

Toward a New Definition of Shared Prosperity

A Dynamic Perspective from Three Countries

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Abstract

This paper proposes a new measure of growth in shared prosperity, based on shifts in population shares of different income groups over time. This measure complements the definition of shared prosperity recently proposed by the World Bank in which income growth of the bottom 40 percent is examined. The new measure's strengths arise from its close ties to countries' national poverty lines and poverty measures, its focus on inclusion of the vulnerable population, and its identification of a population segment that is neither poor nor at significant risk of falling into

poverty. The paper also offers a typology of scenarios for tracking shared prosperity under this measure. It provides illustrative examples using survey data from India, the United States, and Vietnam for the mid-to-late 2000s. Estimation results comparing the two approaches with measuring the evolution of shared prosperity are qualitatively consistent, and suggest that during this period, Vietnam enjoyed the greatest expansion in shared prosperity, followed by India and then the United States.

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Toward a New Definition of Shared Prosperity: A Dynamic Perspective from Three Countries*

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I. Introduction

By the standards of a very austere international poverty line, such as the World Bank’s \$1.25 per person per day in 2005 Purchasing Power Parity (PPP) dollars, global poverty has fallen rapidly in recent decades (World Bank, 2015a). In many countries of the world, absolute poverty defined in these terms no longer affects significant segments of the population. This is a remarkable achievement that is rightly celebrated – even though it is clear that in certain countries and certain parts of the world, extreme poverty by this standard remains both widespread and stubbornly resistant to change. But poverty is not only thought of in absolute terms, and on the basis of an international standard. Most countries of the world assess poverty in their societies on the basis of national poverty lines that are largely anchored to the standards, expectations, and aspirations of their own societies. With social progress and economic growth, these standards typically evolve and consequently the poverty thresholds underpinning national poverty analysis also tend to rise (Ravallion and Chen, 2011). In this context, attention in many countries is shifting away from merely a focus on the rate of income growth among the poorer population groups towards also an assessment of the quality of this growth. In particular, a key question that resonates in many countries is whether the poor are able to participate to the same degree and extent as the non-poor in a given country’s growth process; whether they are sharing equally in the country’s rising prosperity. In an attempt to provide a quantifiable measure that engages with these concerns, the World Bank has recently proposed a definition of “shared prosperity” as growth in the income of the bottom 40 percent of the income distribution over time (e.g., Basu, 2013; Jolliffe et al., 2015).¹

This measure has many attractive features, most notably that it is easy to understand, can be straightforwardly estimated from household survey data, and has a historical pedigree within

¹ In a slight abuse of notation, we use the terms income and consumption interchangeably in this note.

development thinking that dates back to the 1970s.² However, as with other welfare measures that attempt to collapse complex and multifaceted distributional outcome information into a single summary index, there are conceptual and measurement-related subtleties that the measure does not fully capture. For example, as was suggested above, there are good grounds to believe that at the country level, poverty remains an important concern for policy makers, even if the standards by which poverty is assessed are country specific and are far from immutable over time as the country develops. It seems plausible that a debate about shared prosperity within a country would want to be able to refer to national-level poverty, even if it is understood that the notion of shared prosperity extends beyond a focus on poverty. Questions have been raised about the income threshold used in the World Bank's shared prosperity index to identify the population segment of interest: why should the income threshold be set at the 40th percentile, rather than say, the 20th percentile or 35th percentile? Why not instead use the percentile that derives from application of the country's own poverty threshold?³ As discussed above, countries may vary in defining their national poverty lines, which in turn have a significant bearing on poverty rates. Why apply a blanket 40 percent to all countries? Furthermore, one might also ask why we do not consider growth of the income distribution as a whole instead for a more comprehensive analysis.⁴

Another limitation of the World Bank measure is that it focuses on the level of growth for the bottom 40 percent, rather than dynamic changes to the population shares of poor and vulnerable

² This measure was in fact proposed as early as 1972 in a speech by McNamara (1972), a former president of the World Bank, to the Board of Governors. A book subsequently published by the Bank (Chenery et al., 1974) provides more formal support. See Jolliffe et al. (2015) for more discussion on the historical development of this measure; see also Currie-Alder et al. (2014) for a collection of papers on the evolution of development thinking.

