coastal	0.35	0.26	0.38	0.39	0.37	0.39
Benjamin et al. (2008)	CHNS, Interior	0.39	0.31	0.40	0.48	0.39	0.49
Khan and Riskin (1998); Li and Sicular (2014)	CHIP	0.38	0.23	0.34	0.46		
Benjamin et al. (2005)	RCRE			0.27			0.33

(1) This table reports selected Gini coefficients from other studies on inequality in China; (2) The full sources are listed in the References; (3) Data refers to the data used in the source: (i) NBS refers to the annual household survey of the National Bureau of Statistics; (ii) CHNS is the China Health and Nutrition Survey; (iii) CHIP is the China Household Income Project; and (iv) RCRE is the rural household survey of the Research Centre for Rural Economy; (4) The estimates of Khan and Riskin using CHIP are for 1988; the estimates by Li and Sicular are for 2002

Chinese reforms beginning in the late 1970s, and *Doi Moi* a decade or so later, the period we analyze between 2002–2014 in Vietnam lines up reasonably well with the period running from the early 1990s to the early 2000s in China, or the decade running between Deng Xiaoping's famous Southern Tour and China's entry into the WTO. And third, there are problems of data comparability.

There are a number of alternative data sources and estimates of inequality for China that can be used for this comparison, albeit each with its own shortcomings. Since our purpose is more limited here, we will not dwell on these issues and simply take the estimates at face value.¹⁰ Fortunately, the estimates tell a fairly consistent story. In Table 7 we report a number of estimates for inequality for 1991 and 2001 for all of China and then for the urban and rural populations separately. To help put these numbers in context, in 1981, the first year for which we have estimates, the overall Gini for China was 0.31, and 0.25 and 0.18 for rural and urban China, respectively.¹¹

By 1991, inequality in China was significantly higher than it was at the start of the reform, largely because widening differences among households within both rural and urban areas offset the benefits of a narrowing in the urban-rural gap.¹² The overall level of inequality was also on par with our estimates for Vietnam in 2002. Over the next decade, inequality in China continued to rise, with the increase in the dispersion of incomes among households in the cities between 1991 and 2001 being larger than we observe in the Chinese countryside. The end of the iron rice bowl and the massive layoffs from China's state-enterprise sector, as well as the growing wage dispersion in the cities linked to rising returns to human capital

¹⁰These issues, including sampling, representativeness, definitions of household membership, price differences, etc., are taken up in Benjamin et al. (2008). Some of these issues are also taken up in Li et al. (2013).

¹¹These estimates suggest levels much lower than the earliest reported estimates for Vietnam using the 1992/93 VLSS.

¹²This narrowing reflects the huge gains from early reforms that were focused on the rural sector and contributed to rapid growth in agriculture and local non-agricultural sources of income.

each figure prominently here. In the countryside, declining growth in farming incomes, and unequal access among rural households to emerging opportunities in the labor market and through family run businesses further skewed incomes. Much is often made of the role of regional differences in China's rising urban and rural inequality, but over this period geography actually became less, not more important, largely reflecting the liberalization of product and factor (labor) markets (Benjamin et al. 2008). Conservatively, the Gini for household per capita incomes for all of China in 2001 was in the vicinity of 0.45.

China's huge size makes comparisons with Vietnam at the national level potentially misleading. In terms of population as well as area, Vietnam is much more comparable to a single province in China. In Table 7, we report estimates for a sample of urban and rural households drawn separately from coastal and interior provinces. The differences are stark. Although inequality increased in both regions between 1991 and 2001, we observe much smaller increases in the coastal provinces. Underlying this are two important features of growth in the coastal provinces: first, there was basically no rise in rural inequality, and second, there was more rapid growth in rural than urban incomes, and thus there was a decline in the urban-rural gap. By contrast, in the interior provinces, urban, rural as well as urban-rural differences all increased significantly between 1991 and 2001, while income growth lagged that in the more dynamic coastal provinces.

In key respects, Vietnam's distributive record has similarities with that of China's more open and rapidly growing provinces, especially in regards to the behaviour of rural incomes. In Vietnam, the ability of rural households to access off-farm opportunities, especially through the labor market and in small and medium enterprises, has been important, as has been the ability of those remaining in agriculture to shift into more highly valued crops. No one policy in these provinces can be singled out, but lower barriers to entry for new firms, an openness to FDI, as well as fewer restrictions on individual mobility are all likely important.

More recent estimates for China suggest a continued rise in inequality with levels now between 0.50–0.55 (See, for example, Xie and Zhou 2014).¹³ As both countries continue to develop, one of the striking comparisons is with the labor market, and the role of wage earnings in inequality. In Vietnam, as we illustrate in this paper, access to the labor market and wage earnings have been an important reason why growth has been relatively equitable. By contrast, in China, inequality in wage earnings has increased significantly, largely as a result of widening differences in educational attainment and a sharp rise in the premium to higher levels of education, especially at the university level (Park et al. 2005). This may eventually occur in Vietnam as well, but the existing differences in the labor market outcomes highlight the important interactions between education policy, the development of off-farm opportunities, and distributive outcomes.