³ It is perfectly possible, for example, if a country's national poverty rate is sufficiently below the cut-off point of 40%, for there to be an increase in poverty while growth in average income of the bottom 40% is judged to be acceptably high. Such an outcome could occur if inequality within the bottom 40% was increasing dramatically such that the poorest percentiles were seeing a decline in incomes while the group as a whole was seeing average incomes rise. It is unclear whether and how the concept of shared prosperity defined in this way would resonate within a country under these circumstances.

⁴ See Jolliffe et al. (2015, chapter 5) for further discussion of this point.

groups, since the target population is always fixed at this specified proportion. If there is an interest to track shared prosperity in terms of shifts in such population shares it would appear useful to develop a measure that focuses on such transitions explicitly.

We develop in this note an alternative approach to tracking changes in shared prosperity that is more closely anchored to traditional analysis of poverty. We employ a dynamic approach that considers not only the currently poor but also takes into account that segment of the population currently non-poor but facing a heightened risk of falling back into poverty. We postulate that a process of growth that fails to reduce not only poverty but also that fraction of the population vulnerable to falling into poverty, cannot be regarded as representing fully satisfactory progress in boosting shared prosperity. Our proposed measure aims to circumvent the issues raised with respect to the current measure of shared prosperity, discussed above, by clearly delineating the population into three income groups: poor, vulnerable, and secure (or “middle class”) and tracking how their population shares evolve. We examine the implication of alternative growth scenarios for the relative size of these groups over time. In this approach, shared prosperity is most obviously boosted when population shares of the poor and vulnerable are seen to decline, with a corresponding increase in the share of the population that can be viewed as secure. We present a simple, but perhaps practically useful, way of interpreting and ranking the different possible scenarios in terms of changes in shared prosperity.

We emphasize that our proposed measure is not intended to detract from, or supplant, the current approach of considering the growth of the bottom 40 percent. Rather, it is meant to offer an additional perspective that can help enrich our understanding. These two approaches are complementary and simply focus on different aspects of growth for population groups that fall in the lower part of the income distribution. As will be seen later, our approach is perhaps somewhat

more complex and requires more detailed analysis, but in our examples it appears to generate results that are quite consistent with those deriving from the former approach.

To operationalize our analysis, we build on a method recently proposed by Dang and Lanjouw (2014) to construct vulnerability lines that, together with existing national poverty lines, can help identify the poor and the vulnerable in each country. These vulnerability lines are associated with given vulnerability indexes— defined as the percentage of the population that are currently non-poor but who face a significant risk of falling into poverty in the next period. For each country a socially acceptable vulnerability index has to be pre-specified— in the same way that countries have to specify national poverty lines that resonate within their respective societies.⁵ Our method allows for shared prosperity to be defined both anonymously (i.e., for poor or vulnerable households in each period regardless whether they are different or the same) and non-anonymously (i.e., for the same poor or vulnerable households in the first period). Importantly, although the method focuses on dynamics and transitions in and out of specific population groups, it does not depend crucially on the availability of panel data. Instead, the method can build on methods to construct synthetic panels constructed from multiple rounds of cross-sectional data. The latter are far more frequently available in the developing country context and as a result, our method can potentially be applied to most developing countries.

For illustration, we analyze shared prosperity based on both the established approach, and our new proposed measure, using data from three countries from different income levels and geographical locations: India, the US, and Vietnam. Data from the US and Vietnam are actual panels respectively from the Panel Study of Income Dynamics (PSID) and the Vietnam Household

⁵ The vulnerability indices can be anchored to consideration of government budgetary constraints or to normative social welfare objectives. Also note that our proposed measure of shared prosperity is flexible enough to work with other definitions of the vulnerability line.

Living Standards Survey (VHLSSs), while data from India are synthetic panels that are constructed from cross sections of the National Sample Surveys (NSSs). To maximize comparability across countries, we focus on the same time period for all three countries: 2004-2008 for the US and Vietnam; and 2004/05- 2009/10 for India.⁶ Detailed calculations and estimation results are drawn from two companions to the present paper (Dang and Lanjouw, 2014, 2015).

This note consists of four sections. We briefly review the growth experience for India, the US, and Vietnam in the next section, before delving into the analysis of shared prosperity in Section III. Section IV concludes with further thoughts on research directions.

II. Overview on Growth Experience of Three Countries

Table 1 provides two measures of economic growth, one is growth in GDP per capita, and the other is growth in household consumption per capita (total household income for the US). The latter measure is shown both for the whole population and the bottom 40 percent. While these measures can be qualitatively similar, they can offer different estimates of the speed of growth (e.g., Deaton, 2005). Thus combining the two can provide a more comprehensive picture. Indeed, Table 1 shows that growth rates are different, depending on whether the first or the second measure is employed.

A couple of observations are in order for this table. First, India had the largest annual growth rate for GDP per capita, which is then followed by Vietnam and the US for the considered periods. This order is, however, different when growth is defined in terms of household consumption. By this measure, overall growth rates in India and Vietnam were the same, and were higher than in the US. Second, while GDP per capita for the US had positive growth over this time period, survey-based income growth was even negative for the US. This suggests that this economy might in fact

⁶ We use the 2007 and 2009 rounds of the PSID, whose income data are for the previous tax year. Thus we refer to these two rounds by the tax year for convenience.

be contracting between 2004 and 2008, in stark contrast to the case in the other two countries. Finally, using growth of the bottom 40 percent as a measure of shared prosperity, Vietnam moved up and took the lead at 3.1 percent, followed by India at 2.0 percent, and finally the US at -1.3 percent. If comparison is made not across the countries, but within each respective country relative to the population as a whole, growth for the bottom 40 percent is stronger for Vietnam while it is weaker for India. On the hand, this growth is less negative than that of the whole population for the US (i.e., the mean consumption for the bottom 40 percent decreases less than that of the whole population).

We will come back to more discussion on each country in Section III.3. We discuss next the framework of analysis before considering a more disaggregated analysis of growth.

III. Analysis for Shared Prosperity

A key feature with our proposed approach to measuring shared prosperity is that we construct a vulnerability line, which separates out the nonpoor population into two groups: those that are currently nonpoor but face a heightened risk of falling into poverty in the next period, and those that are secure (and can be denoted middle class).⁷ Since this vulnerability line is built upon the existing poverty line, employing these two lines together can provide a more comprehensive and more consistent analysis.

III.1. Vulnerability Line: Definition and Estimation⁸

⁷ The “middle class” defined in this way includes as well those households that would perhaps more reasonably be described as “rich”. Note, however, that there is a general perception that household surveys do not typically capture well the richest segments of society. For example, Szekely and Hilgert (2007) show for the case of surveys from Latin America that the richest surveyed households generally reported incomes that were roughly similar or lower in dollar terms to what a middle manager in the U.S. might earn. The authors argue that inequality calculated from households survey data in the LAC region is likely to be seriously underestimated as a result of these findings.

⁸ This section provides a brief overview of the vulnerability lines provided in Dang and Lanjouw (2014). Interested readers are encouraged to read the cited paper for more details.

Let y_t and Z_t represent the household's consumption and the poverty line respectively in time t , $t=0$ and 1 .⁹ We define V_0 as the vulnerability line such that a specified proportion of the population with a consumption level *higher* than the poverty line but still *below* this line in time 0 will fall below the poverty line Z_1 in time 1. We designate the likelihood among this population of falling back into poverty in period 1 as the “vulnerability” index.¹⁰

We thus define the new vulnerability line as one that satisfies the following equality, given a specified vulnerability index $\mathcal{P}$

$$\mathcal{P} = P(y_1 \leq Z_1 | Z_0 < y_0 < V_0) \quad (1a)$$

or its equivalent expression,

$$\mathcal{P} = \frac{P(y_1 \leq Z_1 \cap Z_0 < y_0 < V_0)}{P(Z_0 < y_0 < V_0)} \quad (1b)$$

It can be useful to highlight some features of this vulnerability line. First, just as a poverty line can be constructed anchored to a benchmark (e.g., level of energy or median household consumption), a vulnerability line can be constructed given a specific value for the vulnerability index $\mathcal{P}$ (say, 5 or 10 percent). Second, also similar to the poverty line, a lower value for this index is desirable and implies that a lower proportion of the population is at risk of falling into poverty.