5 Conclusions

Given the significant structural changes and high rate of growth over this period, it is remarkable how little inequality in Vietnam has changed. Overall inequality declined slightly from a Gini of 0.375 in 2002 to 0.360 in 2014. Rural inequality rose relatively steadily, with the Gini rising from 0.341 to 0.365, but urban inequality, on the other hand, actually declined from 0.365 to 0.313. These offsetting trends, combined with a reduction

¹³See Knight (2014) for an overview of research on inequality in China, including a discussion of the various factors that have been suggested as underlying the growing and high levels of current inequality.

of the gap between rural and urban incomes, account for the stability and slight decline of overall inequality.

Most of the rising rural income inequality derives from differences in outcomes between the Kinh majority and ethnic minorities. While it is true that incomes rose for minority households, they grew more slowly than for Kinh. Moreover, amongst ethnic minorities, inequality itself rose more than among the Kinh. Understanding rural inequality dynamics therefore requires further research on the determinants of the livelihoods of minority households, especially as minorities are a rising share of the rural population. Here, our results about inequality are not all that different from previous research with respect to poverty. Underlying the differences between Kinh and minorities, and also within the minority sub-population, are significant differences in access to higher paying earnings opportunities, in agriculture and in the labor market.

The role of location in accounting for inequality has fallen dramatically. Specifically, inequality is increasingly a within-location outcome and less due to differences between locations. This is true between urban and rural areas, between provinces, and between urban and rural areas within provinces. Migration across locations has played a role in decreasing the importance of location for income.

Finally, the co-evolution of growth and relative equality in Vietnam is in sharp contrast with the experience of China, where there were much larger increases in inequality. In China, most of the overall increase of inequality is attributable to increases of inequality within rural and urban areas, arising from unequal access to new opportunities outside of agriculture. In rural areas, much slower growth of farm incomes, for those for whom agriculture remains important, compounds these problems. While current policy matters, so do past policies that have influenced educational outcomes and the distribution of human capital in both the cities and the countryside. A promising research agenda would compare educational policies in the two countries to better understand the differential role played by returns to human capital in linking modernization, markets, and overall inequality.

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References

- Abdelkrim, A., Yves-Duclos, J.: DASP: Distributive Analysis Stata Package, PEP, World Bank. UNDP, Universite Laval (2007)
- Baulch, B., Vu, H.D.: Poverty dynamics in Vietnam, 2002 to 2006. In: Baulch, B. (ed.) *Why Poverty Persists: Poverty Dynamics in Asia and Africa*. Edward Elgar Publishing, Inc, Northhampton, M. A. (2011)
- Baulch, B., Pham, H.T., Reilly, B.: Decomposing the ethnic gap in Vietnam, 1993-2004. *Oxf. Dev. Stud.* **40**(1), 87–117 (2012)
- Bhattacharya, R.: Inflation dynamics and monetary policy transmission in Vietnam and emerging Asia. IMF Working Paper (2013)
- Benjamin, D., Brandt, L.: Agriculture and income distribution in rural Vietnam under economic reforms: a tale of two regions. In: Glewwe, P., Agrawal, N., Dollar, D. (eds.) *Economic Growth, Poverty and Household Welfare in Vietnam*, pp. 133–86. The World Bank, Washington, D.C. (2004)
- Benjamin, D., Brandt, L., Giles, J.: The evolution of income inequality in rural China. *Econ. Dev. Cult. Chang.* **53**(4), 769–824 (2005)