However, a major difference between this vulnerability line and the poverty line is that the former is constructed using a dynamic poverty framework while the latter a static one; another is that this vulnerability line is defined to be used at the population level for population-averaged quantity rather than at the household level. Put differently, the construction of vulnerability lines

⁹ We use the standard notation where y_t and Z_t are respectively a vector and a constant term; we also suppress the subscript for households to make notation less cluttered.

¹⁰ Dang and Lanjouw (2014) also offer another version of this vulnerability line which is based on an “insecurity index”, where a specified proportion of the population with a consumption level *higher* than this line in time 0 will fall below the poverty line Z_1 in time 1. While sharing several common features with the vulnerability line provided here, this other version focuses on households in the top part of the consumption distribution.

is a two-step process. In the first step, (absolute) poverty lines are constructed, often based on minimum levels of calorie requirements. Then in the second step, these poverty lines provide a building block, which is then supplemented with information on the shares of the population defined in relationship to these poverty lines in both periods, to construct vulnerability lines.

Finally, this vulnerability line can offer a lower bound for the middle class. Put differently, it can work as a lower bound value where households with a higher consumption than this line would be considered as belonging to the middle class, and households with a consumption level in between this line and the poverty line belonging to the group that is most vulnerable to poverty.

In terms of estimation, equality (1b) lends itself to straightforward estimation using household panel survey data, where the denominator can be estimated from the cross section in time 0, and the numerator from the panel data spanning both time 0 and time 1. There is no closed-form solution for V_0 in equalities (1a) and (1b). However, given household consumption in both periods, the poverty line Z_1 , and a pre-specified value for either the insecurity or vulnerability index, we can empirically solve for the vulnerability line V_0 . In particular, since $\mathcal{P}$ is a decreasing function of V_0 , we can iterate from the poverty line upward until we reach a value for V_0 that provides the specified vulnerability index. Given appropriate adjustments for inflation rates, the vulnerability line in time 0 can then be updated for later periods just as with poverty lines. In contexts where actual panel data are not available, synthetic panels can be constructed to substitute for such data (Dang, Lanjouw, Luoto, and McKenzie, 2014; Dang and Lanjouw, 2013).

For illustration purposes, Table 1.1 in the Appendix shows the different vulnerability lines that correspond to different vulnerability indexes for India during the period 2004/05- 2009/10. Further examples are provided in Dang and Lanjouw (2014, 2015).

III.2. Typology of Poverty and Vulnerability Dynamics

The estimated vulnerability line can then be combined with the existing poverty line to classify the population into three welfare groups: Poor, Vulnerable, and Middle class. We propose a simple typology of different growth scenarios for the three welfare groups in Table 2. To obtain a ranking for the different growth scenarios, we adopt the following pro-poor criterion: Growth for the Poor category is most prioritized; and between the Vulnerable category and the Middle class, growth for the former has more priority. As a result, there are in total six possible growth scenarios depending on whether (the population share for) each of the three categories is expanding or shrinking.¹¹ The first three scenarios relate to the reduction of the Poor category, while the remaining three scenarios concern the expansion of this category. Thus by our pro-poor definition, these first three scenarios indicate positive growth, and the remaining scenarios suggest negative growth.

Table 2 indicates that the most positive pro-poor growth scenario is that both the Poor and Vulnerable categories are reduced while the Middle class category expands (Scenario 1). This is also the best general economic growth scenario, where everyone—regardless of whether they are rich, vulnerable or poor—is on average better off. The second best growth scenario is one where only the Poor category becomes smaller, while both the Vulnerable and Middle class swell (Scenario 2). The worst pro-poor scenario is where both the Poor and Vulnerable increase while the Middle class is reduced and everyone on average loses (Scenario 6), which is the opposite of Scenario 1. All the remaining scenarios can be similarly classified based on the changes in the sizes of these three categories.

¹¹ Since these three groups add up to 100 percent, two other scenarios of either expanding or shrinking for all these groups as shares of the population are out of the question. In other words, the increases and decreases in the population shares of the three groups should cancel out each other in the total.

Some findings emerge from this simple typology. First, pro-poor growth is strongest—or shared prosperity is largest—when both poverty and vulnerability are reduced. Otherwise, reduced poverty coupled with increased vulnerability (Scenarios 2 and 3) can potentially result in unstable poverty reduction. The reason is rather straightforward: assuming the increase in the Vulnerable category is mostly due to those households that just escaped poverty, without strong social protection programs, there is no guarantee that these households may not fall back into poverty in the next period. Consequently, for sustainable growth and more shared prosperity, more attention should be focused not only on reducing poverty but also on decreasing vulnerability, or aiding the vulnerable population category that are currently nonpoor but face a high risk of falling into poverty.

Second, the ranking provided in Table 2 can provide some rough guideline for a preferred pro-poor growth order for the different growth trajectories. If the objective is to achieve shared prosperity, this ranking suggests that growth for the poor and vulnerable—in this order—should be most prioritized. While the best pro-poor growth scenario is generally consistent with general economic growth (Scenario 1), this may not hold for other pro-poor growth scenarios where the Middle class can either expand or contract (Scenarios 2 and 3). Similarly, the whole economy may grow on average but poor households may even sink deeper into poverty if the Poor category swells (Scenarios 4 and 5). This priority should be well noted if shared prosperity is to be interpreted as more or at least equal growth for the poorer groups.

Finally, the typology provided in Table 2 is general enough to be employed with different definitions of vulnerability lines. Even though we derive these vulnerability lines based on the approach in Dang and Lanjouw (2014) for the analysis in this paper, these lines can also be obtained using other approaches. For example, one option is to derive the vulnerability line, also

based on the probability of falling into poverty but using a regression-based framework (Ferreira et al., 2013; Lopez-Calva and Ortiz-Juarez, 2014); other options are to simply use some absolute cutoff thresholds such as between \$2 and \$10 PPP dollars (Banerjee and Duflo, 2008) or between the 40th and 80th percentiles of the income distribution (Alesina and Perotti, 1996).

III.3. Welfare Analysis

We provide the empirical illustration in Table 3, where estimates are constructed based on the results from Dang and Lanjouw (2014).¹² We briefly review the most relevant studies about pro-poor growth in each country before discussing estimation results.

India

India witnessed its GDP per capita increasing by almost half (47 percent) and poverty decreasing by 21 percent during the period 2004-2009 (World Bank, 2015b). Not much, however, is known about pro-poor growth for India during this period, but recent studies (e.g., Datt and Ravallion, 2011; Ravallion, 2011) suggest that economic growth has generally had a negative impact on poverty rates starting from the early 1990s. Our earlier estimates (Table 1) indicate that growth for the bottom 40 percent is slightly smaller than that of the whole population.

Estimation results shown in Table 3 confirm that growth in India in this period has been pro-poor, with the population share of the Poor category decreasing by 14 percent. However, this rate of decrease is slower than the growth rate of the Middle class at 19 percent. This period also saw the Vulnerable category expanding by 5 percent. The growth scenario for India in this period is

¹² The figures shown in Table 3 are the relative changes of the different welfare categories. The absolute changes offer qualitatively similar results and are provided in Table 1.2 in the Appendix.

definitely a positive case, and is second only to the most positive case of both reduced poverty and vulnerability and expanded middle class (Table 2).¹³

United States

The year 2008 marks the Great Recession in this country, where subprime housing mortgages had a detrimental domino effect on other sectors of the economy. Petev, Pistaferri, and Eksten (2011) document that while real per capita consumption declined monotonically until the middle of 2009, the decline of real per capita disposable income was significantly smaller. This finding was corroborated by De Nardi, French, and Benson (2012), who also found that the drop in income for poorer households was in fact lower than that of other households (thanks to means-tested transfer programs from the government).¹⁴ Both the negative growth rate for mean income per capita, and the negative growth for the bottom 40 percent (shown in Table 1)—even though the latter is slightly larger—are consistent with these findings.