- Benjamin, D., Brandt, L., Giles, J., Wang, S.: Income inequality during China's economic transition. In: Brandt, L., Rawski, T. (eds.) *China's Great Economic Transformation*, pp. 729–755. Cambridge University Press, Cambridge (2008)
- Benjamin, D., Brandt, L., McCaig, B.: The evolution of income inequality in Vietnam, 1993–2006, Chapter 2. In: McCaig, B. (ed.) *Empirical Essays on Poverty, Inequality, and Social Welfare*, PhD Dissertation, University of Toronto (2009)
- Cling, J.-P., Marouani, M.A., Razafindrakoto, M., Robilliard, A.-S., Roubaud, F.: The distributive impact of Vietnam's accession to the WTO. *Int. Econ.* **118**(2), 43–71 (2009)
- Cowell, F.A., Litchfield, J.A., Mercader-Prats, M.: Income inequality comparisons with dirty data: the UK and Spain during the 1980s. *Distributional Analysis Research Programme Discussion Paper No. 45* (1999)
- Coxhead, I., Vu, L.H., Le, D.T.: Global market shocks and poverty in Vietnam: the case of rice. *Agric. Econ.* **43**(5), 575–592 (2012)
- Diep, P., Coxhead, I.: Inter-provincial migration and inequality during Vietnam's transition. *J. Dev. Econ.* **91**(1), 100–112 (2010)
- Edmonds, E., Pavcnik, N.: Trade liberalization and the allocation of labor between households and markets in a poor country. *J. Int. Econ.* **69**(2), 257–95 (2006)
- Fukase, E.: Foreign job opportunities and internal migration in Vietnam. World Bank Policy Research Working Paper No. 6420 (2013)
- General Statistics Office: *Operational Handbook: Vietnam Household Living Standards Survey 2008*, Ha Noi (2008)
- Gibson, J., Le, T., Kim, B.: Prices, Engel Curves and time-space deflation: Impacts on poverty and inequality in Vietnam, unpublished paper (2014)
- Glewwe, P., Gragnolati, M., Zaman, H.: Who gained from Vietnam's boom in the 1990s? *Econ. Dev. Cult. Chang.* **50**(4), 773–92 (2002)
- Glewwe, P.: An overview of economic growth and household welfare in Vietnam in the 1990s. In: Glewwe, P., Agrawal, N., Dollar, D. (eds.) *Economic growth, poverty and household welfare in Vietnam*, pp. 1–26. The World Bank, Washington, D.C. (2004)
- Glewwe, P.: Measurement error bias in estimates of income and income growth among the poor: analytical results and a correction formula. *Econ. Dev. Cult. Chang.* **56**(1), 163–189 (2007)
- Glewwe, P.: How much of observed economic mobility is measurement error? IV methods to reduce measurement error bias, with an application to Vietnam. *World Bank Econ. Rev.* **26**(2), 236–264 (2012)
- Jenkins, S.P.: Accounting for inequality trends: decomposition analysis for the UK, 1971–86. *Economica* **62**(245), 29–63 (1995)
- Khan, A.R., Riskin, C.: Income and inequality in China: composition, distribution and growth of household income, 1988 to 1995. *China Q.* **154**, 221–253 (1998)
- Knight, J.: Inequality in China: an overview. *World Bank Econ. Rev.* **29**(1), 1–19 (2014)
- Lerman, R.I., Yitzhaki, S.: Income inequality effects by income source: a new approach and applications to the United States. *Rev. Econ. Stat.* **67**(1), 151–156 (1985)
- Li, S., Sato, H., Sicular, T. (eds.): *Rising Inequality in China: Challenges to a Harmonious Society*. Cambridge University Press, New York (2013)
- Li, S., Sicular, T.: The distribution of household income in China: inequality, poverty and policies. *China Q.* **217**, 1–41 (2014)
- McCaig, B.: Exporting out of poverty: Provincial poverty in Vietnam and U.S. market access. *J. Int. Econ.* **85**(1), 102–113 (2011)
- McCaig, B., Pavcnik, N.: Moving out of agriculture: Structural change in Vietnam. NBER Working Paper No. 19616 (2013)
- McCaig, B., Pavcnik, N.: Export markets and labor allocation in a poor country. NBER Working Paper No. 20455 (2014)
- McCaig, B., Pavcnik, N.: Informal employment in a growing and globalizing low-income country. *Am. Econ. Rev.* **105**(5), 545–50 (2015)
- Park, A., Song, X., Zhang, J., Zhao, Y.: Economic returns to schooling in urban China, 1998–2001. *J. Comp. Econ.* **33**(4), 730–752 (2005)
- Phung, D.T., Phong, N.: Vietnam Household Living Standards Survey (VHLSS), 2002 and 2004: Basic Information (n.d.)
- Ravallion, M., Chen, S.: China's (uneven) progress against poverty. *Journal of Development Economics* **82**(1), 1–42 (2007)
- Shorrocks, A.F.: Inequality decomposition by factor components. *Econometrica* **50**(1), 193–211 (1982)

- van de Walle, D., Gunewardena, D.: Sources of ethnic inequality in Vietnam. *J. Dev. Econ.* **65**(1), 177–207 (2001)
- van de Walle, D., Cratty, D.: Is the emerging non-farm market economy the route out of poverty in Vietnam? *Econ. Transit.* **12**(2), 237–274 (2004)
- VASS (Vietnam Academy of Social Sciences): Vietnam Poverty Update Report 2006: Poverty and Poverty Reduction in Vietnam 1993–2004. The National Political Publisher, Hanoi (2006)
- VASS (Vietnamese Academy of Social Sciences): Poverty Reduction in Vietnam: Achievements and Challenges. The World Publisher, Hanoi (2011)
- World Bank: Vietnam's Remarkable Progress on Poverty Reduction and the Emerging Challenges. Report Washington, D.C.: World Bank (2013)
- Xie, Y., Zhou, X.: Income inequality in today's China. *Proc. Natl. Acad. Sci.* **111**(19), 6928–6933 (2014)