Our estimates (Table 3) suggests that growth in the US in this period has been least pro-poor, with the population share of the Poor category increasing by 12 percent. At the same time, the Vulnerable category expanded by 9 percent, while the Middle class contracted by 2 percent. The growth scenario for the US is in fact the most negative case for pro-poor growth according to the typology shown in Table 2.

Vietnam

¹³ Analysis of mobility for the more recent period (2009/10- 2011/12) for India is provided in Dang and Lanjouw (2015).

¹⁴ In addition, Saez and Zucman (2014) document that over the 1986-2012 period, wealth per family averaged a growth rate of 1.9% per year but did not grow at all for the bottom 90% of U.S. families.

Vietnam has been enjoying a steady GDP per capita growth rate of almost 6 percent in the period 2004-2008 (Table 1), which followed a preceding decade of strong growth. Poverty has been declining rapidly in this country, and decreased by one quarter, from 20 percent in 2004 to 15 percent in 2008. Economic growth in the previous decade (the 1990s) has been found to be strongly pro-poor (Glewwe and Dang, 2011).

Our estimates (Table 3) suggests that growth in Vietnam in this period has been solidly pro-poor, with the population share of the Poor category decreasing by 29 percent. At the same time, the Vulnerable category also decreased by 27 percent, while the Middle class expanded by 22 percent. The growth scenario for this country is in fact the most positive case for pro-poor growth according to our proposed typology.

We thus show that for the three countries during the studied period, Vietnam represents the most positive pro-poor growth scenario and India represents the next most positive, while the US reveals the least positive scenario.¹⁵ It should be noted that while both the cited bottom 40 percent measure and our measure provide consistent results for these examples, this may not always hold for other countries.

IV. Conclusion

We propose in this short paper an alternative measure of shared prosperity, which divides the population into three income groups and which is based on the changes of the population shares of each of these groups over time. We also offer a typology of different pro-poor growth scenarios based on this measure. Our proposed measure does not attempt to replace the measure of shared prosperity as growth of the bottom 40 percent recently proposed by the World Bank, but rather

¹⁵ However, note that if mobility between all income groups is considered, India has slightly more mobility than Vietnam, which is then followed by the US (Dang and Lanjouw, 2014).

aims at examining different aspects of growth. Our proposed measure would involve more intricate analysis, but the payoff is that it can provide richer analysis.

Furthermore, several strengths of our proposed measure merit attention. First, it is constructed using the existing poverty line and resultant vulnerability line. As a result, it helps avoid the complicating issues of associating the bottom 40 percent with any existing national (or international) poverty line. Second, this measure emphasizes the importance of taking into account not only the poor but also the vulnerable (i.e., those that are currently nonpoor but face a significant risk of falling into poverty) into the estimation of shared prosperity. Finally, the vulnerability lines used to construct this measure can be derived using a vulnerability index approach (Dang and Lanjouw, 2014) or other approaches. It is rather straightforward to estimate vulnerability for the former approach based on synthetic panels constructed from cross sections.

It is useful to explore the combination of both approaches for analysis of shared prosperity, as illustrated in this paper. Estimation results using both approaches are qualitatively consistent for the three countries examined, and suggest that growth for Vietnam has the most shared prosperity, which is followed by India and the US. These results could well change for a more recent period, particularly since the period under study leads to the recent Great Recession period in the US.

We do not further investigate the dynamics of the movement between the different consumption categories for each country, which requires more detailed mobility analysis. But a promising direction for future research is to incorporate these between-group transitions into constructing a richer and more dynamic measure of shared prosperity. Another direction is to analyze the changes in shared prosperity not just for the poor as a whole, but also for specific subgroups among the poor and disadvantaged, such as the unemployed or those belonging to ethnic minorities.

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Table 1: Growth Experience of India, the United States, and Vietnam (percentage)

Annual growth rate	Country		
	India	United States	Vietnam
<i>1. Based on national account</i>			
GDP/ capita	6.6	1.3	5.8
<i>2. Based on household survey</i>			
Consumption/ capita for all the population	2.2	-1.8	2.2
Consumption/ capita for the bottom 40 percent	2.0	-1.3	3.1
Note: Annual growth rate is between 2004 and 2008 for the US and Vietnam, and 2004 and 2009 for India. GDP per capita data are from the World Development Indicators database. Survey-based consumption figures are from the NSS and VHLSS surveys respectively for India and Vietnam; for the US, this figure is total household income from the PSID. All survey-based numbers are estimated with population weights.			

Table 2: Typology of Welfare Transition Dynamics over Two Periods

Scenario	Pro-poor Growth	Welfare Category			Notes
		Poor	Vulnerable	Middle class	
1	Strongest/ Most positive	-	-	+	reduced poverty and vulnerability, and expanded middle class
2	More positive	-	+	+	reduced poverty, increased vulnerability, and expanded middle class
3	Positive	-	+	-	reduced poverty, increased vulnerability, and shrunk middle class
4	Negative	+	-	+	increased poverty, reduced vulnerability, and expanded middle class
5	More negative	+	-	-	increased poverty, reduced vulnerability, and shrunk middle class
6	Weakest/ Most negative	+	+	-	increased poverty, increased vulnerability, and shrunk middle class
Note: The signs (-) and (+) respectively stand for decrease and increase. Pro-poor growth is defined as the dynamics that are most beneficial to the different categories in this order: Poor, Vulnerable, and Middle class.					

Table 3: Welfare Transition Dynamics of India, the United States, and Vietnam (percentage)

Welfare category	Country		
	India	United States	Vietnam
Poor	-14.4	12.4	-28.5
Vulnerable	4.8	9.4	-26.5
Middle class	19.0	-2.4	22.3
Pro-poor growth scenario	More positive	Most negative	Most positive
Note: Welfare transition is between 2004 and 2008 for the US and Vietnam, and 2004 and 2009 for India. Households are considered to be in the vulnerable category if their probability of falling from this status in the first period into poverty in the next period is at least 20 percent. Estimates are derived from Table 8 and Table 2.4 in Dang and Lanjouw (2014), where data for the US and Vietnam are true panels with the PSID and VHLSS, and data for India are synthetic panels constructed from the cross sections in the NSS. All survey-based numbers are estimated with population weights.			

Appendix

Table 1.1: Vulnerability Lines at Given Vulnerability Indexes for India, 2004-2009

No	Vulnerability index (%)	Vulnerability line (rupee)	Increase (%)	Pop. share with consumption above poverty line but less than V-line (%)
1	35	508	5	3.4
2	34	528	9	6.2
3	33	543	12	8.2
4	32	553	14	9.4
5	31	578	20	12.6
6	30	598	24	15.0
7	29	623	29	17.9
8	28	648	34	20.7
9	27	673	39	23.3
10	26	703	46	26.2
11	25	743	54	29.8
12	24	783	62	33.1
13	23	823	70	36.1
14	22	868	80	39.1
15	21	923	91	42.3
16	20	998	107	45.6
17	19	1083	124	49.4
18	18	1213	151	53.4
19	17	1398	189	57.1
20	16	1723	257	60.6

Note: Vulnerability lines are in monthly rupees per capita in 2004 prices. The relative increases of the vulnerability line from the poverty line is shown under the column "Increase" (column 4). All numbers are estimated with synthetic panel data and weighted with population weights. The incremental value for iteration is 5 rupees. The exchange rate is US\$1 for 45.3 rupees in 2004 (World Bank, 2015).

Table 1.2: Welfare Transition Dynamics of India, the United States, and Vietnam, Absolute Changes (percentage)

Welfare category	Country		
	India	United States	Vietnam
Poor	-5.3	1.1	-5.7
Vulnerable	2.2	0.8	-6.6
Middle class	3.2	-2.0	12.3
Pro-poor growth scenario	More positive	Most negative	Most positive

Note: Welfare transition is between 2004 and 2008 for the US and Vietnam, and 2004 and 2009 for India. Households are considered to be in the vulnerable category if their probability of falling from this status in the first period into poverty in the next period is at least 20 percent. Estimates are derived from Table 8 and Table 2.4 in Dang and Lanjouw (2014), where data for the US and Vietnam are true panels with the PSID and VHLSS, and data for India are synthetic panels constructed from the cross sections in the NSS. All survey-based numbers are estimated with population weights.